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St Vitus's Dance.  
Sal Ammoniac.  
Salicylic Acid.  
Salisbury.  
Salt Lake City.  
Saltpetre.  
Salt.  
Salvador.  
Salvation Army.  
Salzburg.  
Samoa.  
Samoyedes.  
Sanctuary.  
San Francisco.  
Santo Domingo.  
Sarsaparilla.  
Saskatchewan.  
Savannah.  
Saxe-Coburg-Gotha.  
Saxe-Weimar-Eisenach.  
Saxony.  
Scarlet Fever.  
Schleswig-Holstein.  
Scilly Isles.  
Selio.  
Serpulariaceae.  
Scurvy.  
Seal-Fisheries.  
Seattle.  
Sea-Urchin.  
Sedition.  
Seismometer.  
Selenium.  
Selkirkshire.  
Senna.  
Sennar.  
Sennar.  
Sequoia.  
Serjeant.  
Servo-Bulgarian War.  
Settlement.  
Severn.  
Sewing Machines.  
Sextant.  
Seychelles.  
Shadow.  
Shakers.  
Shamash.  
Sheffield.  
Shell-beaps.  
Shell-money.  
Sheridan.  
Shetland.  
Shoe.  
Shorthand (modern).  
Shropshire.
ST ELMO’S FIRE, the glow accompanying the slow discharge of electricity to earth from the atmosphere. This discharge, which is identical with the “brush” discharge of laboratory experiments, usually appears as a tip of light on the extremities of pointed objects such as church towers, the masts of ships, or even the fingers of the outstretched hand: it is commonly accompanied by a crackling or fizzing noise. St Elmo’s fire is most frequently observed at low levels through the winter season during and after snowstorms.

The name St Elmo is an Italian corruption through Sant’ Ermo of St Erasmus, a bishop, during the reign of Domitian, of Formiae, Italy, who was broken on the wheel about the 2nd of June 304. He has ever been the patron saint of Mediterranean sailors, who regard St Elmo’s fire as the visible sign of his guardianship. The phenomenon was known to the ancient Greeks, and Pliny in his Natural History states that when there were two lights sailors called them Castor and Pollux and invoked them as gods. To English sailors St Elmo’s fires were known as “corposants” (Ital. corpo santo). See Hazlitt’s edition of Brand’s Antiquities (1905) under “Castor and Pollux.”

ST EMILION, a town of south-western France, in the department of Gironne, 2½ m. from the right bank of the Dordogne and 27 m. E.N.E. of Bordeaux by rail. Pop. (1906), town, 1901; commune, 3546. The town derives its name from a hermit who lived here in the 7th and 8th centuries. Picturesquely situated on the slope of a hill, the town has remains of ramparts of the 12th and 13th centuries, with ditches hewn in the rock, and several medieval buildings. Of these the chief is the parish, once collegiate, church of the 12th and 13th centuries. A Gothic cloister adjoins the church. A fine belfry (12th, 13th and 15th centuries) commanding the town is built on the terrace, beneath which are hollowed in the rock the oratory and hermitage of St Emilion, and adjoining them an ancient monolithic church of considerable dimensions. Remains of a monastery of the Cordeliers (15th and 17th centuries), of a building (13th century) known as the Palais Cardinal, and a square keep (the chief relic of a stronghold founded by Louis VIII.) are also to be seen. Disused stone quarries in the side of the hill are used as dwellings by the inhabitants. St Emilion is celebrated for its wines. Its medieval importance, due to the pilgrimages to the tomb of the saint and to the commerce in its wines, began to decline towards the end of the 13th century owing to the foundation of Libourne. In 1272 it was the first of the towns of Guyenne to join the confederation headed by Bordeaux.
SAINTES—ST ÉTIENNE

SAINTES-PALAYE, JEAN BAPTISTE LA CURNE (OF LACURNE) DE (1697–1781), French scholar, was born at Auxerre on the 6th of June 1697. His father, Edme, had been gentleman of the bed-chamber to the duke of Orleans, brother of Louis XIV, Saint-Palaye had a twin brother to whom he was greatly attached, refusing to marry so as not to be separated from him. For some time he held the same position under the minister of Orleans, and under the duke of Orleans. He had received a thorough education in Latin and Greek, and had a taste for history. In 1724 he had been elected an associate of the Académie des Inscriptions et Belles-Lettres, merely from his reputation, as nothing had been written by him before that date. From this time he devoted himself exclusively to the work of this society. After having published numerous memoirs on Roman history, he began a series of studies on the chronicles of the middle ages for the Historiens des Gaules et de la France (edited by Dom Bouquet): Raoul Glaber, Helgada, the Gestes of Louis VII, the chronicle of Mornigay, Rigord and his continuator, William le Breton, the monk of St Denis, Jean de Venette, Froissart and the Jouvencel. He made two journeys into Italy with his brother, the first in 1730–1740, accompanied by his companion, the president Charles de Brosses, who related many humorous anecdotes about the two brothers, particularly about Jean Baptiste, whom he called "the bilious Saintes-Palaye!" On returning from this tour he saw one of Joinville's manuscripts at the house of the senator Florentini, well known in the history of the text of this pleasing memorialists. The manuscript was bought for 150 livres in 1741, and was given to the Academy at that time. After the second journey (1749) Lacurne published a letter to de Brosses, on Le Goût dans les arts (1751). In this he showed that he was not only attracted by manuscripts, but that he could see and admire works of art. In 1759 he published the first edition of his Mémoires sur l'ancienne chevalerie, considérée comme un établissement politique et militaire, for which unfortunately he only used works of fiction and ancient stories as sources, neglecting the heroic poems which would have shown him the nobler aspects of this institution so soon corrupted by "courtly" manners; a second edition appeared at the time of his death (3 vols. 1781, 3rd ed. 1850). He prepared an edition of the works of Eustache Deschamps, which was never published, and also made a collection of more than a hundred volumes of extracts from ancient authors relating to French antiquities and the French language of the middle ages. His Glossaire de la langue française was ready in 1756, and a prospectus had been published, but the great length of the work prevented him finding a publisher. It remained in manuscript for more than a century. In 1764 a collection of his manuscripts was bought by the government and after his death were placed in the king's library; they are still there. (fonds Lacurne, within the collection of some which were given to the marquis of Paulmy in exchange, and were later placed in the Arsenal. Lacurne de Saintes-Palaye ceased work about 1771; the death of his brother was greatly felt by him, he became childless, and died on the 1st of March 1781. Saintes-Palaye had been a member of the Académie Française since 1738. His life was written for this Académie by Chamfort and for the Académie des Inscriptions by Dupuy; both works are of no value. See, however, the biography of Lacurne, with a list of his published works and those in manuscript, at the beginning of the tenth and last volume of the Dictionnaire historique de l'ancien langage français, ou glossaire de la langue française depuis son origine jusqu'au siècle de Louis XIV., published by Louis Favre (1875–1882).

SAINTES, a town of western France, capital of an arrondissement in the department of Charente-Inférieure, 47 m. S.E. of La Rochelle by the railway from Nantes to Bordeaux. Pop. (1906), town, 13,744; commune, 19,025. Saints is pleasantly situated on the left bank of the Charente, which separates it from its suburb of Les Dames. It is of interest for its Roman remains, of which the best preserved is the triumphal arch of Germanicus, dating from the reign of Tiberius. This formerly stood on a Roman bridge destroyed in 1843, when it was removed and reconstructed on the right bank of the river. Ruins of baths and of an amphitheatre are also to be seen. The amphitheatre, larger than that of Nîmes, and in area surpassed only by the Coliseum, dates probably from the close of the 1st or the beginning of the 2nd century and was capable of holding 20,000 spectators. A Roman building known as the Capitol was destroyed after the capture of the town from the English by Charles of Alençon, brother of Philip of Valois, in 1350, and its site is occupied by a modern church, the Eglise Notre-Dame. The Eglise St Peter, built in the first half of the 13th century, was rebuilt in the 17th century, and again after it had been almost destroyed by the Huguenots in 1568. The interior has now an unattractive appearance. The tower (15th century) is 236 ft. high. The church of St Eutropius (founded at the close of the 6th century, rebuilt in the 11th, and had its nave destroyed in the Wars of Religion) stands above a very interesting well-lighted crypt—the largest in France after that of Chartres—adorned with richly sculptured capitals and containing the tomb of St Eutropius (4th or 5th century). The fine stone spire dates from the 15th century. Notre-Dame, a splendid example of the architecture of the 11th and 12th centuries, with a noble clock-tower, is no longer devoted to religious purposes. The old hôtel de ville (16th and 18th centuries) contains a library, and the present hôtel de ville a museum. Bernard Palissy, the porcelain-maker, has a statue in the town, where he lived from 1542 to 1562. Small vessels ascend the river as far as Saintes, which carries on trade in grain, brandy and wine, has iron foundries, works of the state railway, and manufactures earthenware, tiles, bricks, pottery.

Saintes (Médialolium or Mediolanium), the capital of the Santones, was a flourishing town before Caesar's conquest of Gaul; in the middle ages it was capital of the Saintonge. Christianity was introduced by St Eutropius, its first bishop, in the middle of the 3rd century. Charlemagne rebuilt its cathedral. The Normans burned the town in 845 and 854. Richard Coeur de Lion fortified himself within its walls against his father Henry II, who captured it after a destructive siege. In 1242 St Louis defeated the English under its walls, and St Louis again reconquered the town. It was not, however, till the reign of Charles V. that Saintes was permanently recovered from the English. The Protestants did great damage during the Wars of Religion.

ST ÉTIENNE, an industrial town of central France, capital of the department of Loire, 310 m. S.S.W. of Paris and 36 m. S.S.W. of Lyons by rail. Pop. (1906), town, 135,940; commune, 146,668. St Étienne is situated on the Eure, which flows through it from S.E. to N.W., partly underground, and is an important adjunct to the silk manufacture. The town is uniformly built, its principal feature being the straight thoroughfare nearly 4 m. long which traverses it from N. to S. The chief of the squares is the Place Marenco, which has a statue of F. Garnier, the explorer, and is overlooked by the town hall and the prefecture, both modern. The church of St Étienne dates from the 15th century, and the Romanesque church of the abbey of Valbonne is on the S.E. outskirts of the town. A valuable collection of arms and armour are in a gallo-romain collection, and a library with numerous manuscripts are in the Palais des Arts. St Étienne is the seat of a prefect, and has an important school of mining, and schools of music, chemistry and dyeing, &c.

The town owes its importance chiefly to the coal-basin which extends between Firmignon and Rive-de-Gier over an area 20 m. long by 5 m. wide, and is second only to those of Northern France. There is a very large employment to some 18,000 workmen and producing annually between 3,000,000 and 4,000,000 tons. The mineral is of two kinds—smelting coal, said to be the best in the world, and inferior coal; the former is used in manufactures of ribbons, trimmings and other goods made from silk and mixtures of cotton and silk. This industry dates from the early 17th century, is carried on chiefly in small factories (electricity supplying the motive power), and employs at its maximum some 50,000 hands. The attendant industry of dyeing is carried on on a large scale. The manufacture of steel and iron and of heavy iron goods such as armour-plating occupies about 3,500 men, and that of steel alone has a capital of 60,000,000 fr. The iron-mongery is very extensive. There is a large iron and steel works which employs at busy times more than 10,000 men, and can turn out 450,000 rifles in the year. Private firms, employing 4500 hands, make both military rifles and sporting-guns, revolvers, &c. To these the manufacture of elastic fabrics, glass, cartridges, liqueurs, hemp-cables, &c.
At the close of the 12th century St Étienne was a parish of the Pays de Gier belonging to the abbey of Valbonne. By the middle of the 13th century the coal trade had reached a certain development, but at the beginning of the 15th century Charles VII permitted the town to erect fortifications. The manufacture of fire-arms for the state was begun at St Étienne under Francis I. and was put under the surveillance of state inspectors early in the 18th century. In 1789 the town was producing at the rate of 12,000 muskets per annum; between September 1794 and May 1796 they delivered over 175,000; and 100,000 was the annual average throughout the period of the empire. The first railways opened in France were the line between St Etienne and Andrézieux on the Loire in 1838 and that between St Etienne and Clermont in 1851. St Étienne became the administrative centre of the department instead of Montbrison.

**ST EUSTATIUS—ST GALL**

**ST FLORENTIN,** a town of north-central France, in the department of Loiret, 37 m. S.E. of Sens on the Paris-Lyon-Méditerranée railway. Pop. (1906) 2303. It stands on a hill on the right bank of the Armançon, built a mile or so from the Armançon and the canal of Burgundy. In the 17th century part of the town stands the church, begun in the latter half of the 15th century, and though retaining the Gothic form, with great flying buttresses, is mainly in the Renaissance style. It is approached through a narrow alley up a steep flight of steps, and contains a fine Holy Sepulchre in bas-relief and a choir-screen and stained glass of admirable Renaissance workmanship. The chœur, left incomplete, was restored and finished between 1837 and 1862. The market-gardens of St Florentin produce large quantities of asparagus. A castle stands on the site of the Roman military post Castrodunum, the sanctuary of an unchristianized saint in the 3rd century of Saints Florentin and Hilaire, round whose tomb it grew up. The abbey established here in the 9th century afterwards became a priory of the abbey of St Germain at Auxerre. The town and its territory belonged, under the Merovingians, to Burgundy, and in later times to the counts of Champagne, from whom it passed to the kings of France. Louis XV. raised it from the rank of viscountcy to that of county and bestowed it on Louis Phélypeaux, afterwards Duc de la Vallière.

**ST FLORUS,** a town of north-central France, capital of an arrondissement in the department of Cantal. It stands at a height of 2900 ft. on a basaltic plateau overlooking the Lioré, a branch of the Loire of the Truyère, 47 m. E.N.E. of Aurillac by rail. Pop. (1900) 4900. The streets are dark and narrow, but the town has spacious promenades established in the 18th century. St Flur grew up round the tomb of St Flur, the apostle of Auvergne, who died there in the 4th century. The abbey founded there about the beginning of the 11th century became in 1317 an episcopal seat, and the town is still the seat of a bishopric. The cathedral (1306–16) is the principal building. The manufacture of coarse woolen fabrics, of earthenware and candles is carried on. A few miles S.E. of the town the gorge of the Truyère is spanned by the fine railway viaduct of Garabit over 600 yds. long and at a height of 400 ft. above the river.

**ST GALL (Ger. St Gallen),** one of the cantons of north-east Switzerland, on the border of the Austrian province of the Vorarlberg and of the independent principality of Liechtenstein. It entirely surrounds the canton of Appenzell, which, like a great part of this canton, formerly belonged to the abbots of St Gall, while the "enclave" of Horn is in the canton of Thurgau.

Its area is 779 sq. m., of which 710 sq. m. are reckoned "productive," forests covering 157 sq. m. and vineyards 18 sq. m. while of the remainder 28 sq. m. are occupied by glaciers. The altitude above the sea-level varies from 306 ft. (the lake of Constance) to 7364 ft. (the Ringelespitzen). The canton includes portions of the lake of Constance (21 sq. m.), of the Waleensee (rather over 7 sq. m.), and of the lake of Zürich (4 sq. m.), and several small lakes wholly within its limits. Hilly in its N. region, the height gradually increases towards the S. border, while to its S.W. and E. extend considerable alluvial plains on the banks of the Linth and of the Rhine. The two rivers just named form in part its frontiers, the Rhine stream within the canton being the Thur (as regards its upper course), with the middle reach of its principal affluent the Sitter, both forming part of the Rhine basin. It has ports on the lake of Constance (Korsach) and of Zürich (Rapperswil), as well as Wassen (on the Waleensee). The intersecting point of Ragatz (g.v.) is supplied with hot mineral waters from Hellers. The main railway lines from Zürich past Sargans for Coire, and from Sargans past Alstätten and Rorschach for Constance, skirt its borders, while the capital is on the principal railway line from St. Gall to Rorschach, and communicates by rail with Appenzell and with Frauenfeld. In 1900 the population of the canton was 250,285, of whom 243,388 were German-speaking, 5300 Italian-speaking and 7100 French-speaking, while there were 90,412 "Catholics" (whether
ST GALL—SAINT-GAUDENS

Roman or "Old"), 99,114 Protestants and 536 Jews (mostly in the town of St Gall). Its capital is St Gall, the other most populous place being Tablat (pop. 12,590), Rorschach (9140), Alstättten (8724), Straubenzell (8090), Gossau (6055) and Wattwil (4971). In the southern and more Alpine portion of the canton the inhabitants, mainly well-to-do farmers, number over 9000 "alps" or mountain pastures on the canton amounted to 304, capable of supporting 21,144 cows, and of an estimated total value of nearly 14 million francs. The central and southern regions agriculture is generally combined with manufactures.

The canton is one of the most industrial in Switzerland. Cotton-spinning is widely spread, though cloth-weaving has declined. But the embroidery industry is perhaps the most important. It is based mostly on muslin, embroidery and lace. It is reckoned that the value of the embroideries and lace exported from the canton amounts to about one-seventh of the total value of the exports from Switzerland. The town of St Gall is the center of three administrative districts, which comprise ninety-three communes.

The existing constitution dates from 1890. The legislature or Grossrat is elected by the communes, each commune of 1500 inhabitants or less having a right to one member, and as many more as the divisor 1500, or fraction over 750, justifies. Members hold office for three years. For the election of the seven members of the executive or Regierungsrat, who also hold office for three years, all the citizens of the federal canton form a single body. The members of the federal Ständerat are named by the legislature, while the thirteen members of the federal Nationalrat are chosen by a popular vote. The right of "facultative referendum" or of "initiative" as to legislative projects belongs to any 4000 citizens, but in case of the revision of the cantonal constitution 10,000 must sign the demand. The canton of St Gall was formed in 1803 and was augmented by several districts that had belonged since 1798 to the canton Linth or Glarus—the upper Taggenburg, Sargans (held since 1543 by the Swiss), Gaster and Uznach (belonging since 1428 to Schwyz and Glarus), Gams (since 1410 the property of the same two members), Weesenberg (owned by Glarus since 1517), Sax (bought by Zürich in 1615), and Rapperswil (since 1712 under the protection of Zürich, Bern and Glarus).

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ST GALL, capital of the Swiss canton of that name, is situated in the upper valley of the Steinach, 2193 ft. above the sea-level. It is by rail 9 m. S.W. of Rorschach, its port on the lake of Constance, and 53 m. E. of Zürich. The older or central portion of the town retains the air of a small rural capital, but the newer quarters present the aspect of a modern commercial center. At either extremity considerable suburbs merge in the neighboring towns of Tablat and of Straubenzell. Its chief building is the abbey church of the celebrated old monastery. This has been a cathedral church since 1846. In its present form it was constructed in 1756–1765. The famous library is housed in the former palace of the abbott, and is one of the most renowned in Europe by reason of its rich treasures of early MSS. and printed books. Other portions of the monastic buildings are used as the offices of the cantonal authorities, and contain the extensive archives built of this monastery. The ancient churches of St Magnus (Old Catholics) and of St Lawrence (Protestant) were restored in the 19th century. The town library, which is rich in Reformation and post-Reformation MSS. and books, is in the buildings of the cantonal school. The museum contains antiquarian, historical and natural history collections, while the new museum of industrial art has an extensive collection of embroideries of all ages and dates. There are a number of fine modern buildings, such as the Bourse. The town is the centre of the Swiss muslin, embroidery and lace industry. This manufactures a number of goods, such as "alps" or mountain pastures on the canton amounted to 304, capable of supporting 21,144 cows, and of an estimated total value of nearly 14 million francs. The central and southern regions agriculture is generally combined with manufactures.

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SAINT-GAUDENS, AUGUSTUS (1848–1907), American sculptor, was born in Dublin, Ireland, of a French father (a shoemaker by trade), and an Irish mother, Mary McGuinness, on the 1st of March 1848, and was taken to America in infancy. He was apprenticed to a cameo-cutter, studying in the schools of the Cooper Union (1861) and the National Academy of Design, New York (1863–1866). His earliest work in sculpture was a bronze bust (1867) of his father, Bernard, and himself. In 1865 he went to Paris and became a pupil of Jourfroy, in the École des Beaux-Arts. Two years later, with his fellow-student Mercié, he went to Italy, where he spent three years. At Rome he executed his statues "Hiawatha " and "Silence." He then settled in New York. In 1874 he made a bust of the statesman, William M. Evarts, and was commissioned to execute a large relief for St Thomas's Church, New York, which brought him
into prominence. His statue of Admiral Farragut, Madison Square, New York, was commissioned in 1878, exhibited at the Paris Salon in 1880 and completed in 1881. It immediately brought the sculptor widespread fame, which was increased by his church, once an enormous warehouse, built in 1887, for Lincoln Park, Chicago. In Springfield, Mass., is his "Deacon Chapin," known as "The Puritan." His figure of "Grief" (also known as "Death" and "The Peace of God") for the Adams (Mrs Henry Adams) Memorial, in Rock Creek Cemetery, Washington, D.C., has been described as "an idealization complete and absolute, the rendering of a simple, natural fact—a woman in grief—yet with such deep and embracing comprehension that the individual is magnified into a type." His Shaw Memorial in Boston, a monument to Robert G. Shaw, colonel of a negro regiment in the Civil War, was undertaken in 1884 and completed in 1887; it is a relief in bronze, 11 ft. by 15, containing many figures of soldiers, led by their young officer on horseback, a female figure in the clouds pointing onward. In 1903 was unveiled his equestrian statue (begun in 1892) to General Sherman, at 59th street and Fifth avenue, New York; preceding the Union commander is a winged figure of "Victory." This work, with others, formed a group at the Paris Exposition of 1900. A bronze copy of his "Amor Caritus" is in the Luxembourg, Paris. Among his other works are relief medallion portraits of Robert Louis Stevenson (in St Giles's Cathedral, Edinburgh) and the French painter Jules Bastien-Lepage; Garfield Memorial, Fairmount Park, Philadelphia; General Logan, Chicago; the Peter Cooper Memorial; and Charles Stewart Parnell in Dublin. Saint-Gaudens was made an officer of the Legion of Honour and corresponding member of the Institute of France. He died at Cornish, N.H., on the 3rd of August 1907. His monument of Phillips Brooks for Boston was left practically completed. Saint-Gaudens is rightly regarded as the greatest sculptor produced by America, and his work had a most powerful influence on art in the United States. In 1887 he married Augusta F. Homer and left a son, Howard Saint-Gaudens. His brother Louis (1829-1854), at all in relief, undertook the work of his brother and assisted Augustus Saint-Gaudens in some of his works.

See Royal Cottisso, Augustus Saint-Gaudens (1897); Lorado Taft, History of American Sculpture (1903), containing two chapters devoted to Saint-Gaudens; Kenyon Cox, Old Masters and New (1905); C. Lewis Hind, Augustus Saint-Gaudens (1906).

ST GAUDENS, a town of south-western France, capital of an arrondissement in the department of Haute-Garonne, 1 m. from the left bank of the Garonne, 57 m. S.S.W. of Toulouse, on the railway to Tarbes and Pop. (1900), town, 4533; commune, 7720. The town has a cathedral, dedicated to Saint-Sernin, and a great many fine medieval homes, built in the flamboyant Gothic style. The town has sawing-, oil- and flour-mills, manufactures woollen goods, and is a market for horses, sheep and agricultural produce. Saint-Gaudens derives its name from a martyr of the 5th century, at whose tomb a college of canons was afterwards established. It was important as capital of the Nébouzan, as the residence of the bishops of Comminges and for its cloth industry.

SAINT-GELAIS, MELIN DE (1487-1558), French poet, was born at Angoulême on the 3rd of November 1487. He was the natural son of Octavien de St Gelais (1466-1502), afterwards bishop of Angoulême, himself a poet. At the age of 14, his father cast him into France. Melin, who had studied at Bologna and Padua, had the reputation of being doctor, astrologer and musician as well as poet. He returned to France in 1515, and soon gained favour at the court of Francis I. by his skill in light verse. He made amaner to the Dauphin, abbot of Reclus in the diocese of Troyes and librarian to the king at Fontainebleau. He enjoyed immense popularity until the appearance of Du Bellay's Défense et illustration... in 1549, where St Gelais was not excepted from the scorn poured on contemporary poets. He attempted to ridicule the innovators by reading aloud the Odes of Ronsard with burlesque emphasis before Henry II., when the king's sister, Margaret of Valois, seized the book and read them herself. Ronsard accepted Saint-Gelais's apology for this incident, but Du Bellay satirized the offender in the Pôle courtois. In 1554 he collaborated, perhaps with François Habert (1520-1574?), in a translation of the Sophonisse of Trissino which was represented (1554) before Catherine de Medicis at Blois. Saint-Gelais was the champion of the style maroquiné and the earliest of French sonneteers. He died in 1558.

His Œuvres were edited in 1873 (3 vols., Bibl. éditée par M. Prosper Blanchéman.

SAINT-GEORGES, GEORGES HENRI VERNY DE (1799-1875), French dramatist, was born in Paris on the 7th of November 1799. Saint-Louis ou les deux diuers (1823), a vaudeville written in collaboration with Alexandre Tardif, was followed by a series of operas and ballets. In 1829 he became manager of the Opéra Comique. Among his more famous libretti are: Le Vol d'Andorre (1848) for Halévy, and La Fille du régiment (1840) for Donizetti. He wrote some fifty pieces to collaborate on with Eugène Scribe, Auguste de Limur, Joseph Mazilier, and a great number in collaboration with other authors. Among his novels may be mentioned Un Mariage de prince. Saint-Georges died in Paris on the 23rd of December 1875.

SAINT-GERMAIN, COMTE DE (c. 1710-1780) called der Wundermann, a celebrated adventurer who by the assertion of his discovery of some extraordinary secrets of nature exercised considerable influence at several European courts. Of his parentage and place of birth nothing is definitely known; the common version is that he was a Portuguese Jew, but various surmises have been advanced as to his origin. It has been stated that he obtained his money, of which he had abundance, from acting as spy to one of the European courts. But this is hard to maintain. He knew nearly all the European languages, and spoke German, English, Italian, French (with a Piedmontese accent), Portuguese and Spanish. Grimm affirms him to have been the man of the best parts he had ever known. He was a musical composer and a capable violinist. His knowledge of history was comprehensive, and his accomplishments as a chemist, on which he based his reputation, were in many ways real and considerable. He pretended to have a secret for removing flaws from diamonds, and to be able to transmute metals. The most remarkable of his professed discoveries was of a liquid which could prolong life, and by which he asserted he had himself lived 2000 years. After spending some time in Persia, Saint-Germain is mentioned in a letter of Horace Walpole's as being in London about 1743, and as being arrested as a Jacobite spy and released. Walpole says: "He is called an Italian, a Spaniard, a Pole; a somebody that married a great fortune in Mexico and ran away with her jewels to Constantiopole; a priest, a fiddler, a vast nobleman." At the court of Louis XV., where he appeared about 1748, he exercised for a time as an ordinaire courtier. He was employed on important missions by Louis XV.; but, having interfered in the dispute between Austria and France, he was imprisoned in June 1760, on account of the hostility of the duke of Choiseul, to remove to England. He appears to have resided in London for one or two years, but was at St Petersburg in 1762, and is asserted to have played an important part in connexion with the conspiracy against the emperor Peter III. in July of that year, a plot which placed Catherine II. on the Russian throne. He then went to Germany, where, according to the Mémoires authentiques de Cagliostro, he was the founder of freemasonry, and was associated with the most notorious adventurers, and lived from 1770 to 1774, and after frequenting several of the German courts he took up his residence in Schleswig-Holstein, where he and the Landgrave of Hesse distinguished him at the time of the secret sciences. He died at Schleswig in or about 1780-1785, although he is said to have been seen in Paris in 1789.

Andrew Lang in his Historical Mysteries (1904) discusses the career of Saint-Germain, and cites the various authorities for it. Saint-Germain is mentioned in the correspondence of Grimm and of Voltaire. See also Oettinger, Graf Saint-Germain (1846); F. Bülow, Geheime Geschichten und räthselhafte Menschen, Band i. (1890-1890); Lascelles Bramall, Remarkable Adventures (1865); and U. Birch in the Nineteenth Century (January 1908).

SAINT-GERMAIN, CLAUDE LOUIS, COMTE DE (1707-1778), French general, was born on the 15th of April 1707, at the Château of Vertamboz. Educated at Jesuit schools, he intended to enter the priesthood, but at the last minute obtained from
Louis XV. an appointment as sub-lieutenant. He left France, according to the gossip of the time, because of a duel; served under the elector palatine; fought for Hungary against the Turks, and on the outbreak of the war of the Austrian Succession (1740) joined the army of the elector of Bavaria (who later became emperor under the name of Charles VII.), displaying such bravery that he was promoted to the grade of lieutenant field-marshal. He left Bavaria on the death of Charles VII., and afterwards served under Frederick the Great. Ceded Marschale, England, was re-engaged by the Elector of Hanover and built a field-marshal of the French army. He distinguished himself especially at Lawfield, Rancourt and Maastricht. On the outbreak of the Seven Years’ War (1756) he was appointed lieutenant-general, and although he showed greater ability than any of his fellow-commanders and was admired by his soldiers, he fell a victim to court intrigues, professional jealousy and hostile criticism. He resigned his commission in 1760 and accepted an appointment as field-marshal from Frederick V. of Denmark, being charged in 1762 with the reorganization of the Danish army. The death of Frederick in 1766 he returned to France, bought an extensive estate at near Lauterbach, and devoted his time to religion and farming. A financial crisis swept away the funds that he had saved from his Danish service and rendered him dependent on the bounty of the French ministry of war. Saint-Germain was presented at court by the reformers Turgot and Malascher, and was appointed minister of war by Louis XVI. on the 25th of October 1773. He sought to lessen the number of officers and to establish order and regularity in the service. His efforts to introduce Prussian discipline in the French army brought on such opposition that he resigned his commission in June 1777. He accepted quarters from the king and a pension of 40,000 livres, and died in his apartment at the arsenal on the 13th of January 1778.

ST. GERMAIN-EN-LAYE, a town of northern France, in the department of Seine-et-Oise, 13 m. W.N.W. of Paris by rail. Pop. (1906), town, 14,074; commune, 17,288. Built on a hill on the left bank of the Seine, nearly 300 ft. above the river, and on the edge of a forest 10,000 to 11,000 acres in extent, St. Germain has a bracing climate, which makes it a place of summer residence for Parisians. The terrace of St. Germain, constructed by A. Lenôtre in 1637, is 1 m. long and 100 ft. wide; it was planted with lime trees in 1745 and affords an extensive view of the valley of the Seine as far as Paris and the surrounding hills: it ranks as one of the finest promenades in Europe.

A monastery in honour of St. Germain, bishop of Paris, was built in the forest of Laye by King Robert. Louis VI. erected a castle close by. Burned by the English, rebuilt by Louis IX., and again by Charles V., this castle did not reach its full development till the time of Francis I. who may have planned the construction of the building. A new castle was begun by Henry II. and completed by Henry IV.; it was subsequently demolished, with the exception of the so-called Henry IV. pavilion, where Thiers died in 1877. The old castle has been restored to the state in which it was under Francis I. The restoration is particularly skillful in the case of the chapel, which dates from the first half of the 13th century. In the church of St. Germain is a mausoleum erected by George IV. of England (and restored by Queen Victoria) to the memory of James II. of England, who after his deposition resided in the castle for twelve years and died there in 1701. In one of the pavilions in the grounds of Thiers, the first manager of the forest is the Convent des Loges, a branch of the educational establishment of the Legion of Honour (St. Denis). The fete des Loges (end of August and beginning of September) is one of the most popular in the neighbourhood of Paris.

ST. GERMANS, a small town in the Bodmin parliamentary division of Cornwall, England, pleasantly situated on the river Lynher, 91 m. W. by N. of Plymouth by the Great Western railway. Pop. (1901) 2384. It contains a fine church dedicated to St. Germanus. The west front is flanked by towers both of which are Norman in the lower parts, the upper part being in the one Early English and in the other Perpendicular. The front itself is wholly Norman, having three windows above a porch with a beautiful ornate door-way. Some Norman work remains in the body of the church, but the most part is Perpendicular or Decorated. Port Eliot, a neighbouring mansion, contains an excellent collection of pictures, notably several works of Sir Joshua Reynolds. St. Germans is supposed to have been the original seat of the Cornish bishopric. It was the see of Bishop Burzhold, who died in 1027. Under Leofric, who became bishop of Crediton and Cornwall in 1046, the see was removed to Exeter. Bishop Leofric founded a priory at St. Germans and bestowed upon it twelve of the twenty-four hides which in the time of the Confessor constituted the bishops' manor of St. Germans. There was then a market on Sundays, but at the time of the Domesday Survey this had been removed. The lower part of the manor established by the count of Mortain on the same day at Trematon castle. In 1302 the grant of infangethief, assize of bread and ale, waf and straw by Henry III. was confirmed to the bishop, who in 1311 obtained a further grant of a market on Fridays and a fair at the feast of St. Peter ad Vincula. In 1343 the prior sustained his claim to a prescriptive market and fair at St. Germans. After the suppression the borough belonging to the priory remained with the crown until 1616. Meanwhile Queen Elizabeth created it a parliamentary borough. From 1563 to 1632 it returned two members to the House of Commons. In 1815 John Elliot was created earl of St. Germans, and in 1865 the first suffragan bishop of Truro was consecrated bishop of St. Germans.

ST. GILLES, a town of southern France, in the department of Gard, on the canal from the Rhone to Cetce, 123 m. S.S.E. of Nimes by road. Pop. (1906) 5292. In the middle ages St. Gilles, the ancient Vallis Flaviana, was the seat of an abbey founded towards the end of the 7th century by St. Aegidius (St. Gilles). It acquired wealth and power under the counts of Toulouse, who added to their title that of counts of St. Gilles. The church, which survives, was founded in 1116 when the abbey was at the height of its prosperity. In 1777 the owner of the abbey, the marquis de Castelnael, St. Gilles was the seat of the first grand priory of the Knights Hospitallers in Europe (12th century) and was of special importance as their place of embarkation for the East. In 1226 the countship of St. Gilles was united to the crown. In 1562 the Protestants ravaged the abbey, which they occupied till 1622, and in 1714 it was suppressed.

ST. GIRONS, a town of south-western France, capital of an arrondissement in the department of Ariège, 20 m. W. of Foix by rail. Pop. (1906) 5215. The town is situated on the Salat at the foot of the Pyrenees. There are mineral springs at Audinac, at Lourdes, and at the watering-place of Aulus, about 20 m. to the S.S.E., is reached by road from St. Giron. St. Léon-Der-Couserans (q.v.), an ancient episcopal town, is 1 m. N.N.W.

ST. GOAR, a town of Germany, in the Prussian Rhine Province, on the left bank of the Rhine, opposite St. Goarshausen and just below the famous Lorelei, 12 m. above Boppard by the railway from Coblenz to Mainz. Pop. (1905) 1475. It is in part surrounded by the ruins of its old walls, and contains an Evangelical church, with some Renaissance monuments, and a Roman Catholic church with an image of St. Goar of Aquitania, around which the chapel of the place originally arose. Below the town, high on an eminence above the Rhine, stands Schloß Rheinfels, the property of the king of Prussia, the most perfect of the feudal castles on the banks of the river. In the later middle ages St. Goar was the capital of the county of Katzenelnbogen, and on the extinction of this family it passed to Hesse-Cassel. It came into the possession of Prussia in 1815.

ST. GOTTHARD PASS, the principal route from northern Europe to Italy. It takes its name (it is not known wherefore) from St Gotthard, bishop of Hildesheim (d. 1038), but does not seem to be mentioned before the early 13th century, perhaps because the access to it lies through two very narrow Alpine
valleys, much exposed to avalanches. The hospice on the summit is first mentioned in 1331, and from 1683 onwards was in charge of two Capuchin friars. But in 1775 the buildings near it were damaged by an avalanche, while in 1799–1800 everything was destroyed by the French soldiery. Rebuilt in 1834, the hospice was burnt in March 1906. The mule path (dating from about 1293) across the pass served for many centuries, for though Mr Greville, in 1775, succeeded in taking a light carriage across, the carriage-road was only constructed between 1820 and 1830. Now the pass is deserted in favour of the great tunnel (pierced in 1873.7 m. in length, and attaining a height of 3786 ft.), through which runs the railway (opened in 1882) from Lucerne to Milan (1735 m.), one of the greatest engineering feats of the 19th century. It runs mainly along the eastern shore of the Lake of Lucerne, from Lucerne to Flüelen (321 m.), and then up the Reuss valley past Altldorf and Wassern, near which is the first of the famous spiral tunnels, to Göschenen (56 m. from Lucerne). Here the line leaves the Reuss valley to pass through the tunnel and so gain, at Airolo, the valley of the Ticino or the Val Veveyta, which it descends, through several spiral tunnels, till at Biasca (through the crater Göschenen) it reaches more level ground. Thence it runs past Bellinzona to Lugano (361 m. from Biasca) and reaches Italian territory at Chiasso, 35 m. from Milan. In 1909 the Swiss government exercised the right accorded to it by the agreement of 1870 of buying the St Gotthard Railway from the company which built it within thirty years of that date. (W.A.B.C.)

ST HELENA, an island and British possession in the South Atlantic in 15° 55′ S. 5° 42′ 30″ W. (Ladder Hill Observatory). It lies 700 m. S.E. of the island of Ascension (the nearest land), 1266 m. S.W. of the Walvis Mountains (the easternmost African port), 1063 m. N.W. of Cape Town, and is distant from Southampton 4477 m. It has an area of about 47 sq. m., the extreme length from S.W. to N.E. being 103 m., and the extreme breadth 81. The island is of volcanic formation, but greatly changed by oceanic abrasion and atmospheric denudation. Its principal feature, a semi-circular ridge of mountains, open towards the south-east and south, with the culminating summit of Diana's Peak (2704 ft.) is the northern rim of a great crater; the southern rim has disappeared, though its débris apparently keeps the sea shallow (from 20 to 50 fathoms) for some 2 m. S.E. of Sandy Bay, which has been occupied for a total of 38 ft. The crater wall onwards water-cut gorges stretch in all directions, widening as they approach the sea into valleys, some of which are 1000 ft. deep, and measure one-eighth of a mile across at bottom and three-eighths across the top (Melissa). These valleys contain small streams, but the island has no rivers properly so called. Springs of pure water are, however, abundant. Along the enclosing hill-sides caves have been formed by the washing out of the softer rocks. Basalts, andesites and phonolites, represent the chief flows. Many dikes and masses of basaltic rock seem to have been injected subsequently to the last volcanic eruptions from the central crater. The Ass's Ears and Lot's Wife, picturesque pinnacles standing out on the S.E. part of the crater ridge, and the Chimney on the coast south of Sandy Bay, are formed of such injected dikes and masses. In the neighbourhood of Man and Horse (S.W. corner of the island), throughout an area of about 40 acres, scarcely 50 sq. yds. exist not crossed by a dyke. On the leeward (northern) side of St Helena the sea-face is generally formed by cliffs from 600 to 1000 ft. high, and on the windward side these heights rise to about 2000 ft., as at Holfast Tom, Stone Top, and Old Joan Point. The only practicable landing-place is on the windward side at St Helena Bay—an open roadstead. From the head of the bay a narrow valley extends for 13 m. The greatest extent of level ground is in the N.E. of the island, where are the Deadwood and Longwood plains, over 1700 ft. above the sea.

Climate. — Although it lies within the tropics the climate of the island is healthy and temperate. This is due to the south-east trade-wind, constant throughout the year, and to the effect of the cold waters of the South Atlantic current. As a result the temperature varies little, ranging on the sea level from 68° to 84° in summer and 57° to 70° in winter. The higher regions are about 10° cooler. The rainfall varies considerably, being from 30 to 50 in. a year in the hills.

Flora. — St Helena is divided into three vegetation zones: (1) the southern flat, extending from 1 ft. to 1 m., formerly clothed with a luxuriant vegetation, but now "dried up, coated, and rocky," with little save prickly pears, wire grass and Mesembryanthemum; (2) the middle zone (400–1800 ft.), extending from 1 to 3 m. high, where a number of plants, including the smaller grasses and succulents, such as Alopecurus rubra—are known to have become extinct; and at least two species have probably shared the same fate—Heliotropium pennsylvanicum and Demersera obliquata. Melianthus melianthus, or native ebony, once abundant in parts of the island now barren; but the young trees were allowed to be destroyed by the goats of the early settlers, and it is now extinct. Its beautiful congener Melianthus scutellatus still abounds splendidly in 1810, but is now reduced to a few specimens. Very rare have been the Pelargonium cotyledonis, called "Old Father Live-for-ever," from its remaining vitality for months without soil or water. Commiphora longiflora and Commiphora africana occur abundantly in their fry, and the most abundant in the island, was represented in 1868 by about 1300 to 1400 examples; and Commiphora rusquin ("scrubwood") is confined to somewhat limited regions. Both these plants are characteristic of a daly forest belt of peculiar flora of St Helena were described by Sir Joseph Hooker as African, but George Bentham points out that the Compositae and Leguminosae are characteristic features of the forest, as in central America. The exotic flora introduced from all parts of the world gives the island almost the aspect of a botanical garden. The oak, thoroughly naturalized, grows alongside of the bamboo and banana. Among the plants and trees of peculiar peculiarities are:—Laguncula, probably introduced from Africa about 1775; Hypochaeris radiata, which above 1500 ft. forms the dandion of the country; the beautiful but aggressive Buddleia Madagascariensis; Fuchsia peruana; and a form of a species of Cynodon. The peepul is the principal shade tree in Jamestown, and in Jamestown valley the date-palm grows freely. Orange and lemon trees, once common, are now scarce.

Fauna. — St Helena possesses no indigenous vertebrate land fauna. The only land groups well represented are the beetles and the land shells. T. V. Woolfson, in Coleoptera Sanctae Helenae (1877), shows that there are 201 species; 200 of these are endemic; 18 species have been introduced, and 12 are accidental. The only birds of St. Helena that are not indigenous are the Housecrow and the Kestrel. The latter is a native of Madagascar, which is inhabited by the same species. The bee was introduced in 1775; Hypochaeris radiata, which above 1500 ft. forms the dandion of the country: the beautiful but aggressive Buddleia Madagascariensis; Fuchsia peruana; and a form of a species of Cynodon. The peepul is the principal shade tree in Jamestown, and in Jamestown valley the date-palm grows freely. Orange and lemon trees, once common, are now scarce.

Inhabitants. — When discovered the island was uninhabited. The majority of the population are of mixed European (British, Dutch, Portuguese), East Indian and African descent—the Asiatic strain perhaps predominating; the majority of the early settlers having been previously members of the crews of ships returning to Europe from the East. From 1840 onward for a considerable period numbers of freed slaves of West African origin were settled here by men-of-war engaged in suppressing the slave trade. Their descendants form a distinct element

1In the "Challenger" expedition reports, Botany, vol. i. (1885).
in the population. Since the substitution of steamships for sailing vessels and the introduction of new methods of preserving meat and vegetables (which made it unnecessary for sailing vessels to take fresh provisions from St Helena to avoid scurvy) the population has greatly diminished. In 1871 there were 6444 inhabitants; in 1900 the civil population was estimated at 555. The number of births, 64 per 1000, was the lowest on record in the island. The only town, in which live more than half the total population, is Jamestown. Longwood, where Napoleon died in 1821, is 33 m. E. by S. of Jamestown. In 1858 the house in which he lived and died was presented by Queen Victoria to Napoleon III., who had it restored to the condition, but unoccupied, in which it was at the time of Bonaparte's death.

**Agriculture, Industries, &c.—**Less than a third of the area of the island is cultivable. Many trees, including trees which could be (and formerly was) devoted to raising crops are under grass. The principal crop is potatoes, which are of very good quality. They were chiefly sold to ships—especially to passing ships. They are now occasionally exported to the Cape. Cattle and sheep were raised in large numbers when a garrison was maintained, so that difficulty has been found in disposing of surplus stock now that the troops have been withdrawn. Steep, sandy, or enclosed conditions, which formerly prevailed were entirely altered by the substitution of steamers for sailing vessels, which caused a great decrease in the number of ships calling at Jamestown. A remedy was sought in the establishment of industries. A few attempts were made to culture cinchona proved unsuccessful. Attention was also turned to the aloe (Furcraea gigantea), which grows wild at mid elevations. A few thousands of young were lifted from the wild plant, for their utilization in the manufacture of fibre. From 1875 to 1881 a company ran a mill at which they turned out both aloe and flax fibre, but the enterprise proved unremunerative. In 1906 a company (incorporated by a grant of 16790 from the imperial exchequer) started a mill at Longwood for the manufacture of phosphorium fibre, with encouraging results. Fish curing and lace making are also carried on to some extent.

Trade is chiefly dependent upon the few ships that call at Jamestown—now mostly whalers or vessels in distress. There is also some trade with ships that "pass" without "calling." In thirty years (1836-1866) 2111 vessels visited the island, with 244,204 tonnage. In 1881-1882 1821 ships with 244,204 tonnage left the island, and 1664 with 449,724 tonnage to 57 with 140,122 tonnage. In the last year the imports were valued at £35,614; the exports (excluding specie) at £17,487—but the goods supplied to "passing" vessels do not figure in these returns. In 1908 fibre and hops (valued at £1657) were added to the exports, and in 1909 a good trade was done with Ascension in sheep. St Helena is in direct telegraphic communication with Europe and South Africa, and there is a regular monthly mail steamship service.

**Government, Revenue, &c.—**St Helena is a Crown colony. The island has never had any form of local legislative chamber, but the government has always been aided by an executive council. The governor alone makes laws, called ordinances, but legislation can also be effected by the Crown by order in council. The revenue, £10,287 in 1905, had fallen in 1899 to £8778 (including a payment of £3500), the expenditure in each of the five years (1905-1909) being in excess of the revenue. Elementary education is provided in government and private schools. St Helena is the seat of an Anglican bishopric established in 1895. Ascension and Tristan da Cunha are included in the diocese.

**History.**—The island was discovered on the 21st of May 1502 by the Portuguese navigator Joao de Nova, on his voyage home from India, and by him named St Helena. The Portuguese found it uninhabited, imported live stock, fruit-trees and vegetables, built a chapel and one or two houses, and left their sick there to be taken home, if recovered, by the next ship, but they formed no permanent settlement. Its first known permanent resident was Fernando Lopez, a Portuguese in India, who had turned traitor and had been mutilated by order of Albuquerque. He preferred being marooned to returning to Portugal in his maimed condition, and was landed at St Helena in 1513 with three or four negro slaves. By royal command he visited Portugal some time later, but returned to St Helena, where he died in 1546. In 1584 two Japanese ambassadors to Rome landed at the island. The first Englishman known to have visited it was Thomas Cavendish, who touched there in June 1588 during his voyage round the world. Another English seaman, Captain Kendall, visited St Helena in 1591, and in 1593 Sir James Lancaster stopped at the island on his way home from the East. In 1603 the same commander again visited St Helena on his return from the first voyage equipped by the East India Company. The Portuguese had by this time given up calling at the island, and large sums of money have been occupied by the Dutch about 1615. The Dutch occupation was temporary and ceased in 1631, the year before they founded Cape Town. The British East India Company appropriated the island immediately after the departure of the Dutch, and they were confirmed in possession by a clause in their charter of 1661. The company built a fort (1678), named after the duke of York (James II.), and established a garrison in the island. In 1673 the Dutch succeeded in obtaining possession, but were ejected after a few months' occupation. Since that date St Helena has been in the undisturbed possession of Great Britain, though in 1706 two ships anchored off Jamestown were carried off by the French. In 1767 the Dutch had been expelled by the forces of the Crown, but by a new charter granted in December of the same year the East India Company were declared "the true and absolute lords and proprietors" of the island. At this time the inhabitants numbered about 1000, of whom nearly half were negro slaves. In 1810 the company began the importation of Chinese from their factory at Canton. During the company's rule the island prospered, thousands of homeward-bound vessels anchored in the roadstead in a year, staying for considerable periods, refitting and recruiting. The company's policy was to keep the island, where wealthy merchants and officials had their residence. The plantations were worked by the slaves, who were subjected to very barbarous laws until 1792, when a new code of regulations ensured their humane treatment and prohibited the importation of any new slaves. Later it was enacted that all children of slaves born on or after Christmas Day 1818 should be free, and between 1826 and 1836 all slaves were set at liberty.

Among the governors appointed by the company to rule at St Helena was one of the Hugenot refugees, Captain Stephen Poirier (1697-1707), who attempted unsuccessfully to introduce the cultivation of the vine. A later governor (1741-1742) was Robert Jenkin (q.v.) of "Jenkin's ear" fame. Dampier visited the island twice, in 1691 and 1701; Halley's Moon commemorates the visit paid by the astronomer Edmund Halley in 1676-1678—the first of a number of scientific men who have pursued their studies on the island.

In 1815 the British government selected St Helena as the place of detention of Napoleon Bonaparte. He was brought to the island on the British bark Pandoua in October 1815, and there he died in May 1821. During this period the island was strongly garrisoned by regular troops, and the governor, Sir Hudson Lowe, was nominated by the Crown. After Napoleon's death the East India Company resumed full control of St Helena until the 22nd of April 1834, on which date it was in virtue of an act passed in 1833 vested in the Crown. As a port of call the island continued to enjoy a fair measure of prosperity until about 1870. Since that date the great decrease in the number of vessels visiting Jamestown has deprived the islanders of their principal means of subsistence. When steamers began to be used for sail and steam was introduced, the Suez Canal was opened (1869) fewer ships passed the island, while of those that still pass the greater number are so well found that it is unnecessary for them to call (see also §§ Inhabitants). The withdrawal in 1906 of the small garrison, lightherto maintained by the imperial government, was another cause of depression. During the Anglo-Boer war of 1890-1902 some thousands of Boer prisoners were detained at St Helena, which has also served as the place of exile of several Zulu chiefs, including Dinizulu.

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ST HELENS—ST INGEBERT

ST HELENS, a market town and municipal, county, and parliamentary borough of Lancashire, England, 14 m. E.N.E. from Liverpool, on the London & North-Western and Great Central railways. Pop. (1801) 72,433; (1901) 84,440. A canal communicates with the Mersey. The town is wholly of modern development. Besides the town hall and other public buildings and institutions there may be mentioned the Gamble Institute, erected and presented by Sir David Gamble, Bart., for a technical school, educating some 2000 students, and library. Among several public pleasure grounds the principal are the Taylor Park of 48 acres, and the smaller Victoria and Thatto Heath Parks. This is the principal seat in England for the manufacture of crown, plate, and sheet glass; there are also art glass works, and extensive copper smelting and refining works, as well as chemical works, iron and brass foundries, potteries and patent medicine works. There are collieries in the neighbourhood. The scene is in the National Gallery, London, of Mr. Hamilton, known as Windleshaw Abbey, together with a well called St Thomas' well, but the history of the foundation is not known. The parliamentary borough (1885) returns one member. The county borough was created in 1888. The town was incorporated in 1868, and the corporation consists of a mayor, 9 aldermen and 27 councillors. Area 7285 acres.

ST HELIER, the chief town of Jersey, the largest of the Channel Islands. Pop. (1901) 27,866. It lies on the south coast of the island on the eastern side of St Aubin's Bay. The harbour is flanked on the W. by a rocky ridge on which stands Elizabeth Castle, and on the E. by Fort Regent on its lofty promontory. The parish church is a cruciform building with embattled tower, dating in part from the 14th century. It contains a monument to Major Peirson, who on the occasion of a French attack on Jersey in 1781 headed the militia to oppose them, and forced them to surrender, but was killed as his followers were at the point of victory. The French leader, Baron de Rullecourt, is buried in the churchyard. The spot where Peirson fell, in what is now called Peirson Place, is marked by a tablet. A large canvas by John Singleton Copley depicting the episode is in the National Gallery, London. The castle, which consists of the old castle (1400) built by Fort Regent, is the meeting-place of the royal court and deliberative States of Jersey. Victoria College was opened in 1852 and commemorates a visit of Queen Victoria and the prince consort to the island in 1846. A house in Marine Terrace is distinguished as the residence of Victor Hugo (1851-1855). Elizabeth Castle, which is connected with the mainland by a causeway, dates from 1531-1590; and in 1649 and 1649 Prince Charles resided here. In 1649 he was proclaimed king, as Charles II., in Jersey by the royalist governor. The fort is now the easternmost fort of the line usually called Fort Regent on the island the mace which is still used at the meetings of the court and States. Close to the castle are remnants of a chapel or cell, from which the rock on which it stands is known as the Hermitage, dating probably from the 9th or 10th century, and traditionally connected with the patron saint Helierus.

SAINT-HILAIRE, AUGUSTIN FRANÇOIS CÉSAR PROUVÉNÇAL DE, commonly known as AUGUSTE DE (1790-1853), French botanist and traveller, was born at Orleans on the 4th of October 1790. He began to publish memoirs on botanical subjects at an early age. In 1816-1822 and in 1830 he travelled in South America, especially in south and central Brazil, and the results of his study of the rich flora of the regions through which he passed appeared in several books and numerous articles in scientific journals. The works by which he is best known are the Flora Brasiliensis Meridionalis (3 vols., folio, with 192 coloured plates, 1832-1834), published in conjunction with A. de Jussieu and J. Cambessedes, Histoire des plantes les plus remarquables du Brésil et de Paraguay (1 vol. 4to, 50 plates, 1824), Plantas usuales des Brésilien (1 vol. 4to, 70 plates, 1827-1828), also in conjunction with De Jussieu and Cambessedes, and Voyage dans le district des diamants et sur le littoral du Brésil (2 vols., 1832). His Lesçons de botanique, comprenant principalement la morphologie végétale (1840), was a comprehensive exposition of botanical morphology and of its application to systematic botany. He died at Orleans on the 30th of September 1853.

ST HUBERT, a small town of Belgium in the province of Luxemburg and in the heart of the Ardennes. Pop. (1904) 3204. It is famous for its abbey church containing the shrine of St Hubert, and for its annual pilgrimage. According to tradition, the church and a monastery attached to it were founded in the 7th century by Electrude, wife of Pippin of Herstal. The second church was built in the 12th century, but burnt by a French army under Condé in the 16th century. The present building is its successor, but has been restored in modern times and presents no special feature. The tomb of St Hubert—a marble sarcophagus ornamented with bas-reliefs and having four statuettes of other saints at the angles—stands in one of the side chapels. The legend of the conversion of St Hubert—a hunter before he was a saint—by his meeting in the forest a stag with a crucifix between its antlers, is well known, and explains how he became the patron saint of huntsmen. The place where he is supposed to have met the stag is still known as la converserie and is almost 5 m: from St Hubert on the road to La Roche. The pilgrimage of St Hubert in May attracts annually between thirty and fifty thousand pilgrims. The buildings of the old monastery have been utilized for a state training-school for wails and strays, which contains on an average five hundred pupils. In the middle ages the abbey of St Hubert was one of the most important in Europe, owning forty villages with an annual income of over 80,000 crowns. During the French Revolution, when Belgium was divided into departments, the possessions of the abbey were sold for £2,500, but the bishop of Namur was permitted to buy the church itself for £150.

ST HYACINTHE, a city and port of entry of Quebec, Canada, and capital of St Hyacinthe county, 32 m. E.N.E. of Montreal, on the left bank of the river Yamaska and on the Grand Trunk, Canadian Pacific, Intercolonial, and Quebec Southern railways. Pop. (1901) 9210. It is the seat of a Roman Catholic bishop, and contains a classical college, dairy school, two monasteries and several other educational and charitable institutions. It manufactures organs, leather, woollens and agricultural implements, and is an important distributing centre for the surrounding district.

SAINTINE, JOSEPH XAVIER (1798-1865), French novelist and dramatist, whose real surname was BONFACE, was born in Paris on the 10th of July 1798. In 1823 he produced a volume of poetry in the manner of the Romanticists, entitled Pombes, ades, épîtres. In 1836 appeared Piccola, the story of the comte de Charney, a political prisoner in Piedmont, whose reason was saved by his cult of a tiny flower growing between the paving stones of his prison yard. This story is a masterpiece of the French romantic mind, and has been translated into many foreign languages. He produced many other novels, none of striking individuality with the exception of Soul (1857), which purported to be the authentic record of Alexander Selkirk on his desert island. Saintine was a prolific dramatist, and collaborated in some hundred pieces with Scribe and others, usually under the name of Xavier. He died on the 21st of January 1865.

ST INGEBERT, a town of Germany, in the kingdom of Bavaria on the Röhrbach, 14 m. by rail W. of Zweibrücken. Pop. (1905) 15,527. It has coal-mines and manufactures of glass and machinery. There are also large iron and steel works in the town, and other industries are the making of powder, leather, cigars, soap and cotton. St Ingebert is named after the Irish saint, St Ingobert, and belonged for 300 years to the electorate of Trier.
ST IVES, a market town, municipal borough and seaport in the St Ives parliamentary division of Cornwall, England, 10 m. N.N.E. of Penzance, on a branch of the Great Western railway. Pop. (1901) 6699. It lies near the W. horn of St Ives Bay on the N. coast. The older streets near the harbour are narrow and irregular, but on the upper slopes there are modern terraces with good houses. The small harbour, protected by a breakwater, originally built by John Smeaton in 1757, has suffered from the accumulation of sand, and at the lowest tides is dry. The by-porches for pilchard herring and mackerel are important. Boat-building and sail-making are carried on. An eminence south of the town is marked by a granite monument erected in 1782 by John Knill, a native of the town, who intended to be buried here; to maintain a quinquennial celebration on the spot he bequeathed property to the town authorities. The borough is under a mayor, 4 aldermen and 12 councillors. Area, 1890 acres.

The town takes name from St Iza, St Iza, St Iza or Ta, an Irish virgin and martyr, who is said to have accompanied St Piran on his missionary journey to Cornwall in the 5th century, and to have landed near this place. The Patent Rolls give the name and the almost continuous series of trials for piracy and plunder by St Ives sailors from the beginning of the 14th to the end of the 16th century. A mere chapelry of Lelant and the less important part of the distant manor of Ludgvan Leaze, which in Domuslcle Book appears as Luduaim, it had no fostering hand to minister to its growth. In order to augment the influence of the Tudors in the House of Commons, Philip and Mary in 1558 invested it with the privilege of returning 2 members. Its affairs were at that time administered by a headwarden, who after 1598 appears under the name of St Ives and Great Ives, 12 chief burgesses and 24 ordinary burgesses. The portreeve was elected by the 24; the 12 by the chief inhabitants. This body had control over the fishing, the harbour and harbour dues, the fabric of the church, sanitation and the poor. In 1639 a charter of incorporation was granted under which the portreeve became mayor, the 12 became aldermen, and the 24 were styled burgesses. Provision was made for four fairs and for markets on Wednesdays and Saturdays, also for a grammar school. This charter was surrendered to Charles II. and a new one granted in 1685, the latter reducing the number of aldermen to 10 and of burgesses also to 10. It ratified the parliamentary franchise and the almost continuous series of trials for piracy and plunder by St Ives sailors from the beginning of the 14th to the end of the 16th century.

ST IVES, a market town and municipal borough in the northern parliamentary division of Huntingdonshire, England, mainly on the left (north) bank of the Ouse, 5 m. E. of Huntingdon by the Great Eastern railway. Pop. (1901) 2910. The river is crossed by an old bridge said to have been built by the abbots of Ramsey early in the 12th century. A building over the centre pier of the bridge was once used as a chapel. The causeway (1827) on the south side of the river is built on arches so as to assist the flow of the river in time of flood. The church of All Saints is Perpendicular, with earlier portions. A curious custom is practised annually in this church in connexion with a bequest made by a certain Dr Robert Wilde in 1678; it is the distribution of Bibles to six boys and six girls of the town. The original provision was that the Bibles should be cast for by dice on the Communion table. Oliver Cromwell was a resident in St Ives in 1634-1635, but the house which he inhabited—Slepe Hall—was demolished in the middle of the 19th century. St Ives has a considerable agricultural trade. It is governed by a mayor, 4 aldermen and 12 councillors. Area 2326 acres.

The manor of "Slepe" is said to have been given by Ethelstan 'Mannesse of to the abbots of Ramsey and confirmed to him by King Edgar. It owed its change of name to the supposed discovery of the grave of St Ivo, a Persian bishop, in 1901, and a priory was founded in the same year by Abbot Ednoth as a cell to Ramsey. St Ives was chiefly noted for its fair, which was first granted to the abbots of Ramsey by Henry I. to be held on Monday in Easter week and eight days following. In the reign of Henry III. merchants from Flanders came to the fair, which had become so important that the king granted it to be continued beyond the eight days if the abbots agreed to pay a farm of £30 yearly for the extra days. The fair, with a market on Monday granted to the abbots in 1386, survives, and was purchased in 1874 by the corporation from the duke of Manchester. The town was incorporated in 1874.

ST JEAN-D'ANGÉLY, a town of western France, capital of an arrondissement in the department of Charente-Inférieure, 33 m. E. of Rochefort by rail. Pop. (1906) 6242. St Jean lies on the right bank of the Boutonne, which is navigable for small vessels. The parish church of St Jean stands on the site of an abbey church of the 13th century, of which some remains are left. In 1568 the monastery was destroyed by the Hugenots, but much of it was rebuilt in the 17th and 18th centuries, to which period belong two towers and the façade of an unfinished church.

St Jean owes the suffix of its name to the neighbouring forest of Angy, which is said to have been built by John the Baptist, a recluse of the 14th century. Pippin I. of Aquitaine in the 9th century established there a Benedictine monastery which was afterwards regularly received by the canons of the cathedral of Bordeaux. The buildings and the archives of the monastery are still preserved by the college of canons, and are visited by pilgrims; a town grew up, took the name of St Jean d'Angély, and was fortified in 1131, and in 1204 received a charter from Philip Augustus. The possession of the place was disputed by France and England in the 12th and 13th centuries, and between Catholics and Protestants at a later date. In 1569 it was occupied by the duke of Anjou (afterwards Henry III.). Louis XIII., again took it from the Protestants in 1621 and deprived it of its freedom in 1639.

ST JEAN-DE-LUZ, a coast town of south-western France, in the department of Basses-Pyrénées, at the mouth of the Nivelle, 14 m. S.W. of Bayonne on a branch of the Southern railway. Pop. (1906) 3424. St Jean-de-Luz is situated in the Basque country on the bay of St Jean-de-Luz, the entrance to which is protected by breakwaters and moles. It has a 13th-century church, the chief features of which are the galleries in the nave, which, according to the Basque custom, are reserved for men. The Maison Louisiane, the Maison de l'Infante (both 17th century), and the hôtel de ville (1657) are picturesque old buildings. St Jean is well known for its bathing and as a winter resort. Fishing is a considerable industry.

From the 14th to the 17th century St Jean-de-Luz enjoyed a prosperity due to its mariners and fishermen. Its vessels were the first to set out for Newfoundland in 1520. In 1538, owing to the depredations of the English ships of Francis I., the Basques were deprived of the town. In 1627, however, it was able to equip 80 vessels, which succeeded in saving the island of Ré from the duke of Buckingham. In 1698 the treasure of the Pyrenees was signed at St Jean-de-Luz, and was followed by the marriage of the Infanta Maria Francisca to Louis XIV. At that time the population numbered 15,000. The cession of Newfoundland to England in 1713, the loss of Canada, and the silting-up of the harbour were the three causes which contributed to the decline of the town.

ST JOHN, CHARLES WILLIAM GEORGE (1806-1856), English naturalist and sportsman, son of General the Hon. Frederick St John, second son of Frederick, second Viscount Bolingbroke, was born on the 3rd of December 1809. He was educated at Midhurst, Sussex, and about 1828 obtained a clerkship in the treasury, but resigned in 1834, in which year he married a lady with some fortune. He ultimately settled in the "Laigh" of Moray, "within easy distance of mountain lochs", the largest being Duddingston Loch near Edinburgh. He lost both of his eyes, and for the benefit of his health he removed to the south of England. He died at Woolston, near Southampton, on the 22nd of July 1856. His works are Wild Sports and Natural History of the Highlands (1846, 2nd ed. 1848, 3rd ed. 1861); Tour in Sutherland (1849, 2nd ed., with recollections by Captain H. St. John, 1884); Notes of Natural History and Sport in Morayshire, with Memoir by C. Innes (1863, 2nd ed. 1884). They are written in a graphic style, and illustrated with engravings, many of them from clever pen-and-ink sketches of his own.

ST JOHN, JAMES AUGUSTUS (1801-1875), British author and traveller, was born in Carmarthenshire, Wales, on the 24th
ST JOHN, O.—ST JOHN

of September 1801. He received private instruction in the classics, and also acquired proficiency in French, Italian, Spanish, Arabic and Persian. He obtained a connexion with a Plymouth newspaper, and when, in 1824, James Silk Buckingham started the Oriental Herald, St John became assistant editor. In 1827, together with D. L. Richardson, he founded the London Weekly Review, subsequently purchased by Coburn and transformed into the Court Journal. He lived for some years on the Continent and in Egypt and travelled round the holy places. His journeys were published under the titles Egypt and Mohammed Ali, or Travels in the Valley of the Nile (2 vols., 1834), Egypt and Nubia (1844), and Isis, an Egyptian Pilgrimage (2 vols., 1853). On his return he settled in London, and for many years wrote political "leaders" for the Daily Telegraph. In 1868 he published a Life of Sir Walter Raleigh, based on researches in the archives at Madrid and elsewhere. He died in London on the 22nd of September 1875.

Besides the works mentioned St John was also the author of Journal of a Residence in Normandy (1830), Life of a Traveller (1830); Anatomy of Society (1831); History, Manners and Customs of the Hindus (1831); Margaret Ravenscroft, or Second Love (3 vols., 1835); The Heleneens, or Manners and Customs of Ancient Greece (1836); The Life and Letters of Dugald Stewart (4 vols., 1844); Again in Search of Beauty (1853); The Nemesis of Power (1854); Philosophy at the Foot of the Cross (1854); The Preaching of Christ (1855); The Ring and the Veil, a novel (1860); Life of Louis Napoleon (1861); Life of Charles de la Tour (1863); England or the Frenchman's Paradise (1865); Weighed in the Balance, a novel (1864). He also edited, with notes, various English classics.

Of his four sons, all journalists and authors of some literary distinction, St John, born in 1821-1889, Bayle, Spencer and Horace Rococo (1832-1888)—the second, BAYLE ST JOHN (1822-1890)—began contributing to the periodicals when only thirteen. When twenty he wrote a series of papers for Fraser's under the title "De re vehiculari, or a Comic History of Chariots." To the same magazine he contributed a series of essays on Montaigne, and published in 1857 Montaigne the Essayist, a Biography, in 4 volumes. During the Crimean War, he was one of the Libros Descritos (1849). While in Egypt he learnt Arabic and visited the oasis of Siwa. On his return he settled for some time in Paris and published Two Years in a Levantine Family (1850) and Views in the Islands of Sicily, Sardinia, and Minorca after a second visit to the East he published Village Life in Egypt (1852); Purple Tints of Paris: Characters and Manners in the New Empire (1854); The Louvre, or Biography of a Museum (1855); the Sublime Kingdom, or Experiences and Studies in Soway (1856); Travels of an Arab Merchant in the Soudan (1854); Marathóma, a Story of Adventure (1856); and Memoirs of the Duke of Saint-Simon in the Reign of Louis XIV. (4 vols., 1857).

ST JOHN, OLIVER (c. 1598-1673), English statesman and judge, was the son of Oliver St John. There were two branches of the ancient family to which he belonged, namely, the St Johns of Bletso in Bedfordshire, and the St Johns of Lydiard Tregoe in Wiltshire, both descendants of the St Johns of Staunton St John in Oxfordshire. Oliver St John was a member of the senior branch, being great-grandson of Oliver St John, who was created Baron St John of Bletso in 1599, and a distant cousin of the 4th baron who was created earl of Bolingbroke in 1624, and who took an active part on the parliamentary side of the Civil War, being killed at the battle of Edgehill. Oliver was educated at Queens' College, Cambridge, and was called to the bar in 1666. He appears to have got into trouble with the court in connexion with a seditionist publication, and to have associated himself with the future popular leaders John Pym and Lord Saye. In 1668 he defended Hampden on his refusal to pay Ship Money, on which occasion he made an notable speech. In the same year he married, as his first wife, Elizabeth, daughter of Oliver Cromwell, to whom his first wife also had been distantly related. The marriage led to an intimate friendship with Cromwell. St John was member for Totnes in both the Short and the Long Parliament, where he acted in close alliance with Hampden and Pym, especially in opposition to the impost of Ship Money (q.v.). In 1641, with a view of securing his support, the king appointed St John solicitor-general. None the less he took an active part in promoting the impeachment of Strafford and in preparing the bills brought forward by the popular party in the Commons, and was dismissed from office in 1643. On the outbreak of the Civil War, he became recognized as one of the parliamentary leaders. In the struggle between the parliament and the army in 1647 he sided with the latter, and throughout this period he enjoyed Cromwell's entire confidence.

In 1648 St John was appointed chief justice of the common pleas, holding the post, he freed himself mainly to his judicial duties. He refused to act as one of the commissioners for the trial of Charles. He had no hand in Pride's Purge, nor in the constitution of the Commonwealth. In 1651 he went to the Hague as one of the envos to negotiate a union between England and Holland, a mission in which he entirely failed; but in the same year he successfully conducted a similar negotiation with Scotland. After the Restoration he published an account of his past conduct (The Case of Oliver St John, 1660), and this apologia enabled him to escape any more severe vengeance than exclusion from public office. He retired to his country house in Northamptonshire till 1662, when he went to live abroad. He died on the 31st of December 1673.

By his first wife St John had two sons and two daughters.

His daughter Johanna married Sir Walter St John of Lydiard Tregoe and was the grandmother of Viscount Bolingbroke.

By his second wife he had two children, and after her death he married, in 1645, Elizabeth, daughter of Daniel Ozenbridge.


ST JOHN, the capital of St John county, New Brunswick, Canada, is on 44° 17' N. and 66° 4' W., 481 m. from Montreal by the Canadian Pacific railway, Pop. (1901) 40,711. It is situated at the mouth of the St John river on a rocky peninsula. With it are incorporated the neighbouring towns of Carleton and (since 1889) Portland. The river, which is spanned by two bridges, enters the harbour through a rocky gorge, which is passable by ships for forty-five minutes during each ebb and flow of the tide. The harbour level at high tide (see FUNDY, BAY OF) is 6 to 12 ft. higher than that of the river, but at low tide about as much below it, hence the phenomenon of a fall outwards and inwards at every tide. St John is an important station of the Intercolonial, Canadian Pacific, and New Brunswick Southern railways, and shares with Halifax the honour of being the chief winter port of the Dominion, the harbour being deep, sheltered and free from ice. It is the distributing centre for a large district, rich in agricultural produce and lumber, and has larger exports than Halifax, though less imports. It is also the centre of fisheries which employ nearly 1000 men, and has important industries, such as saw, grist, cotton and woolen mills, carriage, box and furniture factories, boiler and engine shops. The beauty of the scenery makes it a pleasant residential city.

St John was visited in 1604 by the Sleur de Monts (1560-1630) and his lieutenant Champlain, but it was not until 1635 that Charles de la Tour (d. 1666) established a trading post, called Fort St Jean (see Parkman, The Old Regime in Canada), which existed under French rule until 1758, when it passed into the hands of Britain. In 1758 a body of United Empire Loyalists landed at St John and established a city, called Parr Town (now Sydney), which was incor-porated with Conway (Carleton), under royal charter, as the city of St John. It soon became and has remained the largest town in the province, but heavy military reasons was not the chief cause of the capital (see FREDERICTON). The town's growth was checked by several destructive fires, especially that of June 1877, when half of it was swept away, but it since has been rebuilt in great part of more solid materials.

(W. L. G.)
ST JOHN, an island in the Danish West Indies. It lies 4 m. E. of St. Thomas, is 10 m. long and 2½ m. wide; area 21 sq. m. It is a mass of rugged mountains, the highest of which is Camel Mountain (1270 ft.). Although one of the best watered and most fertile of the Virgin Group, it has little commerce. It is a free port, and possesses in Coral Bay the best harbour of refuge in the Antilles. The village of Cruxbay lies on the northern coast.

Pop. (1901) 925.

ST JOHN, a river of New Brunswick, Canada, rising in two branches, in the state of Maine, U.S.A., and in the province of Quebec. The American branch, known as the Walloostook, flows N.E. to the New Brunswick frontier, where it turns S.E. and for 80 m. forms the international boundary. A little above Grand Falls the St John enters Canada and flows through New Brunswick almost to the Bay of Fundy at St John. Its total length is about 450 m. It is navigable for steamers as far as Fredericton (86 m.), and in spring and early summer for smaller vessels to Grand Falls (220 m.), where a series of falls and rapids form a descent of 70 or 80 ft. Above the falls it is navigable for 65 m. It drains an area of 26,000 sq. m., of which half is in New Brunswick, and receives numerous tributaries, of which the chief are the Aroostook, Allagash, Madawaska (draining Lake Temiscouata in Quebec), Tobique and other streams.

ST JOHN OF JERUSALEM, KNIGHTS OF THE ORDER OF THE HOSPITAL OF (Ordo fratrum hospitalarium Hierosolymitano- rum, Ordo militiae Sancti Johannis Baptistae hospitalis Hierosolymitani), known also later as the KNIGHTS OF RHODES and the SOVEREIGN ORDER OF THE KNIGHTS OF MALTA. The history of this order divides itself naturally into four periods: (1) From its foundation in Jerusalem during the First Crusade to its expulsion from the Holy Land after the fall of the Latin kingdom in 1291; (2) from 1300–1310, when the order was established in Rhodes, to its expulsion from the island in 1522; (3) from 1523 to 1798, during which its headquarter was in Malta; (4) its development, as reconstituted after its virtual destruction in 1798, to the present day.

Early Developments.—Medieval legend sets back the beginnings to the days of the Maccabees, with King Antiochus as the founder and Zacharias, father of the Baptist, as one of the first masters; later historians of the order maintained that it was established as a military order contemporaneously with the Latin conquest of Jerusalem, and that it had no connexion with any earlier foundation (so P. A. Paoli, De origine). This view would not hold to the satisfaction of all that the order was connected with an earlier Hospitale Hierosolymitana.1 Such a hospital had existed in the Holy City, with rare interruptions, ever since it had become a centre of Christian pilgrimage. About 1023 certain merchants of Amalfi had purchased the site of the Latin hospice established by Charlemagne, destroyed in 1010 with the other Christian establishments by order of the fanatical caliph Hakim Biamirallah,2 and had founded there a hospital for pilgrims, served by Benedictines and later dedicated to St John the Baptist.3 When, in 1087, the crusaders surrounded the Holy City, the head of this hospital was a certain Gerard or Gerald,4 who earned their gratitude by assisting them in some way during the siege.5 After the capture of the city he used his popularity to enlarge and reconstitute the hospital. If, as M. Le Roux supposes, he had previously been affiliated to the Benedictines, he now left them and adopted for his order the Augustinian rule. Donations and privileges were showered upon the new establishment. Godfrey de Bouillon led the way by granting to it in Jerusalem itself the casal Heselitia (Es Silsilah) and two bakehouses.6 Kings, nobles and prelates followed suit, not in the Holy Land only, but in Provence, France, Spain, Portugal, England and Italy: in Portugal a whole province was in 1114 made over to Gerard and his brethren (Cartul. i. No. 34). In 1123 Pope Paschal II. took the order and its possessions under his immediate protection (bull of Feb. 15th to Gerard, Cartul. i. No. 35). In 1125 the Order was at length confirmed in its possessions by Innocent II. and subsequently by other popes. Gerard indeed, as Pope Paschal called him, the "institutor" of the order, if not its founder. It retained, however, during his lifetime its purely ecleemosynary character. The armed defence of pilgrims may have been part of its functions, but its organization as an aggressive military force was the outcome of special circumstances—the renewed activity of the Saracens—and was the work of Raymond du Puy, who succeeded as grand master on the death of Gerard (3rd of September 1120).7

Not that Raymond can be proved to have given to his order arms and arms, for it is only from its later years that we have any trustworthy evidence as to its activities and possessions. The first proven fact is that in his Rule8 of the division into knights, chaplains and sergeants; indeed, there is no mention of any military duties whatever. It merely lays down certain rules of conduct and discipline for the brethren; what they are to eat, what they are to wear, from what they are to take refuge, and what is the duty of the order in times of poverty and obedience. They are to claim nothing for themselves save bread, water and raiment; and this is to be of poor quality; so that our Lord's poor, whose servants they were henceforward, would not be ashamed to say, "We are barefooted and worldly, for the servant to be proud when his master is humble." Finally, the brethren are to wear crosses on the breast of their capes and mantles, "at Deus peripsum vexillum et fedem et operationem et obedientiam nos custodiat."9 Yet that Raymond laid down military regulations for the brethren is certain. Their underlying principle is revealed by a bull of Pope Alexander III. addressed (1178–1180) to the grand master Roger des Moulins, in which he bids him, "According to the custom of Raymond, abbard, from bearing arms save when the standard of the Cross is displayed either for the defence of the kingdom or in an attack on an "pagan" city."

The statesmanlike qualities of Raymond du Puy rendered his long mastership epoch-making for the order. When it was decided to fortify Ibelin (Beit-Jibrin) as an outpost against attacks from the side of Ascalon, it was to the Hospitalers that the building and defence of the new castle were assigned; and it was the Hospitallers who for many years were the only garrison of the place. The siege of the castle was long and anxious. The Hospitallers craftsmen were enabled to produce iron to the quantity of 150 tons during the siege, and the total expenses of the siege amounted to some 120,000 liras.10

1 Cf. the bull of Pope Celestine II. to Raymond du Puy, in the matter of the Teutonic order, which describes the Hospital as "Hospitale domus Sancti Iohannis Baptistae et sancti Iohannis evangelii..." (Le Roux, Cartulaire, i. No. 154).
2 William of Tyre says that the monastery of Alaric supplied the hospital with a fine flow of water, as the complex was a longue res praeextender Christi pauperum usibus dedicata, tam christianorum quam etiam Saracenorum tempore..." (Le Roux, Cartulaire, i. No. 154).
3 This solution of the much debated question of the connexion of the Hospital with the Benedictine foundation of Sancta Maria Latina is worked out in much detail by M. Delaville Le Roux in his Les Hospiteleter et Terre Sainte, chap. i.
4 According to the legend, he joined the defenders on the walls, and, instead of hurling stones, hurled bread at the Christians, who were short of supplies. Hailed before the Muslim governor, his discoverers were confounded when the incriminating leaves they produced were discovered to be turned into stones.
5 "Fours." So the charter of Baldwin I. (Cartul. No. 20; cf. Cartul. No. 225). In his Hospitallers Le Roux has "tours," i.e. two towers slightly built up in the wall and, instead of hurling stones, hurled bread at the Christians, who were short of supplies. Hailed before the Muslim governor, his discoverers were confounded when the incriminating leaves they produced were discovered to be turned into stones.
6 The existence of a certain Roger as master between Gerard and Raymond, maintained by some historians, is finally disposed of by Raymond himself, who, in his "Regnum mundi per gratiam Dei post obitum domini Giraldi facuss servus pauperum Christi" (Cartul. i. No. 46).
7 For text see Cartulaire, i. No. 70.
8 For text see Cartulaire, i. No. 527.

4 In spite of his fame, nothing is known of his origin. The surname "Tunc" or "Torque" often given to him is, as Le Roux points out, merely the result of a copist's error for "Gerardus tunc..."

5 According to the legend, he joined the defenders on the walls and, instead of hurling stones, hurled bread at the Christians, who were short of supplies. Hailed before the Muslim governor, his discoverers were confounded when the incriminating leaves they produced were discovered to be turned into stones.

6 The date of this can only be approximately assigned, in so far as it is left uncertain by the Euban II. which died in 1153.

7 For text see Cartulaire, i. No. 70.
class to sons born in lawful wedlock of knights or members of knightly families, a rule which applied also to the donzels. For the
sergeant men-at-arms it sufficed that they should not be serfs. Between the officers of the order and the lesser orders of the
Church or work as artisans or as labourers on the farms.

All the higher offices in the order were filled by the knights, except the cardinal chapels—and those of master of the
squires of the order, or worked as artisans or as labourers on the farms.

The habit before Damascus was repaired five years later by the
capture of Ascalon (10th of August 1153), in which Raymond
du Puy and his knights had a conspicuous share.

Meanwhile, in addition to its ever-growing wealth, the order
had received from successive popes privileges which rendered it,
like the companion order of the Temple, increasingly independent
of and obnoxious to the secular clergy. In 1153 Innocent II had
confirmed to Raymond the privileges accorded by Paschal II.,
Callixtus II. and Honorius II., when the diocesan bishops to interdict the
churches of the Hospitallers, whom he also authorized, in case of a general interdict, to
celebrate mass for themselves alone. In 1157 he gave them the
privilege of Christian burial during such interdicts and the right to open
interdicted churches once a year in order to say mass and
collect money. These bulls were confirmed by Eugenius III.,
in 1153 and Anastasius IV. in 1154, the latter adding the permission
for the order to have its own priest, independent of the diocesan bishops.
In vain the patriarch of Jerusalem, attended by a delegation,
journeyed to Rome in 1155 to complain to Adrian IV. of the Hospitallers’ abuse of their privileges and to beg him to withdraw his renewal of his predecessor’s bull.

Far different was the effect produced by Raymond du Puy’s triumphant progress through southern Europe from the spring of 1157 onward. From the popes, the emperor Frederick I.,
kings and nobles, he received fresh gifts, or the confirmation of
old ones. After the 25th of October 1158, when his presence
is attested at Verona, this master builder of the order disappears
from history; he died some time between this date and 1160,
when the name of another grand master appears.

During the three years of his rule at the Hospital, which Gerard
had instituted to meet a local need, had become universal. In
the East its growth was beyond calculation: kings, prelates and
laity had overwhelmed it with wealth. In the West, all Europe
combined to enrich it; from Ireland to Bohemia and Hungary,
from Italy and Provence to Scandinavia, men vied with each
other to attract it and establish it in their midst. It was clear
that for this vast institution an elaborate organization was
needed, and this need was probably the occasion of Raymond’s
presence in Europe. The priory of St Gilles already existed as
the nucleus of the later system; the development of this system took
place after Raymond’s death.

Constitution and Organization.—The rule of the Hospital, as
formulated by Raymond du Puy, was based on that of the Augustinian Canons (q.v.). Its further developments, of which only the
salient characteristics can be mentioned here, were closely analogous
to those of the Templars (q.v.), whose statutes regulating the life
of the brethren, the terms of admission to the order, the maintenance
of discipline, and the scale of punishments, culminating in expulsion,
were always recorded in the Order and treated in the same manner
by those of the Hospital. These, too, were early (probably in
Raymond’s time) divided into three classes: knights (fraters miles),
chaplains (fraters capitellarii), and sergeants (fraters servientes armigeri),
with affiliated brethren (Henocrates) and “donors” (donantes),
the regular subscribers, as it were, to the order in return for its privileges
and the ultimate right to enter the ranks of its knights. Similar,
too, was the aristocratic rule which confined admission to the first

1. **Cartul.** i. No. 136. The arrangement was confirmed by the
bull of 1085 (Le roux, ii. 154), with a modification, closely
analogous to those of the Templars (q.v.), whose statutes regulating
the life of the brethren, the terms of admission to the order, the maintenance
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1. **Cartul.** i. No. 113.

2. **Ibid.** i. No. 122.

3. **Ib.** i. No. 217.

4. **Ib.** i. No. 226.

5. “This renewal was dated 19th of December 1154” (**Ib.** i. No. 229).

6. The knights were ultimately distinguished as “Knights of Justice” (“chevaliers de justice”) and “Knights of Grace” (“chevaliers de grace”), the former under severe conditions as to birth, and were therefore knights “justly”; the latter were those who were admitted “of grace” for supererogatory merits.

7. An exception was made in favour of the natural sons of counts and greater personages (Statute 7 of 1270; **Cartul.** ii. 3206).

8. Their premier house in Europe was at Sigened in Aragon, which they still occupied. It was granted to them by Sancia of Navarre, queen of Aragon, in 1184, the order being definitively established there in 1188. Their rule, which is that of Augustinian Canons, dates from 1088, and dates from October 1188, is printed by Le Roux, **Cartulaire.** i. No. 899. There is no word about nursing in it. In England the most important house was that at London, built by the Danish house
survives in the Lutheran convent of St John the Baptist at Wetzlar, and is called the Wetzlar house, or, after 1552, a Stift for noble ladies, whose superior has the title of prioress. On solemn occasions a realistic wax head of St John the Baptist on a charger is still produced.

9. Commander (comandore, commandeur), with its Latin translation
preceptor, came into use as the title of these officials somewhat late.
In earlier documents they are styled ospitallas, bajulus (bailiff), etc.

10. Omitting the Anglo-Bavarian langue, created in 1782, the
langues (in the 15th century) were eight in number. They were
(1) the German (grand priory of Toulouse), (2) the Auvergne (grand priory of Auvergne),
(3) the France (grand priory of France), (4) Aquitaine, (Champagne),
(5) Italy (grand priory of Lombardy, Rome, Venice, Pisa, Capua, Barletta, Messina),
(6) Aragon (castellany of Aragon, grand priory of Aragon),
(7) Germany (grand priory of Germany), (8) England (grand priory of England—including Scotland—and Ireland),
(9) Germany (grand priory of Germany or Heitersheim, Bohemia,
Hungary, Dacia—i.e. Scandinavia—and the Bailiwick (Baillet) of
was very great, but not absolute. The supreme legislative and controlling power was vested in the general chapter of the knights, at the periodic meetings of which the great officers of the order had the right to sit and vote and who had also the right to pass statutes binding on the order. The executive power of the grand master, like that of the great dignitaries immediately subordinate to him, was as a rule divided among officers elected for life as the heads of the sub-offices. He was assisted in his exercise by four councils: (1) the "convent" or ordinary chapter, a committee of the general chapter,1 for administrative business; (2) a secret council, for criminal cases and financial affairs; (3) a special council, all composes of grandees of the order, to examine cases of disputed tenure; and (4) the "venerable chamber of the treasury" for financial matters. To the general chapter at headquarters corresponded the chapters of the priories and the commanderies, which conducted the business of the priors and commanders.

Immediately subordinate to the grand master were the seven great dignitaries of the order, known as the conventional bailiffs: the bailli (bailiff, defendant) of Champagne, of which he was the legal representative; the grand master, elected by the chapter at the same time as the grand master and subject to his approval, was the lieutenant in the absence of the latter, empowered to seal for him and, in the event of his capture by the enemy, to act as vice-master. The functions of the bailiff, draper, treasurer and turcopole were practically identical with those of the officials of the same title in the orders of Knights Templars. That of hospitalier, on the other hand, was naturally a charge of exceptional importance in the order of St John; he had a seat of his own, and was responsible for everything concerning the hospital and its affairs.

The admiral, as the name implies, was at sea what the marshal was on land. The office first appears in 1299 when the knights, after their expulsion from the Holy Land, had begun to organize their merchant shipping as a separate body. As the admiral was the equal in rank of the grand master and the great dignitaries, these were practically on the same scale and of the same nature as described in the article Temple. The grand master had the right to nominate his companions and the members of his household (seneschal, squires, secretaries, chaplains, &c.), which, as Le Roux points out, was such as to enable him to figure as the equal of the kings and princes with whom he consorted.

The grand-mastership of Gilbert d'Assia was signalized by the participation of the Hospitallers in the abortive expeditions of Amauric of Jerusalem into Egypt in 1162, 1168 and 1169. On the 10th of August 1164 also they shared in the disastrous defeat in which the preceptor, John of Courtenay, was captured, and of which the defeat was the result of a delegation of the sub-priories of the Holy Land. The important position occupied by them in the councils of the kingdom is shown by the fact that the grand preceptor Guy de Mauny was one of the ambassadors sent in 1169 to ask aid of the princes of the West. Another important development was the bestowal on the order by Bohemund III., prince of Antioch, in 1168, and King Amauric, as regent of Tripoli, in 1170, of considerable territories on the northern frontier, to be held with almost sovereign power as a march against the Saracens (Carlois e), i. Nos. 391, 411. The failure of the expedition to Egypt, however, brought considerable discredit on Gilbert d'Assis, who was succeeded in 1169 by Roulx of Brandenbourg, the latter (1175) by the grand preceptor William de Roulx, who was succeeded in 1184 by the grand preceptor John of Toul, who was succeeded in 1192 by John of Courtenay, the last of the great Hospitallers.

1 This seems to have consisted of practice of the great dignitaries of the order. See Le Roux, Hospitallers, p. 314. 2 Le Roux, p. 314. 3 The word "esquire" is derived from the Latin esquire/essentia/essentia/equester, or the sayd of the esquire (esquire, Lat. siguardium = court) which could be demanded by any knight who thought himself injured by a decision of his superior, even the grand master.

2 The grand-mastership of the Hospitalers was represented in the grand master, who represented the grand master in the West generally.

3 To these the grand bailiff (German, langue) and grand chancellor (castellan) were added later.
submit their disputes in Syria, Cyprus and Armenia to arbitration, a decision which bore fruit in 1260 in the settlement of their differences in Tripoli and Margat. The satisfactory arrangement was possibly affected by the result of a combined attack made in 1259 on the Hospitallers by the Templars and the brethren of St Lazurus and St Thomas, which had resulted in the practical extermination of the aggressors, possibly also by the crushing defeat of the Templars and the Syrian barons by the Turcomans at Tiberias in 1258. The sultan had achieved, the remonstrance was badly needed; for Bibars, having in 1260 driven back the Tartars and established himself in the sultanate of Egypt, began the series of campaigns which ended in the destruction of the Latin kingdom. In 1268 Bibars conquered Antioch, and the Christian power was confined to Acre, Château Pèlerin, Tyre, Sidon, and the castles of Margat, Krak and Bekdâ (Baldel), in which the Hospitallers still held out. The respite afforded by the second crusade of St Louis was ended by his death at Tunis in 1270. On the 30th of March 1271 the great fortress of Krak, the key to the remaining two years of his life Jean de Villiers, who surrendered after a short siege. The crusade of Prince Edward of England did little to avert the ultimate fate of the kingdom, and with it that of the Hospitallers in the Holy Land. This was merely delayed by the preoccupations of Bibars elsewhere, and by his death in 1277. In 1280 the Mongols overran northern Syria; and the Hospitallers distinguished themselves by two victories against enormous odds, one over the Turcomans and one over the emir of Krak (February 1281). The situation, however, was desperate, and the grand master Nicolas Lorgne, who had succeeded Huges de Pélérin on 1277, wrote despairing letters of appeal to Edward I. of England. On the 25th of May 1285, Margat surrendered to the sultan Kalaun (Mansur Saïdaldin). Not even the strong character and high courage of Jean de Villiers, who succeeded Nicolas Lorgne as grand master in 1285, could do more than stave off the ultimate disaster. The Hospitallers assisted in the vain defence of Tripoli, which fell on the 26th of April 1289. On the 18th of May 1291 the Mussulmans stormed Acre, the last hope of the Christians in the Holy Land. Jean de Villiers, wounded, was carried on board a ship, and sailed to Limass in Cyprus, which became the headquarters of the order. For the remaining two years of his life Jean de Villiers was occupied in attempting the reorganization of the shattered order. The demoralization in the East was, however, too profound to admit a ready cure. The knights, represented by the grand dignitaries, addressed a petition to Pope Boniface VIII. in 1295 asking for the appointment of a permanent council of seven divertiriore to control the grand master, who had become more and more autocratic. The pope did not consent; but in a severe letter to the new grand master, Eudes de Pin, he sternly reproved him for the irregularities of which he had been guilty. In 1296 the situation was completely different. The Hospitallers, under prior Grand Master of St Gilles, who for three years after his election remained in Europe, regulating the affairs of the order. In 1300, in response to the urgent remonstrances of the knights, he appeared in Cyprus. In 1299 an unnatural alliance of the Christians and Mongols gave a momentary prospect of regaining the Holy Land; in 1300 the Hospitallers took part in the raid of King Henry II. (de Lusignan) of Cyprus in Egypt, and gained some temporary successes on the coast of Syria. Of more advantage for the prestige of the order, however, were the immense additions of property and privileges which Guillaume de Villaret had secured in Europe from the pope and many kings and princes, and the reform of the rule and drastic reorganization of the order promulgated in a series of statutes between 1300 and 1304, the year of Guillaume's death. Of these changes the most significant was the bestowment of the powers and status of the admiral, a new great dignitary created in 1299. The grand-mastership of Foulques de Villaret, Guillaume's successor, continued until 1317, when Foulques de Villaret was succeeded by his uncle, Guillaume de Saint-Cast.
nephew and successor, was destined to be eventful for the order. On the 5th of June 1305 Bertrand de Got became pope as Clement V. The new pope consulted the grand master of the Templars and Hospitaliers as to the organization of a new crusade, and at the same time raised the question of the fusion of the military orders. This scheme already had been suggested by St. Louis, discussed at the council of Lyons in 1274, and approved by the pope's patron Philip IV. of France. The proposal broke down on the opposition of Jacques de Molay, grand master of the Temple, but the desired result was obtained by other and more questionable means. In October 1307 Philip IV. caused all the Templars in France, including the grand master, to be arrested on charges of heresy and gross immorality; Pope Clement V., a creature of the French king, reluctantly endorsed this action, and at his instance the other sovereigns of Europe followed the example of Philip. The famous long-drawn-out trial of the Templars followed, ending at the council of Vienne in 1314, when Pope Clement decreed the dissolution of the order of the Temple and at the same time assigned the bulk of its property to the Hospital.  

(See Templars, Knights.)

Meanwhile an event had occurred which marks an epoch in the history of the order of the Hospital. In 1306 Fouques de Villaret, anxious to find a centre where the order would be unhampered by obligations to another power as in Cyprus, came to an agreement with a Genoese pirate named Vignolo de' Villoni for a concerted attack on Rhodes and other islands belonging to the Hospitallers. The latter, however, having realized that the conquest of the island is uncertain, nor is it clear that the grand master took a personal part in it. By command of the pope he had left Cyprus for Europe at the end of 1306 or the beginning of 1307, and he did not return to the East till late in 1309. He returned, however, not to Cyprus but to Rhodes, and it is with 1310, therefore, when its headquarters were established in the latter island, that the second period of the history of the order of the Hospital opens.  

The Knights in Rhodes.—The history of the order for the next fifty years is one of expansion and crisis. Certain changes, however, took place which profoundly modified its character. The most important of these was its definitive division into "languages." The beginnings of this had been made long before; but the system was only legalized by the general chapter at Montpellier in 1330. Hitherto the order had been a cosmopolitan society, in which the French element had tended to predominate; henceforth it became a federation of national societies united only for purposes of commerce and war. To the headship of each "language" was attached one of the great dignitaries of the order, which thus came to represent, not the order as a whole but the interests of a section. The motive of this change was probably, as Prutz suggests,  

1 M. Le Roux dates his election between the 23rd of November 1330 and the 19th of December (1330) (1308).  

2 The Templars' property in the Spanish peninsula and Majorca was specially exempted, being subsequently assigned to the sovereigns who transferred some of it to the native military orders. Nor did the Hospitaliers receive by any means all of the rest. Philip IV. charged against the Hospital an enormous bill for expenses incurred in the trial of the Templars, including, as one item, those for torturing the knights. In France at least the Hospitaliers complained that they were actually out of pocket. See Finke, Papstum und Unter- gang des Tempelherrenordens, i, ad fin. None the less, the great accession of territorial property necessitated the subdivision of the great national jurisdictions, notably that of the priory of St. Gilles, into new grand priories.


4 Fouques de Villaret's head seems to have been turned by his success on the island of Cyprus and state manlike qualities gave place to luxury, debauchery and a tyrannical temper. He was ultimately deposed, and died at the castle of Tavron in Languedoc in 1327.  

5 The great dignitaries were distributed as follows: Grand commandeur in chief, France; the grand master; Italy, the grand admiral; Aragon, the grand conservator or draper; England, the turcopoliere; Germany, the grand bailli; Castile, the grand conservator; Portugal, the grand bailli; Spain, the grand conservator.  

6 "Die Anfänge der Hospitaliter auf Rhodos."  

7 Compare the division of the general councils of Basel and Constance into "nations."  

8 See the regulations made, soon after the capture of the island, in the Agenda Rota, an extract of a code, published by Ewald in Neues Archiv iv, pp. 265-269.

fear of the designs of Philip IV. of France and his successors to which point had been given by the fate of the Templars, and the consequent desire to destroy the preponderance of the French element.  

The character and aims of the order were also profoundly affected by their newly acquired sovereignty—for the shadowy overlordship of the Eastern emperor was soon forgotten—and above all by its seat. The Teutonic order had established its sovereignty in Prussia, in wide and ill-defined spheres beyond the north-eastern marches of Germany. The Hospitaliers ruled an island too narrow to monopolize their energies, but occupying a position of vast commercial and strategic importance. Close to the Anatolian mainland, commanding the outlet of the Archipelago, and lying in the direct trade route between Europe and the East, Rhodes had become the chief distributing point for the lively commerce which, in the 13th and 14th centuries, Christian traders maintained with the Mahomedan states; and in the new capital of the order representatives to every language and religion of the Levant jostled, haggled and quarrelled. The Hospitaliers were thus divided between their duty as sovereign, which was to watch over the interests of their subjects, and their duty as Christian warriors, which was to combat the Infidel. In view of the fact that the crusading spirit was everywhere declining, it is not surprising that their policy was henceforth directed less by religious than by political and commercial considerations. Not that they altogether neglected their duty as protectors of the Cross. Their governors continued to export their consul in Egypt and Jerusalem watched over the interests of pilgrims; their hospitals were still maintained for the service of the sick and the destitute. But, side by side with this, secularization proceeded apace. In 1341 Pope Clement VI. wrote to the grand master denouncing the luxury of the order and the misuse of its funds; in 1355 Innocent VI. sent the celebrated Juan Fernandez de Heredia, castellan of Amposta and grand commandeur of Aragon, as his legate to Rhodes, armed with a bull which threatened the order with dissolution if it did not reform in the spirit of the papal decrees. In 1346 the Hospitaliers, in alliance with Venice and Cyprus, had captured Smyrna; but the chief outcome of this had been commercial treaties with their allies. Such treaties were, in fact, a matter of life and death; for the island was not self-supporting, and even towards the Infidel the attitude of the knights was necessarily influenced by the fact that their supplies of provisions were mainly drawn from the Mussulman mainland. By the 15th century their crusading spirit had grown so weak that they even attempted to negotiate a commercial treaty with the Ottoman sultan; but they refused on the refusal of the knights to accept the sultan's suzerainty.  

The earlier history of the Hospitaliers bristles with obscure questions on which modern scholarship (notably the labours of Delaville Le Roux) has thrown new light. From 1355 onward, however, the case is different; the essential facts have been established by writers who were able to draw on a mass of well-ordered materials.  

Their history during the two centuries of the occupation of Rhodes, so far as its general interest for Europe is concerned, is that of a long series of naval attacks and counter-attacks; its chief outcome fell upon the island itself, which owed its survival to gratitude but ill acknowledged, the postponement for some two centuries of the appearance of the Ottomans as a first-rate naval power in the Mediterranean. The seaward advance of Osman the Turk was arrested by their victories; in 1358 they successfully defended Smyrna; in 1365 under their grand master Raymond Béranger (d. 1374), and in alliance with the king of Cyprus, they captured and burned Alexandria. The Ottoman peril, however, grew ever more imminent, and in 1395, under their grand master Phillibert de Naillac, the Hospitaliers considered.  

Philip IV. strenuously opposed the change for this reason: Prutz, Die geistlichen Ritterorden, pp. 358 sqq. Compare the division of the great national jurisdictions of the Hospitallers, as shown in "The Hospitaliers at the Close of the Middle Ages."
ST JOHN OF JERUSALEM

shared in the disastrous defeat of Nicopolis. The invasion followed of Timur the Tatar, invited to his aid by the Eastern emperor. Sultan Bayezid, the victor of Nicopolis, was overthrown; but Timur turned against the Christians and in 1402 captured Smyrna, putting the Hospitallers who defended it to the sword. It was after this disaster that the knights built, on a narrow promontory jutting from the mainland opposite the island of Kos, the fortress of St Peter the Liberator. The castle, which was four times captured and four times reconquered by the Turks (from Bedros, Peter), was long a place of refuge for Christians flying from slavery.1 Some years later the position of the order as a Mediterranean sea-power was strengthened by commercial treaties with Venice, Pisa, Genoa, and even with Egypt (1423). The zenith of its power was reached a few years later, when, under the grand master Jean Bonpar de Lastic, it twice defeated an Egyptian attack by sea (1440 and 1444). A new and more imminent peril, however, arose with the capture of Constantinople by the Turks in 1453, for Mahomed II had announced his intention of making Rhodes his next objective. The Turks, making war for twenty-seven years by the sultan's wars in south-eastern Europe; and meanwhile, in 1476, Pierre d'Aubusson (q.v.), the second great hero of the order, had been elected grand master. Under his inspiration, when in June 1480 the Turks, led by three renegades, attacked the island, the knights made so gallant a resistance that, in July, after repeated and decisive repulses, the Turks retreated. In 1503 Pierre d'Aubusson was succeeded by Aymar d'Amboise, who directed a long series of naval battles. In 1521 the famous Philippe de Villiers de l'Isle d'Adam was elected grand master still stands, its name corrupts the l'Isle d'Aubusson Magistral's directed his attack on Rhodes. In 1523 he besieged the island, reinforcements failed, the European powers sent no assistance, and in 1525 the knights capitulated, and withdrew with all the honours of war to Candia (Crete). The emperor Charles V., when the news was brought to him, exclaimed, "Nothing in the world has been so well lost as Rhodes!" But he refused to assist the grand master in his plans for its recovery, and, instead, five years later (1530), handed over to the Hospitallers the island of Malta and the fortress of Tripoli in Africa.

The Knights in Malta.—The settlement of the Hospitallers in Malta was contemporaneous with the Reformation, which profoundly affected the order. The master and knights of the bailiwick of Brandenburg accepted the reformed religion, without, however, breaking off all connexion with the order (see below). In England, on the other hand, the refusal of the grand prior and knights to acknowledge the royal supremacy led to the confiscation of their estates by Henry VIII., and, though not formally suppressed, the English "langue" practically ceased to exist.2 The knights of Malta, as they came to be known, none the less continued their vigorous warfare. Under Pierre du Tillot, who succeeded Jean de Perellos d'Aubusson in 1534, they took a conspicuous part in Charles V.'s attack on Goletta and Tunis (1535). In 1550 they defeated the redoubtable corsair Dragut, but in 1555 their position in Tripoli, always precarious, became untenable and they capitulated to the Turks under Dragut, concentrating their forces in Malta. In 1557 Jean Parisot de la Vallette (1494-1548) was elected grand master, and under his vigorous rule strenuous efforts were made to put the defences of Malta into a fit state to resist the expected Turkish attack. On the 18th of May 1565 the Ottoman fleet, under Dragut, appeared before the city, and one of the most famous sieges in history began.3 It was ultimately raised on the 8th of September, on the appearance of a large relieving force despatched by the Spanish viceroy of Sicily, after Dragut and 25,000 of his followers had fallen. The memory of La Vallette, the hero of the siege, who died in 1568, is preserved in the rock of Valletta, which was built on the site of the Tedesco.

In 1571 the knights shared in the victory of Lepanto; but this crowning success was followed during the 17th century by a long period of depression, due to internal dissensions and culminating during the 'Thirty Years War, the position of the order being seriously affected by the terms of the peace of Westphalia (1648). The order was also troubled by quarrels with the papacy, who claimed to nominate its officials (a claim renounced by Innocent XII. in 1697), and by rivalry with the Mediterranean powers, especially Venice. In Malta itself there were four rival claimants to independent jurisdiction: the grand master, the English ambassador, the Venetian, and the mayor. The former had succeeded in 1572, and the Society of Jesus, introduced by Bishop Gargallo in 1592. The order, indeed, saw much fighting: e.g. the frequent expeditions undertaken during the grand-mastership of Alof de Vignacourt (1601-1622); the defence of Candia—which fell after a twenty years' siege in 1669—under Nicholas Cottoner, grand master from 1665 to 1680; and, during the grand-mastership of Gregorio Carafa (1650-1690), a campaign (1683) with John Sobieski, king of Poland, against the Turks in Hungary, and the attack in alliance with Venice on the Morea (1686), in which the Venetian Hospitallers were killed in the defeat at Neap- pon in 1689. The decline of the order was hastened by the practice of electing aged grand masters to ensure frequent vacancies; such were Luis Mendez de Vasconcellos (1622-1623) and Antonio da Paula (1623-1636) and Giovanni Paolo Lascaris (de Castellar), in 1636, who died twenty-one years later at the age of ninety-seven. The character of the order at this date became more exclusively aristocratic, and its wealth, partly acquired by commerce, partly derived from the contributions of the commanders scattered throughout Europe, was enormous. The wonderful fortifications, planned by French architects (Crete). The emperor Charles V., when the news was brought to him, exclaimed, "Nothing in the world has been so well lost as Rhodes!" But he refused to assist the grand master in his plans for its recovery, and, instead, five years later (1530), handed over to the Hospitallers the island of Malta and the fortress of Tripoli in Africa.

1 There is a reduction of a photograph of the castle in Bedford and Holbeche's Order of the Hospital, p. 20. The building materials were largely taken from the Mausoleum of the Emperors. It is the headquarters of the revived English 'langue,' Sir John Lawson, prior of Kilmarnock, the headquarters of the order in Ireland, accepted the royal supremacy and was created Lord Clontarf. In 1679 the duke of Ormonde erected the present hospital on the site of the ancient priory. The preceptory of Torphichen, headquarters of the order in Scotland, was surrendered in 1547 by the preceptor, Sir John Clavell, who was afterwards created Lord Clavell. As "Lord of St John he had had precedence of all the barons of Scotland, and this right—originally exercised as a spiritual peer—was retained by him and his successors.

2 The great priory church at Clerkenwell in London was almost wholly destroyed by the Protector Somerset, who used the materials for his palace in the Strand. Only the great gateway, 'Tunbridge Street,' now survives above ground of the priory buildings. It is the headquarters of the revived English 'langue,' Sir John Lawson, prior of Kilmarnock, the headquarters of the order in Ireland, accepted the royal supremacy and was created Lord Clontarf. In 1679 the duke of Ormonde erected the present hospital on the site of the ancient priory. The preceptory of Torphichen, headquarters of the order in Scotland, was surrendered in 1547 by the preceptor, Sir John Clavell, who was afterwards created Lord Clavell. As "Lord of St John he had had precedence of all the barons of Scotland, and this right—originally exercised as a spiritual peer—was retained by him and his successors.

3 In Protestant England public prayers were offered for the success of the knights. Yet a few years later Queen Elizabeth was seeking the alliance of the sultan against Spain, on the ground of their common religion as against 1 the idolators!"
ST JOHN OF JERUSALEM

The Order of St John of Jerusalem was founded in the 11th century to provide medical care and religious services to pilgrims visiting Jerusalem. It was initially known as the Order of the Hospital of St John of Jerusalem, later becoming the Johanniterorden or Knights of St John. The order played a significant role in the history of the Crusades and was closely associated with the expansion of Christianity in the Holy Land.

The order was founded by the Franciscan monk St Hugh of Cluny, who established the first hospital in Jerusalem in 1024. The hospital was later expanded into the Hospitaller Order, which became known for its military prowess and charitable work. The order was the first of the military orders and was headquartered in Jerusalem, where it maintained a strong presence until the late 15th century.

The order was divided into two main branches: the Knights Hospitaller in Jerusalem and the Knights of Malta in Rome. The Knights Hospitaller were responsible for the defense of the Holy Land and the protection of pilgrims, while the Knights of Malta were primarily engaged in the protection of aristocratic pilgrims and the administration of medical care.

The order faced numerous challenges throughout its history, including conflicts with Muslim forces, the decline of the Holy Land, and internal power struggles. Despite these difficulties, the order maintained its presence in the region for over 200 years, until it was expelled by the Ottoman Turks in 1523.

The remains of the order were reconstituted in the 19th century, and the Knights of Malta continues to serve as a charitable and humanitarian organization today. The order is headquartered in Rome and has a worldwide presence, providing aid to those in need and promoting peace and understanding around the globe.
ST JOHNS—SAINT JOSEPH

19

In French...

Hospitaux en Terre Sainte et en Chypre (Paris, 1904), an invaluable work in which many hitherto obscure problems have been solved.

It contains a full list of published authorities. Of English works many will occur to the reader.

The Knights Hospitallers in England (Camden Soc., London, 1857); W. Porter, Hist. of the Knights of Malta (2 vols., 1858, new ed. 1883); and Bedford and Porter, History of the Hospital of St John at Jerusalem (1902), for the modern order.

ST JOHNS, the capital of Newfoundland, situated on the east coast of the island, in the peninsula of Avalon, in 47° 33' 54" N., and 52° 40' 18" W. It is the most easterly city of America, only 1700 m. from Queenstown in Ireland, and 2530 m. from Liverpool.

It stands on rising ground on the north side of a land-locked harbour, about a mile, suddenly walled off from the open ocean by a bar of the fishing vessels, or with the disposal and manufacture of their catch. Steamship lines run to Liverpool, New York, Halifax (N.S.) and Saint Pierre. Nearly all the commerce of the island is sea-borne, and well-equipped steamers connect St Johns with the numerous bays and outports. It is the eastern terminus of the government railway across the island to Port-aux-Basques, whence there is steamer connexion with the mainland at Sydney.

The finest buildings in the city are the Anglican and Roman Catholic cathedrals. Education is controlled by the various religious bodies. Many of the young men complete their studies in Canada or Great Britain. St. John's is not an incorporated town. A municipal council was abolished after having largely increased the debt of the city, and it is now governed by commissioners appointed by the governor in council.

St. John's was first settled by Devonshire fishermen early in the 16th century. It was twice sacked by the French, and captured by them in the Seven Years' War (1762), but recaptured in the same year, since when it has remained in British possession. Both in the War of American Independence and in that of 1812 it was the headquarters of the British fleet, and at one time the west end of the harbour was filled up with American prizes. The old city, built entirely of wood, was twice destroyed by fire (1816–1817 and 1846). Half of it was again swept away in 1892, but new and more substantial buildings have been erected.

The population, chiefly of the Roman Catholic faith and of Irish descent, increases slowly. In 1901 the electoral district of St. Johns contained 39,994 inhabitants, of whom 30,486 were within the limits of the city.

ST JOHNS, a town and port of entry of Quebec, Canada, and capital of St. Johns county, 27 m. S.E. of Montreal by rail, on the river Richelieu and at the head of the Chambly canal. Pop. (1901) 4030. A large export trade in lumber, grain and farm produce is carried on, and its mills and factories produce flour, silk, pottery, hats, &c. Three railways, the Grand Trunk, Canadian Pacific and Central Vermont, enter St. Johns. On the opposite bank of the river is the flourishing town of St. Jean d'Iberville (usually known simply as Iberville), connected with St. Johns by several bridges.

SAINT JOHNSBURY, a township and the county-seat of Caledonia county, Vermont, U.S.A., on the Passumpsic river, about 34 m. E.N.E. of Montpelier. Pop. (1890) 6567; (1900) 7010; (1910) 8652; of the village of the same name (1890) 5666 (1890 foreign-born); (1910) 6693. Area of the township, about 47 sq. m. Saint Johnsbury is served by the Boston & Maine and the Saint Johnsbury & Lake Champlain railways. The farms of the township are devoted largely to dairying. In the village are a Y.M.C.A. building (1885); the Saint Johnsbury Academy (1842); the Saint Johnsbury Athenaeum (1871), with a library (about 18,000 volumes in 1909) and an art gallery; the Fairbanks Museum of Natural Science (1891), founded by Colonel Franklin Fairbanks; St. Johnsbury Hospital (1851); Brightlook Hospital (1899, private); the large scales manufactory of the E & T. Fairbanks Company (see Fairbanks, Erastus), and also manufactories of agricultural implements, steam hammers, granite work, furniture and carriages. There are two systems of water-works, one being owned by the village.

The township of St. Johnsbury was granted to Dr Jonathan Arnold (1741–1793), and associates in 1768. In 1762 a settlement was established and the place was named in honour of Jean Hector Sulur John de Crèvecoeur (1731–1814), who wrote An American Farmer (1783), a glowing description of America, which brought thither many immigrants, and who introduced potato planting into France. The township government was organized in 1790, and the village was incorporated in 1853.

ST JOHN'S WORT, in botany, the generic name for species of Hypericum, especially H. perforatum, small shrubby plants with slender stems, sesaile opposite leaves which are often dotted with pellucid glands, and showy yellow flowers. H. Androsaemum is Tutsan (Fr. lout saine), so called from its healing properties. H. calycinum (Rose of Sharon), a creeping plant with large almost solitary flowers 3 to 4 in. across, is a south-east European plant which has become naturalized in Britain in various places in hedges and thickets.

SAINT JOSEPH, a city and the county-seat of Berrien county, Michigan, U.S.A., on Lake Michigan at the mouth of the Saint Joseph river, near the S.W. corner of the state. Pop. (1890) 3733; (1900) 3155; (1910) 3357. It is the terminus of the railroad from Chicago, and a point where the St. Joseph river enters Lake Michigan. It is the terminus of the Chicago, South Bend, & St. Louis railway. It has a valuable trade in lumber, and is the terminus of the Cleveland, Cincinnati, Chicago & St. Louis railway. The U.S. government has deepened the harbour channel to 18 ft.; and the St Joseph river has been made navigable for vessels drawing 3 ft. from St Joseph to Berrien Springs (25 m. by river). A canal, 1 m. long, extends from the upper part of the river to the lake. At this point a public library is maintained.

The city is a summer and health resort; it has mineral (saline sulphur) springs and a large mineral-water bath house. The general offices and the hospital (1902) of the Michigan Children's Home Society are here. The city has an important trade in fruit, and has various manufactures, including paper, fruit packages, baskets, motor boats, gasolene launches, automobile supplies, hosery and knit goods, air guns and sashes and blinds. The municipality owns and operates its water-works and electric-lighting plant.

On or near the site of the present city La Salle built in 1679 Fort Miamis. In the same county, or on near the site of the present city of Niles (pop. 1910, 5156), French Jesuits established an Indian mission in 1690, and the French government in 1697 erected Fort St. Joseph, which was destroyed in 1713, and which was held by the French even after the Peace of 1763, and in 1761 was seized by a Spanish party from St. Louis. Fort Miami has often been confused with this Fort St Joseph, 60 m. farther up the river. St Joseph was settled in 1829, incorporated as a village in 1836 and first chartered as a city in 1891.

SAINT JOSEPH, a city and the county-seat of Buchanan county, Missouri, U.S.A., and a port of entry, situated in the north-western corner of the state on the E. bank of the Missouri river. It is the third in size among the cities of the state. Pop. (1880) 32,431; (1890) 35,234; (1900) 102,979, of whom 8242 were foreign-born and 6260 were negroes; (1910 census) 77,493. St Joseph is a transportation centre of great importance. It is served by six railways, the Atchison, Topeka & Santa Fe, the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago, Rock Island & Pacific, the Missouri Pacific, and the St Joseph & Grand Island; in addition there are branch lines and several bridges over the Missouri river. The town is laid out on hills above the bluffs of the river. The site was completely remade, however (especially in 1866–1873), and the entire business portion has been much graded down. The principal public buildings are the Federal building, the court house, an auditorium seating 7000, a Union Station and a...
public library. There are six city parks, of which the largest are Krug Park (30 acres) and Barlett Park (20 acres). The State Hospital (No. 2) for the Insane (opened 1874) is immediately E. of St Joseph; in the city are the Ensworth, St Joseph and Woodson hospitals, a Memorial Home for needy old people and the Home for Little Wanderers. South St Joseph, a manufacturing suburb, has a library and so has the northern part of the city. The greatest stockyards of South St Joseph are sights of the century. In 1860 the manufacturing products of the city and its immediate suburbs was valued at $31,600,736, of which $20,000,332 were credited to slaughtering and packing. In the decade of 1890-1900 the increase in the value of manufactures (165.5%) was almost five times as great in St Joseph as in any other of the largest four cities of the state, and this was due almost entirely to the growth of the slaughtering and meat-packing business, which is for the most part located outside the municipal limits. In 1905 the census reports did not include manufactures outside the actual city limits; the total value of the factory product of the city proper in 1905 was $21,573,720; besides slaughtering and packing the other manufactures in 1905 included the factory made clothing (valued at $1,556,955) flour and gist-mill products (valued at $683,464), saddlery and harness (valued at $524,018), confectionery ($437,000), malt liquors ($267,054), boots and shoes ($350,384) and farm implements.

In 1826 Joseph Robidoux, a French half-breed trader, established a trading post on the site of St Joseph. Following the purchase from the French government of the Missouri Territory in 1803, in 1836, a settlement grew up around this trading post, and in 1843 Robidoux laid out a town here and named it St Joseph in honour of the patron saint of the Catholic Church. Joseph became the county seat of Clay county in 1846, and in 1851 was first chartered as a city. It early became a trading centre of importance, well known as an outfitting point for miners and other emigrants to the Rocky Mountain region and the Pacific coast. During the Civil War it was held continuously by the Unionists, but local sentiment was bitterly divided. After the war a rapid development began. In 1889 St Joseph became a city of the second class. Under the state constitution of 1875 it has had the right, since attaining a population of 100,000, to form a charter for itself. In September 1909, at a special election, it adopted the commission charter described above.

ST JUNIEN, a town of west-central France in the department of Haute-Vienne, on the right bank of the Vienne, 26 m. W. by N. of Limoges on the railway from Limoges to Angoulême. Pop. 17,321. In the collegiate church, a fine example of the Romanesque style of Limousin, contains a richly sculptured tomb of St Junien, the hermit of the 6th century from whom the town takes its name. Another interesting building is the Gothic chapel of Notre-Dame, with three naves, rebuilt by Louis XI., standing close to a medieval bridge over the Vienne. The town, which ranks second in the department in population and industry, is noted for leather-dressing and the manufacture of gloves and straw paper.

SAINT-JUST, ANTOINE LOUIS LÉON DE RICHEBOURG DE (1767-1794), French revolutionary leader, was born at Decize in the Nivernais on the 25th of August 1767. At the outbreak of the Revolution, intoxicated with republican ideas, he threw himself with enthusiasm into politics, was elected an officer in the National Guard of the Aisne, and by fraud—he being yet under age—admitted as a member of the electoral assembly of his district. Early in 1789 he had published twenty cantos of licentious verse, in the fashion of the time, under the title of Organi au Vatican. Henceforward, however, he assumed revolutionistmannish airs. They gave him the nickname of "the beautiful Saint-Just" and pitilessly thorough, became the characteristic of his life. He entered into correspondence with Robespierre, who, flattered by his worship, admitted him to his friendship. Thus supported, Saint-Just became deputy of the department of Aisne to the National Convention, where he made his first speech on the condemnation of Louis XVI.—gloomy, fanatical, remorseless in tone—on the 13th of November 1792. In the Convention, in the Jacobin Club, and among the populace his relations with Robespierre became known, and he was dubbed the "St John of the Messiah of the People." His appointment as a member of the Committee of Public Safety placed him at the centre of the political fever-heat. In the name of this committee he was charged with the drawing up of reports to the Convention upon the absorbing themes of the overthrow of the party of the Girondists (report of the 8th of July 1793), of the Hébertists, and finally, of that denunciation of Danton which consigned him and his followers to the guillotine. What were then called reports were rather appeals to the passions; in Saint-Just's hands they furnished the occasion for a display of fanatical daring, of gloomy eloquence, and of undoubted genius; and—with the shadow of Robespierre behind him—they served their turn. Desmoulins, in jest and mockery, said of Saint-Just—the youth with the beautiful countenance and the long fair locks—"He carries his head like a Holy Sacrament," "And I, savagely replied Saint-Just, "will make him carry his like a Saint Denis." The threat was not vain: Desmoulins accompanied Danton to the scaffold. The same ferocious inflexibility animated Saint-Just with reference to the external policy of France. He proposed that the National Convention should itself, through its committees, direct all military movements and all branches of the government (report of the 10th of October 1793). This was agreed to, and Saint-Just was despatched to Strasbourg, in company with another deputy, to superintend the military operations. It was suspected that the enemy without was being aided by treason within. Saint-Just's remedy was direct and terrible; he followed his experience in Paris, "organized the Terror," and soon the heads of all suspects sent to Paris were falling under the guillotine. But there were no executions at Strasbourg, and Saint-Just repressed the excesses of J. G. Schneider (q.v.), who as public prosecutor to the revolutionary tribunal of the Lower Rhine had ruthlessly applied the Terror in Alsace. Schneider was sent to Paris and guillotined. The conspiracy was defeated, and the armies of the Rhine and Moselle having been inspired by success—Saint-Just himself taking a fearless part in the actual fighting—and having effected a junction, the frontier was delivered and Germany invaded. On his return Saint-Just was made president of the Convention. Later, with the army of the North, he placed before the generals the dilemma of victory over the enemies of France or trial by the dreaded revolutionary tribunal; and before the eyes of the army itself he organized a force specially charged with the slaughter of those who should seek refuge by flight. Success again crowned his efforts, and Belgium was galvanized for France (May, 1794). Meanwhile affairs in Paris looked gloomier than ever, and Robespierre recalled Saint-Just to the capital. Saint-Just proposed a dictatorship as the only remedy for the convulsions of society. At last, at the famous sitting of the 9th Thermidor, he ventured to present as the report of the committees of General Security and Public Safety a document expressing his own views, a sight of which, however, had been refused to the other members of committee on the previous evening. Then the storm broke. He was vehemently interrupted, and the sitting ended with an order for Robespierre's
arrest (see ROBESPIERRE). On the following day, the 28th of July 1794, twenty-two men, nearly all young, were guillotined. Saint-Just maintained his proud self-possession to the last.


ST JUST (at St Just in Penwith), a market town in the St Ives parliamentary division of Cornwall, England, 73 m. by road W. of Penzance. Pop. of urban district (1901) 5646. This is the most westerly town in England, lying in a wild district 1 m. inland from Cape Cornwall, which is 4 m. N. of Land's End. The urban district has an area of 7633 acres, and includes the small industrial colonies near some of the most important mines in Cornwall. The Levant mine is the chief, the workings extending beneath the sea. Traces of ancient workings and several exhausted mines are seen. The church of St Just is Perpendicular in style and dates from the first third of the 14th century. The most notable feature is the richly decorated east window of the chancel.

ST KILD A, a city of Bourke county, Victoria, Australia, 33° m. by rail S. of, and suburban to, Melbourne. Pop. (1901) 20,544. It is a fashionable watering-place on Hobson's Bay, and possesses the longest pier in Australia. The esplanade and the public park are finely laid out; and portions of the sea are fenced in to protect bathers. The town hall, the public library, the assembly hall, and the great Anglican church of All Saints are the chief buildings.

Saint-Lambert, Jean François De (1716-1803), French poet, was born at Nancy on the 26th of December 1716. He entered the army and, when Stanislaus Leszczynski was established in 1737 as duke of Lorena, he became an official at his court at Lunéville. He left the army after the Hanoverian campaign of 1756-57, and devoted himself to literature, producing a volume of descriptive verse, Les Soisons (1769), never now read, many articles for the Encyclopédie, and some miscellaneous works. He was admitted to the Academy in 1770. His fame, however, comes chiefly from his amours. He was already high in the favour of the marquise de Boufflers, Stanislaus's mistress, whom he addressed in his verses as Doris et Thémire, when Voltaire in 1748 came to Lunéville with the marquise de Châtelet. Her infatuation for him and its fatal termination are known to all readers of the life of Voltaire. His subsequent liaison with Madame d'Houdetot, Rousseau's Sophie, though hardly less disastrous to his rival, continued for the whole lives of himself and his mistress. Saint-Lambert's later years were given to philosophy. He published in 1798 le Prince de muses chez toutes les nations ou catéchisme universel, and published his Œuvres philosophiques (1803), two years before his death on the 6th of February 1803. Madame d'Houdetot survived until the 28th of January 1813.

ST LAWRENCE. The river St Lawrence, in North America, with the five fresh-water inland seas (see GREAT LAKES), Superior, Michigan, Huron, Erie and Ontario, forms one of the great river systems of the world, having a length, from the source of the river St Louis (which rises near the source of the river Mississippi and falls into the head of Lake Superior) to Cape Gaspé, where it empties into the Gulf of St Lawrence, of 2100 m. The river is here considered as rising at the foot of Lake Ontario, in 44° 12′ N., 76° 30′ W., where the name of St Lawrence is first applied to it. The river, to the point where it crosses 45° N. in its north-westerly course, forms the boundary line between the state of New York and the province of Ontario; thence to the sea it is wholly within Canadian territory, running through the province of Quebec. At Point des Monts, 260 m. below Quebec, it is 26 m. wide, and where it finally merges into the Gulf of St Lawrence, 150 m. farther on, it is 90 m. wide, this stretch being broken by the large island of Anticosti, lying fairly in the mouth. The character of the river banks varies with the geological formations through which it runs. Passing over the Archaean rocks of the Laurentian from Kingston to Brockville the shores are very irregular, and the river is here bordered by a cordon of glaciated summits of the granites and gneisses into a large number of picturesque islands, "The Thousand Islands," greatly frequented as a summer resort. From Brockville to Montreal the river runs through flat-bedded Cambro-silurian limestones, with rapids at several points, which are all run by flight-draught passenger boats. For the up trip the rapids are avoided by canalization. From Montreal to Three Rivers the course is through an alluvial plain over-lying the limestones,
the river at one point expanding into Lake St Peter, 20 m. long by 10 m. wide, with a practically uniform depth of 10 ft. Below Three Rivers the banks grow gradually higher until, after passing Quebec through a cleft in slate rocks of Cambrian age, the river widens, washing the feet of the Laurentian Mountains on its north shore; while a moderately hilly country, terminating in the Shickshock Mountains of the Gaspé Peninsula, skirts its south shore.

From Kingston, at the head of the river, to Montreal, a distance of 170 m., navigation is limited to vessels of 14 ft. draft by the capacity of the canals. From Montreal to Quebec, 160 m., a ship channel has been dredged to a depth of 30 ft.; below Quebec the river is tidally navigable by vessels of any draught. The canals on the St Lawrence above Montreal have been enlarged to the capacity of the Welland canal, the improved system having been opened to commerce in the autumn of 1899. Instead of enlarging the Beauharnois canal, on the south side of the river, a new canal, the "Soulanges," was built from Coteau Landing to Cascades Point, on the north side, the Beauharnois canal still being used for small barges. The locks of the enlarged canals are all 45 ft. wide, with an available depth of 14 ft. and a minimum length of 270 ft. The following table shows the canalized stretches in this portion of the river—

<table>
<thead>
<tr>
<th>Name</th>
<th>From</th>
<th>To</th>
<th>Length in Miles</th>
<th>Number of Locks</th>
<th>Fall in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galops River</td>
<td>Head of Galops Rapids</td>
<td>Iroquois</td>
<td>74</td>
<td>3</td>
<td>15$\frac{1}{2}$</td>
</tr>
<tr>
<td>Rapide Plat</td>
<td>Head of Ogden Island</td>
<td>Morrisburg</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Farran Point</td>
<td>Head of Croll Island</td>
<td>Farran Point</td>
<td>10</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>River</td>
<td>Cornwall</td>
<td>Cornwall</td>
<td>11</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>Lake St Francis</td>
<td>Lake St Louis</td>
<td>Coteau Landing</td>
<td>30$\frac{1}{2}$</td>
<td>4</td>
<td>82$\frac{1}{2}$</td>
</tr>
<tr>
<td>Soulanges</td>
<td>Cascades Point</td>
<td>Montreal</td>
<td>14</td>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>Lachine</td>
<td>Montreal</td>
<td></td>
<td>109$\frac{1}{2}$</td>
<td>21</td>
<td>206</td>
</tr>
</tbody>
</table>

In the stretch between Montreal and Quebec the ship channel, begun by the Montreal Harbour Commissioners, has been assumed by the Dominion government as a national work, and improvements, involving extensive dredging, have been undertaken with the aim of securing everywhere a minimum depth of 30 ft. with a minimum width of 450 ft. The whole river from Kingston to the sea is well supplied with aids to navigation. In the dredged portions lights are arranged in pairs of leading lights on foundations sufficiently high and solid to resist the pressure of ice movement, and there is an elaborate system of fog alarms, gas-lighted and other buoys, as well as telegraphic, wireless and telephonic communication, storm signal, weather and ice reporting stations and a life-saving service.

Montreal, at the head of ocean navigation, the largest city in Canada, is an important distributing centre for all points in western Canada, and enjoys an extensive shipping trade with the United Kingdom, the sea-going shipping exceeding 1,500,000 tons, and the inland shipping approximating 2,000,000 tons, annually. Quebec is the summer port used by the largest steamers in the Canadian trade. There are numerous flourishing towns on both banks of the river, from Kingston, a grain transferring port, to the sea. Large quantities of lumber, principally spruce (fir) and paper pulp, are manufactured at small mills along the river, and shipped over sea directly from the place of production. The mail steamers land and embark mails at Rimouski, or from which they are conveyed by rail along the south shore.

The importance to Canada of the river St Lawrence as a national trade route cannot be over-estimated. As a natural highway between all points west of the Maritime Provinces and Europe it is unique in permitting ocean traffic to penetrate 1000 m. into the heart of a country. It is, moreover, the shortest freight route from the Great Lakes to Europe. From Buffalo to Liverpool via New York involves rail or 7-ft. canal transport of 406 m. and an ocean voyage of 3034 nautical miles. Via Montreal there is a 14-ft. transport of 348 m. and river and ocean voyage of 2772 nautical miles. From Quebec to Liverpool by Cape Race is 2801 nautical miles, while the route by Belle Isle, more nearly a great circle course, usually taken between July and October, is only 2633 nautical miles. On the other hand, time taken for the passage of the first vessel from sea and the departure of the last ocean vessel is seven months. From Kingston to Quebec the river freezes over every winter, except at points where the current is rapid. Below Quebec, although there is heavy border ice, the river never freezes over. For a few winters, while the bridge accommodation at Montreal was restricted to the old single-track Victoria bridge, railway freight trains were run across the ice bridge on temporary winter tracks. Efforts have been made to lengthen the season of navigation by using specially constructed steamers to break the ice; and it is claimed that the season of navigation could be materially lengthened, and winter floods prevented by keeping the river open to Montreal. Winter ferries are maintained at Quebec, between Prince Edward Island and Nova Scotia, and between Newfoundland and Sydney, Cape Breton. In the winter of 1898-1899 an attempt was made to run a winter steamer from Paspebic to England, but it was not successful, principally because an unsuitable vessel was used. To pass through the field of ice that is always in the gulf, in greater or less quantity, specially strengthened vessels are required.

The river above tide water is not subject to excessive flooding, the maximum rise in the spring and early summer months being not more than fifteen feet. From the harbors tributaries of the Ottawa eastward, being 10 ft. The Great Lakes serve as impounding reservoirs for the gradual distribution of all overflows in the west. At Montreal, soon after the river freezes over each winter, there is a local rise of about 10 ft. in the level of the water in the harbour, caused by restriction of the channel by anchor ice; and in the spring of the year, when the volume of the water is augmented, this obstruction leads to a further rise, in 1886 reaching a height of 27 ft. above ordinary low water. To prevent flooding of the lower parts of the city a dike was in 1887 built along the river front; which prevented a serious flooding in 1889.

Tides enter the Gulf of St Lawrence from the Atlantic chiefly through Cabot Strait (between Cape Breton and Newfoundland), which is 75 m. wide and 250 fathoms deep. The tide entering through Belle Isle Strait, 10 m. wide and 30 fathoms deep, is comparatively little felt. The tidal undulation, in passing through the gulf, expands so widely as to be almost imperceptible in places, as for example, at the Magdalen Islands, in the middle of the gulf, where the range amounts to about 3 ft. at springs, becoming effaced at neaps. There is also little more tide than this at some points on the north shore of Prince Edward Island. The greatest range is attained in Northumberland Strait and in Chaleur Bay, where it amounts to 10 ft. At the entrance to the estuary at Anticosti it has again the oceanic range of about 6 ft., and proceeds up the estuary with an ever-increasing range, which attains its maximum of 10 ft. at the lower end of Orleans Island, 650 m. from the ocean at Cabot Strait. This must be considered the true head of the estuary. At Quebec, 30 m. farther up, the range is nearly 10 ft.; but at 90 m. above Quebec it is largely cut off by the Richelieu Rapids, and finally ceases to be felt at Three Rivers, at the lower end of Lake St Peter, 760 m. from the ocean.

The St Lawrence provides ample water-power, which is being increasingly used. Its rapids have long been used for milling and saw. The St Lawrence is deep enough for the passage of Lachine Rapids and furnishes electricity to Montreal; the falls of Montmorency light Quebec and run electric street cars; and from Lake Superior to the gulf there are numerous points on the tributaries to the St Lawrence where power could be used.

Nearly all the rivers flowing into the St Lawrence below Quebec are stocked with salmon (Salmo salar), and are preserved and leased to anglers by the provincial government. In the salt
ST LEGER—ST LEONARDS 23

water of the gulf and lower river, mackerel, cod, herring, smelt, sea-trout, striped bass and other fish are caught for market.

The St Lawrence is spanned by the following railway bridges:
(1) A truss bridge built near Cornwall in 1900 by the New York & Ottawa railroad, now operated by the New York Central railroad.
(2) A truss bridge with a swing, built in 1890 by the Canada Atlantic railway at Coteau Landing.
(3) A cantilever bridge built in 1887 by the Canadian Pacific railway at Caughnawaga.
(4) The Victoria Jubilee bridge, built as a tubular bridge by the Grand Trunk railway in 1860, and transformed into a truss bridge in 1889-1890.
(5) A very large cantilever bridge, having a central span of 1800 ft., crosses the river at a point 7 m. above Quebec.

The southern half of the superstructure, while in course of erection in August 1907, fell, killing 78 men, and necessitating a serious delay in the completion of the work.

The river St Lawrence was discovered by Jacques Cartier, commissioned by the king of France to explore and trade on the American coast, he entered the mouth of the St Lawrence in 1534, but Breton fishermen had previously resorted there in summer and penetrated as far as Brest, eleven leagues west of Blanche Sablon, the dividing line between Quebec and Labrador. Cartier circled the whole gulf, but missed the entrance to the river. On his second voyage in 1536 he named a bay on the north shore of the gulf, which he entered on the 10th of August, the feast of St Lawrence, Baye Saint Laurent, and the name gradually extended over the whole river, though Cartier himself always wrote of the River of Canada. Early in September, he reached "Canada," now Quebec, and on the 2nd of October reached Hochelaga, now Montreal. No permanent settlement was then made.

The first, Tadoussac, at the mouth of the Saguenay, was established by Champlain in 1603, and Quebec was settled by him in 1608. Between that time and 1616 Champlain explored the whole river system as far west as Lake Huron, reaching it by way of the Ottawa river, and taking possession of the country in the name of the king of France. It became British by the treaty of Paris, in 1763.

See S. E. Dawson, The St Lawrence, its Basin and Border Lands (New York, 1905); (historical); St Lawrence Pilot (7th ed., Hydrographic Office, Admiralty, London, 1906); Sailing Directions for the St Lawrence River to Montreal (United States Hydrographic Office publication, No. 10, revised, 1907); The Records of the Canadian Departments of Marine and Fisheries, Public Works and Railways and Canals, Ottawa; Transactions (Royal Society, Canada, 1868-1899), vol. iv. sec. iii.; T. C. Keefer on "Ice Floods and Waterspouts" of the St Lawrence (Canadian Society of Civil Engineers, Presidential Address of W. P. Anderson, on improvements to navigation on St Lawrence, 1904).

(W. P. A.)

ST LEGER, SIR ANTHONY (c. 1496-1559), lord deputy of Ireland, eldest son of Ralph St Leger, a gentleman of Kent, was educated abroad and at Cambridge. He quickly gained the favour of Henry VIII., and was appointed in 1537 president of a commission for inquiring into the condition of Ireland. This work he carried out with ability and obtained much useful knowledge of the country. In 1540 he was appointed lord deputy of Ireland. His first task was to repress disorder, and he at once proceeded with severity against the Kavagnahs, permitting them, however, to retain their lands, on their accepting feudal tenure on the English model. By a similar policy he exacted obedience from the O'Mores, the O'Tooles and the O'Mahony, the latter being on the defendant side in the Donoughmore case and having conciliated the O'Briens in the west and the earl of Desmond in the south. The lord deputy carried an act in the Irish parliament in Dublin confirming the title of king of Ireland on Henry VIII. and his heirs. Conn O'Neill, who in the north had remained sullenly hostile, was brought to submission by vigorous measures. For the most part, however, St Leger's policy was one of moderation and conciliation—rather more so, indeed, than Henry VIII. approved. He recommended The O'Brien, when he gave token of a subversive disposition, for the title of earl of Thomond; O'Neill was created earl of Tyrone; and administrative council was instituted in the province of Munster; and in 1544 a levy of Irish soldiers was raised for service in Henry VIII.'s wars. St Leger's personal influence was proved by an outbreak of disturbance when he visited England in 1544, and the prompt restoration of order on his return some months later. St Leger retained his office under Edward VI., and again effectually quelled attempts at rebellion by the O'Connors and O'Byrnes. From 1548 to 1550 he was in England. He returned charged with the duty of introducing the reformed liturgy into Ireland. His conciliatory methods brought upon him the accusation that he lacked zeal for the reformation, and led to his recall in 1551. After the accession of Mary he was again appointed lord deputy in October 1553, but in consequence of a charge against him of keeping false accounts he was recalled for the third time in 1556. While the accusation was still under investigation, he died on the 16th of March 1559.

By his wife Agnes, daughter of Hugh Warham, a niece of Archbishop Warham, he had three sons, William, Warham and Anthony. William died in his father's lifetime leaving a son, Sir Warham St Leger (d. 1600), who was father of Sir William St Leger (d. 1643), president of Munster house, one of the "flight of the earls" (see O'NEILL) in 1607, and spent several years abroad. Having received a pardon from James I. and extensive grants of land in Ireland, he was appointed president of Munster by Charles I. in 1627. He warmly supported the arbitrary government of Strafford, actively assisting in raising and drilling the Irish levies destined for the service of the king of the Parliament. In the great rebellion of 1641 he bore the chief responsibility for dealing with the insurgents in Munster; but the forces and supplies placed at his disposal were utterly inadequate. He executed martial law in his province with the greatest severity, hanging large numbers of rebel, often without much proof of guilt. He was still struggling with the insurrection when he died at Cork on the 2nd of July 1642. Sir William's daughter Margaret married Murrough O'Brien, 1st earl of Inchiquin; his son John was father of Arthur St Leger, created Viscount Donorle in 1703.


ST LEONARDS, EDWARD BURTENSHEAD SUGDEN, 1ST BARON (1781-1875), lord chancellor of Great Britain, was the son of a hairdresser of Duxford Street, Westminster, and was born on the 12th of February 1781. After practising for some years as a barrister, he went to the bar at Lincoln's Inn in 1807, having already published his well-known work on the Law of Vendors and Purchasers (14th ed., 1862). In 1822 he was made king's counsel and chosen a bencher of Lincoln's Inn. He was returned at different times for various boroughs to the House of Commons, where he made himself prominent by his opposition to the Reform Bill of 1832. He was appointed solicitor-general in 1829, was named lord chancellor of Ireland in 1834, and again filled the same office from 1841 to 1846. Under Lord Derby's first administration in 1852 he became lord chancellor and was raised to the peerage as Lord St Leonards. In this position he devoted himself with energy and vigour to the reform of the law; Lord Derby on his return to power in 1858 again offered him the same office, which from considerations of health he declined. He continued, however, to take an active interest especially in the legal matters that came before the House of Lords, and bestowed his particular attention on the reform of the law of property. He died at Boyle Farm, Thames Ditton, on the 29th of January 1875.
After his death his will was missing, but his daughter, Miss Charlotte Sugden, was able to recollect the contents of a most intricate document, and in the action of Sugden v. Lord St Leonards (L.R. 1 P.D. 154) the court accepted her evidence and granted probate of a paper propounded as containing the provisions of the lost will. This decision established the proposition that the contents of a lost will may be proved by secondary evidence, even of a single witness.

Lord St Leonards was the author of various important legal publications, many of which have passed through several editions. Besides the treatise on purchasers already mentioned, they include Power's, Cases decided by the House of Lords, Gilbert on Uses, New Real Property Law and Handbook of Property Law, Misrepresentations in Campbell's Lives of Lyndhurst and Brougham, corrected by St Leonards. See The Times (30th of January 1875); E. Manson, Builders of our Law (1904); J. R. Atlay, Lives of the Victorian Chancellors, vol. III.

ST LIZIER-DE-COUSERANS, a village of south-western France in the department of Ariège on the right bank of the Salat, 1 m. N.N.W. of St Girons. Pop. (1906) 615; commune 1205. St Lizier, in ancient times one of the twelve cities of Novempopulania under the name of Lugdunum Consororum, was later capital of the Couserans and seat of a bishopric (suppressed at the Revolution) to the holders of which the town belonged. It has a cathedral of the 12th and 14th centuries with a fine Romanesque-styled facade flanked by two remarkable arches of Roman remnants. The old episcopal palace (17th century) and the adjoining church (14th and 17th centuries), once the cathedral with its fine chapter-hall (12th century), form part of a lunatic asylum. The Salat is crossed by a bridge of the 12th or 13th century. The town owes its name to its bishop Lycerus, who is said to have saved it from the Vandals in the 7th century. The chief event in its history was its devastation in 1350 by Bernard III., count of Comminges, a disaster from which it never completely recovered.

ST LÔ, town of north-western France, capital of the department of Manche, 47 s. m. W. of Caen by rail. Pop. (1906) town 9379; commune, 12,381. St Lô is situated on a rocky hill on the right bank of the Vire. Its chief building is the Gothic church of Notre-Dame, dating mainly from the 16th century. The façade, flanked by two lofty towers and richly decorated, is impressive, despite its lack of harmony. There is a Gothic pulpit outside the choir. In the hôtel-de-ville is the "Torigini marble," the pedestal of an ancient statue, the inscriptions on which relate chiefly to the annual assemblies of the Gallic deputés held at Lyons under the Romans. The modern chief buildings are the town hall; the other public buildings belonged to the church of an ancient Benedictine abbey. St Lô is the seat of a prefect and has tribunals of first instance and of commerce, a training college for masters, a school of drawing, a branch of the Bank of France, a chamber of arts and manufactures, and a government stud. The town has trade in grain, fat stock, troop-horses and farm produce, and carries on tanning, wool-spinning and bleaching and the manufacture of woollen and other fabrics.

St Lô, called Brière in the Gallo-Roman period, owes its present name to St Lô (Lauda), bishop of Coutances (d. 568). In the middle ages St Lô became an important fortress as well as a centre for the weaving industry. It sustained numerous sieges, the last in 1574, when Richelieu's army was in occupation; 124 men, 272 horses, and 10,000 sheep were captured, and the Catholics and many of its inhabitants massacred. In 1800 the town was made capital of its department in place of Coutances.

ST LOUIS, the chief city and a port of entry of Missouri, and the fourth in population among the cities of the United States, situated on the W. bank of the Mississippi river, about 20 m. below its confluence with the Missouri, 200 m. above the influx of the Ohio, and 1270 m. above the Gulf of Mexico, occupying a land area of 65-750 acres. In a commanding central position, it is the great drainage basin of the Mississippi system, the richest portion of the continent. Pop. (1880) 350,518, (1890) 451,779, (1900) 575,238, (1910) 687,029.

The central site is marked by an abrupt terraced rise from the river to an easily sloping tableland, 4 or 5 m. long and somewhat less than 1 m. broad, behind which are rolling hills. The length of the river-front is about 1500 ft. The average elevation of the city is more than 425 ft.; and the recorded extremes of low and high water on the river are 379 and 428 ft. (both established in 1844). The higher portions of the city lie about 60 ft. above the river level, and in general the site is so elevated that there can be no serious interruption of business except by extraordinary floods. The natural drainage is excellent, and the sewerage system, long very imperfect, has been made adequate. The street plan is approximately rectilinear. The stone-paved wharf or river-front, known as the Levee or Front Street, is 3-7 m. long. Market Street, running E. and W., is regarded as the central thoroughfare; and the numbering of the streets is systematized according to the line of the river. Broadway (or Fifth Street, from the river) is the most important street. The shopping centres; Washington Avenue, First (or Main) and Second Streets are devoted to wholesale trade; and Fourth Street is the financial centre. The most important public buildings are the Federal building, built of Maine granite; the county court house (1839-1862, $1,199,872)—a semi-classic, plain, massive stone structure, the Four Courts (1871, $75,000), built of cream-coloured Joliet stone, and a rather effective city hall (1890-1904, $2,000,000), in Victorian Gothic style in brick and stone. The chief slave-market before the Civil War was in front of the Court House. The broad avenue fronted by quasi-classic public edifices and the Tudor-Gothic building of the Washington University, are perhaps the most satisfying structures in the city architecturally. Among other noteworthy buildings are the Public Library, the Mercantile Library, the Mercantile, the Mississippi Valley, the Missouri-Lincoln, and the St Louis Union Trust Company buildings; the German-Renaissance home of the Mercantile Club; the florid building of the St Louis Club; the Merchants' Exchange; the Missouri School for the Blind; the Coliseum, built in 1897 for conventions, horse shows, &c., torn down in 1907 and rebuilt in Jefferson Avenue; and the Union Station, used by all the railways entering the city. This was opened in 1894, and cost, including the site, $6,500,000; has a train-shed with thirty-two tracks, covers some eleven acres, and is one of the largest and finest railway stations in the world. The city owns a number of markets. In 1907 a special architectural commission, appointed to supervise the construction of new municipal buildings, purchased a site adjacent to the City Hall, for new city courts and jail, which were begun soon afterwards.

The valley of Mill Creek (once a lake bed, "Chouteau Pond," and afterwards the central sewer) traverses the city from W. to E. and gives entry to railways coming from the W. into the Union Station. The terminal system for connecting Missouri with Illinois includes, in addition to the central passenger station, vast centralized freight warehouses and depots; an elevated railway along the levee; passenger and freight ferries across the Mississippi with railway connections; two bridges across the river; and a tunnel leading to one of them under the streets of the city along the river front. The Merchants' Bridge (1887-1890, $3,000,000), used solely by the railways, is 1368-5 ft. long in channel span, with approaches almost twice as long. The Eads Bridge (1869-1874; construction cost $5,356,730, total cost about $10,000,000) is 3 m. farther down the river; it carries both wagon ways and railway tracks, is 1627 ft. clear between shore abutments, and has three spans. Built entirely of steel above the piers, it is a happy combination of strength and grace, and was considered a marvel when erected.

St Louis has exceptionally fine residential streets which are accounted among the handsomest in the world. The most notable are Portland Place, Westmoreland Place, Van Venderer Place, Kingsbury Place, &c., in the neighbourhood of Forest Park: broad parked avenues, closed with ornamental gateways, and flanked by large houses in fine grounds. The park system of the city is among the finest in the country, containing in 1910 2641-5 acres (cost to 1900, $6,417,745). Forest Park (1372 acres), maintained mainly in a natural, open-country state, is the largest single member of the system. In one of its oldest was the Missouri Purchase Exposition in 1904. Tower Grove Park (274 acres) and the Missouri Botanical Gardens.
the former home of William T. Harris, and for many years has been recognized as one of the best in the United States.

The first permanent kindergarden in the country in conjunction with the Teachers College Schools of Teachers College (Riggs)," the superintendent of schools, and Miss Susan Ellen Blow. The first public kindergarden training school was established at the same time. There is a teachers' college in the city school system, and there are special schools for handicapped children. Several school buildings have been successfully used as civic centres. The city has an excellent educational museum, material from which is available for the use of teachers in the public schools...

It was college 1905 statues of Columbus, Shakespeare (Tower Grove Park) and Napoleon (Lafayette Park); Terry's (Stephen W. T.) collection of sculptures associated with St Louis or Missouri. There are various lake, river and hillside pleasure-resorts near the city; and there are other parks. King's Highway is a boulevard (partially completed in 1910) from the Mississippi on the S. to the Mississippi on the N., crossing the western part of the city. In accord with a general movement in American cities late in the 19th century, St Louis made a beginning in the provision of small "neighbourhood parks," intended primarily to better the lives of the city's poor, and vacation playgrounds for children; and for this purpose five blocks of tenements were condemned by the city. In the different parks and public places are statues of Columbus, Shakespeare (Tower Grove Park) and Napoleon (Lafayette Park); Terry's (Stephen W. T.) collection of sculptures associated with St Louis or Missouri. 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own factors. The gross cotton movement continues to increase, but the field of supply has been progressively lessened by the development of Galveston and other ports on the gulf. As a grain and stock market St Louis has felt the competition of Kansas City and St Joseph.

River and railway transportation built up in turn the commanding commercial position of the city. The enormous growth of river traffic in the decade before 1860 gave it at the opening of the Civil War an incontestable primacy in the West. In 1810 about twenty independent railway systems, great and small (including two terminal roads within the city), gave outlet and inlet to commerce at St Louis; and of these fifteen are among the greatest. The river traffic of the Western, the Chicago, Burlington & Quincy, the Chicago & Alton, the Cleveland, Cincinnati, Chicago & St Louis, the St Louis & San Francisco, the Illinois Central, the Missouri, Kansas & Texas, the Missouri Pacific, the Pennsylvania, the St Louis South-Western, the Southern, the Wabash, the Louisville & Nashville, the Mobile & Ohio, and the Toledo, St Louis & Western. The construction of the Missouri Pacific Railway system was begun at St Louis in 1830, and various other roads were started in the next two years. For several decades railway development continued. Increased the commercial primacy of the city in the southern Mississippi Valley, but in more recent years the concentration of roads at Kansas City enabled that place to draw from the west and south-west an immense trade once held by St Louis. River freighting is of very slight importance. St Louis is a port of entry for foreign commerce; its imports in 1907 were valued at $7,442,567; in 1908 at $6,362,770.

The population of St Louis in 1840 was 16,460; in 1850 it was 77,860 (seventh in size of the cities of the country); in 1860, 166,773; in 1870, 310,864 (third in size); in 1880, 330,918; in 1890, 451,779; in 1900, 575,238; and in 1910, 657,029. Since 1861 it has been fourth in population among the cities of the United States. Of the population of 1900 (575,238) 111,356 were foreign-born and 35,516 were negroes. Of the foreign-born in 1900, 58,783 were Germans, 19,421 were Irish, 5,800 were English, 4,785 Russian. In 1900, 147,746 inhabitants of St Louis were children of German parents.

Under the state constitution of 1875 St Louis, as a city of 100,000 inhabitants, was authorized to frame its own charter, and also to separate from St Louis county. These rights were exercised in 1876. The General Assembly of the state holds the same powers over the entire area of the city as over other cities. The electorate may pass upon proposed amendments to the charter at any election, after due precedent publication thereof. The mayor holds office for four years. In 1823 the mayor was first elected by popular vote and the municipal legislature became unicameral. The bicameral system was again adopted in 1839. The municipal assembly consists of a Council of 13 chosen at large for four years—half each two years—and a House of Delegates, 28 in number, chosen by wards for two years. A number of chief executive officers are elected for four years; the mayor and Council appoint others, and the appointment is made at the middle of the mayor's term in order to lessen the immediate influence of municipal patronage upon elections. Single commissioners control the parks, streets, water service, harbour and wharves, and sewers, and these constitute, with the mayor, a board of public improvement. Under an enabling act of 1907 the municipal assembly in 1909 created a public service commission, of three members, appointed by the mayor. The measure of control exercised by the state is important, the governor appointing the excise (liquor-licence) commissioner, the board of circuit commissioners, the inspector of petroleum and of tobacco, and (since 1861) the police board. St Louis is normally Republican in politics, and Missouri Democratic. Taxes for state and municipal purposes are collected by the city. The school board, as in very few other cities of the country, has independent taxing power. The city owns the steamboat landings and draws a small revenue from their rental. The heaviest expenses are for streets and parks, debt payments, police and education. The bonded debt in 1910 was $27,815,312, and the assessed valuation of property in that year was $530,207,640. The city maintains hospitals, a poor-house, a reformatory work-house, an industrial school for children, and an asylum for the insane.

The water-supply of the city is derived from the Mississippi, and is therefore potentially inexhaustible. Settling basins and a coagulant chemical plant (1904) are used to purify the water before distribution. After treatment the water was supplied to the city by means of a system of fifteen thousand miles of water-works, under the direction of the city, and owned by the city. The street railways are controlled—since a state law of 1899 permitted their consolidation—by one corporation, though a one-share, universal transfer 5-cent rate is in general operation. A single corporation has controlled the gas service from 1846 to 1873 and since 1890, though under no exclusive franchise; and the city has not the right of purchase.

St Louis was settled as a trading post in 1764 by Pierre Laclede Liguest (1724-1778), representative of a company to which the French crown had granted a monopoly of the trade of the Missouri river country. When, by the treaty of Paris of 1763, the borders of Louisiana fell to the United States, St Louis was ceded by France to Great Britain, many of the French inhabitants of the district of the Illinois removed into the portion of Louisiana W. of the river, which had passed in 1762 under Spanish sovereignty; and of this lessened territory of upper Louisiana St Louis became the seat of government. In 1767 it was a log-cabin village of perhaps 500 inhabitants. Spanish rule became an actuality in 1770 and continued until 1804, when it was momentarily supplanted by French authority—existent theoretically since 1800—and then, after the Louisiana Purchase, by the sovereignty of the United States. In 1780 the town was attacked by Indian allies of Great Britain. Canadian-Frenchhunters and trappers and boatmen, a few Spaniards and other Europeans, some Indians, more half-breeds, and a considerable body of Americans and negro slaves made up the motley population that became inhabitants of the United States. The fur trade was growing rapidly. Under American rule there was added the trade of a military supply-point for the Great West, and in 1817-1819 steamship traffic was begun with Louisville, New Orleans, and the lower Missouri river. Meanwhile, in 1808, St Louis was incorporated as a town, and in 1823 it became a city. The city charter, which was in existence from 1823 to 1858, marked the beginning of its great prosperity, and the decade 1850-1860 was one of colossal growth, due largely to the river trade. All freights were being moved by steamship as early as 1825. The first railway was begun in 1850. At the opening of the Civil War the commercial position of the city was most commanding. Its prosperity, however, was dependent upon the prosperity of the South, and received a fearful set-back in the war. When the issue of secession or adherence to the Union had been made up in 1861, the outcome in St Louis, where the fate of the state must necessarily be decided, was of national importance. St Louis was headquarters for an army department and contained a great national arsenal. The secessionists tried to manœuvre the state out of the Union by strategy, and to seize the arsenal. The last was prevented by Congressman Francis Preston Blair, Jr., and Captain Nathaniel Lyon, first a subordinate and later commander at the arsenal. The garrison was strengthened; in April the president entrusted Blair and other loyal civilians with power to enlist loyal citizens, and put the city under martial law if necessary; in May ten regiments were ready—made up largely of German-American Republican charter became Democratic in March 1861; early thirties then—when force became necessary to secure election rights to anti-slavery men—semi-military, and which now were quickly made available for war; and on the 10th of May Captain Lyon surrounded and made prisoners a force of secessionists quartered in Camp Jackson on the outskirts of the city. A street riot followed, and 28 persons were killed by the volleys of the military. St Louis was held by the Union forces throughout the war.
ST LOUIS—ST LUCIA

During a quarter century following 1857 the city was the centre of an idealistic philosophical movement that has had hardly any counterpart in American culture except New England transcendentalism. Its founders were William T. Harris (p. e.) and Henry C. Brockmeyer (b. 1828), who was Lieutenant-governor of the state 1867-1868. A. Bronson Alcott was one of the early adherers to the group which gathered around these two, a group which studied Hegel and Kant, Plato and Aristotle. Brockmeyer published excellent versions of Hegel's Unabridged Logic, Phenomenology, and Psychology. Harris became the greatest of American exponents of Hegel. Other members of the group were Thomas Davidson (1840-1900), Adolph E. Kroeger, the translator of Fichte, Anna Callender Brackett (b. 1836), who published in 1886 an English version of Rosenkranz's History of Education, Denton Jacques Snider (b. 1841), whose best work has been on Fichte, and William McKendree Bryant (b. 1843), who wrote Hegel's Philosophy of Art (1879) and Hegel's Educational Ideas (1896). This Philosophical Society published (1867-1883) at St Louis The Journal of Speculative Philosophy, the first periodical of the sort in English.

Since the war the city's history has been signalized chiefly by economic development. A period in this was auspiciously closed in 1904 by the holding of a world's fair to celebrate the centennial of the purchase from France, in 1803, of the Louisiana territory—since then divided into 13 states, and containing in 1900 some 12,500,000 inhabitants. Preparations for this Louisiana Purchase Exposition began three years earlier. Its structures, buildings, and grounds, which took up the site covering 1240 acres, of which 250 were under roof. The total cost, apart from individual exhibitions, was about $4,500,000, of which the national government contributed $5,000,000 and the city of St Louis and its citizens $10,000,000. Altogether 12,804,616 paid admissions were collected (total admissions 19,694,855) during the seven months that it was open, and there was a favourable balance at the close of about $1,000,000.

Up to 1848 St Louis was controlled in politics almost absolutely by the Whigs; since then it has been more or less evenly contested by the Democrats against the Whigs and Republicans. The Republicans now usually have the advantage. As mentioned before, the state is habitually Democratic; "boss" rule in St Louis was particularly vicious in the late 'nineties, and corruption was the natural result of ring rule—the Democratic bosses have at times had great power—and of the low pay—only $25 monthly—of the city's delegates and councilmen. But the election came, and with it a strong movement for independent voting. Fire, floods, epidemics, and war have repeatedly attacked the city. A great fire in 1846 burned along the levee and destroyed many buildings, but saved the city, as estimated by the city of the assesser, more than $6,000,000. Cholera broke out in 1832-1833, 1849-1851, and 1866, causing in three months of 1849 almost 4000 deaths, or the death of a twentieth of all inhabitants. Smallpox raged in 1872-1875. These epidemics probably reflect the one-time lamentable lack of proper sewage. Great floods occurred in 1875, 1881, 1856, 1844, 1872, 1885 and 1903; those of 1875 and 1884 being the most remarkable. There were tornadoes in 1853, 1852 and 1871; and in 1866 a cyclone of 20 minutes' duration, accompanied by violent rain, destroyed or wrecked 8000 buildings and caused a loss of property valued at more than $100,000,000.

The city is surrounded by the levee and bluff, which together form a barrier along the Mississipi River, the Mississippi itself is the source of the city's earliest history. It is one of the best railway centres of the country. It is entered from the east by six lines of railway, which cross to St Louis by the celebrated steel arch bridge and by the Merchants' Bridge. It is also served by three interurban electric railways. The state of St Louis is in the "American Bottom," little above the high-water mark of the river. This "bottom" stretches a long distance up and down the river, with a breadth of 10 or 12 m. It is intersected by many sloughs and crescent-shaped lakes which indicate former courses of the river. The manufacturing interests of East St Louis are important, among the manufactories being packing establishments, iron and steel works, rolling-mills and foundries, flour-mills, glassworks, paint works and wheel works. By far the most important industry is slaughtering and meat-packing; both in 1900 and in 1905 East St Louis ranked sixth among the cities of the United States in this industry; its product in 1900 was valued at $27,676,818 (out of a total for all industries of $32,460,057), and in 1905 the product of the slaughtering and meat-packing establishments in and near the limits of East St Louis was valued at $39,972,245, in the same year the total for all industries within the corporate limits being only $71,586,196. The city has a large horse and mule market. East St Louis was laid out about 1818, incorporated as a town in 1829, and charted as a city in 1835.

Consult the Encyclopedia of the History of St Louis (4 vols., St Louis, 1899); J. T. Scharf, History of St Louis City and County including Biographical Sketches (2 vols., Philadelphia, 1883); E. H. Shepherd, Early History of St Louis and Missouri (2 vols., St Louis, 1843 (St Louis, 1870); F. Billon, Annals of St Louis . . . 1804 to 1821 (2 vols., St Louis, 1886-1888); G. Anderson, Story of a Border City (1909); The Renewal of the Romance of St Louis . . . reported to the Merchants' Exchange, by its secretary.

ST LOUIS, the capital of the Republic of Senegal, Senegal, West Africa, with a population (1904) of 24,070, or including the suburbs, 28,446. St Louis, known to the natives as N'dar, is 163 m. by rail N.E. of Dakar and is situated on an island 1148 ft. long, and 132 ft. wide. Above the river, the town has been built on the right bank, there separated from the sea by a narrow strip of sand called the Langue de Barbarie. This strip of sand is occupied by the villages of N'dar Toute and Guet N'dar. Three bridges connect the town with the villages; and the Pont Faidherbe, 2132 ft. long, affords communication with Bouvetville, a suburb on the left bank, and the terminus of the railway to Dakar. The houses of the European quarter have for the most part flat roofs, balconies and terraces. Besides the governor's residence the most prominent buildings are the cathedral, the great mosque, the court-house, the barracks and military offices. The round beech huts of Guet N'dar are mainly inhabited by native fishermen. N'dar Toute consists of villages with gardens, and is a summer watering-place. There is a pleasant public garden, and N'dar Toute is approached by a magnificent alley of palm-trees. The low-lying position of St Louis and the extreme heat render it unhealthy, whilst the sandy nature of the soil causes intense inconvenience. The mouth of the Senegal being obstructed by a shifting bar of sand, the steamships of the great European lines do not come up to St Louis; passengers embark and land at Dakar, on the entrance of the river, and the vessel is then hauled to the town by a tug. St Louis is the capital of the Senegal Department. All citizens, irrespective of colour, can vote. From 1895 to 1903 St Louis was not only the capital of Senegal, but the residence of the governor-general of French West Africa. In November of the last named year Dakar was recognized as the capital of the French West African Empire. St Louis is the last port defended by the Senegalese and the only fortified point on the Senegal, and is protected from the sea by a well-constructed battery. It is the oldest colonial establishment in Africa belonging to France (see SENEGAL). Its modern development dates from 1854. The town is 18,044 ft. on the St Louis River, 1854, and has a population of 10,842. It has a good harbour, and is connected with Dakar by a railway 17 m. long, completed in 1883. All citizens, irrespective of colour, can vote. From 1895 to 1903 St Louis was not only the capital of Senegal, but the residence of the governor-general of French West Africa. In November of the last named year Dakar was recognized as the capital of the French West African Empire. St Louis is the last port defended by the Senegalese and the only fortified point on the Senegal, and is protected from the sea by a well-constructed battery.
of mountains, rising sheer from the water, their summits bathed in perpetual mist. Impenetrable forests alternate with fertile plains, and the coast, a combination of beautiful bays and coves. Everywhere there is luxuriant vegetation.

Les Pitons (2720 and 2680 ft.) are the chief natural feature—a two immense pyramids of rock rising abruptly from the sea, their slopes, lined at an angle of 60°, being clad on three sides with densest vegetation, which is the richest in the island system of the island. In the S.W. also is the volcano of Soufrière (about 4000 ft.), whose crater is 3 acres in size and covered with a dense forest. The climate is humid, the fall varying from 70 to 120 in. per annum, with an average temperature of 80° F. The soil is deep and rich; the main products are sugar, cocoa, logwood, coffee, nutmegs, mace, kola-nuts and vanilla, all of which have been cultivated since the time of Columbus. The usine or central factory system is established, there being four government sugar-mills. Snakes, formerly prevalent, have been almost exterminated by the introduction of the mongoose. Only a few the island is cultivated, the rest being crown land under virgin forest, abounding in timber suitable for the finest cabinet work. The main import trade up to 1904 was from Great Britain; since then, owing to the increased demand from the United States, the imports are chiefly from other countries. The majority of the exports go to the United States and to Canada. In the ten years 1898-1907 the imports averaged £522,000 a year; the exports, £230,000. By the Treaty of 1874, the island is free of duties on imports and exports. Coal, sugar, cocoa and logwood form the chief exports.

Education, denominational, assisted by government grants. The larger majority of the schools are under the control of the Roman Catholics, to whom all the government primary schools were handed over in 1895. There is a government agricultural school at St Lucia is controlled by the government, and at the government-built Windward Islands, assisted by an executive council. The legislature consists of the administrator and a council of nominated members. Revenue and expenditure in the period 1901-1907 balanced at about 60,000 a year. The law of the island preservos, in a modified form, the laws of the French monarchy.

Castries, the capital, on the N.W. coast, has a magnificent landscaped harbor. There is a concrete wharf 650 ft. long, alongside of 27 ft., and a wharf of wood 552 ft. in length. It is the principal coaling station of the British fleet in the West Indies, was strongly fortified, and has been the military headquarters. The present town was laid out in 1824, and is a well planned 100-room city. It is a port of registry, and the facilities it offers as a port of call are widely recognized, the tonnage of ships cleared and entered rising from 1,555,000 in 1898 to 2,627,000 in 1907. Pop. (1901) 7910. Situated in the south, on the only other river of any importance, had a population of 2394. The Caribs have disappeared from the island, and the bulk of the inhabitants are negroes. Their language is a French patois, but English is gradually replacing it. There is a small colony of French Creoles, and the white inhabitants are partly Creoles of French descent. The total population of the island (1901) is 49,833.

History.—St Lucia is supposed to have been discovered by Columbus in 1505, and to have been named by the Spaniards after the saint on whose day it was discovered. It was inhabited by Caribs, who killed the majority of the white people (Englishmen) who attempted to settle on the island (1605). For two centuries St Lucia was claimed both by France and by England. In 1627 the famous Carlisle grant included St Lucia among British possessions, while in 1635 the king of France granted it to two of his subjects. In 1638 some 130 English from St Kitts formed a settlement, but in 1641 were killed or driven away by the Caribs. The French in 1659 sent settlers from Martinique, who concluded a treaty of peace with the Caribs in 1666. Thomas Warner, natural son of the governor of St Kitts, attacked and overpowered the French settlers in 1663, but the peace of Breda (1667) restored it to France and it became nominally a dependency of Martinique. The British still claimed the island as a dependency of Barbados, and in 1722 George I. made a grant of it to the duke of Montague. The year following French troops from Martinique compelled the British settlers to evacuate the island. In 1748 both France and Great Britain recognized the island as neutral. In 1762 it was declared to be an island and to Admiral Rodney and General Monckton. By the treaty of Paris (1763), however, the British acknowledged the claims of France, and steps were taken to develop the resources of the island. French planters came from St Vincent and Grenada, cotton and sugar plantations were formed, and in 1772 the island was said to have a population of 15,000, largely slaves. In 1778 it was captured by the British; its harbours were a rendezvous for British squadrons and Gros Ilet Bay was Rodney's starting-point before his victory over the Gronde the Grandes (April 1782). The peace of Versailles (1785) restored St Lucia to France. In 1795 it was occupied by Admiral Jervis (Lord St Vincent). Victor Hugues, a partisan of Robespierre, aided by insurgent slaves, made a strenuous resistance and recovered the island in June 1795. Sir Ralph Abercromby and Sir John Moore, at the head of 12,000 troops, were sent in 1796 to reduce the island, but it was not until 1797 that the revolutionists laid down their arms. By the treaty of Amiens St Lucia was anew declared French. Bonaparte intended to make it the capital of the Antilles, but it once more capitulated to the British (June 1803) and was finally ceded to Great Britain in 1814. In 1823, when the slaves were emancipated, there were in St Lucia over 13,000 negro slaves, 2600 free men of colour and 2300 whites. The development of the island—half ruined by the revolutionary war—has been retarded by epidemics of cholera and small-pox, by the decline of the sugar-cane industry and other causes, such as the low level of education. The depression in the sugar trade led to the adoption of cocoa cultivation. Efforts were also made to plant settlers on the crown lands—with a fair amount of success. The colony successfully survived the financial stringency caused by the withdrawal of the imperial support. Pigeon Island, formerly an important military port, lies off the N.W. end of St Lucia, by Gros Ilet Bay.

See Sir C. P. Lucas, Historical Geography in the British Colonies, vol. ii., "The West Indies" (2nd ed. revised by C. Atchley, Oxford, 1905), the works of Sir R. Basset, and also the annual reports on St Lucia issued by the Colonial Office.

ST MACAIRE, a town of south-western France, in the department of Gironde, on the Garonne, 20 m. S.E. of Bordeaux by rail. Pop. (1906), 2085. St Macaire is important for its medieval remains, which include a triple line of ramparts with old gateways. There are also several houses of the 13th and 14th centuries. The imposing church of St Sauveur (11th to 13th centuries) has a doorway with beautiful 13th-century carvings and interesting mural paintings. St Macaire (anc. Ligeva) owes its name to the saint whose relics were preserved in the monastery of which the church of St Sauveur is the principal remnant.

ST MAIXENT, a town of western France, in the department of Deux-Sèvres, on the Sèvre Niortaise, 15 m. N.E. of Niort by rail. Pop. (1906), 4102. The town has a fine abbey church built from the 12th to the 15th century, but in great part destroyed by the Protestants in the 16th century and rebuilt from 1670 to 1682 in the flamboyant Gothic style. The chief feature of the church is the nave, which is Romanesque, and a lofty 13th-century tower over the west front. The crypt contains the tomb of Saint Maxentius, second abbot of the monastery, which was founded about 460. The town has a communal college, a chamber of arts and manufactures, and an infantry school for non-commissioned officers preparing for the rank of sub-lieutenant. It was the birthplace of Colonel Denfert-Rochereau, defender of Belfort in 1870-1871, and has a statue to him. The industries include dyeing and the manufacture of hosiery, mustard and plaster. The prosperity of the town was at its height after the promulgation of the edict of Nantes, when it numbered 12,000 inhabitants.

ST MALO, a seaport of western France, capital of an arrondissement in the department of Ille-et-Vilaine, 51 m. N.W. of Rennes by rail. Pop. (1906) town, 8727; commune, 10,647. St Malo is situated on the English Channel on the right bank of the estuary of the Rance at its mouth. It is a garrison town surrounded by ramparts which include portions dating from the 14th, 15th and 16th centuries, but as a whole were rebuilt at the end of the 17th century according to Vauban's plans, and restored in the 19th century. The most important of the gates are that of St Vincent and the Grande Porte, defended by two massive 15th-century towers. The granite island on which St Malo stands communicates with the mainland on the northeast by a causeway known as the "Sillon" (furrow), 650 ft. long, and at one time only 46 ft. broad, though now three times that breadth. In the sea round about lie other granite rocks,
which have been turned to account in the defences of the coast; on the islet of the Grand Bey is the tomb (1848) of François Auguste, vicomte de Chateaubriand, a native of the town. The tide rises to 50 ft. above low-water level, and the sea surges over the ramparts. The harbour of St Malo lies south of the town in the creek separating it from the neighbouring town of St Servan. Including the contiguous and connected basins belonging more especially to St Servan, it comprises an outer basin, a tidal harbour, two wet-docks and an inner reservoir, affording a total length of quayage of over 2 m. The wet-docks have a minimum depth of 15 to 15½ ft. on sill, but the total depth of water in the basin is 35 ft. In 1904 the number of vessels in the port was 1004, of which St Malo-St Servan is 1002, of which 1023 is 289,920 tons. The bulk of trade is with England, the exports comprising large quantities of fruit, dairy-produce, early potatoes and other vegetables and slate. The chief imports are coal and timber. The London and South-Western railway maintains a regular service of steamers between Southampton and St Malo. The port carries on shipbuilding and equips a fleet for the Newfoundland cod fisheries. The industries also include iron and copper founding and the manufacture of portable furnaces and copper fountains. Duguay-Trouin was a native of the town. The town is the seat of a sub-prefecture and has tribunals of first instance and of commerce. Communication between the quays of St Malo and St Servan is maintained by a railway bridge.

St Malo is largely frequented for sea-bathing, but not so much as Dinard, on the opposite side of the Rance. The town presents a tortuous maze of narrow streets and small squares lined with high and sometimes quaint buildings (e.g. the 17th-century house in which René Duguay-Trouin was born). Above all rises the stone spire (1589) of the cathedral, a building begun in the 12th century but added to and rebuilt at several subsequent periods. The castle (15th cent.), which defends the town towards the "Sillon," is flanked with four towers, one of which, the great keep, is an older and loftier structure, breached in 1378 by the duke of Lancaster. St Malo has statues to Chateaubriand, Duguay-Trouin and the privateer Robert Surcouf (1773-1827), natives of the town. The museum contains remains of the ship "La Petite Hermine," in which Jacques Cartier sailed to the St Lawrence (1534), and a natural history collection.

In the 6th century the island on which St Malo stands was the retreat of Abbot Aaron, who gave asylum in his monastery to Malo, a monk whose Noves he published. He perished by consecration in order to escape the episcopal dignity, but afterwards became bishop of Aleth (now St Servan); the see was transferred to St Malo only in the 12th century. Henceforth the bishops of St Malo claimed the temporal sovereignty over the town, a claim which was absolutely disputed by the dukes of Brittany. The policy of the citizens themselves, who thus gained substantial powers of self-government, was directed by consistent hostility to England and consequently to the dukes. They took the side of Bishop Josselin de Rohan and his successor in their quarrel with dukes John IV and John V, and it was not till 1424 that John V., by the agency of Charles VI. of France and with the sanction of the pope, finally established his authority over the town. In 1488 St Malo unsuccessfully resisted the French troops on behalf of the duke. During the troubles of the League the citizens hoped to establish a republican government, and on the 11th of March 1590 they exterminated the royal garrison and imprisoned their bishop and the canons. But four years later they surrendered to Henry IV. of France. During the following century the maritime power of St Malo attained some importance. In November 1663 and July 1665 the English boldly bombarded it. The people of St Malo had in the course of a single war captured upwards of 1500 vessels (several of them laden with gold and other treasure) and burned a considerable number more. Enriched by these successes and by the wealth they drew from the New World, the shipowners of the town not only supplied the king with the means necessary for the famous Rio de Janeiro expedition conducted by Duguay-Trouin in 1711, but also lent him large sums for carrying on the war of the Spanish Succession. In June 1758 the English sent a third expedition (Pelagia) to St Malo under the Comte de la Motte. Spencer, third duke of Marlborough, and inflicted great loss on the royal shipping in the harbour of St Servan. But another expedition undertaken in the following September received a complete check. In 1770 and during the wars of the Empire the St Malo privateers resumed their activity. In 1789 St Servan was separated from St Malo and in 1802 St Malo lost its bishopric. During the Reign of Terror the town was the scene of sanguinary executions.
opinions, his property was confiscated after the Revolution because of his social position. He was brought up a strict Catholic, and always remained attached to the church, although his first work, *Of Errors and Truth*, was placed upon the Index. He died at Aunay, near Paris, on the 23rd of October 1803.

His chief work is *Le livre à un ami sur la Révolution Française*; an essay in verse, addressed to the "officier d'état-major" of his regiment, "pour la circonscription de l'homme-épître." Other treatises appeared in his *Œuvres posthumes* (1807). Saint-Martin regarded the French Revolution as a sermon in action, if not indeed a miniature of the last judgment. His ideal society was "a natural and spiritual theocracy," in which God would raise up men of mark and endowment, who would regard themselves strictly as "divine commissioners" to guide the people. All ecclesiastical privileges were to disappear, giving place to a purer spiritual Christianity, based on the assertion of a faculty superior to the reason—moral sense, from which we derive knowledge of God. God exists as an eternal personality, and the creation is an over- flowing from the heart of Deity, which contains in its properties the human soul, the human intellect or spirit, the spirit of the universe, and the elements or matter are the four stages of this divine emanation, man being the immediate reflection of God, and nature in turn a reflection of man. Man, however, has fallen from his high estate, and matter is one of the consequences of his fall. But divine love, united to humanity in Christ, will work the final regeneration.


**ST MARTIN**—SAINT MARYS, a city of Auglaize county, Ohio, U.S.A., on the St Marys river and the Miami & Erie canal, about 85 m. W.N.W. of Columbus. Pop. (1910) 5732. Saint Marys is served by the Lake Erie & Western, the Western Ohio (electric), and the Toledo & Ohio Central railroads. About 1 m. west is a feeding place and milk market covering a daily consumption of 60,000 gallons. Saint Marys is in the Ohio oil region. The town occupies the site of a former Shawnee village, in which a trading post was established in 1782 by James Girty,1 from whom the place was for some years

1 James Girty (1743–1817) was one of the notorious Girty brothers, the sons of Simon Girty (d. 1751), an Irish immigrant. The brothers were taken prisoners by the French and Indian force which in 1756 surrounded Fort Miami. Their name is derived from the Shawnee word "Girti," meaning "trader." James was adopted by the Shawnees and lived among them for three years, after which he acted as an interpreter and trader; he frequently accompanied the Indians against the English settlers, and before 1765 opened business with the Indians at St Marys in 1783–1794, when he withdrew to Canada upon the approach of General Wayne, and again from 1795 until just before the War of 1812, when he again withdrew to Canada. Before he left he traded with the Senecas for several years after his capture, was even more bloodthirsty; he served against the Indians in Lord Dunmore's War, and in 1776, during the War of Independence, entered the
called Girtys's Town. Fort St Marys was built in 1784 or 1785 by a detachment of General Anthony Wayne's troops, and in 1812 Ft. Barbeec was erected at the instance of General W. H. Harrison by Colonel Joshua Barbeec. During the War of 1812 the place was for some time the headquarters of General Harrison's army. St Marys was laid out as a town in 1823, and became one of the first in the principal area of the then unincorporated general municipal code which came into effect in that year.

**ST MARY'S LOCH—ST MICHAEL'S**

The history of St Mawes is simple. The saint of that name is said to have made the creek of the Fal a halting-place in the 5th century. The chapel of St Mawes, pulled down in 1812, was licensed by the bishop in 1381, and both chapel and village were situated within the manor of Bogullos, which in the 16th century belonged to the family of Wydeslade. In the 16th century the Girtys's Loch was the general municipal code which came into effect in that year.

**ST MARY'S LOCH**, a fresh-water lake of Selkirkshire, Scotland. It lies in the high land towards the western border, and is visited from Selkirk (16 m. E. by N.) or Moffat (15 m. S.W.). It is 814 ft. above the sea, is from 80 to 90 ft. deep, 3 m. long, about 1 m. wide at its widest, and has a shore-line of 73 m. A narrow isthmus divides its head from the small Loch of the Lowes (about 1 m. long), which is believed to have been once part of it, the difference of level being only 15 ft. St Mary's is emptied by the Yarrow, and its principal feeder is Megget Water, a noted angling stream. It takes its name from St Mary's Kirk, the ruins of which lie near the northern shore. From the 13th century, when the church is first mentioned, till its destruction in 1557, it was variously known as the Forest Kirk (in which William Wallace was elected Warden of Scotland), St Mary's of Farmainshope, an old name of the adjoining lands of Kirkstead, St Mary of the Lowes, and the Kirk of Yarrow. It had been partly restored, but gradually fell into decay, its place being taken by the church of Yarrow farther down the vale. In the graveyard was buried John Grieve (1787-1856), the Edinburgh bottler, a notable personality in his day, and founder of a brewery. It was next taken over by the town, and its capacity, patron of James Hogg, the Ettrick Shepherd. At the head of the lake is the celebrated inn opened by Tibbie Shiel (Mrs Richardson, d. 1878), which was visited by many distinguished men of letters.

**ST MAUR-DES-FOSSÉS**, a southern suburb of Paris, on the right bank of the Marne, 7 m. from the centre of the city. Pop. (1906), 28,016. St Maur and the residential district surrounding it cover a peninsula formed by a loop in the Marne, the neck of which is crossed by the canal of St Maur. In the reign of Louis the 14th, the monastery of Les Fossés was founded; the amplification of the name came when the body of St Maurus was brought there by the monks of St Maur-sur-Loire. About the same time was inaugurated the pilgrimage of Notre-Dame des Miracles, which still takes place annually. In 1465 a treaty of peace, putting an end to the "War of the Public Weal," was concluded between Louis XI. and his revolted barons at St Maur.

**ST MAUR-SUR-LOIRE**, a village of western France in the department of Maine-et-Loire on the Loire about 15 m. below Saumur. Here St Maurus towards the middle of the 6th century founded the first Benedictine monastery in Gaul. About the middle of the 9th century it was reduced to ruins by the Normans; in anticipation of the disaster the relics of the saint were transferred to the abbey of Fossés (afterwards St Maur-des-Fossés: see above). St Maur-sur-Loire was afterwards restored and fortified; the extant remains consist of a part of the church (12th and 17th centuries) and buildings of the 17th and 18th centuries.

**ST MAWES**, a small seaport in the St Austell parliamentary division of Cornwall, England, beautifully situated on an arm of the English Channel. Pop. (1901), 11,758. The inlet admits only small vessels to the little harbour, but there is a considerable fishing industry. A large circular castle, nái-a-nái, with that of Pendennis near Falmouth, and dating from the same period (Henry VIII.), guards the entrance. Near the shore of the inlet opposite St Mawes is the small church of St Anthony in Roseland, an excellent example of Early English work, retaining a good Norman doorway.

British service as an interpreter, and after the war instigated Indian attacks on the frontier and fought with the Indians against General Arthur St Clair and General Anthony Wayne. Another brother, George Girty (died 1812), lived among the Delawares for several years, was also a trader and interpreter, and was likewise a renegade. Thomas (1739-1820), though he associated much with the Indians, did not participate in their wars. See W. Butterfield's History of the Girty's (Cincinnati, 1890).
never rise above its level, unless occasionally to throw to a small distance a spray of the consistency of melted lead. The Furnas abounds also in hot springs, some of them of a very high temperature. There is almost always, however, a cold spring near the hot one. These have long been visited by sufferers from palp, rheumatism, scrofula and similar maladies. Bath-rooms and other buildings have been erected.

The plains of St Michael's are fertile, producing wheat, barley and Indian corn; vines, oranges and other fruit trees grow luxuriantly on the sides of the mountains. The plants are made to spring even from the ashes of the volcanic rock, which are sometimes blasted to receive them. Raised in this manner, these fruits are of superior quality; but the expense of such a mode of cultivation necessarily restricts it. The western part of the island yields hemp.

The principal town and seaport is Ponta Delgada (6sq.), with 17,675 inhabitants in 1900. The other chief towns are Arrifes (5644), Lagos (7950), Povoacao (5093), Ribeira Grande (8499) and Vila Velha (3562). [See also Azores.]

ST MICHAEL'S MOUNT, a lofty peak,looks like an island, exhibiting a curious combination of slate and granite, rising 400 yds. from the shore of Mount's Bay, in Cornwall, England. It is united with Marazion by a natural causeway cast up by the sea, and passable only at low tide. If its identity with the Mittac of Timaeus and the Ictis of Diiodorus Siculus be allowed, St Michael's Mount is one of the most historic spots in the west of England. It was possibly held by a body of religious in the Confessor's time and given by Robert, count of Mortain, to Mount St Michael, of which Norman abbey it continued to be a priory until the dissolution of the alien houses by Henry V., when it was given to the archbishop and conveyed to the land owners for a resort of pilgrims, whose devotions were encouraged by an indulgence granted by Pope Gregory in the 11th century. The Mount was captured on behalf of Prince John by Henry Pomeroy in the reign of Richard I. John de Vere, earl of Oxford, seized it and held it during a siege of twenty-three weeks against 6000 of the king's troops in 1473. Perkin Warbeck occupied the Mount in 1497. Humphry Arundell, governor of St Michael's Mount, led the rebellion of 1549. During the reign of Queen Elizabeth it was given to Robert, earl of Salisbury, by whose son it was sold to Sir Francis Basset. Sir Francis Basset, brother of Sir Francis, held the Mount against the parliament until July 1646. It was sold in 1659 to Colonel John St Aubyn and is now the property of his descendant Lord Levan.

The chapel is extra-diocesan and the castle is the residence of Lord St Levan.

Many relics, chiefly armour and antique furniture, are preserved in the castle. The chapel of St Michael, a beautiful 15th-century building, is founded on two tiers of conical turrets, of which a small turret, which served for the guidance of ships. Chapel rocks, on the beach, marks the site of a shrine dedicated to the Virgin Mary, where pilgrims paused to worship before ascending the Mount. A few yards below the top of the site was the spring supplying them with water. The harbour, widened in 1823 to allow vessels of 500 tons to enter, has a pier dating from the 19th century, and subsequently enlarged and restored. Pop. (1901), 111.

ST MIHIEL, a town of north-eastern France, in the department of Meuse, on the right bank of the Meuse and the Canal de l'Est, 23 m. S. E. of Verdun by rail. Pop. (1906) of the town, 5943 (not including a large garrison), of the commune, 6661. St Mihiel is famous for its Benedictine abbey of St Michael, founded in 709, to which it owes its name. The abbey buildings (occupied by the monastic offices) date from the 17th century and the beginning of the 18th century, and the church from the 17th century. The latter contains a wooden carving of the Virgin by the sculptor Ligier Richer, born at St Mihiel in 1506. Other interesting buildings are the church of St Étienne, chiefly in the flamboyant Gothic style, which contains a magnificent Holy Sepulchre by Ligier Richer, and several houses dating from the 15th, 16th and 17th centuries. On the road to Verdun are seven huge rocks, in one of which a sepulchre (18th century), containing a life-sized figure of Christ, has been hollowed. St Mihiel formerly possessed fortifications and two castles which were destroyed in 1635 by the royal troops in the course of a quarrel between Louis XIII. and Charles IV., duke of Lorraine. The town is the seat of a court of assizes, and has the tribunal of first instance belonging to the arrondissement of Commercy and a communal college.

ST MORITZ (in Ladin, San Murezzan), the loftiest (6637 ft.) and the most populous village of the Upper Engadine in the Swiss canton of the Grisons. It is built above the north shore of Lake of the same name, formed by the Inn, and the railway line 56 m. from Coire by the Albula railway, or by road 483 m. from Martinsbruck (the last village in the Engadine), or by road 30 m., over the Maloja Pass, from Chavonna. In 1900 it had a population of 1603, 475 being German-speaking, 433 Ladin-speaking, and 504 (railway workmen) Italian-speaking, while 837 were Protestants and 743 Catholics. The village is about 1 m. north of the baths, an electric tramway connecting the two. Both are how much frequented by foreign visitors. The baths (chalybeate, sparkling with free carbonic acid) were known and much resorted to in the 16th century. Napoleon visited them, and they were described by Paracelsus; they were visited in 1779 by Archdeacon W. Cox. They are frequented chiefly by non-English visitors in summer, the English season at St Moritz being mainly the winter, for the sake of skating and tobogganing.

ST NAZARIO, a town of western France, capital of an arrondissement in the department of Loire-Inférieure, 40 m. W.N.W. of Nantes by rail and 29 m. by river. Pop. (1906), 30,345. St Nazaire, situated on the right bank of the Loire at its mouth, is a modern town with straight thoroughfares crossing one another at right angles. It possesses nothing of antiquarian interest except a granite dome 100 ft. in diameter. There are given horizontally on two other stone tanks in the soil, above which they rise 63 ft. The only noteworthy building is a modern church in the Gothic style of the 14th century. The harbour, which constitutes the outlet of Nantes and is accessible to ships of the largest size, is separated from the estuary by a narrow strip of land, and comprises an outer harbour and entrance, two floating docks (the old dock and the Penhouët dock), three graving docks, and the extensive shipbuilding yards of the Loire Company and of the General Transatlantic Company whose offices are in this town. St Nazaire is separated from the Isthmus of Panama by a strait, the English Channel is separated from the English Channel by the same strait. Ships for the navy and the mercantile marine are built, and there are important steel-works, blast-furnaces, forges, and steam saw-mills. The town is the seat of a sub-prefecture, and has a tribunal of first instance, a board of trade arbitration, an exchange, a chamber of commerce, a communal college, and schools of navigation and industry. Next to British and French, Spanish, Norwegian and Swedish vessels most frequent the port. In the decade 1868-1878 the value of imports greatly fluctuated, being highest in 1868 (2,800,000) and lowest in 1871 (80,000). The exports, however, were much more regular, being 3,280,000 francs. The value of the exports in the same period varied between 3,172,400 in 1890 and 5,130,600 in 1906, the average being 2,915,200. Imports include coal and patent fuel, iron ore and pyrites, timber, rice and hemp; exports include iron ore, coal and patent fuel, pit wood, sugar, garments and woven goods, preserved fish, and wine and spirits.

According to remains discovered on excavating the docks, St Nazaire seems to occupy the site of the ancient Corbithe, placed by Strabo among the more important maritime towns of Gaul. At the close of the 4th century the site of Corbithe was occupied by Saxons, and, their conversion to Christianity being effected one or two centuries later by Savenay, the place took the name of St Nazaire. It was still only a little "bourg" of some 3000 inhabitants when under the second empire it was chosen as the site of the new harbour for Nantes, because the ascent of the Loire was becoming more and more difficult. In 1868 the site of the Priory was transferred to St Nazaire from Savenay.

ST NÉCARE (corrupted into Senecetere and Senneterre), the name of an estate in Avuergue, France, which gave its name to a feudal house holding distinguished rank in the 13th century. The eldest branch of this family held the marquisate of La Ferté (q.v.), and produced a heroine of the religious wars of the 16th century, Madeleine de St Nectaire, who married Guy de St Exupery, seigneur de Miremont, in 1548, and fought successfully at the Battle of Cerbère in 1557. The seigneurs of St Nectaire were entitled to bear the arms of the League. To the same house belonged the branches of the marquisies of Châteauneuf, the seigneurs of Brinon-sur-Sauldre.
ST NEOTS—SAINTON

and St Victour, and the seigneurs of Clavelier and Fontenilles, all of which are now extinct.

ST NEOTS, a town in the southern parliamentary division of Huntingdonshire, England, on the right (east) bank of the Ouse, 51¾ m. N. of London by the Great Northern railway. Pop. of urban district, (1901) 3880. A stone bridge crosses the river, built in 1580, from the ruins of a former priory. The parish church of St Mary is a fine Perpendicular building of the later 15th century. The original oak roof is noteworthy. Among other buildings may be mentioned the Victoria museum (1887), the library and literary institute, and the endowed school (1760). Paper-mills, breweries, flour-mills and engineering works furnish the chief industries of the town.

The name of St Neots is derived from the monastery founded in the adjoining parish of Eynesbury in the reign of King Edgar (967–975). St Neot, a priest of Glastonbury Abbey in Somerset, became a recluse at a place which he named Neotstoke, near Bodmin in Cornwall, where he died about the end of the 9th century. His shrine at Eynesbury being threatened by the incursion of the Danes early in the 11th century, the relics were conveyed to Crowland Abbey, in Lincolnshire, of which he became abbot. On the death of the last Abbot of Crowland in 1383, the town was refounded from that of Bec in Normandy. An Anglo-Saxon enamelled mosaic in the Ashmolean Museum at Oxford is supposed to contain a portrait of St Neot. In 1648 a troop of Royalists under the command of Villiers, duke of Buckingham, was routed in St Neots by the Parliamentarians.

ST NICOLAS, a town of Belgium in the province of East Flanders, about 12 m. S.W. of Antwerp. Pop. (1904), 34,767. It is the principal town of Waes, formerly a district of bleak and barren down, but now the most productive part of Belgium. St Nicolas is the centre and distributing point of this district, being an important junction on the direct line from Antwerp to Ghent; it has also many manufactures of its own. The principal church dedicated to St Nicolas was finished in 1666, but the other public buildings are only of the 15th century.

ST NICOLAS DU PORT, a town of north-eastern France, in the department of Meurthe-et-Moselle, on the left bank of the Meurthe, 8 m. S.E. of Nancy by rail. Pop. (1906), 4706. The town has a fine Gothic church dating from the end of the 13th and the first half of the 16th century, and possessing a finger-joint of St Nicolas formerly the object of pilgrimages with a number of stones from the origin of well-known fairs. The latter became less important after 1615, when the Sweeds sacked the town. There are important salt-workings in the vicinity; cotton spinning and weaving are carried on. Its port, shared with Varangéville on the opposite side of the river, has an active trade.

ST OMER, a town and fortress of northern France, capital of the department of Pas-de-Calais, 42 m. W.N.W. of Lille on the railway to Calais. Pop. (1906), 17,261. At St Omer begins the canalized portion of the Aa, which reaches the sea at Graveines, and under its walls it connects with the Neuvesosse canal, which ends at the Lys. The fortifications were demolished during the last decade of the 19th century and boulevards and new thoroughfares made in their place. There are two harbours outside and one within the city. St Omer has wide streets and spacious squares, but little animation. The old cathedral belongs almost entirely to the 13th, 14th and 15th centuries. A heavy square tower finished in 1499 surmounts the west portal. The church contains interesting paintings, a colossal statue of Christ seated between the Virgin and St John (13th century, originally belonging to the cathedral of Thérouanne and presented by the emperor Charles V.), the ctenasth of St Omer (13th century) and numerous ex-votos. The richly decorated chapel in the transept contains a wooden figure of the Virgin (12th century), the object of pilgrimages. Of St Bertin, the church of the abbey (built between 1126 and 1130 on the site of previous churches) where Childeric III. retired to end his days, there remain some arches and a lofty tower, which serve to adorn a public garden. Several other churches or convent chapels are of interest, among them St Sepulchre (14th century), which has a beautiful stone spire and stained-glass windows. A fine collection of records, a picture-gallerie, and a theatre are all accommodated in the town hall, built of the materials of the abbey of St Bertin. There are several houses of the 16th and 17th centuries; of the latter the finest is the Hôtel Colbert, once the royal lodging, and now occupied by an archaeological museum. Among the hospitals the military hospital is of note as occupying the well-known college opened by the English Jesuits in 1592. The old episcopal palace adjoining the cathedral is used as a court-house. The chief statue in the town is that of Jacqueline Robin (see below). St Omer is the seat of a sub-prefect, of a court of assizes, and of a presidential tribunal of commerce. The town is supplied with gas from a local works, and with water from a well in a saltmine. There are schools of music and of art. The industries include the manufacture of linen goods, sugar, soap, tobacco-pipes, and mustard, the distilling of oil and liqueurs, dyeing, salt-refining, malting and brewing. The suburb of Haut Pont to the north of St Omer is inhabited by a special stock, which has remained faithful to the Flemish tongue, its original costume and its peculiar customs, and is distinguished by honesty and industry. The ground which these people cultivate has been (since 1668) drained from the marsh, and the Rêques (i.e. the square blocks of land) communicate with each other only by boats floated on the ditches and canals that divide them. At the end of the marsh, on the borders of the forest of Clairmarais, are the ruins of the abbey founded in 1140 by Thierry d’Alsace, to which Thomas Becket betook himself in 1165. To the south of St Omer, on a hill commanding the Aa, lies the camp of Halfast, often called the camp of St Omer. On the Canal de Neuf-Fosse, near the town, is the Ascenseur des Fontinettes, a hydraulic lift enabling canal boats to surmount a difference of level of over 40 ft.

Omer, bishop of Thérouanne, in the 7th century established the monastery of St Bertin, from which that of Notre-Dame was an offshoot. Rivalry and dissension, which lasted till the Revolution, soon sprang up between the two monasteries, becoming especially virulent when in 1559 St Omer became a bishopric and Notre-Dame was raised to the rank of cathedral. In the 9th century the village which grew up round the monasteries took the name of St Omer. The Normans laid the place waste about 860 and 860, but ten years later found town and monastery surrounded by walls and safe from their attack. Situated on the borders of territories frequently disputed by French, Flemish, English and Spaniards, St Omer long continued subject to siege and military disaster. In 1671 Philip I. and Count Arnulf III. of Flanders were defeated at St Omer by Robert the Frisian. In 1127 the town received a communal charter from William Clito, count of Flanders. In 1493 it came to the Low Countries as part of the Spanish dominion. The French made futile attempts against it between 1551 and 1596, and again in 1638 (under Richelieu) and 1647. But in 1677, after seventeen days’ siege, Louis XIV. forced the town to capitulate; and the peace of Nijmegen permanently confirmed the conquest. In 1717 St Omer, on the verge of surrendering to Prince Eugene and the duke of Marlborough, owing to famine, was saved by the daring of Jacqueline Robin, who risked her life in bringing provisions into the place. St Omer ceased to be a bishopric in 1801.

See L. Deschamps de Pas, Hist. de la ville de Saint-Omer (2nd ed., Arras, 1881). For a full bibliography of other works see U. Chevalier, Répertoire des sources hist. topo-bibliographie (Montbéliard, 1903), i. 2743 seq.

SAINTON, PROSPER PHILIPPE CATHERINE (1813–1893), French violinist, was the son of a merchant at Toulouse, where he was born on the 5th of June 1813. He entered the Paris Conservatoire under Habeneck in 1817, and became professor of the violin in the Conservatoire of Toulouse. In 1844 he made his first appearance in England, at a Philharmonic concert directed by Mendelssohn. Settling in London, he was in 1845 appointed professor at the Royal Academy of Music. In the early organizations for chamber music which culminated in the establishment of the Popular concerts, Sainton bore an important
part; and when the Royal Italian Opera was started at Covent Garden, he led the orchestra under Costa, with whom he migrated to Her Majesty's Theatre in 1871. From 1848 to 1855 he was leader of the Queen's Band, and in 1862 he conducted the music at the opening of the International Exhibition. In 1860, he married the famous contralto singer, Miss Charlotte Dolby (see below). He was leader of the principal provincial festivals for many years, and gave a farewell concert at the Albert Hall in 1883. He died on the 17th of October 1890. His method was somewhat unorthodox, and his educational work of great value, the majority of the most successful orchestral violinists having been his pupils.

**SAINT-DOLBY, CHARLOTTE HELEN** (1821-1883). English contralto singer, was born in London on the 17th of May 1821, studied at the Royal Academy of Music from 1832 to 1837, Crivelli being her principal singing-master. In 1837 she was elected to a king's scholarship, and first appeared at a Philharmonic concert in 1841. In October 1845 she sang at the Gewandhaus, Leipzig, through the influence of Mendelssohn, who had been delighted by her singing. The time of music in his *Elisabeth* was written for her voice, but she did not appear in that work till the performance at Exeter Hall on the 16th of April 1847. She married M. Sainton in 1860, and in 1870 she retired from the career of a public singer, but two years afterwards started a "vocal academy" in London. She made various successful attempts as a composer, and the cantatas "The Legend of St Dorothea" (1876), "The Story of the Faithful Soul" (1870), and "Florimel" (1883), enjoyed considerable success. Her last public appearance was at her husband's farewell concert in June 1883. She died on the 15th of February 1885. A scholarship in her memory was founded at the Royal Academy of Music. Her voice was of moderate power and of fine quality, but it was her dignified and artistic style that gave her the high place she held for so many years both in oratorio and ballads.

**SAINTONGE, one of the old provinces of France, of which Saintes (q.v.) was the capital, was bounded on the N.W. by Aunis, on the N.E. by Poitou, on the E. by Angoumois, and on the S. by Guienne, and on the W. by Guienne and the Atlantic. It now forms a small portion of the department of Charente and the greater part of that of Charente-In-St-Père. The time of Caesar, Saintonge was occupied by the Santones, whose capital was Mediolanum; afterwards it was part of Aquitania Secunda. The civitas Santorum, which formed the bishopric of Saintes, was divided into two *pagi*: Santonicus (whence Sontion, Saintonge) and Alienensis, later Aunensis (Aunis). Halved by the treaty of 1250, it was wholly ceded to the king of England in 1360, but reconquered by Du Guesclin in 1371. Up to 1789 it was in the same gouvernement with Angoumois, but from a judicary point of view Saintonge was under the parlement of Bordeaux and Angoumois under that of Paris.


**ST OUEEN, an industrial town of northern France, in the department of Seine, on the right bank of the Seine 1 m. N. of the fortifications of Paris. Pop. (1906) 37,673. A château of the early 10th century occupies the site of a château of the 17th century bought by Madame de Pompadour in 1745, where in 1814 Louis XVIII. signed the declaration promising a constitutional charter to France. Previously there existed a château built by Charles of Valois in the early years of the 14th century, where John the Good inaugurated the short-lived order of the Knights of "Notre Dame de la noble maison," called also the "orde de l'étoile." The industries of St Ouen include metal founding, engineering and machine construction and the manufacture of government uniforms, pianos, chemical products, &c. It has important docks on the Seine and a race-course.

**ST PANCRAST, a northern metropolitan borough of London, England, bounded E. by Islington, S.E. by Finsbury, S. by Holborn, and W. by St Marylebone and Hampstead, and extend-
The highest ridge of the island is not more than 820 ft. above the sea. On the south-west side the coasts are inaccessible. According to Vélin, the island originally rose above the ocean as a high ridge of ryholitic trachyte similar to that which still forms the Nine Pin rock to the north of the entrance to the crater. Next followed a period of activity in which basic rocks were produced by submarine eruptions—lavas and scoriae of anorhtic character, palagonitic tuffs, and basaltic ashes; and finally from the crater, which must have been a vast lake of fire like those in the Sandwich Islands, poured forth quiet streams of basaltic lavas which are seen dripping from the centre of the island towards the cliffs at angles of 30° to 60°. The only remaining indications of the old volcanic activity are the warm springs and emissions of carbon dioxide.

See C. Vélin. *Passage de Vénus sur le soléil* (9 décembre 1874). *Expédition française aux îles St Paul et Amsterdam* (Paris, 1877); *Description géologique de la presqu'île d'Aden... Réunion... St Paul et Amsterdam* (Paris, 1878); and an article in *Annales de géographie*, 1893.

**ST PAUL**, the capital of Minnesota, U.S.A., and the county-seat of Ramsey county, situated on the Mississippi river, about 2750 m. above its mouth, at the practical head of navigation, just below the Falls of St Anthony. It is about 360 m. N.W. of Chicago, 120 m. W. of the city of Minneapolis Pop. (1880) 41,473; (1890) 133,156; (1900) 163,632, of whom 46,819 were foreign-born (12,035 Germans, 9832 Swedes, 4892 Irish, 3557 English-Canadians, 2900 Norwegians, 2005 English, 1488 Austrians, 1343 Bohemians, 1206 Danes, and 1105 French-Canadians), 100,599 of foreign parentage (i.e. both parents foreign born), and 2206 negroes; (1910 census) 214,744. Land area (1906) 52-28 sq. m. St Paul is supplied by the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago, Rock Island & Pacific, the Northern Pacific, the Minneapolis, St Paul & Sault Ste Marie, the Chicago & North-western, the Chicago, Milwaukee, St Paul, the Great Northern, and the Minneapolis & St Louis railways. Five bridges span the Mississippi, the largest of which, known as High Bridge, is 2770 ft. long and 200 ft. high. Four interurban lines connect with Minneapolis.

St Paul is attractively situated 670-880 ft. above sea-level, on a series of lofty limestone terraces or bluffs, formerly heavily wooded. It lies on both sides of the river, but the principal part is on the east bank. In its park system the numerous lakes within and near the city have been utilized. Of the parks, Como Park (425 acres; including Lake Como and a fine Japanese garden and a lily pond), and Phalen Park (600 acres, more than 400 of which are water area), are the largest. There are also 47 smaller squares and "neighbourhood parks" aggregating 560 acres. In Indian Park (135 acres), at the crest of the bluffs (Dayton's Bluffs), in the east central part of the city, are burial-mounds of the Sioux. Summit Avenue Boulevard, 200 ft. wide and extending for 23 m. along the heights, is a fine residential street. Boulevards along the bluffs on either side of the river connect with the Minneapolis park system. Harriet Island, in the Mississippi river opposite the business center of the city, is attractively parked, and on it are public paths. Adjoining the city on the south-west, at the junction of the Minnesota and Mississippi rivers, is the Fort Snelling U.S. Government Military Reservation, with a round stone fort, built in 1820. The principal public building is the State Capitol, completed in 1905. It was designed by Cass Gilbert (b. 1859), of Minnesota granite and white Georgia marble with a massive central white dome, and has sculptural decorations by D. C. French and interior decorations by John La Farge and E. H. Blaisdell. The park, Como Park (1859), and Edward Simmons (b. 1852). Other city and park buildings are the City Hall and Court House, a Gothic greystone structure; the Federal building, of greystone, opposite Rice Park; a Young Men's Christian Association building; the Metropolitan Opera House; the Auditorium, which was built by public subscription; the St Paul armory (1903), with a drill hall; the Chamber of Commerce; and the Union railway station. Among the principal churches are the Roman Catholic Cathedral, and the People's, the Central Presbyterian, the Park Congregational, and the First Baptist churches. The wholesale district is in the lower part of the city near the Union railway station; the retail shops are mostly in an area bounded by Webba, Seventh, Fourth and Roberts streets.

St Paul has an excellent public school system, which included in 1900 three high schools, a teachers' training school, a manual training high school, forty-eight grade schools, and a parental school. Among other educational institutions are the Freeman School; St Paul Academy; Barnard School for Boys; St Paul College of Law (1900); the College of St Thomas (Roman Catholic, 1885); St Paul Seminary (Roman Catholic, 1894), founded by James J. Hill as the provincial seminary of the See of St Paul with an endowment of $500,000, 40 acres of land, and a library of 10,000 volumes; Luther Theological Seminary (1885); Hamline University (co-educational; Methodist Episcopal), chartered in 1854, with a medical school in Minneapolis (chartered 1883; part of Hamline since 1893), and having in the college and preparatory school, in 1908-1909, 17 instructors and 384 students; Macalester College (Presbyterian; co-educational), founded as Baldwin Institute in 1833, reorganized and renamed in 1874 in honour of a benefactor, Charles Macalester (1798-1873) of Philadelphia; and the Scholl of Agriculture (1887), the first of the agricultural colleges of Minnesota. The University of Minnesota, in St Anthony Park, west of Como Park and south of the fair grounds. Among the libraries are the City Public Library, the State Law Library and the Minnesota Historical Society Library. The Minnesota Historical Society, organized in 1849, has an archaeological collection in the east wing of the Capitol. In the private residence of James J. Hill is a notable art gallery, containing one of the largest and best collections of the Barbizon School in existence. The principal newspapers are the *Dispatch* (Independent, 1874) and the *Pioneer-Press*, the latter established by James M. Goodhue (1800-1852) in 1849. Among the hospitals and charitable institutions are the City and County, St Joseph's and St Luke's hospitals, all having nurses' training schools; the Swedish Hospital, the Scandinavian Orphan Asylum, the Home for the Friendless, the Magdalen Home and the Women's Christian Home. Within the city limits (east of Indian Mounds Park) is the Willowbrook (state) Fish Hatchery, second to none in the United States in completeness of equipment; and adjoining the city on the north-west are the extensive grounds (200 acres) of the State Agricultural Experiment Station, by the University of Minnesota, serving as a farm for the Minnesota Customs District, and imports from Canada and from the Orient via the Pacific railways constitute an important factor in its commercial life, its imports and exports were valued at $6,754,289 and $9,009,940 respectively in 1909. Coal and wood, grain, farm produce and dairy products are important exports. St Paul is the principal market in the United States for the furs of the North-west, and there are extensive stock-yards and slaughtering and packing houses in the neighbouring city of South St Paul (pop. in 1910, 4510). St Paul ranks second to Minneapolis (308,880) as the manufacturing centre. The total value of its factory products in 1905 was $38,318,704, an increase of 27.5% since 1900. The following were among the largest items: fur goods; printing and publishing—book (especially law-book) and job, newspapers and periodicals; malt liquors; steam-railway car building and repairing; boots and shoes; foundry and machine-shop products; lumber and planing-mill products; men's clothing; tobacco, cigars and cigarettes; and saddlery and harness.
St Paul's is governed under a charter of 1900, which may be amended by popular vote on proposals made by a permanent charter commission. The mayor, comptroller and city treasurer are elected for two years. The mayor has the veto power and appoints the members of boards of police, parks, library, fire, water-supply and education. The legislature is bicameral, consisting of an assembly of nine members elected on a general city ticket and a board of aldermen chosen one from each of the twelve wards.「The city supply is pumped through 275 m. of water mains from a group of lakes north of the city, and the system has a capacity of 40,000,000 gallons per day.

History.—The earliest recorded visit of a European to the site of St Paul was that of the Jesuit Louis Hennepin in 1680. The traders Pierre Le Sueur and Nicholas Perrot visited the region between 1690 and 1700, and apparently established a temporary trading post somewhere in the neighbourhood. The first man of English descent to record his visit was Jonathan Carver, who, according to his journal, spent some time in the vicinity in 1767-1768. In 1805 Lieutenant Zebulon Pike included a treaty with the Sioux. The first steamboat made its way up the river in 1823. The site of St Paul was opened to settlement by the treaty of Prairie du Chien, negotiated by Governor Henry Dodge of Wisconsin with the Chipewas in 1837. Two years later (1839) the first permanent settlement was made by Swiss and Canadian refugees from Lord Selkirk's Red River colony. In 1841 Father Lucien Gaultier erected a log mission chapel, which he named St Paul's; from this the settlement was named St Paul's Landing and finally St Paul. On the erection of Minnesota Territory in 1849, St Paul was incorporated as a village and became the Territorial capital. Its population in 1850 was only 1112. It was chartered as a city in 1854, and continued as the capital of the new state after its admission (1858). The first railway connecting St Paul and Minneapolis was completed in 1862, at which time St Paul's population exceeded 10,000 and in 1869 through railway connexion with Chicago was effected. The city of West St Paul was annexed in 1874. The growth of the city had been comparatively slow until 1870, in which year the population was 20,030; but the rapid railway construction and the settlement and clearing of the Western farm lands increased its commercial and industrial importance as it did of its sister city, Minneapolis. In 1884 the city limits were extended to the Minnesota line.

ST PAUL'S CATHEDRAL, the cathedral church of the diocese of London, England, standing in the heart of the City, at the head of Ludgate Hill. (For plan, &c., see Architecture: Renaissance in England.) The name of a bishop of London, Restitutus, is recorded in 314, but his individuality and even his existence are somewhat doubtful, and nothing is known of the existence of a church until Bede's notice that early in the 7th century one was built here by Æthelberht of Kent at the instance of the missionary Mellitus, who became bishop. Tradition placed upon the site a Roman temple of Diana. The church was dedicated to St Paul, and, after passing through many vicissitudes, was removed in 1683 when Bishop Maurice, with the countenance of William the Conqueror, undertook the erection of a new cathedral. The building was not pressed forward with vigour, and in 1135 much of it was damaged by fire. The tower was completed in 1221; an Early English choir followed shortly after, and was enlarged after 1255 when Bishop Fulk brought great energy to bear upon the repair and elaboration of the building. At the close of the century the cathedral was regarded as finished; but a new spire was built early in the 14th century. Much of the Norman work, particularly in the nave, had been left untouched by the Early English builders (who in other parts merely encased it), and the cathedral was a magnificent monument of these styles, and of the early Decorated. Perpendicular additions were not extensive, and the cathedral remained with little alteration until 1561, when lighting struck the spire and fired the church. The spire was never rebuilt. In the time of James I. the fabric had so far decayed that the king was prevailed upon to make a personal examination of it, and Inigo Jones was entrusted with the work of restoration. In accordance with the architectural tendencies of his time he added a classical portico to the west front, and made similar alterations to the transepts. Again, the battering in 1666 the bad state of the fabric necessitated extensive repair, and Dr (afterwards Sir) Christopher Wren furnished a scheme including a central dome. All his plans were complete in August of that year, but in September the great fire of London almost destroyed the building, and rendered what was left unsafe and beyond restoration.

Dimensions of the old cathedral differ. Stow making the extreme length 600 ft, but more recent investigators give 596 ft. The internal height of the choir was 101 ft, and that of the nave, which was of twelve bays, 93 ft., and the extreme breadth of the building was 104 ft. The summit of the wonderful spire was 489 ft. above the ground. The present building is wider than the old, and its orientation is more northerly, but its northern, eastern and southern extremities approximately correspond with those of old. Two of the old sky-lighting towers, lay nearly 100 ft. west of Wren's front. It should be noticed that the eastern part of the old cathedral incorporated the original parish church of St Paul, St. Thomas was dedicated in 1255, when part of the new crypt was allotted to the parish in return. The nave of the church of St Gregory by St Paul actually adjoined the cathedral on the south-west. In the angle west of the south transept lay a cloister, in front of which was the almshouse from 1332. To the north-east of the cathedral stood Paul's Cross, in an open space devoted to public meetings; it included a pulpit, and here religious disputations were held and pulpax promulgated. In 1411 it was removed, but a new cross, erected under the will of H. C. Richards, K.C., M.P., was unveiled in 1910. The formal provision for the rebuilding of the cathedral was made in 1668, and the foundation stone was laid in 1675. The first service was held in it in 1697, and the last stone was set in place in 1710. The cost is curiously estimated, but was probably about £520,000, the greater part of which was defrayed by a duty on sea-borne coal. The material is Portland stone. Wren had to face many difficulties. He naturally insisted on the style of the Renaissance, and his first design was for a building in the form of a Greek cross, but the general desire was that at least the ground-plan of the old English cathedrals should be followed, and the form of a Latin cross was forced upon him. He offered various further designs, and one was accepted, but Wren set the broadest construction upon the permission granted him to alter its ornamental details, and luckily so. The extreme length of the building is 513 ft., the breadth across the transepts 248 ft., of which the central part is 229 ft. The height of the nave is 223 ft, and of the choir 168 ft, leaving 122 ft beneath the dome at the crossing. The cross at the top of the lantern above the dome is 363 ft. above the ground.

The cathedral is approached on the west from an open pavement, on which stands a statue of Queen Anne. There is also an inscription marking the spot on which Queen Victoria returned thanks on the occasion of her Diamond Jubilee (1897). A broad flight of steps leads up to the west front, of two orders, flanked by towers. In the north tower is a chime of bells; in the south the clock, with the old great bell (the 1612), and the new great bell, placed in 1882, weighing about 17 tons. The nave is of four bays, with aisles, and chapels of one bay width immediately east of the western towers. The transepts are of two bays, and are entered by north and south porches approached by circular flight of steps. On the pediment of the south porch is sculptured a phoenix with the inscription RERUMGEN (I shall rise again in all things glorious). Wren, planning his site and desiring to mark in the forming the proper place of his dome, bade a workman bring a piece of stone for the purpose. He picked up at hazard a fragment of an ancient tombstone bearing the inscription JACOB, and, when the four sides of the stone, four bays terminates in an apse, but the rich and lofty modern reeds stand forward, and the apse is thus divided off from the body of the church and forms the Jesus chapel. The choir stalls are a fine series of the work of the 16th century. The triforium of the western side is parapeted by the four vast piers in the angles of the cross, within which are small chambers, and by eight inner piers. The spandrels between the arches which stand upon these piers are ornamented with mosaics.
from the designs of G. F. Watts and others, executed by Salviati. Wren had looked forward to a comprehensive scheme of decoration in mosaic. The later extension of this work was entrusted to him by Sir Christopher Wren, whose Gallery is known as the Whispering Gallery from the fact that a whisper can be easily heard from one side to the other. Above this there are pilasters, with square-headed windows, the four small square spaces above the domed ceiling, ornamented in monochrome by Sir James Thornhill immediately after its completion; but the paintings have suffered from the action of the atmosphere and light, the next restorer, the inner dome, which begins to slope inward from the level of the Whispering Gallery, but this is masked outside by a colonnade, extending up to a point a little above the top of the internal vault. This is the inner dome of brick, pierced at the top to render the lantern visible from below; (2) a brick cone, the principal member of the structure, being the lantern; (3) the dome visible from without, or loaded on a wooden frame. The golden gallery at the base of the lantern (top of the outer dome) is about 65 ft. above the top of the inner dome.

The monuments in St Paul's are numerous, though not to be compared with those in Westminster Abbey. The most notable is that in the nave to the duke of Wellington (d. 1852) by Alfred Stevens. In the crypt, which extends beneath the entire building, are many tombs and monuments— that of Nelson in the centre beneath the dome, those of many famous artists in the so-called Painters' Corner, and in the south choir aisle that of Wren himself, who is buried in the crypt, with an inscription ending St monumentum requiris, circumspice (“If thou seest a monument, look about thee”). Above the south-west chapel in the nave is the chapter library, with many interesting manuscripts, including the records of the cathedral. St Paul's School, established by John Colet, dean, and formerly adjacent to the cathedral, see the article on HAMMERSMITH, whither it was subsequently removed.

Augsburg—Paroissiens, or Memoirs (of Sir Christopher Wren), completed by his son Christopher, now published by his Grandson, Stephen Wren (London, 1758); Sir William Dugdale, History of St Paul's (1658); Dean Milman, Annals of St Paul's (1868); William Longman, The Three Cathedrals dedicated to St Paul (1872); Documents illustrating the History of St Paul's (Camden Society, 1880); Rev. W. Sparrow-Simpson, Chapters in the History of Old St Paul's (1895); Histories of the City of London (History and Topography of St Paul's Cathedral, 1894); Rev. A. Dimock, St Paul's (in Bell's "Cathedral" series, 1901); Rev. Canon Benham, Old St Paul's (1902).

This last work, and elsewhere are shown the valuable drawings of Wenceslas Hollar, showing the old cathedral immediately before the great fire.

ST PAUL'S ROCKS, a number of islets in the Atlantic, nearly 1° N. of the equator and 540 m. from South America, in 29° 15' W. The whole space occupied does not exceed 1400 ft. in length by about half as much in breadth. Besides sea-fowl the only large animals are the seals. The only land species (one, Holocentrum sancti pauli, peculiar to the locality) are collected by the "Challenger" during a brief stay. Darwin (On Volcanic Islands) decided that St Paul's Rocks were not of volcanic origin; later investigators maintain that they probably are eruptive.


ST. PETER, a city and the county-seat of Nicollet county, Minnesota, U.S.A., on the Minnesota river, about 75 m. S.W. of Minneapolis. Pop. (1903, state census) 4,514 (875 foreign-born; 1910) 4,176. It is served by the Chicago & North-Western railway and by steamboat lines on the Minnesota river, which is navigable for light draft steamboats to this point. The neighbouring lakes with their excellent fishing attract many summer visitors. The city has a Carnegie library, and is the seat of the Minnesota Hospital for the Insane (1860), and of Gustavus Adolphus College (Swedish Evangelical Lutheran; co-educational), which was founded in 1862 and has a college, an Academy, and School of Pedagogy, a School of Commerce and a School of Music. St Peter is an important market for lumber and grain; it has stone quarries and various manufactures. Settled about 1852, St Peter was incorporated as a village in 1865, and was chartered as a city in 1891. In 1857 the legislature, a short time before its adjournment for the session, passed a bill to remove the capital of Minnesota to St Peter, but the bill was not presented to the governor for his signature within the prescribed time, and when the legislature re-convened a similar bill could not be passed.

ST PETER PORT, the chief town of Guernsey, one of the Channel Islands. Pop. (1901) 18,264. It lies picturesquely on a steep slope above its harbour on the east coast of the island. The harbour is enclosed by breakwaters, the southern of which connects with the shore and continues beyond a rocky islet on which stands Castle Cornet. It dates from the 12th century and retains portions of that period. Along the sea-front of the town there extends a broad sea-wall, which continues northward nearly as far as the small port of St Sampson's, connected with St Peter Port by an electric tramway. To the south of the town Fort George, with its barracks, stands high above the sea. On the quay there is a bronze statue of Albert, Prince Consort (1862), copied from that on the south side of the Albert Hall, London. St Peter Port was formerly walled, and the sites of the five gates are marked by stones. St Peter's, or the town church, standing low by the side of the quay, was consecrated in 1312, but includes little of the building of that date. It has, however, fine details of the 14th and 15th centuries, and is, as a whole, the most noteworthy ecclesiastical building in the islands. The other principal buildings are the court house, used for the meetings of the royal court and the states, the Elizabeth College for boys, founded by Queen Elizabeth, but occupying a house of the year 1825, and the Victoria Tower, commemorating a visit of Queen Victoria in 1846. Hauteville House, the residence of Victor Hugo from 1855 to 1870, is preserved as he left it, and is open to the public. The harbour is the chief in the island, and a large export trade is carried on especially in vegetables, fruit and flowers. The construction of the harbour was ordered by King Edward I., in 1275.

ST PETERSBURG, a government of north-western Russia, at the head of the Gulf of Finland, stretching for 130 m. along its south-east shore and the southern shore of Lake Ladoga, and bordering on Finland, with an area of 17,221 sq. m. It is hilly on the Finland border, but flat and marshy elsewhere, with the exception of a small plateau in the south (Dudorohu Hills), 300 to 550 ft. high. It has a damp and cold climate, the average temperatures being: at St Petersburg, for the year 30° F., for January 13°, for July 60°; yearly rainfall, 18-7 in.; at Sermak, at the mouth of the Svir on the E. side of Lake Ladoga (66° 28' N.), for the year 37°, for January 13°, for July 62°; yearly rainfall, 20-8 in. Numerous parallel ridges of glacial origin intersect the government towards Lake Peipus and north of the Neva. Silurian and Devonian rocks appear in the south, the whole covered by a thick glacial deposit with boulders (bottom moraine) and by thick alluvial deposits in the valley of the Neva. The bays of Kronstadt, Kpopoya, Luga and Narva afford good anchorage, but the coast is for the most part fringed with reefs and sandbanks. The chief river is the Neva. The feeders of Lake Ladoga—the Volkov, the Syas, and the Svir, the last two forming part of the system of canals connecting the Neva with the Volga—are important channels of commerce, as also is the Narova. Marshes and forests cover about 45% of the area (70% at the end of the 18th century). The population, which was 6,557,800 in 1882, numbered 8,004,083 in 1897, without the capital and its suburbs; including the latter it was 2,103,965. Of this latter number 466,750 were women and 1,637,243 lived in towns. The estimated pop. in 1906 was 2,510,100. The average density was 121 per sq. m. The population is chiefly Russian, with a small admixture of Finns and Germans, and according to religion it is distributed as follows: Greek Orthodox, 76%; Unconfessing, 18%; Lutherans, 4%; and Roman Catholics, 2%.4 A remarkable feature is the very slow natural increase of the population. During the 25 years 1867 to 1891 the natural increase was only 867. The government is divided into eight districts, the administrative headquarters of which, with their populations in 1897, are: St Petersburg (g.v.), Gdov (2,254 inhabitants), Luga (5,687), Novaya Ladoga (4,174), Peterhof (11,300), Schlüsselburg (5,288), Tsarskoye Selo (23,353) and Yamburg (4,166). Most of the towns are summer resorts for the population of the capital. Till the latter part of the 19th century education stood at a very low level, but progress has since been made, and now three-quarters of all who
enter the army from this government are able to read. The semestvo (provincial council) has organized village libraries and lectures on a wide scale. Many improvements have been made, especially since 1897, in sanitary organization. Generally speaking, agriculture is at a low ebb. The principal crops are cereals (rye, oats and barley), potatoes and green crops, the total area under cultivation being only 13%. These crops, which are often ruined by heavy rains in the late summer, are insufficient for the population. Flax is cultivated to some extent. Nearly 21% of the area consists of meadows and pasture. Dairy-farming is developing. Timber, shipping, stone-quarries, coal and iron, are important industries; the chief factories are cotton, tobacco, machinery, sugar, rubber and paper mills, chemical works, distilleries, breweries and printing works.

**ST PETERSBURG**, the capital of the Russian empire, situated at the head of the Gulf of Finland, at the mouth of the Neva, in 59° 56' N., and 30° 20' E., 400 m. from Warsaw, 600 m. from Odessa (via Moscow), and 1390 m. from Astrakhan (also via Moscow). The Neva, before entering the Gulf of Finland, forms a peninsula, on which the main part of the city stands, and itself subdivides into several branches. The islands of the Neva are formed are only 10 to 11 ft. above the average level of the water. Their areas are rapidly increasing, while the banks which continue them seaward are gradually disappearing. The mainland is not much higher than the islands. As the river level rises several feet during westery gales, extensive portions of the islands and of the mainland are flooded every winter. In 1777, when the Neva rose 10-7 ft., and in 1824, when it rose 13-5 ft., nearly the whole of the city was inundated, and the lower parts were again under water in 1850, 1859 and 1898, when the floods rose 8 ft. A ship canal, completed in 1875-1888 at a cost of $1,650,000, has made the capital navigable, and the Great Neva connects the left bank of the mainland with Vasilyevsky or Basil Island; but, being built on boats, it is removed during the autumn and spring. Several wooden or floating bridges connect the islands, while a number of stone bridges span the smaller channels. In winter, when the Neva is covered with ice 2 to 3 ft. thick, temporary roadways for carriages and pedestrians are made across the ice and artificially lighted. In winter, too, thousands of peasants come in from the villages with their small Finnish horses and sledges to ply for hire. The Neva continues frozen for an average of 147 days in the year (25th November to 21st April). It is unnavigable, however, for some time longer on account of the ice from Lake Ladoga, which is sometimes driven by easterly winds into the river at the end of April and beginning of May. The climate of St Petersburg is changeable and unhealthy. Frosts are made much more trying by the wind which accompanies them; and westerly gales in winter bring oceanic moisture and warmth, and melt the snow before and after hard frosts. The summer is hot, but short, lasting barely more than five or six weeks; a hot day, however, is often followed by cold weather: changes of temperature amounting to 35° Fahr. within twenty-four hours are not uncommon. In autumn a chilly dampness lasts for several weeks, and in spring cold and wet weather alternates with a few warm days.

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<th>Mean temperature, Fahr.</th>
<th>38°</th>
<th>January. 15°-0</th>
<th>July. 64°-0</th>
<th>The Year. 38°-6</th>
<th>Prevailing winds. S.W.</th>
<th>Prevailing winds. S.W.</th>
<th>Average daily range of temperature, Fahr. 2°-2</th>
<th>10°-2</th>
<th>7°-7</th>
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**Topography.**—The greater part of St Petersburg is situated on the mainland, on the left bank of the Neva, including the best streets, the largest shops, the bazaars and markets, the palaces, cathedrals and theatres, as well as all the railway stations, except that of the Finland railway. From the Liteinyi bridge to that of Nicholas a granite embankment, bordered by palaces and large private houses, lines the left bank of the Neva. About midway, behind a range of fine houses, stands the Admiralty, the very centre of the capital. Formerly a wharf, on which Peter the Great caused his first Baltic ship to be built in 1706, it is now the seat of the ministry of the navy and of the hydrographical department, the new Admiralty building standing farther down the Neva on the same bank. A broad square, partly laid out as a garden (Alexander Garden), surrounds the Admiralty on the west, while to the south, stands the great and fine memorial to Peter the Great, erected in 1782, and now backed by the cathedral of St Isaac. A bronze statue, a masterpiece of the French sculptor Falconet, represents the founder of the city on horseback, at full gallop, ascending a rock and pointing to the Neva. South of the Admiralty is the ministry of war and to the east the imperial winter palace, the work of Rastrelli (1764), a fine building of mixed style; but its admirable proportions mask its huge dimensions. It communicates by a gallery with the Hermitage Fine Arts Gallery. A broad semi-circular square, adorned by a memorial column (1854), serves to connect the palace and palace from the buildings of the garrison to the Russian government. The range of palaces and private houses facing the embankment above the Admiralty is interrupted by the macadamized "Field of Mars," formerly a marsh, but transformed at incredible expense into a paradise-ground, and the Lycetniy Sad (summer-garden) of Peter the Great. The Neva embankment is continued to a little below the Nicholas bridge under the name of "English embankment," and farther down by the new Admiralty buildings. The topography of St Petersburg is very simple. Three long streets, the main axis of the capital, radiate from the Admiralty: the Prospekt Nevski (Neva Prospect), the Gorokhovaya, and the Prospekt Voznesenskii (Ascension Prospect). Three girdles of canals, roughly speaking concentric, intersect these three streets—the Moika, the Catherine and the Fontanka; to these a number of streets run parallel. The Prospekt Nevski is a very broad street, running straight east-south-east for 3000 yds. from the Admiralty to the Moscow railway station, and thence 1500 yds. farther, bending a little to the south, until it again reaches the Neva at Kalashnikov Harbour, near the vast complex of the Alexander Nevski Monastery (1873) the seaport of the capital. The Prospekt Nevski is a broad street, and still more its animation. But the buildings which border it are architecturally poor. Neither the cathedral of the Virgin of Kazan (an ugly imitation on a small scale of St Peter's in Rome), nor the still uglier Gostinii Dvor (a two-storied quadrilateral building divided into second-rate shops), nor the Anichkov Palace (which resembles immense barracks), nor even the Roman Catholic and Dutch churches do anything to embellish it. About midway between the public library and the Anichkov Palace, an elegant square hides the old-fashioned Alexandria theatre; nor does a profusely adorned memorial (1873) to Catherine II. beautify it much. The Gorokhovaya is narrow and badly paved, and is shut in between gloomy houses occupied mostly by artisans. The Voznesenskii Prospekt, on the contrary, though as narrow as the last, has better houses. On the north, it passes into a series of large squares connected with that in which the monument of Peter the Great stands. One of them is occupied by the cathedral of St Isaac (of Dalmatia), and another by the memorial (1856) to Nicholas I., the greatest monarch and had taste of which contrast strangely with the simplicity and significance of that of Peter the Great. The general aspect of the cathedral is imposing both without and within; but on the whole this architectural monument, built between 1819 and 1858 according to a plan of Montferrat, under the personal direction of Nicholas I., does not correspond either with its costliness ($2,431,300) or with the efforts put forth for its decoration by the best Russian artists.
The eastern extremity of Vasilyevsky Island is the centre of commercial activity; the stock exchange is situated there as well as the quays and storehouses. The remainder of the island is occupied chiefly by scientific and educational institutions—the Academy of Sciences and the Military Academy. The Academy of Sciences (or科学院) consists of several branches: the Historical and Philosophical Institute, the Academy of the first corps of cadets, the Academy of Arts, the Marine Academy, the Mining Institute, and the Central Physical Observatory, all facing the Neva.

Petersburg Island contains the fortress of St Peter and St Paul (1703-1740), opposite the Winter Palace; but the fortress is now a state prison. A cathedral which stands within its walls is the burial-place of the emperors and the imperial family. The mint and an artillery museum are also situated within the fortress. The remainder of the island is mainly built, and is the refuge of the poorer officials (чиновники) and of the intellectual proletariat. Its northern part, separated from the main island by a narrow channel, bears the name of Apotheoses' Island, and is occupied by a botanical garden of great scientific value and several fine private gardens and parks. Krestovsky, Elagin and Kamenny Islands, as also the opposite (right) bank of the Great Neva (one of the branches of the Neva) are occupied by public gardens, parks and summer residences. The mainland on the right bank of the Neva above its delta is known as the Viborg Side, and is connected with the main city by the Liteiniy bridge, closely adjoining which are the buildings of the military academy of medicine and other hospitals.

The Academy of Sciences, (many of them unpaved), with numerous wooden houses, are inhabited by students and workmen; farther north are great textile and iron factories. Vast orchards and the yards of the artillery laboratory stretch north-eastwards, while the railway and the high road to Finland, running north, lead to the park of the Forestry Institute. The two villages of Okhta, on the right bank, are suburbs; higher up, on the left bank, are several factories (Alexandrovsk) which formerly belonged to the crown.

The true boundary of St Petersburg on the south is the Obvodny Canal, running parallel to the three canals already mentioned and forming a sort of base to the Neva peninsula; but numerous orchards, cemeteries and factories, and even unoccupied spaces, are included within the city boundaries in that direction, though they are being rapidly covered with buildings. Except in a few principal streets, which are paved with wood or asphalt, the pavement is usually of granite sets. There are two government dockyards, the most important of which is the new admiralty yard in the centre of the city. At this yard there are three building slips and a large experimental basin, some 400 ft. in length, for trials and tests of models. The Galleon Yard is a little lower down the river, and is devoted entirely to construction. There are two building slips for large vessels, besides numerous workshops, storehouses and so forth. The Baltic Yard is near the mouth of the Neva, and was taken over by the ministry of marine in 1894. Since that time the establishment has been enlarged, and a new stone building slip, 520 ft. in length, completely housed in, has been finished.

Population.—The population of St Petersburg proper at the census specified was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
<th>Proportion of Men to every 100 Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1869</td>
<td>667,207</td>
<td>377,380</td>
<td>289,827</td>
<td>130</td>
</tr>
<tr>
<td>1881</td>
<td>866,303</td>
<td>473,229</td>
<td>388,074</td>
<td>122</td>
</tr>
<tr>
<td>1890</td>
<td>954,403</td>
<td>518,718</td>
<td>441,682</td>
<td>110</td>
</tr>
<tr>
<td>1899</td>
<td>1,126,977</td>
<td>616,865</td>
<td>515,225</td>
<td>105</td>
</tr>
</tbody>
</table>

A further increase was revealed by the municipal census of 1900, when the population of the city was 1,248,739, having thus increased 30-9% in ten years. In 1905 the total population was estimated to number 1,500,000. The population of the suburbs was 134,710 in 1897, and 190,635 in 1900. Including its suburbs, St Petersburg is the fifth city of Europe in point of size, coming after London, Paris, Berlin and Vienna. The large proportion of men in its population is due to the fact that great numbers come from other parts of Russia to work in the winter in the textile factories, and during the summer at unloading the boats. Russians numbered 883,354 in 1897, or 73-1% of the population; Germans 43,798, or 3-9%; Poles 22,307, or 1-9%; Finns, 16,731, or 1-5%; and Jews 10,353, or 0-9%.

The various religions are represented by 84-9% Orthodox Christians, 3-3% Protestants, and 3-9 Roman Catholics. The proportion of illegitimate births (abortion is very common in Russia) is ten times as great as in the rest of Russia, namely 250 to 286 per thousand births. It is thus nearly the same as in Paris, but lower than in Moscow (292 per thousand) and Vienna (349 per thousand). The mortality varies much in different parts of the city—from 12 per thousand in the best situated, the admiralty quarter, to 16 in other central parts, and 25 and 27 in the outlying quarters. The mortality has, however, notably decreased, as it averaged 36 per thousand in the years 1870 to 1874, and only 27 from 1886 to 1895, and 24 in 1897. Infectious diseases, i.e. tuberculosis, diphteria, influenza, smallpox, and measles, are the cause of 37 to 38% of all deaths. The high mortality in certain quarters is largely due to overcrowding and bad water.

An interesting feature of the Russian capital is the very high proportion of people living on their own earnings or income ("independent") as compared with those who live on the earnings or income of someone else ("dependent"). Only a few industrial establishments employ more than twenty workmen, the average being less than ten and the figure seldom falling below five. The number of factories is beyond the limits of this work. Although 36% of the population above six years old are unable to read, the workmen are amongst the most intelligent classes in Russia.

Education, Science and Art.—Notwithstanding the hardships and prosecutions to which it is periodically subjected, the university (nearly 4000 students) exercises a pronounced influence on the life of the city. The medical faculty forms a separate academy under military jurisdiction, with about 1500 students. There are, moreover, a philological institute, a technological institute, a forestry academy, and engineer schools, and the mining academy. The Academy of Art (or Academy of Fine Arts) is called to carry on the traditions of the celebrated painter, Vasiliev, the astronomical and magnetic observatory at Peking, and the botanical garden, are all attached to the academy of sciences. The Society of Naturalists and the Physical and Chemical Society are also connected with the academy, which is in fact a part of the university and is entirely supported by the government. The academy is gradually pushing forward the geological survey of the country; the Mineralogical Society was founded in 1817. The Geographical Society, with branch societies for West and East Siberia, Caucasus, Orenburg, the north-western, the south-western, and north-eastern regions of European Russia, is well known for its valuable work, as is also the Entomological Society. There are four medical societies, and an archaeological society (since 1840), an historical society, an economical society, gardening, forestry, technical and navigation societies. The conservatory of music, with a new building (1861-1866), gives superior musical instruction. The Musical Society is worthy of notice. Art, on the other hand, has notfreed itself from the old scholastic methods at the academy. Several independent artistic societies seek to remedy this drawback, and are the true cradle of the Russian genre painters.

The imperial public library contains valuable collections of books (1,000,000) and MSS. The library of the academy of sciences contains more than 500,000 volumes, 15,000 MSS, rich collections of works on oriental languages, and valuable collections of periodical publications from scientific societies throughout the world. The museums of the Russian capital occupy a prominent place among those of Europe. That of the Academy of Sciences, of the Navy, of the Admiralty (1796), of the Marine (1797), of the Institute of Arts, the Asiatic museum, the Suvorov museum (1901), with pictures by Vereshchagin, the Zoological museum and several others are of great scientific value. The Hermitage Art Gallery contains a magnificent collection of works of art. Founded in 1764, the Russian school, good specimens of the Italian, Spanish and old French schools, invaluable treasures of Greek and Scythian art, and a good collection of 200,000 engravings. Old Christian and old-Russian arts are well represented in the museums of the Academy of Arts. The New Michael Palace was in 1805-1898
converted into a museum of Russian art—the Russian museum; it is one of the handsomest buildings in the city.

In the development of the Russian navy, St Petersburg has played a far greater part than Moscow, and the stage there has never reached the same standard of excellence as that of the older capital. On the other hand, St Petersburg is the cradle of Russian opera and Russian ballet. In the four theatres of the city—municipal, Bear Garden, all—amphitheatre—one for the opera and ballet, one for the native drama, and one for the French and German drama.

Industries and Trade.—St Petersburg is much less a manufacturing than a trading city. St Petersburg produced more timber, metal works, tobacco, paper, and printing goods, but the chief export is grain. The chief imports are sugar, flour, and oil. A large quantity of the grain exports are almost entirely to Europe by sea (from 1,500,000 to 6,000,000), and to Finland (1,500,000 to 3,000,000). The imports consist chiefly of coal, metals, building materials, herrings, coffee, tea, better-class timber, raw cotton, wool, paper, cellulose, and manufactured goods, and amount to about £4,000,000 annually.

Railways.—Two railway lines meet at St Petersburg. Two run westwards along both shores of the Gulf of Finland to Hangö and to Port Baltic respectively; two short lines connect Oranienbaum, opposite Kronstadt and Tsarskoe Selo (with Pavlovsk) with the capitol; and three great trunk lines run south-west to Warsaw, with branches to Riga and Smolensk), south-east to Moscow (with branches to Novgorod and Rybinsk), and east to Vologda, Vyatka, and Perm. The Neva is the principal channel for the trade of St Petersburg with the rest of Russia, by means of the Vaga and its tributaries.

Administration.—The municipal affairs of the city are in the hands of a council, elected by the electors, and a council of ministers, a department of the chief of the police. The city is under a separate governor-general, whose authority, like that of the chief of police, is unlimited.

History.—St Petersburg is surrounded by several fine residences, mostly imperial palaces with large and beautiful parks. Tsarskoe Selo, 15 m. to the south-east, and Peterhof, on the Gulf of Finland, are summer residences of the emperor. Pavlovsk, 17 m. S. of the city, contains the royal palace and park, and is inhabited by thousands of people. There is another imperial palace at Gatchina, 29 m. S. Oranienbaum, 25 m. W. on the south shore of the Gulf of Finland, is a rather deserted place. Pulkovo, on a bill 9 m. S. from St Petersburg, is well known for its observatory; while several villages north of the capital, such as Pargolovo and Murino, are visited in summer by the less wealthy inhabitants.

History.—The region between Lake Ladoga and the Gulf of Finland was inhabited in the 9th century by Finns and some Slavs. Novgorod and Pskov made efforts to secure and maintain dominion over this region, so important for their trade, and in the 13th and 14th centuries they built the forts of Koporya (in the present district of Peterhof), Yam (now Yamburg), and Oranienburg, which were the means of keeping the Neva issues from Lake Ladoga. They found, however, powerful opponents in the Swedes, who erected the fort of Landskrona at the junction of the Okhta and the Neva, and in the Livonians, who had their fortress at Narva. Novgorod and Moscow successively were able to continue fighting to maintain their supremacy over the region south of the Neva throughout the 16th century; but early in the 17th century Moscow was compelled to cede it to Sweden, which erected a fortress on the Neva at the mouth of the Okhta. In 1700 Peter the Great began his wars with Sweden. Orzeshew was taken in 1703, and in the following year the Swedish fortress on the Neva. Two months later (29th June 1703) Peter laid the foundations of a cathedral to St Peter and St Paul, and of a fort which received his own name (in its Dutch transcription, "Piterburgh"). Next year the fort of Kronswlt was erected on the island of Kotlin, as also the Admiralty on the Neva, opposite the fortess. The emperor took most severe and almost barbarous measures for increasing his empire, and driving Hardenbergh and the Dutch from the Neva. By the Peace of Northern Germany in 1807, the fortresses of Russia were removed thither and died in erecting the fortresses and building the houses. Under Elizabeth fresh compulsory measures raised the population to 150,000, and this figure was nearly doubled during the reign of Catherine II. (1762-1796). The chief embellishments of St Petersburg were effected during the reigns of Alexander I. (1801-1825) and Nicholas I. (1825-1855). From the earliest years of Russian history trade had taken this northern direction. Novgorod owed its wealth to this fact; and as far back as the 15th century the Russians had their forts on the Neva, and a few years after the conquest of the city of Moscow in 1547; they exchanged their wares with the Danzig merchants at Nyr and Nowy Vaslyevskiy Island. By founding St Petersburg Peter the Great only restored the trade to its old channels. The system of canals for connecting the upper Volga and the Dnieper with the great lakes of the north completed the work; the commercial mouth of the Volga was thus transferred to the Gulf of Finland, and St Petersburg became the export harbour for more than half Russia. Foreigners hastened thither to take possession of the growing export trade, and to this the Russian industrial and intellectual life is due. The development of the railway system and the colonization of southern Russia now operate, however, adversely to St Petersburg, while the rapid increase of population in the Black Sea region is tending to shift the Russian centre of gravity; new centres of commercial, industrial, and intellectual life are being developed at Odessa and Rostov. The revival of Little Russia is another influence operating in the same direction. Since the abolition of serfdom and in consequence of the impulse given to Russian thought by this reform, the provinces are coming more and more to attract the right of St Petersburg to guide the political life of the country. It has been often said that St Petersburg is the head of Russia and Moscow her heart. The first part of at least this saying is true. In the development of thought and in naturalizing in Russia the results of west European culture and philosophy St Petersburg has played a prominent part. It has helped naturally to familiarize the public with the teachings of west European science and thinking, and to give to Russian literature its liberality of mind and freedom from the trammels of tradition. St Petersburg has no traditions, no history beyond that of the palace conspiracies, and there is nothing in its past to attract the writer or the thinker. The development of intellectual life and new currents of thought develop against Moscow and Kiev, or arise anew at Odessa and in the eastern provinces, these places claim the right to their own share in the further development of intellectual life in Russia.

( P. A. K., J. T. B.)

SAINT-PIERRE, CHARLES IRÉNÉE CASTEL. (ABBÉ DE (1658-1743), French writer, was born at the château de Saint-Pierre-l'Eglise near Cherbourg on the 18th of February 1658. His father was bailli of the Cotentin, and Saint-Pierre was educated by the Jesuits. In Paris he frequented the salons of Madame de la Fayette and of the marquise de Lambert. He was presented to the abbacy of Tiron, and was elected to the whole deputation of the Academy in 1695. In the same year he gained a footing at court as amanuensis. But in 1718, in consequence of the political offence given by his Discours sur la polysynodie, he was expelled from the Academy. He afterwards founded the club of the Entrec sol, an independent society suppressed in 1731. He died in Paris on the 20th of April 1743.

Saint-Pierre's works are almost entirely occupied with an acute though generally visionary criticism of politics, law and social institutions. They had a great influence on Rousseau, who left elaborate examinations of some of them, and reproduced
not a few of their ideas in his own work. His *Projet de paix perpétuelle*, which was destined to exercise considerable influence on the development of the various schemes for securing universal peace which culminated in the Holy Alliance, was published in 1713 at Utrecht, where he was acting as secretary to the French plenipotentiary, the Abbé de Polignac, and his *Polysynodie* contained severe strictures on the government of Louis XIV. With projects for the administration of France by a system of councils for each department of government. His works include a number of memorials and projects for stopping duelling, equalizing taxation, treating mendicancy, reforming education and spelling, &c. It was not, however, for his suggestions for the reform of the constitution that he was disgraced, but because in the *Polysynodie* he had refused to Louis XIV, the title of le Grand. Unlike the later reforming abbés of the philosophic period, Saint-Pierre was a man of very unworldly character and quite destitute of the Frondeur spirit.

His works were published at Amsterdam in 1738-1740 and his *Anoties politiques* in London in 1757. A discussion of his principles, with a view to securing a just estimation of the high value of his political and economic ideas, is given by S. Siegler Pascal in *Un Contrepoids contre la XIVe Idée*. Les Projets de l’abbé de Saint-Pierre, 1658-1743 (Paris, 1900).

SAINT-PIERRE, JACQUES HENRI BERNARDIN DE (1737–1814), French man of letters, was born at Havre on the 19th of January 1737. He was educated at Caen and at Rouen, and became an engineer. According to his own account he served in the army, taking part in the Hesse campaign of 1760, but was dismissed for insubordination, and, after quarrelling with his family, was in some difficulty. He appears at Malta, St Petersburg, Warsaw, Dresden, Brussels, and finally returned to France and resumed his usual pursuits.

His *Voyage à l’Île de France* (2 vols., 1773) gained him a reputation as a champion of innocence and religion, and in consequence, through the exertions of the bishop of Aix, a pension of 1000 livres a year. It is sober and therefore the least characteristic of his books. The *Etudes de la nature* (3 vols., 1784) was an attempt to prove the existence of God from the wonders of nature; he set up a philosophic sense of duty to oppose the materializing tendencies of the Encyclopaedists. His masterpiece, *Paul et Virginie*, appeared in 1786 in a supplementary volume of the *Etudes*, and his second great success, much less sentimental and showing not a little humour, the *Chasteire indienne*, not till 1790. In 1792 he married a very young girl, Félicité Didot, who brought him a considerable dowry. For a short time in 1792 he was superintendent of the Jardin des Plantes, and on the suppression of the office received a pension of 3000 livres. In 1795 he became a member of the Institute. After his first wife’s death he married in 1800, when he was sixty-three, another young girl, Désirée Pelleport, and is said to have been very happy with her. On the 21st of January 1814 he died at his house at Eranay, near Pontoise.

He has been pronounced a poet in style and not in tone. Perhaps Bernardin is not fairly to be judged by this famous story, in which the exuberant sensibility of the time finds equally exuberant expression. His merit lies in breaking away from the atmosphere of sentiment and the mawkishness of classical writing has brought upon France, in his genuine preference for the beauties of nature, and in his attempt to describe them faithfully. After Rousseau, and even more than Rousseau, Bernardin was in French literature the first writer to turn to the real, the commonplace, to the immediate and to the familiar. His immediate follower Chateaubriand there is still much mannerism and unreality.

Aimé Martin, disciple of Bernardin and the second husband of his second wife, published a complete edition of his works in 18 volumes (Paris, 1818-1820), afterwards increased by seven volumes of correspondence and memoirs (1826). Paul et Virginie, the *Chasteire indienne*, have often been separately reprinted. See also Arved-Barin’s *Bernardin de Saint Pierre* (1891).

ST PIERRE and MIQUELON, two islands 10 m. off the south coast of Newfoundland, united area about 91 sq. m. Both are rugged masses of granite, with a few small streams and lakes, a thin covering of soil and scanty vegetation. Miquelon, the larger of the two, consists of Great Miquelon and Little Miquelon, or Langlade; previous to 1783 these were separated by a navigable channel, but they have since become connected by a dangerous mudbank. St Pierre has a sheltered harbour with about 14 ft. of water, good roadsteads, and is not more than seven miles from land. Their importance is due to their proximity to the great Banks, which makes them the centre of the French Atlantic fisheries. These are kept up by an elaborate system of bounties by the French government, which considers them of great importance as training sailors for the navy. Fishing lasts from May till October, and is carried on by nearly five hundred vessels, of which about two-thirds are fitted out from St Pierre, the remainder coming from St Malo, Cancale and other French coast towns. The resident population, which centres in the town of St Pierre, is about 6,000, and increased 10,000 this year (1892) by the return of about four thousand men each year by extra fishing hands from France, but is steadily declining owing to the diminution of trade in Canada. Owing to the low rates of duty, vast quantities of goods, especially French wines and liquors, are imported, and smuggled to Newfoundland, the United States and Canada, though of late years this has been checked by a gradual rise in the scale of duties, and by the presence since 1894 of a British consul. St Pierre is connected with Halifax (N.S.) and St Johns (Newfoundland) by a regular packet service, and is a station of the Anglo American Cable Co. and the Compagnie française des câbles télégraphiques. Excellent facilities for primary and secondary education are given, but the attraction of the fisheries prevents their being fully used.

The islands were occupied by the French in 1666, and fortified in 1700. In 1702 they were captured by the British, and held till 1763, when they were given back to France as a fishing station. They are thus the sole remnant of the French colonies in North America. Destroyed by the English in 1778, restored to France in 1783, again captured and depopulated by the English in 1793, recovered by France in 1802 and lost in 1803, the islands have remained in undisputed French possession since 1814 (Treaty of Paris). Les Colonies françaises, t. ii. (Paris, 1889); Levassure, La France, t. ii. (Paris, 1893); L’Année coloniale, yearly since 1899, contains statistics and a complete bibliography; P. T. McGrath in The New England Magazine (May 1905) describes the daily life of the present inhabitants.

ST POL, COUNTS OF. The countship of St Pol-sur-Ternoise in France (department of Pas-de-Calais), belonged in the 11th and 12th centuries to a family surnamed Candavène. Elizabeth, heiress of this house, carried the countship to her husband, Gaucher de Châtillon, in 1205. By the marriage of Mahaut de Châtillon with Guy VI. of Luxembourg, St Pol passed to the house of Luxembourg. It was in possession of Louis of Luxembourg, constable of France, who was beheaded in 1475. The constable’s property was confiscated by Louis XI., but was subsequently restored in 1488 to his granddaughters, Marie and Françoise of Luxembourg. Marie (d. 1542) was countess of St Pol, and married François de Bourbon, count of Vendôme. Their son, François de Bourbon, count of St Pol (1491-1545), was one of the most devoted and courageous generals of Francis I. Marie, daughter of the last-mentioned count, brought the countship of St Pol to the house of Orleans-Longueville. In 1705 Marie of Orleans sold it to Elizabeth of Lorraine-Lillebonne, widow of Louis de Melun, prince of Épinoy, and their daughter married the prince of Rohan-Soubise, who thus became count of St Pol. (M. P.)*

ST POL-DE-LÉON, a town of north-western France, in the department of Finistère, about 1 m. from the shore of the English Channel, and 13½ m. N. of Morlaix by the road to Roscoff. Pop. (1906), town, 3555; commune, 8140. St Pol-de-Léon is a quaint town with several old houses. The cathedral is
largely in the Norman Gothic style of the 13th and early 14th centuries. The west front has a projecting portico, and two towers 180 ft. high with granite spires. Within the church there are beautifully carved stalls of the 16th century and other works of art. On the right of the high altar is a wooden shrine containing the bell of St Pol de Léon, which was said to cure headache and diseases of the ear, and at the side of the main entrance is a huge baptismal font, popularly regarded as the stone coffin of Conon Mériadeck, king of the Bretons. Notre Dame de Kreizker, dating mainly from the second half of the 14th century, has a celebrated spire, 352 ft. high, which crowns the central tower. The south porch is a fine specimen of the flamboyant style. In the century, which has a chapel of the 15th century, there are ossuaries of the year 1500.

In the 6th century a Welsh monk, Paul, became bishop of the small town of Léon, and lord of the domain in its vicinity, which passed to his successors and was increased by them. In 1793 the town was the centre of a serious but unsuccessful rising provoked by the recruiting measures of the Convention.

SAINT PRIEST, FRANÇOIS EMMANUEL GUIGNARD, Chevalier, then COMTE DE (1733-1811), French statesman, was born at Grenoble on the 12th of March 1733. He was admitted a kinsman in 1782 to the Order of Malta, on attaining five years of age, and at fifteen entered the army. He left active service in 1760 with the grade of colonel, and for the next four years represented the court of France at Lisbon. He was sent in 1768 to Constanti- nople, where he remained with one short interval till 1785, and married Wilhelmina von Ludolf, daughter of the Neapolitan ambassador. His Mémoires sur l'ambassade de France en Turquie et le commerce des Français dans le Levant, prepared during a visit to France, were only published in 1857, when they were edited by C. Scheller. After a few months spent at the court of the Hague, he rejoined the Ministry of Necker as minister without a portfolio, and was in Necker's second cabinet in 1780 was secretary of the royal household and minister of the interior. He became a special object of the popular hatred because he was alleged to have replied to women begging for bread, "You had enough while you had only one king; demand bread of your twelve hundred sovereigns." Nevertheless he held office until December 1790. Shortly after his resignation he went to Stockholm, where his brother-in-law was Austrian ambassador. In 1795 he joined the comte de Provence at Verona as minister of the household. He accompanied the exiled court to Blankenburg and Mitterau, remaining there till the French revolution. He only seeking permission to return to France he was expelled from Switzerland, and wandered about Europe until the Restoration. Besides the memoirs already mentioned he wrote an Examen des assemblées provinciales (1787).

His eldest son, GUILLAUME EMMANUEL (1776-1814), became major-general in the Russian service, and served in the campaigns of Alexander I against Napoleon. He died at Laon in 1814. The second, ARMAND EMMANUEL CHARLES (1782-1863), became civil governor of Odessa, and married Princess Sophia Galitzin. The third, EMMANUEL LOUIS MARIE GUIGNARD, vicomte de Saint Priest (1789-1888), was a godson of Marie Antoinette. Like his elder brother he took part in the invasion of France in 1814. At the Restoration he was attached to the service of the duke of Angoulême, and during the Hundred Days tried to raise Dauphiné in the royal cause. He was distinguished at the battle of Ulm in 1805, and was promoted lieutenant-general. After two years at Berlin he became French ambassador at Madrid, where he negotiated in 1828 the settlement of the Spanish debt. When the revolution of July compelled his retirement, Frederick VII. made him a grandee of Spain, with the title of duke of Alzamaz, in recognition of his services. He then joined the circle of the duchess of Berry at Naples, and arranged her escape in 1832. Saint Priest was arrested, and was only released after ten months' imprisonment. He tried to obtain an asylum in Austria for the duchess, he returned to Paris, where he was one of the leaders of the legitimist society until his death, which occurred at Saint Priest, 26th of February 1848. His son, SAINT PRIEST, ARMAND-EMMANUEL, comte de Saint Priest (1805-1851), was the son of Armand de Saint Priest and Princess Galitzin. Educated in Russia, he returned to France with his father in 1822, and soon made his way into the same circles as his father. His memoirs, Historie de la royauté considérée dans ses origines jusqu'à la formation des principales monarchies de l'Europe (2 vols., 1842); Histoire de la chute des Jésuites (1844); Histoire de la conquête de Naples (4 vols., 1847-1848). He was elected to the Academy in January 1849. Meanwhile he had departed from the legitimist tradition of his family to become a warm friend to the Orleans monarchy, which he served between 1833 and 1838 as ambassador in Brazil, at Lisbon and Copenhagen. He died, while on a visit to Moscow, on the 29th of September 1851.

SAINT PRIV, a village of Lorraine, 7 m. N.W. of Metz. The village and the slopes to the west played a great part in the battle of Gravelotte (August 18, 1870). (See MERZ and FRANKO-GERMAN WAR.) At St Privat occurred the famous repulse of the Prussian Guard by Marshal Canrobert's corps.

ST QUENTIN, a manufacturing town of northern France, capital of an arrondissement of the department of Aisne, 32 m. N.W. of Laon by rail. Pop. (1911), 49,305. It stands on the right bank of the Somme, at its junction with the St Quentin Canal (which unites the Somme with the Scheldt) and the Crozet Canal (which unites it with the Oise). The port carries on an active traffic in building materials, coal, timber, iron, sugar and agricultural produce. Built on a slope, with a southern exposure, the town is dominated by the collegiate church of St Quentin, one of the finest Gothic buildings in the north of France, erected during the 12th, 13th, 14th and 15th centuries. The front, which has no west façade, terminates at that end in a tower and in a vast nave decorated; it has double transcepts. Its length is 435 ft. and the height of the nave 124 ft. The choir (13th century) has a great resemblance to that of Reims; like the chapels of the apse it is decorated with polychromic paintings. There are remains of a choir-screen of the 14th century. Under the choir is a crypt of the 11th century, rebuilt in the 13th century, and containing the tombs of St Quentin (Quintin) and his fellow-martyrs Victorious and Gentianus. The Champs Élysées, an extensive promenade, lies to the east of the cathedral. The hôtel-de-ville of St Quentin is a splendid building of the 14th and 16th centuries, with a flamboyant façade, adorned with curving sculptures. The town hall is a building of the 16th century. The council-room is a fine hall with a double wooden ceiling and a huge chimneypiece, partly Gothic partly Renaissance. A monument commemorates the siege of 1557 (see below), and another close to the river the part played by the town in 1850 and 1871. A building of the 20th century is appropriated to the law court, the learned societies, the museum and the library. St Quentin is the seat of a sub-prefecture, of tribunals of first instance and of commerce, and of a board of trade-arbitration, and has control over the trade and industries of the surrounding district. St Quentin is a town of about 40,000 inhabitants, and is an important centre of trade and manufacture. The town is the centre of an industrial district which manufactures cotton and woollen fabrics. St Quentin produces chiefly piqué and window-curtains, and carries on the spinning and preliminary processes and the bleaching and finishing. Other industries are the making of embroideries by machinery and by hand, and the manufacture of iron goods and machinery. Trade is in grain, flax, cotton and wool.

St Quentin (anc. Augusta Veromanduum) stood at the meeting-place of five military roads. In the 3rd century it was the scene of the martyrdom of Galus Quintinus, who had come thither from Italy as a preacher of Christianity. The date of the foundation of the bishopric is uncertain, but about 512 it was transferred to Noyon. Towards the middle of the 7th century St Eloi (Elligius), bishop of Noyon, established a collegiate chapter at St Quentin's tomb, which became a famous place of pilgrimage. The town thus gained an importance which was increased during the middle ages by the rise of its cloth manufacture. After it had been thrice ravaged by the Normans, the town was surrounded by walls in 853. It became under Pippin, granted of a chapelry of Charlemagne, one of the principal domains of the court of Vermandois. The bishopric of St Quentin received from Charles II., or, more probably, from Charles the Bald, a charter, which was extended in 1103 and is the earliest of those freely granted to the towns of northern France. From 1240 to 1271 St Quentin was occupied by the Burgundians. In 1557 it was taken by the Spaniards (see below). Philip II. commemorated the victory over the relieving force under the Constable Monmouth by the foundation of the Escorial. Two years later the town was restored to the French, and in 1560 it was assigned as the dowry of Mary Stuart. The
fortifications erected under Louis XIV. were demolished between 1810 and 1820. During the Franco-Prussian War St Quentin repulsed the German attacks of the 8th of October 1870; and in January 1871 it was the theatre of a great battle fought between the French and the Prussians (below).

**The battle of 1537**—An army of Spaniards under Emmanuel Philippert of Savoy, invading France from the Meuse, joined an allied contingent of English troops under the walls of St Quentin, which was then closely besieged. Admiral Coligny, then himself invested behind the town. On St Lawrence's Day, 10th August, the relieving column reached the town without difficulty, but time was wasted in drawing off the garrison whom the besiegers had entrenched at the tail of the column, and when brought up were mismanaged. The besiegers, recovering from their surprise, formed the plan of cutting off the retreat of the relieving army. Montmorency, who was the vanguard of the French army, met the Germans with which the besiegers chose for their passage the post was composed of poor troops, who fled at the first shot. Thus, while the constable was busy with his hosts, the Spanish army filed across the Bridge of Kouvroy, some distance above the town, with impunity, and Montmorency, in the hope of executing his mission without fighting, refused to allow the cavalry under the due de Nevers to charge them, and then led a superior force against the retreating gendarmerie who formed the vanguard of the column, and then headed off the slow-moving infantry south of Essigny-le-Grand. Around the 16th hour the Spanish column was formed up with 8,000 men. The cannon thinned their ranks, and at last the cavalry broke in and slaughtered them. Yet Coligny gallantly held St Quentin for seventeen days, Nogent and the General Count of Savoy, and five and a day, the Vercors, Ham and other strong places, entrenched himself in front of Compiegne, and the allies, disheartened by a war of sieges and skirmishes, came to a standstill. Soon afterwards Philip II, jealous of his renown and unwilling to waste his highly trained soldados in ineffective fighting, ordered the army to retreat (17th October), disbanded the temporary regiments and dispersed the permanent corps in winter quarters.

**The Battle of 1871**— fought between the German I. Army under General von Goeben and the French commanded by Generals Faidherbe. The latter concentrated about St Quentin on the 18th of January, and took up a defensive position on both banks of the Somme, who was inferior in numbers, were greatly superior in discipline and training. and General von Goeben boldly decided to attack both wings of the French together on the 19th. The attack took the customary enveloping form. After several hours' fighting it was brought to a standstill, but Goeben, using his reserves in masterly fashion, drove a wedge into the centre of the French line between the canal and the railway, and followed this up with another blow on the other bank of the canal along the Ham road. This was the signal for a decisive attack by the whole of the left wing of the Germans, but the French offered strenuous resistance, and it was not until five in the afternoon that Goeben was able to force the Somme. By skillful dispositions and orderly movement most of his infantry and all but six of his guns were brought off safely, but a portion of the army was cut off by the victors. After a period of long-drawn-out struggle, was sufficiently decisive to deny to the defenders any hope of taking the field again without an interval of rest and reorganization. Ten days later the general armistice was signed.

**SAINT-ÉTIENNE—SAINTS, BATTLE OF THE.** This battle is frequently called by the date on which it took place—the 12th of April 1782. The French know it as the battle of Domincia, near the coast of which it was fought. The Saints are small rocky islets in the channel between the islands of Domincia and Guadaloupe in the island of Martinique, and are considered to be one of the dependencies of this island. The British sent a force to this island in 1681, in the hope of sending wages to the French naval history; it was by far the most considerable fought at sea in the American War of Independence, and was to Great Britain of the nation of a deliverance, since it not only saved Jamaica from a formidable attack, but after the disasters in North America went far to restore British prestige. The comte de Grasse, with 33 sail of the line, was at Fort Royal in Martinique. His aim was to effect a combination with a Spanish force from Cuba, and invade Jamaica. A British fleet (36 sail of the line), commanded by Sir George, afterwards Lord Rodney (q.v.), was anchored in Gros Islet Bay, Santa Lucia. On the 8th of April the British lookout frigates reported that the French were at sea, and Rodney immediately sailed in pursuit. Light and variable sea or land breezes made the movements of both fleets uncertain. Some of the ships of each might have a wind, while others were becalmed. On the 9th of April eight ships of the British van, at some distance from the bulk of their fleet, and nearly opposite the mountain called the Morne au Diable in Dominica, were attacked by fifteen of the French. The comte de Grasse, whose own ships were much scattered and partly becalmed, and who moreover was hampered by the transports carrying soldiers and stores, did not press the attack home. His chief wish was to carry his fleet through the channel between Dominica and Guadaloupe, while Rodney was anxious to force a battle. During the night of the 11th-12th the greater part of the French had cleared the channel, but a collision took place between two of their ships by which one was severely damaged. The crippled vessel was seen and pursued by four ships of the
Saint-Saëns, Charles Camille (1835–1921), French composer, was born in Paris on the 3rd of October 1835. After having as a child taken lessons on the piano, and learned the elements of composition, he entered at an early age the class of the organ, when his precocity and singularity were noticed. He was admitted at the age of fourteen to the Conservatoire, and, at twenty, he was made professor of counterpoint. He was a pupil of Louis Niedermeyer, and his first compositions were: a Mass, a Requiem, and a symphony. His first work of importance was the opera "La Princesse jaune", which was produced at the Opéra-Comique in 1866. He died in Paris on the 15th of May 1921.

Saint-Saëns was a composer of great versatility, and his works cover a wide range of genres, from operas and concertos to chamber music and orchestral works. He was particularly known for his symphonies, concertos, and chamber music, which often incorporated elements of the Romantic and post-Romantic styles. His most famous works include the opera "Samson et Dalila" and the symphonies Nos. 3 and 4.

Saint-Saëns was awarded the Legion of Honour in 1904 and was made a member of the Académie des Sciences, lettres, et beaux-arts in 1906. Despite his successes, he remained relatively unknown during his lifetime, and it was not until the 20th century that his music gained widespread recognition.

Saint-Saëns was a prolific composer, and his works continue to be performed and recorded today. He is remembered as one of the most important and influential composers of his time, and his music continues to be enjoyed by audiences around the world.
SAINTSBURY—SAINT-SIMON, COMTE DE

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English man of letters, was born at Southampton on the 23rd of October 1845. He was educated at King’s College School, London, and at Merton College, Oxford (B.A., 1868), and spent six years in Guernsey as senior classical master of Elizabeth College. From 1874 to 1876 he was headmaster of the Elgin Educational Institute. He began his literary career in 1875 as a critic for the “Christian Enquirer,” and in 1892 he founded the “Saturday Review.” Some of the critical essays contributed to the literary journals were afterwards collected in his Essays in English Literature, 1870–1880 (2 vols., 1890–1893), Essays on French Novellists (1891), Miscellaneous Essays (1892), Corrected Impressions (1895). His first book, A Primer of French Literature (1886), and his Short History of French Literature (1882; 6th ed., Oxford, 1901), were followed by a series of editions of French classics and of books and articles on the history of French literature, which made him one of the most prominent English authorities on the subject. His studies in English literature were no less comprehensive, and included the valuable revision of Sir Walter Scott’s edition of Dryden’s Works (Edinburgh, 1812–1813), Dryden (1881) in the “English Men of Letters” series, History of Elizabethan Literature (1887), History of Nineteenth Century Literature (1896), A Short History of English Literature (1898, 3rd ed. 1903), an edition of the Minor Caroline Poets of the Caroline Period (2 vols., 1903–1905), a collection of rare poems of great value, and editions of English classics. He edited the series of “Periods of European Literature,” contributing the volumes on The French Regency and the Rise of Absolutism, (1897), and The Earlier Renaissance (1901). In 1895 he became professor of rhetoric and English literature at Edinburgh university, and subsequently produced two of his most important works, A History of Criticism (3 vols., 1900–1904), with the companion volume Loci Critici, Passages Illustrative of Critical Theory and Practice (Boston, U.S.A., and London, 1903), and A History of English Prose from the 12th Century to the Present Day (i., 1906; ii., 1908; iii., 1910); also The Later Nineteenth Century (1908).

ST SERVAN, a town of western France, capital of an arrondissement in the department of Landes, 11 m. S.S.W. of Mont de Marsan on the Southern railway between that town and Bayonne. Pop. (1906) town, 2508; commune, 4644. St Sever stands on an eminence on the left bank of the Adour in the district of the Chalosse. Its streets, bordered in places by old houses, are narrow and winding. The promenade of Marlanne laid out on the site of a Roman camp called Palestron command a view of the land and town of the Adour. The church of St Sever, a Romanesque building of the 12th century, with seven apses, once belonged to the Benedictine abbey founded in the 10th century. The public institutions of the town include the sub-prefecture, a tribunal of first instance, and a practical school of agriculture and viticulture which occupies a former Dominican convent. There is trade in the agricultural products of the Chalosse, especially geese.

SAINT-SIMON, CLAUDE DE ROUVROY, DUC DE (1667–1713), French courtier, was born in August 1667, being the second son of Condé de Rouvroy by his wife, Marie, countess of Franciennes, who was a warm supporter of Henry of Guise and the League. With his elder brother he entered the service of Louis XIII, as a page and found instant favour with the king. Named first equerry in March 1627 he became in less than three years captain of the châteaux of St Germain and Versailles, master of the hounds, first gentleman of the bed-chamber, royal councilor and governor of Meulan and of Blaye. On the fall of La Rochelle he received lands in the vicinity valued at 80,000 livres. About three years later his seigniory of Saint-Simon in Vermandois was erected into a duchy, and he was created a peer of France. He was a man of great influence and power; and the reign of Louis and the Day of Dupes (11th of November 1630). Having suffered disgrace for taking the part of his uncle, the bishop of Saint-Léger, after the capture of Catelet (15th of August 1630), he retired to Blaye. He fought in the campaigns of 1638 and 1639, and after the death of Richelieu returned to court, where he was coldly received by the king (18th of February 1643). Thenceforth, with the exception of siding with Condé during the Fronde, he took small part in politics. He died in Paris on the 3rd of May 1693. By his first wife, Diane de Budos de Portes, a relative of Condé, whom he married in 1644 and who died in 1670, he had three daughters. By his second wife, Charlotte de l’Aubespine, whom he married in 1672, he had a son Louis, the “author of the memoirs” (see below).

SAINT-SIMON, CLAUDE HENRI DE ROUVROY, COMTE DE (1760–1825), the founder of French socialism, was born in Paris on the 17th of October 1760. He belonged to a younger branch of the family of the duc de Saint-Simon (above). His education was directed by D’Alembert. At the age of nineteen he assisted the American colonies in their revolt against Britain. From his youth Saint-Simon felt the promptings of an eager ambition. His brother had orders to await him every morning with the words, “Remember, monseur le comte, that you have great things to do.” Among his early schemes was one to unite the Atlantic and the Pacific by a canal, and another to construct a canal from Madrid to the sea. Although he was imprisoned in the Luxembourg during the Terror, he took no part of any importance in the Revolution, but profited by it to amass a little fortune by land speculation—not on any selfish account, however, as he said, but to facilitate his future projects.

and cantatas; “Oatorio de Noël,” “Les Noces de Prométhée,” Psalm “Coeli enarrant,” “Le Déluge,” “La Lyre et la harpe”; three symphonies; four symphonic poems (“Le Roi d’Ophale,” “Phadon,” “Diane Macabre,” “La Jeunesse d’Hércules,” “The Organ Concerto”); three sinfonia concerti; three suites, marches, and other works for orchestra; the ballet Zorlitti; music to the drama Déjantie, given at the open-air theatre of Béziers; a quintet for flute, violin, viola, cello, and harp; over twenty pianoforte pieces; numerous songs, duets and choruses. He also published two volumes of poems, Rimes familières, and Problèmes et mystères; besides a volume of poems, Rimes familières. The honorary degree of Doctor of Music was conferred upon him by Cambridge University in 1893.
Accordingly, when he was nearly forty years of age he went through a varied course of study and experiment, in order to enlarge and clarify his view of things. One of these experiments was an unhappy marriage—undertaken merely that he might have a salon—which, after a year's duration, was dissolved by mutual consent. The result of his experiments was that he found himself completely impoverished, and lived in penury for the remainder of his life. The first of his numerous writings, *Lettres d'un habitant de Genève*, appeared in 1802; but his early writings were mostly scientific and political. In 1817 he began in a treatise entitled *L'Industrie to propound his sociological views, which were to some extent influenced by Comte's ideas (*1810)*; a periodical on which Augustin Thierry and Auguste Comte collaborated. The first number caused a sensation, but it brought few converts. In 1821 appeared Du système industriel, and in 1823-1824 *Catéchisme des industriels*. The last and most important expression of his views is the *Nouveau Christianisme* (1825), which he left unfinished. For many years before his death in 1825 (at Paris on the 19th of May), Saint-Simon had been reduced to the greatest straits. He was obliged to accept a laborious post, working nine hours a day for £20 a year, to live in a garret of a farm. He was forced sometimes to solicit a small pension from his family. In 1823 he attempted suicide in despair. It was not till very late in his career that he attached to himself a few ardent disciples.

As a thinker Saint-Simon was entirely deficient in system, clearness and consecutive strength. But his great influence on modern thought is undeniable, both as the historic founder of French socialism, and as suggesting much of what was afterwards elaborated into Comte's system. Apart from the details of his sociological teaching, which are vague and unsystematic, we find that the ideas of Saint-Simon as to the reconstruction of society are very similar. This was not surprising; his opinions were conditioned by the political and social conditions prevailing in France. In opposition to the destructive liberalism of the Revolution he insisted on the necessity of a new and positive reorganization of society. So far was he from advocating fresh social revolt that he appealed to Louis XVIII. to inaugurate the new order of things. In opposition, however, to the feudal and military system, the former aspect of which had been strengthened by the restoration, he advocated an arrangement by which the industrial chiefs should control society. In place of the medieval church the spiritual direction of society should fall to the men of science. What Saint-Simon desired, therefore, was an industrialist state directed by modern science in which universal association should suppress war. In short, the men who are fitted to organize society for productive labour are entitled to bear rule in it. The social aim is to produce things useful to life. The contrast between labour and capital so much emphasized by later socialism is not present to Saint-Simon, but it is assumed that the industrial chiefs, to whom the control of production is to be committed, shall rule in the interest of society. Later on the cause of the poor receives greater attention, till in his greatest work, *The New Christianity*, it takes the form of a religion. It was this development of his teaching that occasioned his final quarrel with Comte. Previous to the publication of the *Nouveau Christianisme*, Saint-Simon had not concerned himself with theology. Here he starts from a belief in God, and his object in the treatise is to reduce Christianity to its simple and essential elements. He does this by clearing it of the dogmas and other excrescences and defects which have gathered round the Catholic and Protestant forms of it. He propounds as the comprehensive formula of the new Christianity this precept: "The whole of society ought to strive towards the amelioration of the moral and physical existence of the poorest class; society ought to organize itself in the way best adapted for attaining this end." This principle became the watchword of the entire school of Saint-Simon.

During his lifetime the views of Saint-Simon had very little influence; and he left only a few devoted disciples, who continued to advocate the doctrines of their master, whom they revered as a prophet. Of these the most important were Olinde Rodrigues, the favoured disciple of Saint-Simon, and Barthélemy Prosper Enfantin (q.v.), who together had received Saint-Simon's last instructions. Their first step was to establish a journal, *Le Producteur*, but it was discontinued in 1826. The sect, however, had begun to grow, and before the end of 1828, had meetings not only in Paris but in many provincial towns. An important departure was made in 1828 by Amand Bazard, who gave a "complete exposition of the Saint-Simonian faith" in a long course of lectures at Paris, which were well attended. His *Exposition de la doctrine de St Simon* (2 vols., 1825-1830), which is by far the best account of it, won more adherents. The system was in some degree thrown into a more coherent form by Enfantin, who along with Bazard stood at the head of the society, but who left it in 1828, and was soon to be reared in a physical, and was prone to push his deductions to extremities. The revolution of July (1830) brought a new freedom to the socialist reformers. A proclamation was issued demanding the community of goods, the abolition of the right of inheritance, and the enfranchisement of women. Early next year the school obtained possession of the *Globe* through Pierre Leroux (q.v.), who had joined the school, which now numbered some of the ablest and most promising young men of France, many of the pupils of the École Polytechnique having caught its enthusiasm. A series of new periodicals appeared, and the word *Sanisme* was to be heard throughout France. The system was no longer a form of Christianity in the sense of its founder, but was included in three grades, and constituting a society or family, which lived out of a common purse in the Rue Monsigny. Before long, however, dissensions began to arise in the sect. Bazard, a man of logical and more solid temperament, could no longer work in harmony with Enfantin, who desired to establish an arrogant and fantastic sacerdotalism with lax notions as to marriage and the relation of the sexes. After a time Bazard seceded and many of the strongest supporters of the school followed his example. A series of extravagant entertainments given by the society during the winter of 1830 reduced its financial resources and greatly discredited it in character. They finally removed to Ménilmontant, to a property of Enfantin, where they lived in a communistic society, distinguished by a peculiar dress. Shortly after the chiefs were tried and condemned for proceedings prejudicial to the social order; and the sect was entirely broken up (1832). Many of its members became famous as engineers, economists, and men of business.

In the school of Saint-Simon we find a great advance on the vague and confused views of the master. In the philosophy of history they recognize epochs of two kinds, the critical or negative and the constructive. The former period, in which the dominating force is characterized by war, egoism and anarchy, the latter, which is controlled by religion, is marked by the spirit of devotion and sacrifice. Socialism and association are the two great social principles, and on the degree of prevalence of the two depends the character of an epoch. The spirit of association, however, tends more and more to prevail over the spirit of government, and the family is to be extended from the family to the city, from the city to the nation, and from the nation to the federation. This principle of association is to be the keynote of the social development of the future. Under the present system the industrial chief exploits the proletariat, the members of which, though nominally free, must accept his terms under pain of starvation. The only remedy for this is the abolition of the law of inheritance, and the union of all the instruments of labour in a social fund, which shall be exploited by association. Society thus becomes sole proprietor, intrusting to social groups and social functionaries the management of the various properties. The right of succession is transferred from the family to the state. The school of Saint-Simon insists strongly on the claims of merit; they advocate a social hierarchy in which each man shall be placed according to his capacity and rewarded according to his works. This is, indeed, a most special and pronounced feature of the Saint-Simonian socialists, and its theory of government is a kind of spiritual or scientific autocracy, degenerating into the fantastic sacerdotalism of Enfantin. With regard to the family and the relation of the sexes, they leaned strongly on the Christian law of marriage. Connected with these doctrines was their famous theory of the "rehabilitation of the flesh," deduced from the philosophic theory of the school, which they regarded as "Christian." On this theory they rejected the dualism so much emphasized by Catholic Christianity in its penalties and mortifications, and held that the body should be restored to its
dutiful to the duke of Burgundy with that to the duke of Orleans. Both attachments were no doubt all the more sincere because of his undying hatred to "the bastards," that is to say, the illegitimate sons of Louis XIV. It does not appear that this hatred was founded on moral reasons or on any real fear that these bastards would be intruded into the succession. The true cause of his wrath was that they had preceded the peers.

The death of Louis seemed to give Saint-Simon a chance of realizing his hopes. The duke of Orleans was at once acknowledged regent, and Saint-Simon was of the council of regency. But no sooner was this taken to heart by the few government officials of France, ruled by the nobles for its good, and he had little real influence with the regent. He was indeed gratified by the degradation of "the bastards," and in 1721 he was appointed ambassador to Spain to arrange for the marriage (not destined to take place) of Louis XV. and the infant. His visit was splendid; he received the grandeeship, and, though he also caught the smallpox, he was quite satisfied with the business. After his return he had little to do with public affairs. His own account of the cessation of his intimacy with Orleans and Dubois, the latter of whom had never been his friend, is, like his own account of some other events, written while he was still in life, and without much love or respect, and it is little doubt that he was practically ousted by the favourite. He survived for more than thirty years; but little is known of his life. His wife died in 1743, his eldest son a little later; he had other family troubles, and he was loaded with debt. When he died, at Paris on the 2nd of March 1755, he had almost entirely outlived his own generation (among whom he had been one of the youngest) and the prosperity of his house, though not its notoriety. This last was in strange fashion revived by a distant relative born five years after his own death, Claude Henri, comte de Saint-Simon (q.v.).

will have been observed that the actual events of Saint-Simon's life, though they were in some degree connected him, are neither numerous nor noteworthy. He is, however, an almost unique example of a man who has acquired great literary fame entirely by posthumous publications. He was an indefatigable writer, and he began early to set down in black and white all the gossip he collected, all his interminable legal disputes of precedence, and a vast mass of unclassified and almost unclassifiable matter. Most of his manuscripts came into the possession of the government, and it was long before their contents were published in anything like formality. Partly in the form of notes on Dangeau's Journal, partly in that of original and independent memoirs, partly in scattered and multi-ple sheets, they belong in the highest degree to the enormous and immense amount of matter. But the mere mass of these productions are their least noteworthy feature, or rather it is most remarkable as contrasting with their character and style. Saint-Simon, though possessed of certain literary gifts, seems to have been something the striking memoir-writers of France, the country richest in memoirs of any in the world. His pettiness, his absolute injustice to his contemporaries and to those who espoused public parties with which he did not agree, the bitterness which allows him to give favourable portraits of hardly any one, his omnivorous appetite for gossip, his lack of proportion and perspective, are all lost sight of in admiration of his extraordinary genius for historical narrative and character-drawing of a certain sort. He has been compared to Tacitus, and for once the comparison is just. In the midst of his enormous mass of writing phrases scarcely inferior to the Roman's occur frequently, and here and there are passages of sustained description, of intense concentration of light and life, to those of Tacitus or of any other historian. As may be expected from the vast extent of his work, his style is often that of a writer who is not a writer who can be "sampled" easily, inasmuch as his most characteristic phrases sometimes occur in the midst of long stretches of quite uninteresting matter. A few critical studies of his appearance, of his style, is his methods and to the large addition of pure knowledge which he has written about him. Yet no one is so little to be taken at second-hand.

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ST THOMAS (Saint-Thomé), a volcanic island in the Gulf of Guinea immediately north of the equator (° 32' N.) and in 6° 40' E. With the island of Principe (Prince's Island), it forms the Portuguese province of St. Thomas. From the Gabun, the nearest point of the mainland of Africa, St Thomas is distant 166 m., and from Cameroon 207 m. The extreme length of the island is 32 m. the breadth W. to E. 21 m.; the area is about 400 sq. m.

From the coast, the land rises towards lofty verdant mountains (St Thomas, 1,500 ft). At least a hundred streams, small, descend the mountain-sides through deep-cut ravines, many of them forming beautiful waterfalls, such as those of Blu-blu on the Agua Grande. The island during its occupation, by the Dutchmen, much of the country, the noodles, in the direction of the churchyard, and the death-rate is still very high. Malaria is common in the lower regions, but the unhealthiness of the island is largely due to the absence of hygienic precautions. During the dry season (June to September) the temperature ranges in the lower parts between 66°-2 and 80°-6 F., and in the higher parts between 57°-2 and 68°; in the rainy season it ranges between 69°-8 and 89°-6 in the lower parts, and between 64°-9 and 89°-6 in the higher parts. The mean of ten years was 68°-9, the maximum 90°-5 and the minimum 47°-3. The heat is tempered by the equatorial oceanic current. The rainfall is low but uniform.

The soil is exceedingly fertile and a considerable area is densely forested. Among the products are oranges, lemons, figs, mangoes, and in the lower districts the vine, pineapple, guava and banana. The first object of European cultivation was sugar, and to this the island owed its prosperity in the 17th century; sugar has been displaced by coffee and, principally, coca, introduced in 1795 and 1822 respectively. In 1907 the export of coca (including that from Principe) was over 24,000 tons, about a sixth of the world's supply. The cocoa zone lies between 65° and 2000 ft. above the sea. Vanilla and cinchona bark both succeed well, the latter at altitudes of from 1800 to 2000 ft. Coffee, tobacco, palm-oil, and cotton are also produced, but since 1895—the production was under 3000 tons—cocoa has been almost exclusively grown. About 175 sq. m. were in 1910 under cultivation. The value of the imports was £1,750,000 in 1896 and £1,970,000 in 1906. The shipping trade (190 vessels of 460,000 tons in 1908) is chiefly in the hands of the Portuguese. The Government (1905-9) was about £165,000, the expenditure £162,000.

At the census of 1900 the inhabitants were returned as 37,776, of whom 10,121 were whites (mainly Portuguese). The town of St Thomas, the greatest port, and the town of Principe, with its government and of the Curador (the official guardian of the senhorias, i.e. plantations), is situated on Chaves Bay on the N.E. coast. It is the starting-point of a railway 9 m. long, which connects with the Portuguese railways on the coast. The inhabitants of the island, as well as of the Portuguese settlements on the mainland, from the Europeans, consist (1) of descendants of the original settlers, who were convicts from Portugal, slaves and others from Brazil and negroes from the Gabun and other parts of the Guinea coast. They number about 6000, are a brown-skinned, indolent race, and occupy rather than cultivate about one-eighth of the island, which are known as "natives" and use a Negro-Portuguese "lingua de São Tomé." (2) On the south-west coast are Angolares, the 3000 or more descendants of two hundred Angolares, slaves wrecked at Sete-Pedras in 1544. They retain their Bunda speech and customs, and are expert fishermen and canoe-men. (3) Contract labourers from Cape Verde and from the South American republics. The principal wealth of the population is in coffee, the industry was the only 22,000.

St Thomas was discovered on the 21st of December 1470 by the Portuguese navigators João de Santarem and Pero de Escobar, who in the beginning of the following year discovered Annobon ("Good Year"). They found St Thomas uninhabited. The first attempt at colonization was by João de Paiva's in 1455; but this venture was not permitted, and all the criminals and of young Jews taken from their parents to be baptized were sent to the island, and the present capital was founded by Alvaro de Carmonha. In the middle of the 16th century there were over 80 sugar mills on the island, which had a population of 50,000; but in 1567 the settlement was attacked by the French, and in 1753 the Angolares began raids which only ended with their submission in 1693. In 1805 there was a slave revolt; and from 1841 to 1844 the Dutch and plague ruined the capital in 1660, held possession of the island. The Portuguese government again established itself and had to get the sugar industry back to Brazil and internal anarchy reduced St Thomas to a deplorable state. It was not until the later half of the 19th century that prosperity began to return.

The greatly increased demand for cocoa which arose in the last decade of the century led to the establishment of many additional plantations, and a very profitable industry was developed. Planters, however, were handicapped by the scarcity of labour, for though a number of Cape Verde islanders, Krumen and Kabindas employed on short-term agreements, the "natives" would not work. The difficulty was met by the recruitment of indented natives from Angola, as many as 6000 being brought over in one year. The mortality among these labourers was great, but they were very well treated on the plantations. No provision was, however, made for their repatriation, while the great majority were brought by force from remote parts of Central Africa and had no idea of the character of the agreement into which they were compelled to enter. From time to time governors of Angola endeavoured to remedy the abuses of the system, which both in Portugal and Great Britain was denounced as an iniquitous trust. The opposition to slavery has been legally abolished in the Portuguese dominions in 1878. In March 1909 certain firms, British and German, as the result of investigations made in Angola and St Thomas, refused any longer to import cocoa from St Thomas or Principe Islands unless the recruitment of labourers for the plantations was made voluntary. Representations to Portugal were made by the British government, and the Lisbon authorities stopped recruitment entirely from July 1899 to February 1910, when it was resumed under new regulations. British consular agents were stationed in Angola and St Thomas to watch the working of these regulations. (See statement by Sir E. Grey reported in The Times, July 2nd, 1910.) As one means of obviating the difficulties encountered in Angola the recruitment of labourers from Mozambique was begun in 1908, the men going out on a yearly contract.

Principe Island lies 90 m. N.E. of St Thomas, has an area of about 42 sq. m. and is also of volcanic origin. Pop. (1900) 4327. The tssete fly (which is not found in St Thomas) infests the wooded part of the island, and through it sleeping sickness has spread among the inhabitants. The principal industry is the cultivation of cocoa. The chief settlement is St Antonio.

See A. Negrel: Law, Historia etnographica da Ilha de St Thomé (Lisbon, 1896) and St Thomé (Paris, 1901); C. Gravereau "Mission scientifique à l'île de San Thomé; Nouv. Arch. Miss. Scien. t. xv. (Paris, 1907); A. Pinto de Miranda Guedes, "Viagem em St Thomé" in B.S.G. Lisboa (1902) pp. 475-475. E. de Campos

1 According to Aug. Chevalier (in O. Occidentale, May 20th, 1910) the population of St Thomas and Principe combined in December 1909 was 68,221, the "natives" being given at over 23,000.
ST THOMAS—ST VINCENT, EARL OF

"S. Thomé" B.S.G. Lisbon (1908). pp. 113-134; W. A. Cadbury, Labour in Portuguese West Africa (2nd ed., London, 1910); A Sila de S. Thomé (Lisbon, 1907); The Beira Entrance Plantations (Edinburgh, 1907); and British Consular Reports. 

ST THOMAS, an island in the Danish West Indies. It belongs to the Virgin Island group, and lies 40 m. E. of Porto Rico, in 18° 20' N. and 64° 55' W. Pop. (1901) 11,012, mostly negroes. It is 13 m. long, varies in width from 1 m. to 4 m. and has an area of 33 m. It consists of a single mountain ridge, the peaks of a submerged range, culminating in West Mountain (1555 ft.). St Thomas stands on a prolongation of the range which supports the Greater Antilles, and is built up of much disintegrated eruptive rock (porphyry and granite). The climate is tropical, varying in temperature between 76° F. and 86° F., modified however, by the influence of ocean currents. There is a rainy season, lasting from April to September, and a dry season, from October to March. Earthquakes are not unknown, and hurricanes at times sweep over the island. The only town, Charlotte Amalie (pop. 8,540), lies in the centre of the S. coast, at the head of one of the finest harbours in the West Indies. This consists of an almost landlocked basin, about ½ m. across, varying in depth from 27 to 36 ft., and entered by a narrow channel only 300 yds. wide. It is equipped with a floating dock, which can accommodate ships up to 3000 tons, a patent slip for smaller vessels and a repairing yard. Danish is the official language, but English is understood, while French, Spanish and Dutch are also spoken. St Thomas was once the greatest distributing centre in the West Indies, but the introduction of steamships and cables led to its decline, and the removal of the Royal Mail Steamship Company's headquarters to Barbados in 1885 was the final blow. The production of sugar, which decayed gradually after the abolition of slavery, is practically extinct. Aloeas, fibrous plants and fruit are grown. St Thomas is the seat of government for the Danish West Indies (St Thomas, St John and St Croix), a crown colony administered by a governor, who is assisted by a colonial council. The governor resides for half the year in St Thomas, and in St Croix when the latter is in session. The chief importance of St Thomas lies in the fact that it is a coaling station for ships plying to and from the West Indies. 

The island was discovered by Columbus in 1493, and first colonized by the Dutch in 1657. After their departure in 1667 the island came into the hands of the British, and it was held by them till 1671, when it passed into the hands of the Dutch West India Company, which was succeeded in 1685 by the so-called Brandenburg Company, the shareholders of which were mainly Dutch. The king of Denmark having taken over 1654, declared his right to the port, and during the European wars of the 18th century the neutrality of Denmark gave a great impetus to the trade of St Thomas. It was during this period that the distributing trade of the island grew up. It was held by the British in 1801 and again from 1807 to 1815, during which it was the great rendezvous of British merchant vessels waiting for convoy. In 1867, when the islands were governed at a loss to the mother country, a treaty was concluded under which the United States agreed to buy them for 7½ million dollars, but, although the suggestion first emanated from the United States, its Senate refused to ratify the treaty. In 1902 another treaty of cession was signed by which the United States was to buy the islands for 5 million dollars, but the Danish parliament rejected it. The importance of the islands to the United States consists in their suitability as a West Indian naval base.

ST TROND, a town of Belgium in the province of Limburg about 18 m. N.W. of Liége. Pop. (1904) 15,116. It occupies an important strategic position with regard to the N.E. frontier of Belgium, and General Brialmont recommended its fortification. In the middle ages it was a fortified town belonging to the bishops of Liége, and Charles the Bold captured it in 1467. In 1566 the Assembly of Compromise met at St Trond.

SAINT-VICTOR, PAUL BINS, Comte de (1827-1881), known as Paul de Saint-Victor, French author, was born in Paris on the 11th of July 1827. His father Jacques B. M. Bins, comte de Saint-Victor (1772-1838), is remembered by his poem L'Espérance, and by an excellent verse translation of Anacreon.

Saint-Victor, who ceased to use the title of count as being out of keeping with his democratic principles, began as a dramatic critic on the Pays in 1831, and in 1883 he succeeded Théophile Gautier on the Presse. In 1866 he migrated to the Libérité, and in 1869 joined the staff of the Moniteur universel. In 1870, during the last days of the second empire, he was made inspector-general of fine arts. Almost all Saint-Victor's work consists of articles, the best known being the collection entitled Hommes et dieux (1867). His death interrupted the publication of Les Deux Masques, in which the author intended to survey the whole dramatic literature of ancient and modern times. Saint-Victor's critical faculty was not faltering, though rather considered. He owed a good deal to Théophile Gautier, but he carried orateness to a pitch far beyond Gautier's. Saint-Victor died in Paris on the 9th of July 1881.

See also Deljant, Paul de Saint-Victor (1887).
peril was averted by his foresight and severity. He had always taken great care of the health of his men, and was as strict with the officers as with sailors. It must in justice be added that he was peculiarly fitted for the work. We have ample evidence from his contemporaries that he found a pleasure in insulting officers whom he disliked, as well as in hanging and flogging those of his men who offended him. He carried his strictness with his officers to an extent which aroused the actual hatred of many among them, and especially of John Orde (1752-1824) into challenging him to fight a duel. Yet he cannot be denied the honour of having raised the discipline of the navy to a higher level than it had reached before; he was always ready to promote good officers, and the efficiency of the squadron with which Nelson won the battle of the Nile was largely due to him. His health broke down under the strain of long cruising, and in June 1799 he resigned his command. When the earl's health was restored in the following year he took the command of the Channel fleet, into which he introduced his own rigid system. He returned to his house at Rochetts in Essex. The rank of admiral of the fleet was conferred on him in 1821 on the coronation of George IV., and he died on the 14th of March 1823. Lord St Vincent married his cousin Martha Parker, who died childless in 1816. There is a monument to the earl in St Paul's Cathedral, and portraits of him at different periods of his life are numerous. The eardom granted to Jervis became extinct on his death, but a viscountcy, created for him in 1801, passed by special remainder to Edward Jervis Ricketts (1767-1857), the second son of his sister Mary who had married William Henry Ricketts, of Longwood, Hampshire. A vinegar took the name of Jervis, and the title is still held by his descendants.

See Life by J. S. Tucker (2 vols.), whose father had been the admiral's secretary (marred by excessive eulogy). The life by Captain Brenton is rather inaccurate. The Naval Career of Admiral John Markham contains an account of the reforms in the navy. His administrations produced a swarm of pamphlets. Many mentions of him will be found in the correspondence of Nelson.

(D. H.)

**ST VINCENT**, one of the British Windward Islands in the West Indies, lying about 13° 15′ N., 61° 10′ W., west of Barbados and south of St. Lucia. It is about 28 sq. m. by 11 in extreme width, and has an area of 140 sq. m. A range of volcanic hills forms the backbone of the island; their slopes and spurs are beautifully wooded, and the valleys between the spurs are fertile and picturesque. The culminating point is the volcano called the Soufrière (3500 ft.) In the north, the disastrous eruption of which in May 1902 devastated the most fertile portion of the island, a comparatively level tract lying to the north, called the Carib Country (see below). The climate of St Vincent is fairly healthy and in winter very pleasant; the average annual rainfall exceeds 150 in., and the temperature ranges from 88° F. in August to 66° in December and January. Hurricanes are not uncommon.

The capital of the island is Kingstown, beautifully situated on the south-west coast near the foot of Mount St Andrew (2600 ft.).

The population of the island in 1891 was 41,054 (2445 white, 7554 coloured, 31,055 black); in 1906 it was estimated at 34,000. There were about 3300 East Indian coolies, a large number of whom were introduced in 1861 and following years, but on the expiry of their indentures mostly returned home; there were also a few Caribs of mixed blood, the majority of the aboriginal Caribs having being exterminated by disease, or having returned to the wilds. The average annual value of exports in 1896-1906 was £5,157 (in 1903-1904, the year following that of the great eruption, it was £38,174, and in 1905-1906 it was £53,078) and of imports, £30,467. In 1905-1906 the value of imports from the United Kingdom was £5,471, and that of exports to the United Kingdom £24,405.

The present constitution dates from 1877, when the legislative council was reformed. It consists of four nominated members, was formed. In 1869 an important scheme was entered upon, by means of a grant of £15,000 from the Imperial treasury, for settling the labouring population, distressed by the failures of the sugar industry, in the position of peasant proprietors. Estates were acquired from private owners for this purpose, and besides this a number of small holdings on crown lands (which are situated mainly in the high-lying central parts of the island) have been sold. Education is free and compulsory on St Vincent; it includes primary schools, the St Vincent Grammar School, and the Kingstown a grammar school and an agricultural school. The Anglican, Wesleyan and Roman Catholic churches are well represented, and there are some Presbyterians.

St Vincent is generally stated to have been discovered on St Vincent's day, 22nd of January 1498 by Columbus. Its Carib inhabitants, however, remained undisturbed for many years. In 1627 Charles I. granted the island to the earl of Carlisle; in 1672 it was re-granted to Lord Willoughby, having been previously (1660) declared neutral. In 1722 a further grant of the island was made, to the duke of Montague, and now for the first time a serious effort at colonization was made, but the French insisted on the maintenance of neutrality, and this was confirmed by the treaty of Aix-la-Chapelle (1748). In 1762, however, General Monckton captured the island; the treaty of Paris in 1763 confirmed the British possession, and settlement proceeded in spite of the refusal of the Carib to admit British sovereignty. Recourse was had to arms, and in 1773 a treaty was concluded with them, when they were granted lands in the north of the island as a reserve. In 1779 the island was surrendered to the French, but it was restored to Britain by the treaty of Versailles (1783). In 1795 the Caribs rose, assisted by the French, and were only put down after considerable fighting by Sir Ralph Abercromby in 1796, after which the majority of them were deported. The emancipation of negro slaves on the island took place in 1838; in 1846 the first Portuguese labourers were introduced, and in 1867 the first Indian coolies. St Vincent suffered from a terrific hurricane in 1788, and the Soufrière was in eruption in 1821. Severe distress was occasioned by the hurricane of the 11th of September 1898, from which the island had not recovered when it was visited by the eruption of the Soufrière in 1902. This eruption was synchronous with that of Mont Pelé in Martinique (q.v.). There had been signs of activity since February 1901, but the most serious eruption took place on the 6th/7th of May 1902. There were earthquakes in the following July, and further eruptions on the 3rd of September and the 15th of October, and on the 22nd of March 1903. Many sugar and arrowroot plantations were totally destroyed, and the loss of life was estimated at 2000. A Mansion House Fund was at once started in London for the relief of the sufferers, and subscriptions were sent from all parts of the civilized world, and notably from the United States.

**ST VINCENT, BATTLE OF**, fought on the 14th of February 1797, between the British and Spanish fleets, the most famous and important of many encounters which have taken place at this spot. The battle of 1797 is of peculiar significance in British naval history, not only because it came at a vital moment,
but because it first revealed the full capacity of Nelson, which was well known in the navy, to all his countrymen. In the course of 1796 the Spanish government had made the disastrous alliance with the French republic, which reduced its country to the level of a pawn in the game against England. The Spanish fleet, which was in a complete state of neglect, was forced to sea. It consisted of 27 sail of the line under the command of Don José de Córdoba—five ships, but manned in haste by drafts of soldiers, and of landsmen forced on board by the press. Even the flagships had only about eighty sailors each in their crews. Don José de Córdoba, who had gone out with no definite aim, was in reality drifting about with his unmanageable ships in two confused divisions separated from one another, in light winds from the W. and S.W., at a distance of from 25 to 30 m. S.W. of Cape St. Vincent, and the position he was sighted by Sir P. Jervis, of whose nearness to himself he was ignorant, and who had sailed from Lisbon to attack him with only 15 sail of the line. Jervis knew the inefficient condition of the Spaniards, and was aware that the general condition of the war called for vigorous exertions. He did not hesitate to give battle in spite of the numerical superiority of his opponent. Six of the Spanish ships were to the south of him, separated by a long interval from the others which were to the south west. The British squadron was formed into a single line ahead, and was steered to pass between the two divisions of the enemy. The six vessels were thus cut off. A fierce attempt was made by them to molest the British, but being now to leeward as Jervis passed to the west of them, and being unable to face the rapid and well directed fire to which they were exposed, they sheered off. One only ran down the British line, and passing to the stern of the last ship succeeded in joining the bulk of her fleet to windward. As the British line passed through the gap between the Spanish divisions the ships were tacked in succession to meet the windward portion of the enemy. If this movement had been carried out fully, all the British ships would have gone through the gap and were steered to windward to secure themselves from being unimpeded to the north, and perhaps to avoid being brought to a close general action. Their chance of escape was baffled by the independence and promptitude of Nelson. His ship, the "Captain" (74), was the third from the end of the British line. Without waiting for orders he made a sweep to the west, threw himself across the bows of the Spaniards. His movement was seen and approved by Jervis, who then ordered the other ships in his rear to follow Nelson's example. The British force was thrown bodily on the enemy. As the Spanish crews were too utterly unpractised to handle their ships, and the six vessels out of the orders of their officers which they did not understand, their ships were soon driven into a herd, and fell on board of one another. Their incompetence as gunners enabled the "Captain" to assail their flagship, the huge "Santisima Trinidad" (70), with comparative impunity. The "San Josef" (112), and the "San Nicolás" (80), which fell aboard of one another, were both carried by boarding by the "Captain." Four Spanish ships, the "Salvador del Mundo" and "San Josef" (112), the "San Nicolás" (80), and the "San Isidro" (74), were taken. The "Santisima Trinidad" is said to have struck, but she was so far away from the main body of the fleet that the Spaniards were fairly beaten. More prizes might have been taken, but Sir John Jervis put a stop to the action to secure the four which had surrendered. The Spaniards were allowed to retreat to Cadiz. Sir John Jervis was made Earl St Vincent (q.v.) for his victory. The battle, which revealed the worthlessness of the Spanish navy, relieved the British government from a load of anxiety, and may be said to have marked the complete predominance of its fleet on the sea.

AUTHORITIES.—A very interesting account of the battle of Cape St Vincent, A Narrative of the Proceedings of the British Fleet, &c. (London, 1797), illustrated by plans, was published immediately afterwards by Colonel Drinkwater Bethune, author of the History of the Siege of Gibraltar, who was an eyewitness from the "Lively" frigate. See also James's Naval History (London, 1837); and Captain Mahan, The Influence of Sea Power on the French Revolution and Empire (London, 1892). (D. H.)

ST VITUS'S DANCE, or CHOREA, a disorder of the nervous system occurring for the most part in children, and characterized mainly by involuntary jerking movements of the muscles throughout almost the entire body (see NEUROPATHOLOGY). Among the predisposing causes age is important, chorea being essentially an ailment of childhood and particularly during the period of the second dentition between the ages of nine and twelve. It is not often seen in very young children nor after puberty; but there are many exceptions. It is twice as frequent with girls as with boys. Hereditary predisposition to nervous troubles is apt to find expression in this malady, especially if the general health becomes lowered. Of exciting causes strong emotions, such as fright, ill-usage or hardship of any kind, insufficient feeding, overwork or anxiety, are among the most common; and perhaps the most frequent of all are the attacks of some febrile disease, such as typhus fever, or intestinal worms, appears capable of giving rise to an attack. It is an occasional but rare complication of pregnancy. The connexion of chorea with rheumatism is now universally recognized, and is shown not merely by its frequent occurrence before, after or during the course of attacks of rheumatic fever in young persons, but even independently of this by the liability of the heart to suffer in a similar way in the two diseases. Poynto and Paine have demonstrated a diplococcus, which they regard as the specific micro-organism of rheumatism, and which has been found in the lymph spaces in the cortex in chorea. An attempt has recently been made to demonstrate the infectious nature of the chorea.

The symptoms of St Vitus's dance sometimes develop suddenly as the result of fright, but much more frequently they come on insidiously. They are usually preceded by changes in disposition, the child becoming sad, irritable and emotional, while at the same time the general health is somewhat impaired. The first thing indicative of the disease is a certain awkwardness or fidgetiness of manner together with restlessness. In walking, too, slight dragging of one limb may be noticed. The convulsive movements of the neck and arms are generally the first, such as an arm or a leg, and in some instances they may remain localized to that limited extent, while in all cases there is a tendency for the disorderly symptoms to be more marked on one side than on the other. When fully developed the phenomena of the disease are very characteristic. The child when standing or sitting is never still, but is constantly changing the position of the body or limbs or the facial expression in consequence of the sudden and incoordinate action of muscles or groups of them. These symptoms are aggravated when purposeful movements are attempted or when the child is watched. Speech is affected both from the incoordinate movements of the tongue and from phonation sometimes taking place during an act of inspiration. The taking of food becomes a matter of difficulty, since much of it is lost in the attempts to convey it to the mouth, while swallowing is also interfered with owing to the irregular action of the pharyngeal muscles. When the tongue is protruded it comes out in a jerky manner and is immediately withdrawn, the jaws at the same time closing suddenly and sometimes with considerable force. In locomotion the muscles of the limbs act incoordinate and there is a marked alteration of the gait, which is often jerky, and the child may be tripped by one limb being suddenly jerked in front of the other. In short, the whole muscular system is deranged in its operations, and the term "insanity of the muscles" not inaptly expresses the condition, for they no longer act in harmony or with purpose, but seem, as Trouseau expresses it, each to have a will of its own. The muscles of organic life (involuntary muscles) appear scarcely.

1 This name was originally employed in connexion with those remarkable epidemic outbreaks of combined mental and physical excitement which for a time prevailed among the inhabitants of some parts of Germany in the middle ages. It is stated that sufferers from this dancing mania were wont to resort to the chapels of St Vitus (more than one in Swabia), the saint being believed to possess the power of curing them. The transference of the name to the disease now under consideration was a manifest error, but so closely has the association now become that the original application of the term has been comparatively obscured.
if at all, affected in this disease, as, for example, the heart, the
rhythmic movements of which are not as a rule impaired. But
the cases are more frequently affected from inflammatory
conditions similar to those which attend upon rheumatism and
which frequently lay the foundation of permanent heart-disease.
In severe cases of St Vitus’s dance the child comes to present
a distressing appearance, and the physical health declines.
Usually, however, there is a remission of the symptoms during
sleep. The mental condition of the patient is more or less
affected, as shown in emotional tendencies, irritability and a
somewhat fatuous expression and bearing, but this change is
in general of transient character and ceases with convalescence.
Though the cases are always assayed in a very acute and aggravated
form, in which the disorderly movements are so violent as to
render the patient liable to be injured, and to necessitate forcible
control of the limbs, or the employment of anæsthetics to produce
unconsciousness. Such cases are of very grave character, if,
as is common, they are accompanied with sleeplessness, and
they may prove rapidly fatal by exhaustion. In the great
majority of cases, however, complete recovery is to be anticipated
sooner or later, the symptoms usually continuing for from one
to two months, or even sometimes much longer.
The symptoms have been debated for a long time, but it is doubtful
whether any of them has much control over the disease, which
under suitable hygienic conditions tends to recover of itself. These
conditions, however, are all-important, and embrace the proper
feeding, the most careful nursing, the injection of hot water, the
sources of excitement and annoyance, and the rectification of any
causes of irritation and of irregularities in the general health.
For a time, and especially if the symptoms are severe, confinement
to the house or even to bed may be necessary, but as soon as possible
the child should be taken out into the open air and gently exercised
by walking. Ruhrích, recognizing the importance of rest, recom-
mands, for the child is too weak, for at least 2 months. Of medicines
the most serviceable appear to be zinc, arsenic and iron, especially
the last two, which act as tonics to the system and improve the
condition of the blood. In view of the connexion of chorea with
rheumatic fever Dr. B. Less recommends salicylates, and bromide
of potassium in large doses. Recently ergot, hot packs and monobromate
of camphor have found advocates, while cessation of the movements has
followed the application of an ether spray to the spine twice daily.
As sedatives in cases of sleeplessness, bromide of potassium and
chloral are of use. In long-continued cases of the disease benefit
will be obtained by a change of air as well as by the employ-
ment of moderate gymnastic exercises. The employment of massage
and of electricity is also likely to be beneficial. After recovery the
general health of the child should for a long time receive attention,
and care should be taken to guard against excitement, excessive
studio life and overwork, conditions which, according to Ruhrích,
that the disease is apt to recur, and that other nervous disorders still
more serious may be developed from it.

SAINT-WANDRILLE, a village of north-western France, in
the department of Seine-Inferieure, 28 m. W.N. of Rouen
by rail. It is celebrated for the ruins of its Benedictine
abbey. The abbey church belongs to the 12th and 14th centuries;
portions of the nave walls supported by flying buttresses are
standing, and the windows and vaulting of the side aisles are in
fair preservation. The church communicates with a cloister,
from which an interesting door of the Renaissance period opens
into the refectory. Beside this entrance is a richly ornamented
lavabo of the Renaissance period. The refectory is a room over
100 ft. long, lighted by graceful windows of the same period.
The abbey was founded in the 7th century by St Wandrille, aided
by the donations of Clovis II. It soon became renowned for
learning and piety. In the 13th century it was burnt down,
and the rebuilding was not completed till the beginning of
the 16th century. Later in the same century it was practically
destroyed by the Huguenots, and again the restoration was not
finished for more than a hundred years. The demolition of the
church was begun at the time of the Revolution, but proceeded
slowly and in 1832 was entirely stopped.

SAINT YON, a family of Parisian butchers in the 14th and
15th century. Guillaume de Saint Yon is cited as the richest
butcher of the Grande Boucherie in the 14th century. The
family played an important rôle during the quarrels of the
Armagnacs and Burgundians. They were among the leaders of
the Cabochian revolution. The butchers of the Grande
Armagnacs, they recovered their influence after the return of
the Burgundians to Paris in 1418, but had to flee again in 1436
when the constable, Arthur, earl of Richmond, took the city.
Garnier de Saint Yon was échevin of Paris in 1473 and 1419;
Jean de Saint Yon, his brother, was valet de chambre of the
dauphin Louis, son of King Charles VI. Both were in the service of
the king of England during the English domination. Richard
de Saint Yon was master of the butchers of the Grande Boucherie in
1460.

ST YRIEX, a town of west central France, capital of an
arrondissement in the department of Haute-Vienne, on the
left bank of the Loue, 26 m. S. of Limoges on the railway to
Brive. Pop. (1906) town 35604, commune 7916. The town
possesses a church in the early Gothic style known as Le Montier,
dating from the 12th and 13th centuries, and a tower of the 12th
century which is a relic of its fortifications. Its quarries of
kaolin discovered in 1765 were the first known in France. The
town owes its name to Arelius (popularly St Yriex) who in the
6th century founded a monastery to which its origin was due.

SAIS (Egyptian Sa), an ancient city of the Egyptian Delta,
lying westward of the Thermuthiac or Sebennytic branch of the
Nile. It was capital of the 5th nome of Lower Egypt and must
have been important from remote times. In the 5th century
B.C. it was held by the Babylonians, but the Dinastatite
families ruled in the east and the kings of Ethiopia in
Upper Egypt. The Ethiopians found their most vigorous
opponents in the Saite princes Tefnakhtus and his son
Bocchoris “the Wise” of the XXIVth Dynasty. After reigning
six years the latter is said to have been burnt alive by Sabacon,
founder of the Egyptian XXVth Dynasty. At the time when
invasions by the Assyrians drove out the Ethiopian
Taracau again and again, the chief of the twenty princes to
whom Esarhaddon and Assur-ani-pal successively entrusted
the government was Nikiu, king of Sais and Memphis. His son
Psammetichus (95 r.) was the founder of the XXVIIth Dynasty.
Although the main seat of government was at Memphis, Sais
remained the royal residence throughout this flourishing dynasty.
Neith, the goddess of Sais, was identified with Athena, and
Osiris was worshipped there in a great festival.

The brick enclosure wall of the temple is still plainly visible near
the little village of Sa el hagar (Six of stone) on the east bank of the
River Nile, south of Assiut, and other monuments of Sais,
some of which were described by Herodotus, and its inscribed
records, have all gone. Only crude brick ruins and rubbish heaps
remain on the site, but a few relics conveyed to Alexandria and Europe
in the Roman age have come down to our day, notably the tall
sculptured statue of a priest of Neith who was high in favour with
Psammetichus III., Cambyses and Darius. Bronze figures of deities
are now the most interesting objects to be found at Sa el hagar.

SAISSET, BERNARD (d. c. 1314), French bishop, was abbé
of Saint Antonin de Pamiers in 1268. Boniface VIII.,
detaching the city of Pamiers from the diocese of Toulouse in 1295,
made it the seat of a new bishopric and appointed Saisset to the see.
Of a headstrong temperament, Saisset as abbé energetically
sustained the struggle with the counts of Foix, begun two
centuries before, for the lordship of the city of Pamiers, which
had been shared between the counts and abbots by the feudal
contract of pariage. The struggle ended in 1297 by an agree-
ment between the two parties as to their common rights, and
when the pope raised the ecclesiastic immunity purchased by the count,
Saisset absolved him in the refectory of the Dominican monastery
in Pamiers (1300). Saisset is, however, famous in French history
for his opposition to King Philip IV. As an ardent Languedocian
he hated the French, and spoke openly of the king in disrespectful
terms. But when he tried to organize a general rising of the south,
he was denounced to the king, perhaps by his old enemies the count
of Foix and the bishop of Toulouse. Philip IV. charged Richard
Leneuve, archdeacon of Auge in the diocese of Lisieux, and
Jean de Picquigny, vicomte d'Amiens, to make an investigation, which lasted several months. Saisset was on the point of escaping to Rome when the name of Amiens surprised him by night in his episcopal palace. He was brought to Sealis, and on the 24th of October 1301 appeared before Philip and his court. The chancellor, Pierre Flotte, charged him with high treason, and he was placed in the keeping of the archbishop of Narbonne, his metropolitan. Philip IV. tried to obtain from the pope the canonical condemnation of Saisset. Boniface VIII., instead, ordered the king in December 1301 to free the bishop, in order that he might go to Rome to justify himself. At the same time, he sent the famous bulls Seloetor mundus, a sort of repugnation of all the bulls of the Iron Age, and Assulca filii, which opened a new stage of the quarrel between the pope and king. In the heat of the new struggle Saisset was forgotten. He had been turned over in February 1302 into the keeping of Jacques des Normands, the papal legate, and was ordered to leave the kingdom at once. He lived at Rome until after the incident at Anagni. In 1308 the king pardoned him, and restored him to his see. He died, still bishop of Pampiers, about 1374.

There is no proof for the legend that Bernard Saisset earned Philip IV.'s hatred in 1300-1301 by bold statements of the pope denouncing the attempt of the king of France, and Philip, by publicly proclaiming the doctrine of papal supremacy.


SAISSET, ÉMILE EDMOND (1814-1863), French philosopher, was born at Montpellier on the 16th of September 1814, and died at Paris on the 17th of December 1863. He studied philosophy in the school of Cousin, and carried on the eclectic tradition of his master along with Ravaisson and Jules Simon. He was professor of philosophy at Caen, at the École Normale in Paris and later at the Sorbonne.

His chief works are a monograph on Aenesidemus the Sceptic (1840); Le Scepticisme: Énésidème, Pascal, Kant (1843): a translation of Spinoza (1843); Professeurs et disciples de Descartes (1862); Discours de la philosophie de Lethem (1857)—a work which had great influence on the progress of thought in France; Essai de philosophie religieuse (1859); Critique et histoire de la philosophie (1865).

SAKA, or SHAKA, an aboriginal people of the Malay peninsula found chiefly in south Peninsular Siam, and Pahang and Kelantan. They are widely scattered among Malay villages, but these are so crossed with the Malays as to be no longer typical. An attempt has been made to identify the Sakai with the Mon-Annam group of races, i.e. the tribes which till 600 years ago possessed what is now Siam, and some of whom still occupy Pegu and Cambodia.

Professor Virchow suggested that the Sakai belong to what he calls the Dravido-Australian race, the chief representatives of which he finds in the Veddahs of Ceylon, the civilised Tamils of south India and the aborigines of Australia. In essential characteristics of body and mind there is a remarkable agreement. The difficulty in accepting the theory of the common origin of the Chin, which among the Sakais is often a light shade of yellowish brown, whereas among Tamils black is the prevailing colour. Virchow meets this by pointing out that Sinhalese, though admittedly Aryans, are often so dark as to be practically black. The Sakais are, however, it is now generally held, kinsmen of their Negro neighbours, the Semangs (q.v.), and are, like the latter, dwarfish, seldom exceeding 4 ft. 9 in. Their skins are usually a darkish brown, but showing a reddish tinge about the breast and extremities. The head is long, and the hair a black brown, rather wavy then woolly. The face inclines to be long, and would be hatchet-shaped but for the breadth of the cheek bones. The chin is long and pointed, the forehead high and flat, the brows often beetling. The nose is small, slightly tilted or rounded off at the tip, but broad and with deep-set nostrils. The beard is usually scanty. The arm-stretch is almost always greater than their height. Their food is varied; the wilder tribes living on jungle fruits and game they hunt with the blowpipe, while the more civilised grow yams, sweet potatoes, maize, sugar cane, rice and tapioca. The Sakai blow-pipe is a tube 6 ft. long, formed of a single joint of a rare species of bamboo (Bambusa Wrayi). This tube is inserted into another for protection. The darts are made of fine slivers from the mid-rib of the leaf of certain palms, and are about the size of a knitting needle. The point is usually coated with poison compounded from the sap of the Upas tree (Antiaris toxicaria) and of a species of strychnos. Each dart is carried in a separate reed, thirty to fifty of these latter being rolled up and carried in a bamboo quiver. The Sakais can kill at thirty paces with these blow-pipes. They are nomads, building mere leaf-shelters in or under the trees. Their dress is of bark-cloth and they scar their faces, as do the Semangs. They are skilful in mat-making and basket-work, but they have no kind of weaving or pottery. They are musical, using a rough lute of bamboo and a nose-flute, and they sing well in chorus. They have in common with the Semangs curious marriage ceremonies. The dead are slung from a pole and carried to a distant spot in the jungle. Here, wrapped in new bark-cloth, the body is buried in a shallow trench, the clothes worn by the deceased being burned in a fire lighted near the grave. When filled up, rice is sown on the grave and watered, and some herbs and bananas are planted round for the soul to eat on. Afterwards a three-cornered hatchet, not unlike a doll's-house but mounted on high piles, is built at the foot, in which the soul may live. This soul-house is about r ft. high, it is thatched with leaves and has a ladder by which the soul can climb in.

SĀKE, the national beverage of Japan. In character it stands midway between beer and wine. It is made chiefly from rice (see BREWING). Saké contains 12 to 15% of alcohol and about 3% of solid matter (extractives), 0-3% of lactic
Sakhalin

Sakhalin, or Sakhil, is a large elongated island in the North Pacific, lying between 43° 57' and 44° 24' N., off the coast of the Russian Maritime Province in East Siberia, divided between the Russian and Japanese empires. Its proper Ainu name, Karafuto or Karafu, has been restored to the island by the Japanese since 1905. Sakhalin is separated from the mainland by the narrow and shallow Strait of Tatar or Mamiya Strait, which often freezes in winter in its narrower part, and from Yezo (Japan) by the Strait of La Pérouse. The island is 600 m. long, and 15 to 195 broad, with an area of 24,560 sq. m.

It is of geological and geophysical structure imperfectly known. The northern part of the island consists of a tableland which descends to the sea from north to south, reaching 2000 to 5000 ft. (Mt. Ichara, 4860 ft.), while, with two or more wide depressions, not exceeding 600 ft. above the sea. Crystalline rocks predominate, and occur in strata of considerable thickness, containing an abundant and specific fauna of gigantic ammonites, occur at Dui on the west coast, and Tertiary conglomerates, sandstone, marls and clays, fished by subsequent upheavals, in the Tym, north-east coast. The Tym coal and an abundant fossil vegetation, show that during the Miocene period Sakhalin formed part of a continent which comprised North Asia, Alaska, and Japan, and enjoyed a comparatively warm climate. The Pliocene deposits contain a mollusc fauna more arctic than that which exists at the present time, indicating probably that the connexion between the Pacific and Arctic Oceans was broken at this period. Only 5000 years ago were the inhabitants of Sakhalin able to navigate the sea.

The Tym, 250 m. long and navigable by rafts and light boats for 50 m., flows north and north-east with numerous rapids and shallows, and enters the Sea of Okhotsk. The Poroin flows south-west to the Gulf of Patience or Shishiro Bay, on the south-east coast. Three other small streams enter the wide semi-circular Gulf of Aniva or Hilagishumish Bay at the southern extremity of the island.

Owing to the influence of the raw, foggy Sea of Okhotsk, the climate is very cold. At Dui the average yearly temperature is only 33° 2.1° Fahr. (January 3.5°; July 61°); 35° 5.6° at Kusunai and 36° 5.6° at Aniva (January, 9.5°; July, 60-2°). At Alexandrovsk near Dui the temperature was 34° 2.4°, 90° and 5° Fahr. in the interior the minimum is -49° Fahr. The rainfall averages 232 in. Thick clouds for the most part shut out the sun; while the cold current from the Sea of Okhotsk, aided by north-east winds, brings the temperature down to the zero point. During the summer months the island is covered with dense forests, mostly coniferous. The Ayan spruce (Abies ayaensis), the Sakhalin fir (Abies sachalinensis) and the Daruvian larch are the chief trees; and under the mountains the range of Riapla, the Kusunai Karata, the Kurilian bamboo (Arundinaria kurilensis), the birch, both European and Kamchatkan (Betula alba and B. Ermanii), elder, poplar, elm, wild cherry (Prunus padus), Tatar baccata and several willows are mixed with the conifers; while farther south the maple, mountain ash and oak, as well as the Japanese Panax ricinfolium, the Amur cork (Philodendron amurense), the spindle tree (Euonymus macrapterus) and the vine (Vitis labruscera) make their appearance. The under-woods abound in butter-bearing plants (e.g. cloudberry, cranberry, crowberry, red whortleberry), barberry elder (Sambucus racemosa), wild raspberry and Spiraea. Bears, foxes, otters and sables are numerous. Reindeer are abundant, and deer, elk, chamois, roe, hares, squirrels, rats and mice everywhere. The avifauna is the common Siberian, and the rivers swarm with fish, especially species of salmon (Oncorhynchus). Numerous whales visit the sea-coast. Sea-lions, seals and dolphins are a source of profit.

Sakhalin was inhabited in the Neolithic Stone Age. Flint implements, exactly like those of Siberia and Russia, have been found at Dui and Kusunai in great numbers, as well as polished stone hatchets, like the European ones, primitive pottery with decorations like those of Olonets and stone weights for nets. Afterwards a population to whom bronze was known left traces in earthen walls and kitchen-middens on the Bay of Aniva. The native inhabitants consist of some 2000 Gilyaks, 1300 Ainus, with 750 Orochons, 200 Tunguses and Some Yakuts. The Gilyaks in the north support themselves by fishing and hunting.

The Ainus inhabit the south part of the island. There are also 32,000 Russians, of whom over 22,150 are convicts. A little coal is mined and some rye, wheat, oats, barley and vegetables are grown, although the period during which vegetation can grow averages less than 100 days. Fishing is actively prosecuted, especially by the Japanese in the south.

History.—Sakhalin, which was under Chinese dominion until the 19th century, became known to Europeans from the travels of Martin Gerrettz de Vries in the 17th century, and still better from those of La Pérouse (1787) and Krusenstern (1803). Both, however, regarded it as a peninsula, and were unaware of the existence of the Strait of Tatar, which was discovered in 1809 by a Japanese, Mamiya Rinzo. The Russian navigator Nevelskoi in 1849 definitively established the existence and navigability of this strait. The Russians made their first permanent settlement on Sakhalin in 1857; but the southern part of the island was held by the Japanese until 1875, when they ceded it to Russia. By the treaty of Portsmouth (U.S.A.) of 1905 the southern part of the island below 50° N. was re-ceded to Japan, the Russians retaining the other three-fifths of the area.

See C. H. Hawes, In the Ulterior East (London, 1903).

(P. A. K.; J. T. B.)

SAKI, the native name of a group of tropical American monkeys nearly allied to those known as uakaris (see UAKARI), with which they agree in the forward inclination of the lower incisor teeth, the depth of the hinder part of the lower jaw, and the non-prehensile tail. The sakis, which form the genus Pithicus, are especially characterized by their long and generally bushy tails, distinct whiskers and beard, and the usually elongated hair on the crown of the head, which may either radiate from a point in the crown as in S. Ianthe, or be arranged in a tuft. They are very delicate animals, difficult to keep in confinement, and in that state exhibiting a gentle disposition, and being normally silent (see PRIIMATES).

Sakurajima, a Japanese island, oval in shape and measuring 7 mi. by 5 mi., lying in the northern part of the Bay of Kagoshima (31° 40' N., 130° 35' E.). It has a volcanic cone 3743 ft. high (of which an eruption was recorded in 1779), and is celebrated for its hot springs, its oranges and its giant radishes (daikon), which sometimes weigh as much as 70 lb.

Sala, George Augustus Henry (1838-1895), English journalist, was born in London, on the 24th of November 1828. His father, Augustus John James Sala, born 1792-1828, was the son of Claudio Sebastiano Sala, an Italian, who came to London to arrange ballets at the theatres; his mother, Henrietta Simon (1789-1860), was an actress and teacher of singing. Sala was at school in Paris and studied drawing in London. In his earlier years he did odd jobs in scene-painting and book illustration. He wrote a tragedy in French, Frédégonde, before he was ten years old, and in 1841 attracted the attention of Charles Dickens, who published articles and stories by him in Household Words and All the Year Round, and in 1856 sent him to Russia as a special correspondent. About the same time he got to know Edmund Yates, with whom, in his earlier years, he was constantly connected in his journalistic ventures. From 1860 to 1886, over his own initials, he wrote "Echoes of the Week" for the Illustrated London News. Afterwards they were continued in a syndicate of weekly newspapers almost to his death. Thackeray, when editor of the Cornhill, published articles by him on Hogarth in 1866, which were issued in volume form in 1866. In 1866 he started Temple Bar, which he edited till 1888 when the magazine was taken over by Messrs Bentley. Meanwhile he had become in 1857 a contributor to the London Daily Telegraph, and it was in this capacity that he did his most characteristic work, whether as a foreign correspondent in all parts of the world, or as a writer of leaders or special articles. His literary style was highly coloured, bombastic, egotistic and full of trite periphrases, but his articles were invariably full of interesting matter and helped to make the reputation of the paper. He collected a large library and had an elaborate system of commonplace-books, so that he could bring into his articles enough show or reality of special information to make
excellent reading for a not very critical public; he had an
extraordinary faculty for never saying the same thing
twice in the same way. He earned a large income from the Telegraph
and other sources, but he never could keep his money. In 1865
he started on his first tour as special foreign correspondent to
his paper. He spent the year 1864 in America and published a
Diary of the war. Expeditions to Algiers, to Italy during
Garibaldi's 1866 campaign, to Metz during the Franco-German
war, to Spain in 1875 at the end of the Carlist war, were among
his early journalistic enterprises, the long list of which closed with
his journey through America and Australia in 1885. In
1892, when his reputation was at its height, he started a weekly
paper called Sala's Journal, but it was a disastrous failure;
and in 1895 he had to sell his library of 15,000 volumes. Lord
Rosebery gave him a civil list pension of £100 a year, and
was a broken-down man, and he died at Brighton on the 8th
of December 1895. Sala published many volumes of fiction,
travels and essays, and edited various other works, but his
métier was that of ephemeral journalism.

See The Life and Adventures of George Augustus Sala, written by
himself (2 vols., 1895).

**Salaam—Saladin**

**Salaam (Arab. salam, "peace"),** the Oriental term for a
salutation. The word is used for any act of salutation, as of an
ambassador to a monarch, and so in a secondary sense of a
compliment. Properly it is the oral salutation of Mahomedans
to each other; but it has acquired the special meaning of an
act of obeisance.

**Salad (Med. Lat. salata, salted, pickled, salare, to
sprinkle with salt),** a dish, originally dressed with salt, of green uncooked
herbs, such as lettuce, endive, mustard, cress, &c., usually served
with a flavouring of onion, garlic or leeks, and with a dressing of
vinaigre, oil, mustard, pepper and salt, or with a cream, for
which there are many receipts; hard-boiled eggs, radishes and
cucumber are also added.

**Salade, Salatt or Sælet, a head-piece introduced in the early
15th century replacing the heavy helmet. Its essential features are its smooth rounded surface, like an inverted bowl,
and its long projecting neck guard. Usually there was no movable
visor, but the front fixed part covered most of the face, a slit
being left for the eyes. The word is said to come through the
Old Fr. from the Span. escela, Ital. ecetta, Lat. caelata,
sc. cassis, engraved helmet, caelare, to engrave, chass (see
Hérmet).**

**Saladin (Arab. Sala-ad-din, "Honouring the Faith") (1137-
1193),** first Ayyubite sultan of Egypt, was born at Tekrit in
1138. The brilliance of his career was only made possible by
the condition of the East in the 12th century. Such authority as
remained to the orthodox caliph of Baghdad (see Caliphate)
or the heretical Fatimites (q.v.) of Cairo was exercised by their
viziers. The Seljukian empire had, after 1076, been divided and
subdivided among Turkish atabegs. The Latin kingdom of
Jerusalem had existed since 1089 only because it was a
united force in the midst of disintegration. Gradually, however,
Christian enthusiasm had aroused a counter enthusiasm among
the Moslems. Zengi, atabeg of Mosul, had inaugurated the
sacred war by his campaigns in Syria (1137-1146). Nur-ad-din,
his son, had continued his work by further conquests in Syria
and Damascus, by the organization of the western crusades,
and in 1157, by publishing everywhere the Holy War." The
opportunity of Saladin lay therefore in the fact that his lifetime
covers the period when there was a conscious demand for political
union in the defence of the Mahomedan faith. By race
Saladin was a Kurd of Armenia. His father, Ayyub (Job), and
his uncle Shirkuh, sons of a certain Shalady of Adjanakan near
Dawin, were both generals in Zengi's army. In 1139 Ayyub
received Baalbek from Zengi, in 1146 he moved, on Zengi's
death, to the court of Damascus. In 1154 his influence secured
Damascus to Nur-ad-din and he was made governor. Saladin
was therefore educated in the most famous centre of Moslem
learning and represented the best traditions of Moslem culture.

His career falls into three parts, his conquests in Egypt 1164-
1174, the annexation of Syria 1174-1187, and finally the destruct-
tion of the Latin kingdom and subsequent campaigns against
the Christians, 1187-1192. The conquest of Egypt was essential
to Nur-ad-din. It was a menace to his empire on the south, the
occasional ally of the Franks and the home of the unorthodox
caliph. His protest was the plea of an exiled vizier, and
Shirkuh was ordered to Egypt in 1164, taking Saladin as his
lieutenant. The Christians under Count Amalaric immediately
intervened and the four expeditions which ensued in 1164, 1167,
1168 and 1169 were duels between Christians and Saracens.
They resulted in heavy Christian losses, the death of Shirkuh
and the appointment of Saladin as vizir. His relations towards
the unorthodox caliph Nur-ad-din were marked by extraordinary
tact. In 1171 on the death of the Fatimite caliph he was
powerful enough to substitute the name of the orthodox caliph
in Egypt. Moreover, the Mahomedan religion was thus united against Christianity. To Nur-ad-din it was not
unworthy, but the reaction which he employed in adding to the fortifications of Cairo and the haste with which he retreated from an attack on Montréal (1171) and Kerak (1173)
it is clear that he feared his lord's jealousy.

In 1174 Nur-ad-din died, and the period of Saladin's conquests in
Syria begins. Nur-ad-din's vassals rebelled against his youthful heiress, es-Salih, and Saladin came north, nominally to his
assistance. In 1174 he entered Damascus, Emesa and Hamah;
in 1175 Baalbek and the towns round Aleppo. The next step
was political independence. He suppressed the name of es-Salih
in prayers and on the coinage, and was formally declared sultan
by the caliph 1175. In 1176 he conquered Saif-ad-din of Mosul
beyond the Euphrates and was recognized as sovereign by the
princes of northern Syria. In 1177 he returned by Damascus
to Cairo, which he enriched with colleges, a citadel and an
aqueduct. From 1177 to 1180 he made war on the Christians
from Egypt, and in 1180 reduced the sultan of Konia to sub-
mission. From 1181-1183 he was chiefly occupied in Syria. In
1183 he induced the atabeg Imad-ad-din to exchange Aleppo for
the insignificant Sinjar and in 1186 received the homage of the
atabeg of Mosul. The last independent vassal was thus subdued
and the Latin kingdom enclosed on every side by a hostile
empire.

In 1187 a four years' truce was broken by the brilliant brigand
Renaud de Châtillon and thus began Saladin's third period of
conquest. In May he cut to pieces a small body of Templars
and Hospitalers at Tiberias, and, on July 4th, inflicted a
crushing defeat upon the united Christian army at Hittin. He
then overran Palestine, on September 26th besieged Jerusalem
and on October 2nd, after chivalrous demeny to the Christian
inhabitants, crowned his victory by entering and purifying the
Holy City. In the kingdom only Tyre was left to the Christians.
Probably Saladin made his worst strategic error in neglecting
to conquer it before winter. The Christians had thus a
stronghold whence their remnant marched to attack Acre in
June 1189. Saladin immediately surrounded the Christian army
and thus began the famous two years' siege.

Saladin's lack of a fleet enabled the Christians to receive
reinforcements and thus recover from their defeats by land.
On the 8th of June 1191 Richard of England arrived, and on the
12th of July Acre capitulated without Saladin's permission.
Richard of England arrived, and on the 12th of July Acre capitulated
without Saladin's permission. The last independent vassal was thus subdued
and the Latin kingdom enclosed on every side by a hostile
empire.
after a few days' illness, he died. He was buried in Damascus and mourned by the whole East.

The character of Saladin and of his work is singularly vivid. In many ways he was a typical Mahommedan, fiercely hostile towards unbelievers—" Let us purge the air of the air they breathe " was his aim for the demons of the Cross,—intensely devout and regular in prayer, he was also a typical Islamic leader, seeking in the Orient to make the world take his message. " God reserved this triumph for the Ayyubites before all others. " His generosity and hospitality were proved in his gifts to Richard and his treatment of captives. He realized the Oriental idea of endurance, alternating with violent and emotional courage. Other virtues were all his own, his extreme gentleness, his love for children, his selfless honesty, his invariable kindness, his chivalry to women and his great ability. Saladin was a typical Mahommedan, if it be not a surrender to a sacred cause. His achievements were the inevitable expression of his character. He was not a statesman, for he left no constitution or code to the East; his empire was divided among his relatives. He was a commercial man, a strategist, though of great ability, he cannot be compared to Richard. As a general, he never organized an army. " My troops will do nothing, " he confessed, " save when I ride at their head and review them. " His fame lives in Eastern history as the conquering hero who stemmed the tide of Western conquest on the East, and turned it definitely from East to West, as the hero who momentarily united the unruly East, and as the saint who realized in his personality the highest virtues and ideals of Mahommedanism.

AUTHORITIES.—The contemporary Arabian authorities are to be found in Michaud's Recueil des historiens des Croisades (Paris, 1876). The best modern study is the Bahja, chancery and secretariat of al-Salih, the general history of Ibn-Athir (1160-1233), the eulogist of the atabegs of Mosul but the unwilling admirer of Saladin, and part of the general history of Abu Bakr ibn Oman. The biographies of his sons, Osmen and Murkhist, by Doreenbour (Paris, 1886), gives an invaluable picture of Eastern life. Later Arabian authorities are Ibn Kathilin (1211-1282) and Abu-Saliha (1267). The Mohammedan authorities the following are important, the history of William of Tyre (1125-1185), the Historiaus Peregrinorum, probably the Latin version of the Carmen Ambrosii (ed. by Stobo, Rolls series, London, 1864), and the Chronique d'outremer, or the French translation of William of Tyre's history and its continuation by Eurnol, the squire of Ballen, seigneur of Ibelin, 1228. The best modern authority is Stanley Lane-Poole's Saladin (" Herodotus of the Nomads" series, London, 1903); see also the bibliography to Crusades.

SALAMANCA, a frontier province of eastern Spain, formed in 1833 out of the southern part of the ancient kingdom of Leon, and bounded on the N. by Zamora and Valladolid, E. by Avila, S. by Cáceres and W. by Portugal. Pop. (1900) 320,765; area, 4,829 sq. m. Salamanca belongs almost entirely to the basin of the Duero (Portuguese Douro, q.v.), its principal rivers being the Tormes, which follows the general slope of the province towards the north-west, and after a course of 135 m. flows into the Duero, which forms part of the north-west boundary; the Yeltes and the Agueda, also tributaries of the Duero; and the Alagon, an affluent of the Tagus. The northern part of the province is flat, and at its lowest point (on the Duero) is 488 ft. above sea-level. The southern border is part mountainous along the Guadarrama and Gata ranges, but the highest point is La Alberca (950 ft.) in the Sierra de Peña Francia, which rises a little farther north. The rainfall is irregular; but where it is plentiful the soil is productive and there are good harvests of wine, oil, hemp, and cereals of all kinds. Forests of oak, pine, beech and chestnut cover a wide area in the south and south-west; and timber is sent in large quantities to other parts of Spain. Sheep and cattle also find good pasturage, and out of the forty-nine Spanish provinces only Badajoz, Cáceres and Teruel have a larger amount of live stock. Gold is found in the streams, and iron, coal, and pitchblende in the coal mines. Gold and silver are found in the coal mines are only partially developed, and it is doubtful if the deposits would repay exploitation on a larger scale. The manufactures of the province are few and mostly of a low class, intended for home consumption, such as frieze, coarse cloth, hats and pottery. The capital, Salamanca (pop. 1900, 8,690), and the town of Ciudad Rodrigo (8,690) are described in separate articles. Béjar (4,885) is the only other town of more than 5,000 inhabitants. The railways from Zamora, Medina, Plasencia and Peñaranda converge upon the capital, whence two lines go westward into Portugal—via Barca de Alva to Oporto, the other via Vila Formosa to Guarda. Few Spanish provinces lose so small a number of emigrants, and the population tends gradually to increase. See also LEON.

SALAMANCA (anc. Salamanca or Elmonico), the capital of the Spanish province of Salamanca, on the right bank of the river Tormes, 2648 ft. above sea-level and 172 m. by rail N.W. of Madrid. Pop. (1900) 25,690. Salamanca is the centre of a network of railways which radiate N. to Zamora, N.E. to Medina, E. to Peñaranda, S. to Plasencia, W.S.W. to Guarda in Portugal, W. to Pena de Ballesteros, and S. to Oporto. The river is here crossed by a bridge 500 ft. long built on twenty-six arches, fifteen of which are of Roman origin, while the remainder date from the 16th century. The city is still much the same in outward appearance as when its tortuous streets were thronged with students. The university was naturally the chief source of wealth to the town, the population of which in the 16th century numbered 50,000, 10,000 of whom were students. Its decay of course reacted on the townsfolk, but it fortunately also arrested the process of modernization. The ravages of war alone have wrought serious damage, for the French, in their defeative operations in 1811-1812, almost destroyed the western quarter. The ruins still remain, and give an air of desolation which is not borne out by the real condition of the inhabitants, however poverty-stricken they may appear. Side by side with the remains of a great past are the modern buildings: two theatres, a casino, bull-ring, town hall and electric light factory. The magnificent Plaza Mayor, built by Andres Garcia de Quijones at the beginning of the 18th century, and capable of holding 20,000 people to witness a bull-fight, is one of the finest squares in Europe. It is surrounded by an arcade of ninety arches on Corinthian columns, one side of the inner arches ornamented with graceful volute-work. The decoration of the façades are in the Renaissance style, and the plaza as a whole is a fine sample of Plateresque architecture.

The University.—Salamanca is still rich in educational establishments. It still keeps up its university, with the separate faculties of letters, philosophy, sciences, law and medicine; its university and provincial public library, with 50,000 volumes and 1000 MSS.; its Irish college, provincial institute, superior normal school, ecclesiastical seminary (founded in 1778), economic and other learned societies, and very many charitable foundations. The city has 25 parishes, 25 colleges, and as many more or less ruinous convents, and 10 yet flourishing religious houses. The university, the oldest in the Peninsula, was founded about 1130 by Alphonso IX. of Leon, and re-founded in 1424 by St. Ferdinand of Castile. Under the patronage of the learned Alfonso X. its wealth and reputation greatly increased (1252-1282), and its schools of canon law and civil law attracted students even from Paris and Bologna. In the 15th and 16th centuries it was renowned throughout Europe. Here Columbus, to whom a statue was erected in 1891, lectured on his discoveries, and here the Copernican system was taught long before the general acceptance. But soon after 1550 a period of decline set in. The university statutes were remodelled in 1777, but financial troubles and the incessant wars which checked almost every reform in Spain prevented any recovery up to 1857, when a fresh reorganization was effected. At the beginning of the 20th century the number of students was about 1,200, and the number of professors 10—fewer than in any other Spanish university.

Principal Buildings.—The chief objects of interest in the city are the old and new cathedrals. The old cathedral is a cruciform building of the 12th century, begun by Bishop Jerónimo, the confess of the Cid (q.v.). Its style of architecture is that late Romanesque which prevailed in the south of France, but the builder showed much originality in the construction of the dome, which covers the crossing of the nave and transepts. The inner dome is made to spring not from immediately above the arches, but from a higher stage of a double arcade pierced with windows. The thrust of the vaulting is borne by four octagonal piers, which support the arches which carry the coffered ceiling, covered with tiles. The whole forms a most effective and graceful group. On the vault of the apse is a fresco of Our Lord in Judgment by the Italian painter Nicolas Florentino (15th century), representing the scene as recorded, with the piously of fitting the curve of the apse, contains fifty-five panels with paintings mostly by the same artist. There are many fine monuments in the south transept and choir chapels. An adjoining building, the Capilla de Talavera, is used as a chapel for service according to the Mozarabic rite, which
is celebrated there six times a year. On the north and of adjoining the old church stands the new cathedral, built from designs by Juan Gil de Ontañón. Though begun in 1509 the work of construction made extremely slow progress, and was not completed under Bishop Francisco de Bobadilla; though not finished till 1734, it is a notable example of the late Gothic and Plateresque styles. Its length is 340 ft. and its breadth 160 ft. The interior is far more grand than the exterior, and has been decorated on and off by J. F. de Villarreal, J. Navarrete (1526-1579) and L. de Morales (c. 1509-1586), and some overrated statues by Juan de Juni (16th century). The treasury is very rich, and amongst other articles possesses a custodia which is a masterpiece of workmanship, and a beautiful ciborium and a set of altars, including the ciborium which was borne before the Child in the battle. The great bell weighs over 23 tons. Of the university buildings the façade of the library is a peculiarly fine example of late 15th century Gothic. The cloisters are light and elegant; the grand staircase ascending from them has a fine balustrade of foliage and figures. The Colegio de Nobles Irlandeses, formerly Colegio de Santiago Apostol, was built in 1479, and was in the 18th century owned by the governor's palace. The convent of Santo Domingo, sometimes called San Esteban, shows a mixture of styles from the 13th century onwards. The church is Gothic with a Plateresque façade of great lightness and delicacy. It is of purer design than that of the cathedral; nevertheless it shows the tendency of the period. The reredos, one of the finest Renaissance works in Spain, contains statues by Salvador Carmona, and a large, bronze statue of the Virgin and Child on a throne of champlevé enamel of the 12th century. The chapter-house, built by Juan Moreno in 1537, and the staircase and sacristy are good examples of later work. The convent of the Augustinian Recoles, begun by Pontana in 1516, is in better spirit than any other Renaissance building in the city. The church is rich in marble fittings and contains several fine pictures of the Neapolitan school, notably the Conception by J. Riberas in the 16th century and a slightly later altar. The convent of the Espíritu Santo has a good door by A. Herruguet (c. 1480-1561). There is also a rather effective portal to the conven of Las Dueñas. The church of St. Marcos is a curious circular building with three upper stories; and the churches of St. Martin and St. Matteo have good early doorways. Many of the private houses are untouched examples of the domestic architecture of the prosperous times in which they were built. Such are the Casa del Pescador, the finest example in Salamanca of the Casa de la Saja, with a magnificent courtyard and sculptured gallery; and the palaces of Maldonado, Monterey and Espinosa.

The aqueduct of Salamanca has not insignifican, and the stamped leather-work produced there is still sought after. Its manufactures are now of little consequence, and consist of cloth and leather. The transport trade is, however, of more importance than the increasing number of the railway communication between 1855 and 1900. During this period the population increased by nearly 7000.

History.—The town was of importance as early as 222 B.C., when it was captured by Hannibal from the Vettones, and it afterwards became the Romans' ninth station on the Via Lata from Merida to Saragossa. It passed successively under the rule of the Goths and the Moors, till the latter were finally driven out about 1055. About 1100 many foreign settlers were induced by Alphonso VI. to establish themselves in the district, and the city was enlarged and adorned by Count Raymond of Burgundy and his wife, the Princess Urraca. The Fuero de Salamanca, a celebrated code of civil law, probably dates from about 1200. Thenceforward, until the second half of the 16th century, the prosperity of the university rendered the city one of the most important in Spain. But in 1593 the earth floods, the worst since 1570, destroyed many of the buildings. The University of Salamanca and the culture española en el siglo XIII. (Paris, 1900.) (K. G. J.)

Battle of Salamanca, 1812. (For the operations which preceded this battle see PENINSULAR WAR.) On the 22nd of July 1812 the Allied army under Wellington (about 46,000 with 60 guns) was drawn up south of Salamanca, the left resting on the river Tormes at Santa Marta, with a division under Pakenham and some cavalry on the north bank of the Tormes and another force, the Allies gained the northern (since termed the "English") and the French south of the French") Arroyos. While Marmont was closing up his forces, a complete change of position was carried out by Wellington. Pakenham was directed to march through Salamanca, crossing the Tormes, and move under cover to a wood near Aldea Tejada, while Wellington, holding the village of Arroyos and the northern hill, took up a line with four infantry divisions, a Portuguese brigade (Bradford), a strong force of cavalry, and Don Carlos's Spanish brigade, under cover of a ridge between Arroyos and Aldea Tejada. By noon his old right had become his left, and he was nearer to the Ciudad Rodrigo road, flanking Marmont should he move towards it.

Battle of Salamanca July 22, 1812. English Milles

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<td>Casualties</td>
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Redrawn from Maj.-Gen. C. W. Robinson's Wellington's Campaigns, by permission of Hugh Rees, Ltd.

It was not Wellington's wish (Despatches, July 21, 1812) to fight a battle "unless under very advantageous circumstances." He knew that large reinforcements were nearing the French, and, having determined to fall back towards Portugal, he began to pass his baggage along the Ciudad Rodrigo road. Marmont, about 2 p.m., seeing the dust of his baggage column, ignorant of his true position, and anxious to intercept his retreat, ordered two divisions under Maucon, the leading one of which became afterwards Thibaut's 

1 Some authorities differ as to this (see The Salamanca Campaigns, by Captain A. H. Marfin, 1906, appendix, pp. 51-59).
Tormes has been evacuated by its Spanish garrison without Wellington's knowledge.

Salamanca was a brilliant victory, and followed as it was by the capture of Madrid, it severely shocked the French domination in Spain.

**Salamanca**, a village in Cattaraugus county, New York. Utica, in the township of Salamanca, about 52 m. S. by E. of Buffalo. Pop. (1900), 4254, of whom 789 were foreign-born. (1910, census), 5702. Salamanca is served by the Erie, the Buffalo, Rochester & Pittsburg and the Pennsylvania railways, and by interurban electric lines connecting with Olean, N. Y., Bradford, Pennsylvania, and Little Valley (pop in 1910, 1368), the county-seat, about 8 m. N. The village is built on both sides of the Allegany river. The agricultural and industrial development of the region has been considerable, and its best known products are the Allegany apples, (allotted originally to the Seneca Indians by the Big Tree Treaty of 1798 and still including the valley of the Allegany river for several miles above and below Salamanca); but land is now held under a 90 year lease authorized by Congress in 1892. The village is a railway centre and division terminal, and has repair shops of the Erie and the Buffalo, Rochester & Pittsburg railways. The first settlement in the district (which was included within the “Holland Purchase” of 1792-1793) was made in 1815 near the site of West Salamanca (pop. in 1910, 350), 14 m. W. of Salamanca, and in the same year Salamanca (originally Salamanca, or Salamanders) was incorporated in 1879, taking its name from the township, which was erected in 1843 as Buck Tooth Township and in 1862 was renamed in honour of a Spanish banker who was a large stockholder of the Atlantic & Great Western railway, built through the township this year, and later merged with the Erie railway. See History of Cattaraugus County, New York (Philadelphia, Pa. 1870).

**Salamander.** Salamanders in the restricted sense (genus *Salamandra* of N. Laurenti) are close allies of the newts, but of exclusively terrestrial habits, indicated by the shape of the tail, which is not distinctly compressed. The genus is restricted in its habitat to the western parts of the Palearctic region and represented by four species only: the spotted salamander, *S. maculosa*, the well-known black and yellow creature inhabiting Central and Southern Europe, North-West Africa and South-Western Asia; the black salamander, *S. atrata*, restricted to the Alps; *S. cautica* from the Caucasus, and *S. lucifera* from Asia Minor. Salamanders, far from being able to withstand the action of fire, as was believed by the ancients, are found only in damp places, and emerge in misty weather only or after thunderstorms, when they may appear in enormous numbers in localities where at other times their presence would not be suspected. They are usually much dreaded by country people, and although they are quite harmless to man, the large glands which are disposed very regularly on their smooth, shiny bodies, secrete a very active, milky poison which protects them from the attacks of many enemies.

The breeding habits of the two well-known European species are highly interesting. They pair on land, the male clasping the female at the arms, and the impregnation is internal. Long after pairing the female gives birth to living young. *S. maculosa*, which lives in plains or at low altitudes (up to 3000 ft.), deposits her young, ten to fifty in number, in the water, in springs or cool rivulets, and these young at birth are of small size, provided with external gills and four limbs, in every way similar to advanced newt larvae. *S. atrata*, on the other hand, inhabits the Alps between 2000 and 9000 ft. altitude. Localities at such altitudes not being, as a rule, suitable for larval life in the water, the young are retained in the uterus, until the completion of the metamorphosis. Only two young, rarely three or four, are born, and they may measure as much as 50 mm. at birth, the mother measuring only 120. The uterine eggs are large and numerous (up to 1000 per mother) but as a rule only one fully develops in each uterus, the embryo being nourished on the yolk of the other eggs, which more or less dissolve to form a large mass of nutrient matter. The embryo passes through three stages—closer to the egg and living on its own yolk (1); free, within the vitelline mass, which is directly swallowed by the mouth; (2) there is no more vitelline mass, but the embryo is possessed of long excretory tubes which have a direct opening to the maternal uterus, these gills functioning in the same way as the chorionic villi of the mammalian egg. Embryos in the second stage, if artificially released from the uterus, are able to live in water, in the same way as similarly developed larvae of *S. maculosa*. But the uterine gills soon wither and are shed, and are replaced by other gills differing in no respect from those of its congeners.

**Salamis**, an island of Greece in the Saronic Gulf of the Aegean Sea, extending along the coasts of Attica and Megaris, and enclosing the Bay of Eleusis between two narrow straits on the W. and S. Its area is 36 sq. m., its greatest length in any direction 10 m.; its extremely irregular shape gives rise to the modern popular name Κούλαρη, i.e. baker's crescent. In Homer Salamis was the home of the Aeginetan prince Telamon, father of Ajax and Talthybius. In the Iliad it is mentioned as the birthplace of the ancient capital of the island opposite Aegina. It subsequently passed into the hands of the Megarians, but was wrested from them by about 600 B.C. by the Athenians under Solon (q.v.) and definitely awarded to Athens by Sparta's arbitration. Though Attic tradition claimed Salamis as an ancient possession the island was not strictly Athenian territory; a 6th-century inscription shows that it was treated either as a cleruchs or as a privileged foreign dependency. The town of Salamis was removed to an inlet of the E. coast opposite Attica. In 490 B.C. Salamis became the head of the Allied Greek fleet, and was the birthplace of the ill-fated fleet sent out from Artemision, while the Persians took their station along the Attic coast off Phalerum. Through the stratagem of the Athenian Themistocles the Greeks were enclosed in the straits by the enemy, who had wheeled by night across the entrance of the E. channel and detached a squadron to block the W. outlet. The Greeks had thus no resource but to fight, and as they advanced into the narrow neck of the east strait were thrown into confusion. The allies, among whom the Athenians and Aeginetans were conspicuous, seized this opportunity to retreat, some of them even fighting back through the enemy's line. After waging a losing fight for several hours the Persians retreated with the loss of 200 sail and of an entire corps landed on the islet of Psyttaaleia in the channel; the Greeks lost only 40 ships out of more than 300. During the Peloponnesian War Salamis served as a repository for the country stock of Attica. About 350 Salamis obtained the right of issuing copper coins. In 318 Cassander placed in it a Macedonian garrison which was finally withdrawn through the advocacy of the Achaean statesman Aratus (232). The Athenians thereupon supplanted the inhabitants by the base of the allied Greek fleet. By the 1st century A.D. the settlement had fallen into decay. In modern times Salamis, which is chiefly peopled by Albanians, has regained importance through the transference of the naval arsenal to Ambelaki near the site of the ancient capital. Excavations in this region have revealed large numbers of late Mycenaean tombs.


**Salamis**, the principal city of ancient Cyprus, situated on the east coast a little north of the river Pedias (Pediaeus). It had a good harbour, well situated for commerce with Phoenicia, Egypt and Cilicia, which was replaced by trade with Egypt and Cilicia, when Amathus was finally silted low. Its trade was mainly in corn, wine and oil from the midland plain (Mesoria), and in salt from the neighbouring lagoons. Traditionally, Salamis was founded after the Trojan War (c. 1180 B.C.) by Teucer from Salamis, the island off Attica, but there was an important Mycenaean colony somewhat earlier. The spoils of its tombs excavated in 1896 are in the British Museum.
A king Kisu of Silana (Salamis) is mentioned in a list of tributaries of Assur-bani-pal of Assyria in 668 B.C., and Assyrian influence is manifest in the Carian and Cilician regions, where the Assur salute was excavated in 1890-1891. The revolts of Greek Cyprus against Persia in 500 B.C., 386-385 B.C. and 352 B.C. were led respectively by kings Onesilus, Euaqoris (q.v.) and Pityagoras, who seem to have been of Semitic, i.e. “Hellenic” origin. There is no evidence that these Jewish colony in Ptolemaic and early Roman times, and a Christian community founded by Paul and Barnabas in A.D. 45-46. Barnabas was himself a Cypriote, and his reputed tomb, discovered in A.D. 377, is still visited. A town of the Byzantine age, and the monastery of St Epiphanius was archbishop A.D. 367-402. The Greek city was destroyed by the Arabs under the Caliph Moawiya in 647, and does not seem to have revived. In later times the site was plundered for the building of Famagusta; it is now covered by sandhills, and its plan is imperfectly known. The market-place and a few public buildings were excavated in 1890-1891, but nothing of importance was found.


**SALAMONIAC, or ammonium chloride, NH₄Cl, the earliest known salt of ammonia (q.v.), was formerly much used in dyeing and metallurgical operations.**

The name *Hammoniacus sul* occurs in Pliny (Nat. Hist. xxi. 39), who relates that it was applied to a kind of fossil salt found below the sand, in a district of Cyrenaica. The general opinion is, that the salt ammoniac of the ancients was the same as that of the moderns; but the imperfect description of Pliny is far from being conclusive. The native sal ammoniac of Bulgaria, described by Model and Karsten, and analysed by M. H. Kalprath, has no resemblance to the salt described by Pliny. The same remark applies to the sal ammoniac of volcanoes. Diocorides (v. 126), in mentioning sal ammoniac, makes use of a phrase quite irreconcilable with the description of Pliny. He speaks of a salt which has no resemblance to the salt described by Pliny. The same remark applies to the sal ammoniac of volcanoes.

Finally, we have no proof whatever that sal ammoniac occurs at present, either near the temple of Jupiter Ammon, or in any part of Cyrenaica. Hence we conclude that the term sal ammoniac was applied as indefinitely by the ancients as most of their other chemical terms. It may have been given to the same salt which is known to the moderns by that appellation, but was not confined to it.

In any case there can be no doubt that it was well known to the alchemists as early as the 13th century. Albertus Magnus, in his treatise, *Quodlibet volatilium* (q.v.), speaks of sal ammoniac, a natural and an artificial. The natural was sometimes white, and sometimes red; the artificial was more useful to the chemists. He teaches us how it was prepared, but he describes the method of subliming it. Which of the two did Pliny mean? There is a description of sal ammoniac in *Operae minerales* of Isaac Hollandus the elder, there is likewise a description of the mode of subliming sal ammoniac. In his *Carus triumphalis antimonii*, describes some of the peculiar properties of sal ammoniac in, if possible, a still less equivocal manner.

Egypt is the country where sal ammoniac was first manufactured, and from which Europe for many years was supplied with it. This commerce was first carried on by the Venetians, and afterwards by the Dutch. Nothing was known about the method employed by the Egyptians till the year 1719. In 1716 C. J. Geoffroy read a paper to the French Academy, showing that sal ammoniac must be formed by sublimation; but his opinion was opposed stoutly by W. Homberg and N. Lemer, that the paper was not printed. In 1767 Dr. Lavoisier, the French consul at Cairo, sent the Academy an account of the mode of manufacturing sal ammoniac in Egypt. The salt, it appeared, was obtained by simple sublimation from soil. In the year 1760 Linnaeus communicated to the Royal Society a correct detail of the whole process, which he had received from Dr F. Hasselquist, who had travelled in that country as a naturalist (Phil. Trans., 1760, p. 504). The dung of black cattle, horses, sheep, goats, &c., which contains sal ammoniac ready formed, is collected during the first four months of the year, when the animals feed on the spring grass, a kind of clover. It is dried, and sold to the common people as fuel. The soil from this fuel is carefully collected and sold to the sal ammoniac makers, who work only during the months of March and April, for it is only at that season of the year that the dung is fit for the purpose.

The composition of this salt seems to have been first discovered by J. P. Tournefort in 1700. The experiments of C. J. Geoffroy in 1716 and 1723 were still more decisive, and those of H. L. Duhamel de Monceau, in 1735, left no doubt upon the subject.

Dr. Thomson first pointed out a process by synthesis, which has the advantage of being very simple, and at the same time rigidly accurate, resulting from his observation that when hydrochloric acid gas and ammonia gas are brought in contact with each other, they always combine in equal volumes. The first attempt to manufacture sal ammoniac in Europe was made, about the beginning of the 18th century, by Mr. Goodwin, a chemist of London, who appears to have used the mother ley of common salt and putrid urine as ingredients.

The first successful manufacture of sal ammoniac in Great Britain was established in Edinburgh about the year 1760. It was first manufactured in France about the same time by A. Badmé. Manufactures of it were afterwards established in Germany, Holland and Flanders.

It is now obtained from the ammoniacal liquor of gas works by distillation. The liquid so obtained contains sal ammoniac, and, if not carefully washed, it is obtained into hydrochloric acid. The solution of ammonium chloride so obtained is evaporated and the crude ammonium chloride purified by sublimation. The subliming apparatus consists of two vessels: (1) a hemispherical glassware basin placed within a closed fitting iron one, or an enamelled iron basin, and (2) a hemispherical lead or stoneware lid, or dome, cemented on the top of the basin to prevent leakage. The dome has a small aperture in the top which is made to receive a glass tube for the purpose of introducing dry or dried crystallized salt is pressed into the basin, and, after the lid has been fitted on, is exposed to a long-lasting moderate heat. The salt volatilizes (mosty in the form of a mixed vapour of the two components, which reunite on cooling), and condenses in the dome in the form of a characteristically fibrous and tough crust.

The pure salt has a sharp saline taste and is readily soluble in water. It readily volatilizes, and if not rigorously excluded, it does not dissociate, but it possesses more or less traces of water it dissociates into ammonia and hydrochloric acid (H. B. Baker, Journ. Chem. Soc., 1850, 65, p. 612).

Sal ammoniac (ammonium chloride, British and United States pharmacopoeia) as used in medicine is a white crystalline odourless powder having a saline taste. It is soluble in 1 in 3 of cold water and in 2 in 3 of hot water, but is not compatible with carbonates of the alkalis. The dose is 5 to 20 grs. Ammonium chloride has a different action and therapeutic use from the rest of the ammonium salts. It possesses only slight influence over the heart and respiration, but it has a specific effect on mucous membranes as the elimination of the drug takes place largely through the lungs, where it aids in loosening bronchial secretions. This action renders it of the utmost value in bronchitis and associated bronchitis.

The drug may be given in a mixture with glycerine or liqueurice to cover the disagreeable taste or it may be used in a spray by means of an atomizer. The inhalation of the fumes of nascent ammonia is capable of relieving the symptoms of chronic bronchitis and certain forms of foetid bronchitis. Though ammonium chloride has certain irritant properties which may disorder the stomach, yet if its mucous membrane be deprived of atomic the drug may improve its condition, and it has been used with success in gastric and intestinal catarrhs of a subacute type and is given in doses of 10 grains half an hour before meals in painful dyspepsia due to hyperacidity. It is also an intestinal and hepatic stimulant and a feebly diuretic and aphoric, and has been considered a specific in some forms of neuralgia.

**SALARIA, VIA, an ancient highroad of Italy, which ran from Rome by Reate and Asculum to Castrum Truentinum (Porto d'Ascoli) on the Adriatic coast, a distance of 151 m. Its first portion must be of early origin, and was the route by which the Sabines came to fetch salt from the marshes at the mouth of the Tiber. Of its course through the Apennines considerable remains exist.**
SALAR JUNG, SIR (1829-1883), Indian statesman of Hyderabad, born in 1829, descendant of a family which had held various appointments, first under the Adil Shahi kings of Bijapur, then under the Delhi emperors and lastly under the Nizams. While he was known to the British as Salar Jung, his personal name was Mir Turab Ali, he was styled by native officials of Hyderabad the Mukhtar 'l-Mulk, and was referred to in English as the Nawab Sahib. He succeeded his father 'l-Mulk as prime minister in 1853. The condition of the Hyderabad state was at that time a scandal to the rest of India. Salar Jung began by infusing a measure of discipline into the Arab mercenaries, the more valuable part of the Nizam's army, and employing them against the rapacious nobles and bands of robbers who had annihilated the trade of the country. He then constituted courts of justice at Hyderabad, organized the police force, constructed and repaired irrigation works, and established schools. On the outbreak of the Mutiny he supported the British, and although unable to hinder an attack on the residency, he warned the British minister that this was an abomination. The attack was repulsed; the Hyderabad contingent remained loyal, and their loyalty served to ensure the tranquillity of the Deccan. Salar Jung took advantage of the preoccupation of the British government with the Mutiny to push his reforms more boldly, and when the Calcutta authorities were again at liberty to consider the condition of affairs his work had been carried far towards completion. During the lifetime of the Nizam Afzul'd-dowla, Salar Jung was considerably hampered by his master's jealous supervision. When Mir Mahub Ali, however, succeeded his father in 1860, Salar Jung, at the instance of the British government, was associated in the regency with the principal noble of the state, the Shamsu 'l-Umar or Amir Kabir, and enjoyed an increased authority. In 1876 he entered England with the object of obtaining the restoration of Berar. Although he was unsuccessful, his personal merits met with full recognition. He died of cholera at Hyderabad on the 8th of February 1883. He was created G.C.S.I. on the 28th of May 1870, and received the honorary degree of D.C.L. from the University of Oxford on the 21st of June 1876. His grandson enjoyed an estate of 1456 sq. m., yielding an income of nearly 60,000.

See Memoirs of Sir Salar Jung, by a private secretary, Syed Hossein Bilgrami, 1883.

SALARY, a payment for services rendered, usually a stipulated sum paid monthly, quarterly, half-yearly or yearly, and for a permanent or lengthy term of employment. It is generally contrasted with "wages," a term applied to weekly or daily payment for manual services. As laid down by Bowen, L. J., In re Shine (1892) 1 Q.B. 529, "Salary means a definite payment for personal services under some contract and computed by time." The Latin salarium meant originally salt money (Lat. sal, salt), i.e. the sum paid to soldiers for salt. In post-Augustan Latin the word was applied to any allowance, pension or stipend.

SALAS, or SAN MARTIN DE SALAS, a town of southern Spain, in the province of Oviedo; on the road from Tineo to Grado, and on a small sub-tributary of the river Narcea. Pop. (1900), 17,147. The official total of the inhabitants includes not only the actual residents in the town, but also the population of the district of Salas, a mountainous region in which coal-mining and agriculture are the principal industries. The products of this region are sent for export to Cudillero, a small harbour on the Bay of Biscay.

SALAS BARBADILLO, ALONSO JERÓNIMO DE (c. 1580-1639), Spanish novelist and playwright, born at Madrid about 1580, and educated at Alcalá de Henares and Valladolid. His first work, La Patrona de Madrid restituida (1609), is a dull devout poem, which forms a strange prelude to La Hija de Cevalina (1612), a malicious transcription of rites and plays, the best of which was El Cavasol puntual (1621), La Casa de placer honesto (1629), Don Diego de Noche (1623) and a most sparkling satirical volume of character-sketches, El Curioso y sabio Alejandro (1634). He died in poverty at Madrid on the 10th of July 1635. Some of his works were translated into English and French, and Scarron's Hypocrisies is based on La Ingeniosa Elena; he deserved the vogue which he enjoyed till late in the 17th century, for his satirical humour, versatile invention and pointed style are an effective combination.

SALDANHA BAY, an inlet on the south-western coast of South Africa, 63 m. by sea N. by W. of Cape Town, forming a land-locked harbour. The northern part of the inlet is known as Hoetjes Bay. It has accommodation for a large fleet with deep water close inshore, but the arid nature of the country caused it to be neglected by the early navigators, and with the growth of Cape Town Saldanha Bay was rarely visited. Considerable deposits of freestone in the neighbourhood attracted attention during the later 19th century. Proposals were also made to create a port which could be supplied by water from the Berg river, 20 m. distant. From Kalabas Kraal on the Cape Town-Cumberland railway is a narrow gauge line runs via Hopefield to Hoetjes Bay—126 m. from Cape Town.

Saldanha Bay is so named after Antonio de Saldanha, captain of a vessel in Albuquerque's fleet which visited South Africa in 1593. The name was first given to Table Bay, where Saldanha's ship cast anchor, by Mathys de Table, and the name of Table Bay from that time onward appellation was transferred to the bay now called after Saldanha. In 1781 a British squadron under Commodore George Johnstone (1731-1787), seized six Dutch East Indiamen, which, after an action with the Town of Table, the English took refuge in Saldanha Bay. This was the only achievement, so far as South Africa was concerned, of the expedition despatched to seize Cape Town during the war of 1781-1782.

SALDERN, FRIEDRICH CHRISTOPH VON (1719-1789), Prussian soldier and military writer, entered the army in 1735, and (on account of his great stature) was transferred to the Guards in 1739. As one of Frederick's aides-de-camp he was the first to discover the approach of Neipperg's Austrians at Mollwitz. He commanded a guard battalion at Leuthen, again distinguished himself at Hochkirch and was promoted major-general. In 1760 at Liegnitz Frederick gave him four hours in which to collect, arrange and despatch the spoils of the battle, 6000 prisoners, 100 wagons, 82 guns and 5000 muskets. His Criticism reveals him to have been a marked man even in Frederick's army. At Torgau, Saldern and Möllendorf (q.v.) with their brigades converted a lost battle into a great victory by their desperate assault on the Siptitz Heights. The manoeuvring skill, as well as the iron resolution, of the attack, has excited the wonder of modern critics, and after Torgau Saldern was accounted the "completest general of infantry alive" (Carlyle). In the following winter, however, being ordered by Frederick to sack Hubertusburg, Saldern refused on the ground of conscience. Nothing was left for him but to retire, but Frederick was well aware that he needed Saldern's experience and maneuvering ability, and after the peace the general was at once made inspector of the troops at Magdeburg. In 1796 he became lieutenant-general. The remainder of his life was spent in the study of military sciences in which he became a pedant of the most pronounced type. In one of his works he discussed at great length the question between 76 and 75 pieces to the minute as the proper cadence of infantry. There can be no question that "Saldern-tactics" were the most extreme form of pedantry to which troops were ever subjected, and contributed powerfully to the disaster of Jena in 1806. His works included Taktische Infanterie (Dresden, 1784) and Taktische Grundsätze (Dresden, 1786), and were the basis of the British "Dundas" drill-book.

See Küster, Charakterzüge des Generalleutnants von Saldern (Berlin, 1792).

SALE, GEORGE (c. 1607-1676), English orientalist, was the son of a London merchant. In 1720 he was admitted a student of the Inner Temple, but subsequently practised as a solicitor. Having studied Arabic for some time in England, he became, in 1726, one of the correctors of the Arabic version of the New Testament, begun in 1720 by the Society for Promoting Christian Knowledge, and subsequently took the principal part in the
work. He made an extremely paraphrastic, but, for his time, admirable English translation of the Koran (1734 and often reprinted), and had a European reputation as an orientalist. He died on the 13th of November 1736. His collection of oriental manuscripts is now in the Bodleian library, Oxford.

SALE, SIR ROBERT HENRY (1782–1845), British soldier, entered the 36th Foot in 1795, and went to India in 1798, as a lieutenant of the 12th Foot. His regiment formed part of Baird's brigade of Harry's army operating against Tippoo Sahib, and Sale was present at Mallavelly (Mallawall) and Seringapatam, subsequently became colonel. He joined Wellesley in the campaign against Dhundia. A little later the 12th was employed in the difficult and laborious attack on Paichi Raja. Promoted captain in 1806, Sale was engaged in 1808–1809 against the Raja of Travancore, and was at the two actions of Quillon, the storm of Travancore lines and the battle of Killianore. In 1810 he accompanied the expedition to Mauritius, and in 1813 obtained his majority. After some years he became major in the 13th, with which regiment he was for the rest of his life associated. In the Burmese War he led the 13th in all the actions up to the capture of Rangoon, in one of which he killed the enemy's general. After the transfer of the British and French to the plains of Ava, Sale, being now lieutenant-colonel, he commanded a brigade, and at Malonw (1826) he was severely wounded. For these services he received the C.B. In 1838, on the outbreak of the Afghan War, Brevet-Colonel Sale was assigned to the command of the 1st Bengal brigade of the army assembling on the Indus. His column arrived at Kandahar in April 1839, and in May it occupied the Herat plain. The Kandahar force next set out on its march to Kabul, and a month later Ghazni was stormed, Sale in person leading the storming column and distinguishing himself in single combat. The place was well provisioned, and on its supplies the army finished its march to Kabul easily. For his services Sale was made K.C.B. and received the local rank of major-general, as well as the Shah's order of the Durame Empire. He was left, as second-in-command, with the army of occupation, and in the interval between the two wars conducted several small campaigns ending with the action of Parwan which led directly to the surrender of Dost Mahommed. By this time the army had settled down to the quiet life of cantonments, and Lady Sale and her daughter came to Kabul. But the policy of the Indian government in stopping the subsidy to the Afghan tribes roused them into hostilities, and the Afghan chiefs of the frontier tribes roused them into hostilities, and the Afghan chiefs, finding themselves surrounded, agreed to surrender on conditions which the British army was unable to meet. Sale received orders to closest the line of communication to Peshawar. After severe fighting Sale entered Jalalabad on the 12th of November 1841. Ten days previously he had received news of the murder of Sir Alexander Burnes, along with orders to return with all speed to Kabul. These orders he, for various reasons, decided to ignore; suppressing his personal desire to return to protect his wife and family, he gave orders to push on, and on occupying Jalalabad at once set about making the old and half-ruined fortress fit to stand a siege. There followed a close and severe investment rather than a siege, and the provision-baggers were made usually with the object of obtaining supplies. At last Pollock and the relieving army appeared, only to find that the garrison had on the 7th of April 1842 relieved itself by a brilliant and completely successful attack on Akbar's lines. Sir Robert Sale received the G.C.B.; a medal was struck for all ranks of defenders, and salutes fired at every large cantonment in India. Pollock and Sale after a time took the offensive, and after the victory of Hafit Kotal, Sale's division encamped at Kabul again. At the end of the war Sale received the thanks of parliament. In 1843 he was quarter-master-general to Sir H. Gough's army, Sale again took the field. The second Godab, Barmah, he was mortally wounded, and he died on the 21st of December 1845. His wife, who shared with him the dangers and hardships of the Afghan war, was amongst Akbar's captives. Amongst the few possessions she was able to keep from Afghan plunderers was her diary (Journal of the Disasters in Afghanistan, London, 1843).

See Gleig, Sale's Brigade in Afghanistan (London, 1846); Kaye, Lives of Indian Officers (London, 1867); W. Sale, Defence of Jalalabad (London, 1846); Regimental History of the 13th Light Infantry.

SALE, a town of Tanjil county, Victoria, Australia, the principal centre in the agricultural Gippsland district, on the river Thomson, 17½ m. by rail E.S.E. of Melbourne. Pop. (1901), 3,462. It is the seat of the Anglican bishop of Gippsland, and contains the cathedral of the Roman Catholic bishop of Sale. Attached to its mechanics' institute are schools of mines, art and technology, and a fine free library. The finest buildings, excluding a number of handsome churches, are the Victoria Hall and the convent of Notre Dame de Sion. The Agricultural Society has excellent show grounds, in which meetings are held. Sale is the head of the Gippsland lakes navigation, the shipping being brought from the lakes to the town by canal. Daily communication is maintained with Cunningham at the lakes' entrance, and ocean-going steamers ply frequently between Sale and Melbourne.

SALE, an urban district in the Altrincham parliamentary division of Cheshire, England, 5 m. S.W. of Manchester. Pop. (1901), 12,085. It is served by the Manchester, South Junction & Altrincham and the London & North-Western railways, and the Cheshire Lines, and has become a large residential suburb of Manchester. At the beginning of the 19th century the greater part of Sale was a loose collection of farms and cottages, but there are numerous handsome villas. Market gardening is carried on in the neighbourhood; and there are large botanical gardens.

SALEM, a city and district of British India, in the Madras presidency. The city is on both banks of the river Tirumanimuttar, 3 m. from a station on the Madras railway, 206 m. S.W. of Madras city. Pop. (1901), 70,621. There is a considerable weaving industry and some manufacture of cutlery. Its situation in a green valley between the Shevaroy and Jarugumal hills is picturesque.

The District of Salem has an area of 7,530 sq. m. Except towards the south it is hilly, with extensive plains lying between the several ranges. It consists of three distinct tracts, formerly known as the Talaghat, the Baramahal and the Balaghat. The Talaghat is situated below the Eastern Ghats on the level of the Carnatic generally; the Baramahal includes the whole face of the Ghats and a wide piece of country at their base; and the Balaghat is situated above the Ghats on the tableland of Mysore.

The western part of the district is mountainous. Amongst the chief ranges (5,000–6,000 ft.) are the Shevaroys, the Kalhrayas, the Madiya, the Tippoor, Kolliplam, the Puchiam and the Yelaghills. The chief rivers are the Cauvery with its numerous tributaries, and the Ponnar and Palar; the last, however, only flows through a few miles of its north-western branch. The forests are of considerable value. The geological structure of the district is mostly gneissic, with a few irruptive rocks in the form of trap dikes and granite veins. Magnetic iron ore is common in the hill regions, and the iron and chromite of iron are also obtainable. The qualities of the soil differ very much; in the country immediately surrounding the town of Salem a thin layer of calcareous and red loam generally prevails, though which quartz rocks appear on the surface in many places. The climate, owing to the great difference of elevation, varies considerably; on the hills it is cool and bracing, and for a great part of the year very salubrious; the annual rainfall averages about 32 in.

The population in 1901 was 2,204,974, showing an increase of 12% in the decade. The principal crops are millets, rice, other food grains and oil-seeds, with a little cotton, indigo and tobacco. Coffee is grown on the Shevaroy hills. The chief irrigation work is the Barur tank system. Salem suffered severely from the famine of 1877–1878. The Madras railway runs through the district, with two narrow-gauge branches. The chief industry is cotton-weaving, and there is some manufacture of steel from magnetic iron ore. There are many saltpetre refineries, but no large industries. The district was acquired partly by the treaty of peace with Tippoo Sultan in 1792 and partly by the partition treaty of Mysore in 1799. By the former the Talaghat and Baramahal were ceded, and by the latter the Balaghat or what is now the Housal kudah.

SALEM, a city and one of the county-seats (Lawrence is the other) of Essex county, Massachusetts, about 15 m. N.E. of Boston. Pop. (1900), 35,956, of whom 10,902 were foreign-born (including 400 French Canadians, 3,476 Irish, and 1,582 English
Canadians), 23,648 were of foreign parentage (one or the other parent foreign-born) and 156 were negroes; (1910), 43,697.

Area, 8-2 sq. m. Salem is served by the Boston & Maine and by interurban electric railways westward to Peabody, Danvers, Salem, Lynn, and Boston. The Peabody and to Marblehead, Swampscott, Lynn and Boston. It occupies a peninsula projecting toward the north-east, a small island (Winter Island) connected with the neck of the peninsula (Salem Neck) by a causeway, and some land on the mainland. Salem has many historical and literary landmarks. There are three court-houses, one of granite (1835-1841) with great monolithic Corinthian pillars, another (1862), adjoining it, of brick, and a third (1906-1909) of granite, for the probate court. The City Hall was built in 1837, and enlarged in 1876. The Custom House (1837) is occupied in part by the Custom House Collection of 1845 and in it Hawthorne worked as surveyor of the port in 1845-1849. The public library building (1888) was given to the city by the heirs of Captain John Bertram.

The Essex Institute (1848) is housed in a brick building (1851) with freestone trimmings and in old Plummer Hall (1857); its museum contains some old furniture and a collection of portraits; it has an excellent library and publishes quarterly (1850 sq.) Historical Collections. The Peabody Academy of Science, founded by the gift in 1851, of John Crowninshield, has been removed to a large building (1868) in Salem, established in the East India Marine Hall (1848), bought for a special purpose from the Salem East India Marine Society. The Marine Society was organized in 1799, its membership being limited to "persons engaged in the sea, which is beyond Good Hope or Cape Horn, as masters or supercargoes of vessels belonging to Salem"; it assists the widows and children of members. Its museum, like the ethnological and natural history collection of the Essex Institute, is valued by students.

the Athenaeum, established in 1804, is a leading literary and social organization, whose museum now includes Essex county collections (natural history, mineralogy, botany, prehistoric relics, &c.), type collections of Bibles, and a collection of prehistoric, primitive, and savage peoples, especially rich in objects from Malayasia, Japan and the South Sea islands; and portraits and relics of famous Salem merchants, with models and pictures of Salem merchant vessels. The Salem Athenaeum (1804) and the Essex Institute (1829) are both housed in Cabot Hall (1837); the City Library (1781) is housed in Plummer Hall (1868), a building in the colonial style, named in honour of a benefactor of the Athenaeum, Caroline Plummer (d. 1855), who endowed the Plummer Professorship of Christian Morals at Harvard. Some of the old houses were built by ship-owners before the War of Independence, and were built during the first years of the 19th century when Salem privateers made so many fortunes. Many of the finest old houses are of the gambrel type; and there are many beautiful doorways, doorheads and other details. Nathaniel Hawthorne's birthplace was built before 1692; another house—now reconstructed as a social center—was once the point of departure of the original "house of seven gables." The Corwin or "Witch" house, so called from a tradition that Jonathan Corwin, one of the judges in the witchcraft trials, held preliminary examinations of witches here, is also known as the Mayhew or Williams house; a small house, built before 1660, was the homestead of Timothy Pickering and of other members of that family. Among the other buildings and institutions of note are the Francis Cabot Hall (1881), the Franklin Institute (1824), the Salem Marine Society; a large armory; a state normal school (1834); an orphan asylum (1871), under the Sisters of the Grey Nuns; the Association for the Relief of Aged and Destitute Women (1860), occupying a fine old brick house formerly the home of Benjamin W. Crowninshield (1772-1851), a member of the national House of Representatives in 1824-1831 and Secretary of the Navy in 1814; the Bertram Home for Aged Men (1877) in a house built in 1806-1807, the Plummer Farm School for Boys (incorporated 1855, opened 1870), another charity of Caroline Plummer, on Winter Island; the City Almshouse (1816) and the City Insane Asylum (1853), in houses; a house of the Shakers; a fraternity house (1869), a club-house for boys; the Marine Society Bethel; the Salem Seamen's Bethel; the Seamen's Orphan and Children's Friend Society (1839); an Associated Charities (1901), and the Salvation Army.
the release from prison of all then held on the charge of witchcraft.

Salem was an important port after 1670, especially in the India trade, and Salem privateers did great damage in the Seven Years' War, in the War of Independence (when 138 Salem privateers took 445 prizes), and in the War of 1812. On this foreign trade and these rich periods of privateering the prosperity of the place up to the middle of the 19th century was built.

The First Provincial Assembly of Massachusetts met in Salem in 1774. It included the old bridge (between the present Salem and Danvers) the first armed resistance was offered to the royal troops, when Colonel Leslie with the 64th regiment, sent to find cannon hidden in the Salem “North Fields,” was held in check by the townspeople. Salem was the birthplace of Nathaniel Hawthorne, W. H. Prescott, Nathaniel Bowditch, Jones Very and W. W. Story.

Marblehead was separated from Salem township in 1840; Beverly in 1668, a part of Middleton in 1726, and the district of Danvers in 1752. Salem was chartered as a city in 1836.

See Charles S. Ogden and Henry M. Batchelder, Historical Sketch of Salem, 1620-1879 (Salem, 1879); Joseph B. Felt, Annals of Salem (ibid. 1827; 2nd ed., vols. 1845-1849); Charles W. Upham, Salem Witchcraft (2 vols., Boston, 1867); H. B. Adams, Village Communities of Cape Ann and Salem (Baltimore, 1883); Eleanor Putnam, The Life of Stephen Foster in Salem (Boston, 1886); C. H. Webber and W. S. Nevins, Old Naumkeag (Salem, 1877); R. D. Paine, Ships and Sailors of Old Salem (New York, 1900), and Visitor's Guide to Salem (Salem, 1902) published by the Essex Institute.

SALEM, a city and the county-seat of Salem county, New Jersey, U.S.A., in the S.W. part of the state, on Salem Creek, about 35 m. S.W. of Philadelphia. Pop. (1900), 5811, of whom 263 were foreign-born and 500 were negroes; (1910 U.S. census), 6614. It is served by the West Jersey & Seashore railroad, and has steamer connexion with Philadelphia. Among its institutions is the John Tyler Library, established as Salem Library in 1804 and said to be the third oldest public library in the state. In Finn's Point National Cemetery, about 4 m. N. of Salem, there are buried some 2400 Confederate soldiers, who died during the Civil War while prisoners of war at Fort Delaware, on an island in Delaware river nearly opposite the mouth of Salem Creek. Salem lies in a rich agricultural region. Among the city's manufactures are canned fruits and vegetables, condiments, glass-ware, brass and iron-work, hosiery, linoleum and oil-cloth. Near the present site in 1643 colonists from Sweden built Fort Elsbourg; but the Swedish settlers in 1655 submitted to the Dutch at New Amsterdam, and the latter in turn surrendered to the English in 1664. In 1675 John Fowenick, an English Quaker, entered the Delaware river and founded the first English settlement on the Delaware (which he called Salem). After purchasing lands from the Indians, Fowenick attempted to maintain an independent state, but in 1682 he submitted to the authority of the proprietors of West Jersey. During the War of Independence Salem was plundered on the 17th of March 1778 by British troops under Colonel Charles Mawhood, and on the following day a portion of these troops fought a sharp but indecisive engagement at Quinton's Bridge, 3 m. S. of the town, with American militia under Colonel Benjamin Holmes. Salem was incorporated as a town in 1695, and was chartered as a city in 1838.

SALEM, a city of Columbiana county, Ohio, U.S.A., 67 m. N.W. of Pittsburgh and about the same distance N.E. of Cleveland. Pop. (1900), 7582, including 669 foreign-born and 227 negroes; (1910) 8043. Salem is served by the Pennsylvania (the Pittsburg, Fort Wayne & Chicago division) and the Youngstown & Ohio River railways, and by an interurban electric line to Canton. The city has a Carnegie library (1896), two beautiful cemeteries, a park, and a Home for Aged Women. It is situated in a fine agricultural region; coal is mined in the vicinity; natural gas is obtained in abundance; and the city has various manufactures. It was settled by Friends in 1806, incorporated as a town in 1818, was a village in 1832, and chartered as a city in 1887. For several years preceding the Civil War it was a station on the "underground railway" and the headquarters of "the Western Anti-Slavery Society," which published here the Anti-Slavery Bugle.

SALEM, the capital of Oregon, U.S.A., and the county-seat of Marion county, on the east bank of the Willamette river, 52 m. S.S.W. of Portland. Pop. (1900), 4258, including 222 foreign-born; (1910) 14094. It is served by the Southern Pacific railway, by the Oregon Electric line (to Portland), and by a steamship line to Portland. The city is in the centre of the Willamette Valley, a rich farming and fruit-growing country. It has wide, well-shaded streets, and two public parks. Among the public buildings and institutions are the State Capitol, the State Library, the city public library, the county court-house, the Federal building, the state penitentiary and several charitable institutions. Salem is the seat of Willamette University (Methodist Episcopal, 1844), an outgrowth of the mission work of the Methodist Episcopal church begun in 1834 about 10 m. below the site of the present city; of the Academy of the Sacred Heart (Roman Catholic, 1860) and of two business colleges. Immediately north of the city at Chemawa is the Salem (non-reservation) government school for Indians, with an excellently equipped hospital. Water power is derived (in part, by an 18 m. canal) from the Santiam, an affluent of the Willamette river. The city is a market for the produce of the Willamette Valley. The settlement here, gathering about the Methodist mission and school, began to grow in the decade 1840-1850. Salem was chartered as a city in 1853, and in 1860 was made the capital of the state. It grew rapidly after 1900, and its territory was increased in 1903.

SALEM, a town and the county-seat (since 1838) of Roanoke county, Virginia, U.S.A., on the Roanoke river, about 60 m. W. by S. of Lynchburg. Pop. (1900), 3412, including 798 negroes; (1910) 3840. It is served by the Norfolk & Western and the Virginian railways, and has electric railway connexion with Roanoke, about 6 m. E. The town is a summer resort about 1000 ft. above the sea, surrounded by the Alleghany and Blue Ridge mountains. There are chalybeate and sulphur springs in the vicinity. Salem is the seat of a Lutheran Orphan Home (1888), of the Baptist Orphanage of Virginia (1892) and of Roanoke College (co-educational, Lutheran; chartered, 1853). The town is in a dairying, agricultural and fruit-growing region. The Roanoke river provides water-power. The water supply is obtained from a spring within the town limits, from which there flows about 576,000 gallons a day, and from an artesian well. This part of Roanoke county was granted in 1767 to General Andrew Lewis, to whom there is a monument in East Hill Cemetery, where he is buried. Salem, laid out in 1852, was incorporated as a town in 1873.

SALE OF GOODS. Sale (O.Eng. zala, sellan, syllan, to hand over, deliver) is commonly defined as the transfer of property from one person to another for a price. This definition requires some consideration in order to appreciate its full scope, the law of sale is usually treated as a branch of the law of contract, because sale is effected by contract. Thus Pothier entitles his classical treatise on the subject, Traité du contrat de vente, and the Indian Contract Act (ix. of 1872) devotes a chapter to the sale of goods. But a completed contract of sale is something more. It is a contract plus a transfer of property. An agreement to sell or buy a thing, or, as lawyers call it, an executory contract of sale, is a contract pure and simple. A purely personal bond arises thereby between seller and buyer. But a complete or executed contract of sale effects a transfer of ownership with all the advantages and risks incident thereto. By an agreement to sell a jus in personam is created; by a sale a jus in rem is transferred. The essence of sale is the transfer of property for a price. If there be no agreement for a price, express or implied, the transaction is gift, not sale, and is regulated by its own peculiar rules and considerations. So, too, if commodity be exchanged for commodity, the transaction is called barter and not sale, and the rules relating to sales do not apply in their entirety. Again, a contract of sale must contemplate an absolute transfer of the property in the thing sold and agreed to be sold. A mortgage may be in the form of a conditional sale, but English law regards the
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Substance and not the form of the transaction. If in substance the object of the transaction is to secure the repayment of a debt, and not to transfer the absolute property in the thing sold, the law at once annexes to the transaction the complex consequences which flow from the sale of goods; and it is impossible to distinguish a contract for the sale of an article from a contract for the supply of work and materials. If a man orders a set of false teeth from a dentist the contract is one of sale, but if he employs a dentist to stop one of his teeth with gold the contract is for the supply of work and materials. The distinction is of practical importance, because very different rules of law apply to the two classes of contract. The property which may be the subject of sale may be either movable or immovable, tangible or intangible. The present article relates only to the sale of goods—that is to say, tangible movable property. By the laws of all matured civilizations it is, indeed, a public policy, subject to special regulations. It is obvious that the assignment of "things in action," such as debts, contracts and negotiable instruments, must be governed by very different principles from those which regulate the transfer of goods, when the object sold can be transferred into the physical possession of the transferee.

In 1837, when Mr Justice Story wrote his work on the sale of personal property, the law of sale was still in process of development. Many rules were still unsettled, especially the rules relating to implied conditions and warranties. But for every rule of law, a rule of equity, was there to be conceived, or there was a special case to be made.

In 1892 the subject seemed ripe for codification, and Lord Herschell introduced a codifying bill which two years later passed into law as the Sale of Goods Act, 1893 (56 & 57 Vict. c. 71). A sale is a consensual transaction in which an object is transferred from one person to another in consideration, or is agreed to be transferred, on some terms or conditions or from any stipulations or conditions they may see fit to agree to. The code in no wise seeks to fetter this discretion. It lays down a few positive rules—such, for instance, as that which reproduces the 17th section of the Statute of Frauds. But the main object of the act is to provide clear rules for those cases where the parties have either formed no intention or have failed to express it. When parties enter into a contract of sale of goods, they may provide for contingencies which may interrupt that performance—such as the insolvency of the buyer or the destruction of the thing sold before it is delivered. It is the province of the code to provide for these contingencies, leaving the parties free to modify by express stipulation the provisions imported by law. When the code was in contemplation the case of Scotland gave rise to difficulty. Scottish law varies widely from English. To speak broadly, the Scottish law of sale differs from the English by adhering to the rules of Roman law, while the English common law has worked out rules of its own. Where two countries are so closely connected in business as Scotland and England, it is desirable that the law which governs the commercial matters should differ. The Mercantile Law Commission of 1855 reported on this question, and recommended that on certain points the Scottish rule should be adopted in England, while on other points the English rules should be adapted to Scottish conditions. Recommendations of the Commission were partially and rather capriciously adopted in the English and Scottish Mercantile Law Amendment Acts of 1866. Certain rules were enacted for England while similar rules were left to be enacted by Scottish Parliament. Other rules were enacted for Scotland which resembled but did not really reproduce the English law. There the matter rested for many years. The Codifying bill of 1891 applied only to England, but on the advice of Lord Watson it was extended to Scotland. As the English and Irish laws of sale were the same, the case of Ireland gave rise to no difficulty, and the act now applies to the whole of the United Kingdom. As regards England and Ireland very little change in the law has been effected. As regards Scotland the process of assimilation has been carried further, but has not been completed. In a few cases the Scottish rule has been saved or restored, in a few others it is respected, and in those points, where the laws were dissimilar, the English rules have been adopted.

Now that the law has been codified, an analysis of the law resolves itself into an epitome of the main provisions of the statute. The act is divided into six parts, the first dealing with the formation of the contract, the second with the effects of the contract, the third with the conditions and warranties, the fourth with the sale and delivery of goods, the fifth with unpaid seller against the goods, and the sixth with remedies for breach of contract. The sixth part is supplemental. The 1st section, which modified the Scots law, was inserted in order to give the contract a sounder basis in the following terms: "A contract of sale of goods is a contract whereby the seller transfers or agrees to transfer the property in goods to the buyer for a money consideration called the price. A contract of sale is perfected when there is an agreement between the parties as to the price of the property in the goods is transferred from the seller to the buyer the contract is called a 'sale,' but when the transfer of the property in the goods is to take place at a future time or subject to some condition thereafter to be fulfilled the contract is called an 'agreement.'" And it provides that such a contract becomes a sale when the time elapses or the conditions are fulfilled, but before that time the goods may be transferred. This section clearly enunciates the consensual nature of the contract, and this is confirmed by section 7 which provides that a person who does not become a party to the contract shall not be liable to pay a reasonable price for the goods supplied, or to buy the goods. The act is framed on the plan that if the law of contract were codified, this act would form a chapter in the code. The question of the law of contract is therefore that of a general law, but a special provision is inserted (section 2) relating to the treatment of special cases to infants and other persons who are incompetent to contract. Though an infant cannot contract he must live, and he can only get rid of the contract if it is impossible for him to carry it out. It is therefore liable to pay a reasonable price for necessities supplied to him, and it defines necessities as "goods suitable to the condition in life of such minor or other person, and to his actual requirements at the time of the sale and delivery."

The 4th section of the act reproduces the famous 17th section of the Statute of Frauds, which was an act "for the prevention of frauds and to secure good faith."

The object of that statute was to prevent people from setting up bogus contracts of sale by requiring material evidence of the contract. The section provides that "a contract for the sale of any goods of the value of ten pounds or upwards shall not be enforced unless the agreement is in writing and signed by the party making the offer, or his agent or attorney." The courts have disputed whether this enactment has done more good or harm. It has defeated many an honest claim, though it may have prevented many a dishonest sale. It has been said that the provision for recording the contract has denied justice to the parties, and that the court is not bound to try the case on the statement of what was said by the parties. It has accused the judges and juries have been satisfied of the bona fide of a contract which does not appear to satisfy the statute, they have done their best to get round it. Every expression in the section has been subject to a series of judicial decisions, which ran into almost impossible refinements, and illustrate the maxim that hard cases make bad law. It is to be noted that Scotland is excluded from the operation of section 4. The Statute of Frauds has never been applied to Scotland, and Scotsmen appear never to have felt the want of it.

As regards the subject-matter of the contract, the act provides that there are two classes of "goods," general and "fungible goods." The former are those which are "coagulated," or to say, goods to be manufactured or acquired by the seller after the making of the contract. (§ 5). Suppose that a man goes into a gunsmith's shop and says, "This gun suits me, and if you will make or get me another like it I will buy the pair." This is a good contract, and no question as to its validity would be likely to occur to the lay mind. But lawyers have seriously raised the question, whether there could be a valid contract of sale when the subject-matter of the contract was a "fungible goods," which is a phrase that was coined. It is the one by which the thing sold is described as a thing not to be delivered until a certain date, or when certain circumstances are fulfilled. The problem which is raised is whether the contract is enforceable if it is impossible to deliver the goods. The act provides a remedy for this case, and requires the seller to give a warranty, and the buyer to take an option within a reasonable time after delivery, or to retain them and claim compensation (§ 11). In England it is a very common trick for the buyer to keep the goods, and pay nothing at all, or only a small sum, to avoid the conditions of the contract being fulfilled, and the goods not being delivered. This is the "acquisition of the goods by theft." To discourage this practice in Scotland the act provides that, in that country, the court may require the buyer who alleges a breach of contract to bring the agreed price into court
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...pending the decision of the case (§ 59). It seems a pity that this
semblable rule was not extended to England.

In early English law caveat emptor was the general rule, and it was
one well suited to primitive times. Men either bought their goods in the
market place, or bought of men who had sold them. There was no
connection on a footing of equality. Now the complexity of modern
commerce, the division of labour and the increase of technical skill,
have altogether altered the state of affairs. The buyer becomes
more ignorant and less skilled, and the seller more skilled and judge of the
seller or manufacturer. Modern law has recognized this, and protects
the buyer by implying various conditions and warranties in contracts
of sale, and has both given a remedy for grievances and enlarged the
scope of his rights.

First, it is implied undertaking on the part of the seller that he has a right to
sell the goods (§ 12). Secondly, if goods be described by order,
they must correspond with that description (§ 13). This, of course,
is an implied condition that the goods sold are as described in the
public catalogue or price-list. Within the frame of the act, this
is the case of manufacturers or sellers who deal in particular classes of
goods. They naturally have better means of judging of their
merchandise than the ordinary public; they are able to pass
judgment on their skill or judgment. A tea merchant or grocer
knows more about tea than his customers can, and so does a gun-
smith about guns. In such cases, if the buyer makes known to
the seller the particular purpose for which the goods are required,
there is an implied condition that the goods are reasonably fit for it, and
if no particular purpose be indicated there is an implied condition
that the goods supplied are of merchantable quality (§ 14). Fourthly,
in the case of a sale by sample, there is "an implied condition that
the bulk shall correspond with the sample in quality," and that the
buyer shall have a reasonable opportunity of comparing the bulk with
the sample (§ 15).

...The common object of sale is the transfer of ownership from seller
to buyer, and it is often both a difficult and an important matter to
determine the precise moment at which the change of ownership
begins. Whenever the custom of the place is such that the
transfer of ownership takes place by the mere fact that the property
in a thing sold did not pass until delivery to the buyer. Traditio
bium and usufructus dominia torum, non nudus pactis, transferunt.

English law has abandoned this test, and has adopted the principle
that the property passes at the same time as the parties intend it to pass.
Express stipulations as to the time when the property is to pass are
very common, and the parties to the contract have to be gathered to
conduct a long train of judicial decisions has worked out a more or
less artificial series of rules for determining the presumed intention
of the parties, and these rules are embodied in sections 16 to 20 of the act.
The cases are as follows: If the goods are delivered to the buyer,
. i.e., goods defined by description only, and not specifically
identified, "no property in the goods is transferred to the buyer unless
and until the goods are ascertained." If a man orders ten tons of
scrap iron from a dealer, it is obvious that the dealer can fulfil his
contract by delivering any ten tons of scrap that he may select,
and that until the ten tons have been set apart, no question of
change of ownership can arise. But when a specific article is bought,
or when goods ordered by description are appropriated to the
contract, the passing of the property is a question of intention.
Delivery to the buyer is strong evidence of intention to change the
ownership, but the mere fact that the goods are delivered to the
buyer on approval, or for sale or return. Delivery to a carrier for
the buyer operates in the main as a delivery to the buyer, but the
seller may deliver to the carter, and yet yet. If goods are delivered
to the buyer, when and where there is a sale of a specific
article, which is in a fit state for delivery, the property in the
article prima facie passes at once, even though delivery be delayed.
When the goods do not pass by delivery, or are to be sold to
the buyer by description, the property in the goods passes to the buyer,
when, with the express or implied consent of the parties, goods of
the required description are "unconditionally appropriated to the
contract." The cases which determine what amounts to an appro-
priation of goods to the contract are numerous and complicated.
Probably they can all be explained as cases of constructive delivery,
but there is a mass of cases where the word "appropriated" was
defined out of the act, and the doctrine of constructive delivery was not known.
It is perhaps to be regretted that the codifying act did not adopt the test of delivery,
but it was thought better to adhere to the familiar phraseology of the cases,
and to deal with the transference of risks under existing contracts.
Res perit domino is therefore the maxim of English, as well as of
Roman law.

...the great majority of cases people only sell what they have a
right to sell, but the law to make provision for cases where a man
sells goods which he is not entitled to sell. An agent may
misconceive or exceed his authority. Stolen goods may be
sold by the owner to a second party, or Goods may pass to
two innocent parties is to suffer? Is the original owner to be
permanently deprived of his property, or is the loss to fall on the
innocent purchaser? Roman law threw the loss on the buyer, Non
plus justum est et non plus reprehensum. However, in modern
law, in deference to modern commerce, protects the innocent purchaser
and throws the loss on the original owner. "En fait de meubles,
possession vaut titre" (Code civil, art. 1599). English law is a
compromise between these opposing theories. It adopts the Roman
rule as its guiding principle, but qualifies it with certain more or
less arbitrary exceptions. The following are the cases in which
the actual cases which occur (§§ 21 to 26). In the first place, the
provisions of the Factors Act, 1889 (52 and 53 Vict. c. 45, extended
to by 53 and 54 Vict. c. 40), are preserved. That act validates
sales and other dispositions of goods, even if made by a factor
within the apparent scope of their authority, and also protects
innocent purchasers who obtain goods from sellers left in possession,
and who have not knowledge of the fact that the factor has but a
nominal interest in the goods. First, in the case of contracts induced by fraud
is voidable only, and not void, and the act provides, accordingly,
that a voidable contract of sale shall be avoided to the prejudice
of the factor only if he consents to the contract. The fraud must be reasonably
suspected. If a factor has once passed goods in the trade, it is
preserved intact, section 22 providing that "where goods are sold in
market overt, according to the usage of the trade, the buyer
becomes the owner of the goods, unless he gives notice of his title
in good faith, and without notice of any defect or want of title on the part
of the seller." The section does not apply to Scotland, nor to
the law relating to the sale of horses which is contained in two old
acts, 2 & 3 Will. 4 & 3 Eliz. c. 12. The mirror regulations of those statutes are
never complied with, so their practical effect is to take horses out of the category of things
which can be sold in market overt. The privilege of market overt applies
only to markets by prescription, and does not attach to newly
created markets. The operation of the contract is therefore fitful and
capricious. For example, every shop in the City of London is within
the scope of this act, and yet the trade there is not confined to the
street outside. If then a man buys a stolen watch in Fleet Street, he may
get a good title to it, but he cannot do so if he buys it a few doors off
in the Strand. There is, however, a qualification of the right
under this act in that it does not apply to the sale of goods which
were stolen and the thief is prosecuted to conviction, the property in the
goods thereupon reverts in the original owner, and he is entitled to
get them back either by a summary order of the convicting court or
by action. This rule dates back to the statute 21 Hen. VII. It
was probably intended rather to encourage prosecutions in the interests
of public justice than to protect people whose goods were stolen.

Having dealt with the effects of sale, first, as between seller and
buyer, and, secondly, as between the buyer and third parties,
the act proceeds to determine what, in the absence of the
conventional intention of the parties, are the legal consequences
in the performance of their contract (§§ 27 to 37)

...It is the duty of the seller to deliver the goods and of the buyer
to accept until delivery for them in accordance with the terms of the contract
(§ 27). In ordinary cases the seller's duty to deliver the
goods is satisfied if he puts them at the disposal of the buyer at the
place of sale. The normal contract of sale is represented by a cash
sale in a shop. The buyer pays the price and takes away the goods.
"Unless otherwise agreed, delivery of the goods and payment of the
price are concurrent conditions" (§ 27). But agreement, express or
implied, may create infinite variations on the normal contract.
It was the rule that the seller had a right of retainer, and if the buyer
was entitled to reject, and does reject, he is not bound to send them back
to the seller. It is sufficient if he intimate to the seller his refusal to
accept. The normal theory of sale is cash against delivery, but in the great
majority of actual cases, especially in commercial transactions,
this theory is departed from in practice. The interests of the seller are therefore protected by rules whereby he
may recover as damages, in lieu of specific performance, the goods,
and he may retain them until payment. In the absence of any different agreement, as, for instance, where
there is a stipulation for sale on credit, the unpaid seller has a right to
retain possession of the goods until the price is paid or tendered.
The right, of course, be waived, even when it is not negatively
by the contract. It is to be noted that when the seller takes a bill of
exchange from the buyer, demanding payment on a given date or for
what is termed "further consideration" an interest operates as conditional payment. On the dishonour of
the instrument the seller's rights revive (§§ 38-43). If the buyer becomes
insolvent, the unpaid seller has a further right found on ancient
mercantile usages. He may have parted with both the property in
and possession of the goods sold, but he can attach the goods as long
as they are in the hands of a carrier or forwarding agent, and have
not reached the actual possession of the seller or his immediate agent.
Still, in many cases, whether the goods of the
insolvent seller becomes insolvent, the unpaid seller who has parted
with the possession of the goods has the right of stopping them in transitu—
that is, to seize them during the course of transit. They are in
the hands of a carrier, but they are in course of transit, and may retain them until payment or
deposition of the goods (§ 44). The right of stoppage, however, cannot
be exercised to the prejudice of third parties to whom the bill of
lading or other document of title to goods has been lawfully

doubt regarding the sales contract. It is the open market, where the goods on sale are exposed to
view.

1 That is, "open market," where the goods on sale are exposed to
view.
It is not used in European medicine. It consists of the tuberous roots of various species of Orchis and Eulophia, which are decorticated, washed, heated until horny in appearance, and then dried. Its most important constituent is a mucilaginous substance which it yields with cold water to the extent of 48%.

SALENTO (anc. Salernum), a seaport and archiepiscopal see of Campania, Italy, capital of the province of Salerno, on the west coast, 33 m. by rail S.E. of Naples. Pop. (1901), 26,936 (town); 45,313 (commune). The ruins of its old Norman castle stand on an eminence 905 ft. above the sea with a background of graceful limestone hills. The town walls were destroyed by the Saracens and the seaward portion has given place to the Corso Garibaldi, laid out in 1684 by Gregory VII. The chief buildings are the theatre, the prefecture, and the cathedral of St. Matthew (whose bones were brought from Paestum to Salerno in 954), begun in 1076 by Robert Guiscard and consecrated in 1084 by Gregory VII. In front is a beautiful quadrangular court (112 by 102 ft.), surrounded by arcades formed of twenty-eight ancient pillars mostly of granite from Paestum, and containing twelve sarcophagi of various periods; the middle entrance into the church is closed by a remarkable breccia loft of 11th-century Byzantine work. The nave and two aisle ends of the church were two twin temples, the larger dating from 1175, a large 11th-century altarpiece and ambones, the larger in the south aisle, having scenes from the Bible carved on thirty ivory tablets, with 15th-century mosaic in the apse, given by Giovanni da Procida, the promoter of the Sicilian Vespers, and the tomb of Pope Gregory VII., and that of Queen Margaret of Durazzo, mother of King Ladislaus, erected in 1412, deserve to be mentioned. In the crypt is a bronze statue of St. Matthew. The cathedral possesses a fine Exultet roll. S. Domenico near it has Norman cloisters, and several of the other churches contain paintings by Andrea del Sarto and da Salerno, one of the best of Raphael's scholars. The church was largely restored by Desiderio da Procida in 1260 when Naples became the capital of the kingdom, and remained blocked with sand till the unification of Italy, when it was cleared; but it is now unimportant. The chief industries are silk and cotton-spinning and printing. Good wine is produced in the neighbourhood.

SALISBURY, a Roman colony (Salembrigium), was founded in 104 B.C. to keep the Picentini in check. It was captured by the Samnites in the Social War. It was the point at which the coast road to Paestum diverged from the Via Popilia, rejoining it again E. of Buxentum. In the 4th century A.D. the contemporary market place and the ancient town were transferred to the new road, to which the Chrisians of the region resorted in 300 A.D. When Constantine the Great commanding his legions was having a battle of the Monetae in the valley of the Marone, he requisitioned the church of St. John to house the treasures of the church, which he wished to present to the emperor Constantine the Great. The basilica at Lorch was captured by the Romans in 396 A.D., and was probably built at the junction of the Lorch road and the road to the south. The Roman town was destroyed by the Huns in 406 A.D. and by the Vandals in 408 A.D., but was soon restored.

SALEP, a drug extensively used in oriental countries as a nervine restorative and fattener, and also much prescribed in paralytic affections. It probably owed its original popularity to the "doctrine of signatures."
faith, but he passed most of his life at Llanrwst, working at
his literary undertakings. The greatest Welsh scholar of his
time, Salesbury was acquainted with nine languages in
Latin, Greek, Hebrew, and in phthisic and
botany. He died about 1600. About 1546 he edited a collection
of Welsh proverbs (Oli synwyr pen kember), probably the first
book printed in Welsh, and in 1547 his Dictionary in English
and Welsh was published (facsimile edition, 1877). In 1563
the English parliament ordered the Welsh bishops to arrange
for the translation of the Scriptures and the book of common
prayer into Welsh. The New Testament was assigned to Sales-
bury, who had previously translated parts of it. He received valu-
able assistance from Richard Davies, bishop of St. Davids, and
also from the Bishop of Hereford (d. 1591), but he himself did
the greater part of the work. The translation was made from
the Greek, but Latin versions were consulted, and in October 1567
the New Testament was published for the first time in Welsh.
This translation never became very popular, but it served as
the basis for the new one made by Bishop William Morgan (c. 1547-
1604). Salesbury and Davies continued to work together, translat-
ing various writings into Welsh, until about 1570 when the literary
partnership was broken. After this event, Salesbury, although
continuing his studies, produced nothing of importance.
Gaelic versions of the Old Testament (the spelling is Sales-
bury's): the translation is known as the Old Testament
(Salisbury) are: JOHN SALESBURY (c. 1500-1573), who held many
premises under the Tudor sovereigns and was bishop of Sodor and
Man from 1571 to 1573; THOMAS SALESBURY (c. 1555-1580), an
associate of the king's court; JOHN SALESBURY, who was executed for
heresy against Queen Elizabeth; HENRY SALESBURY (1561-c. 1657),
the author of a Welsh grammar published in 1593; THOMAS SALESBURY
(d. 1643), a poet, who probably fought for Charles I. at Edgehill;
and another royalist, WILLIAM SALESBURY (c. 1580-c. 1659), governor
of Denbigh Castle, which, in 1646, he gallantly defended in the
interests of the king.
SALEYER (Dutch, Salteler), a group of islands belonging
to the government of Celebes and its dependencies in the
Dutch East Indies, numbering together 73, the principal
being Saleser, Tambolongang, Pulo Kecil, and the smaller
munities of 5° and 7° 25' S. and 11° 50' and 121° 30' E. The main island,
Saleser, is over 50 m. long and very narrow; area, 248 sq. m.
The strait separating it from Celebes is more than 100 fathoms
deep and, running in a strong current, is dangerous for native
ships to navigate. The strata of the island are all sedimentary
rocks: coralline limestone, occasionally sandstone; everywhere,
except in the north and north-west, covered by a fertile soil.
The watershed is a chain running throughout the island from N.
to S., reaching in Bontona Haru 5840 ft., sloping steeply to the
cast coast. The plateau, mainly a mixed race of Macassars, Buginese,
the natives of Luvi and Buton, is estimated at 57,000 on the main island
and 24,000 on the dependent isles. They use the Macasar language,
are for the most part nominally Mahomedans (though many
beetlen customs survive), and support themselves by agriculture,
fishing, seafaring, trade, the preparation of salt (on the south coast)
and weaving. Field work is largely performed by a servile class.
Raw and prepared cotton, tobacco, trepan, tortoise-shell, cocoanuts
and coconut oil, salt, and sugar are exported. There are frequent emigra-
tions to Celebes and other parts of the archipelago. For that reason,
and also on account of its excellent horses and numerous buffaloes,
Saleser is often compared with Madura, being of the same import-
ance to Celebes as is Madura to Java.
SAFLO, a municipal, county- and parliamentary borough of
Lancashire, England, 189 m. N.W. by N. of London and 31 m.
E. by N. of Liverpool. Pop. (1908 estimate), 239,234.
Salford also gives its name to the hundred of south-west Lan-
cashire in which Manchester is situated; probably because when
the district was divided into hundreds Manchester was in a
ruinous condition from Danish ravages. The parliamentary
and municipal boundaries of Salford are identical; area, 570 acres.
The parliamentary borough has three divisions, each
returning a member. The borough, composed of three townships
identical with the ancient manors of Salford, Pendleton and
Broughton, is for the most part separated from Manchester by
the river Irwell, which is crossed by a series of bridges. The
valley of the Irwell, now largely occupied by factories, separates
the higher ground of Broughton from that of Pendleton, and
is flattest at the south where it joins the Manchester boundary.
At the other extremity of Salford it joins the borough of Eccles.
The borough is also bounded on its southwestern limits by
Bolton, but has its main approach in Manchester. The Lancashire
& Yorkshire and the London & North-Western railways serve the
borough. Salford is a city of 58,400; returning booths under the will
of Thomas Booth were in existence, and the borough was
grown in value greatly. The yearly income of more than £17,000
is disposed of in pensions and in hospital grants. His grandson,
Humphrey Booth the younger, left money for the repair of the
churches of the town, and the17th century revenue is about £1400.
Salford is the seat of a Roman Catholic bishopric, and its cathedral,
St John's, with its spire of 240 ft., is the largest in the country.
The borough contains a large number of cotton and cotton
mill industries and has begun to a large extent overshadowed by Manchester, and the two
boroughs, in spite of their separate government, are closely con-
ected as to be one great urban area. Many of the institutions in
Manchester are intended for the service also of Salford, which,
however, has resisted all attempts at municipal amalgamation.
The chief public buildings are the museum and art gallery at Peel
Park, the technical school, the education offices and the Salford
department of the county hall, built in 1825, is no longer adequate for
municipal needs. Broughton and Pendleton have each a separate
town hall. The large and flourishing technical school was developed
at Peel Park in 1884. The Pemberton and Salford Public
library, founded in 1846, was the first public recreation ground in the borough.
The grounds are Langworthy Gallery and a museum. In the park
are statues of Queen Victoria, the Prince Consort, Sir Robert Peel,
John Peel, Sir Charles and John Hope, and the concert hall—
one monument—a South African War memorial—is outside and almost opposite Peel Park. Other parks are at Seedley, Albert and Buile
Hill; the last contains a museum, the contents of which have been
transferred from Peel Park. There is also Kersal Moor, 21 acres
of Moorland, crossed by a Roman road, which has been noticed for
the variety of its flora, and for the capture of the Oecophora Woodiella,
467 ft., which is as high as any other recorded habitat. The David Lewis
recreation ground at Pendleton may also be named. Altogether Salford
has thirty parks and open spaces having a total area of
217 acres.
Salford has also provided two cemeteries.
The Salford Reference Library formed part of the institution, and from this has developed a free library system in which there are also nine lending libraries.
The commercial and industrial history of Salford is closely bound up
with that of Manchester. It is the seat of extensive cotton, iron,
chemical and allied industries. It owes its development to the
steam-engine and the factory system, and in recent years has shared
in the increase of trade owing to the construction of the Manchester
Ship Canal, which has added greatly to its prosperity. This will be
seen by an examination of the rateable value of the three
boroughs now comprised in the borough. In 1862 it was £1404; in 1841,
£734,220; in 1901, £97,727; in 1808-1909, £1,022,172.
The municipal government is in the hands of a town council consis-
ting of 16 aldermen and 48 councillors elected in 16 wards.
The election of the mayor is the most important of the year, being
the May Day Coronation Day. There is a system of street,
tramway service. There are also municipal baths. Salford has a
separate commission of the peace.
There are no certain figures as to the population before 1773, when at the
instance of Dr Thomas Percival a census was taken of Manchester and Salford.
The latter had then 4755 inhabitants. Census returns show that its population in 1801
was 11,477; in 1851, 61,890; and in 1901, 220,056. The death-rate in 1906 was
18·5 per thousand.
Within the present borough area there have been found neolithic implements and British urns, as well as Roman coins.
In 1831 traces of a Roman road were still visible. Domescott
Book mentions Salford as held by Edward the Confessor and as
having a forest three leagues long and the same broad. At the
Conquest it was part of the domain granted to Roger of Poitou,
but reverted to the crown in 1102. After successively belonging
to the earls of Chester and of Derby it passed to Edward Crouch-
back, earl of Lancaster. It was erected into a duchy and county
palatine in 1353, and in 1388, on the death of Blundeville, to
the earls of Kent. Their Lancashire possessions were kept separate.
Salford and Pendleton are still parts of the ancient duchy
of Lancaster, belonging to the English crown. In 1231
Ranulf de Blundeville, earl of Chester, granted a charter constituting
Salford a "free borough." But the government notwithstanding
was essentially manorial and not municipal. In the Civil Wars
between Charles I. and the parliament, Salford was royalist,
the unsuccessful siege of Manchester was conducted from its side of the Irwell. Its later history is mainly identical with that of Manchester (q.v.). In 1844 it received a municipal charter and became a county borough in 1889.

BIBLIOGRAPHY.—There is no separate history of Salford; see publications named under MANCHESTER. The MS. records of the Quarter Sessions, 1677-1686, in the Library of the Chetham Society, but others still remain in manuscript in the State Paper Office.

(W. E. A. A.)

SALICETI, ANTOINE (1755–1809), French revolutionist, was born at Saliceto, in Corsica, on the 20th of August 1759, of a family of Piacenzans. After studying law in Tuscany, he became an avocat at the upper council of Bastia, and was elected deputy of the Third Estate to the French states-general in 1789. As deputy to the Convention, Saliceti voted for the death of Louis XVI., and was sent to Corsica on mission to oppose the counter-revolutionary intrigues. But the success of his adversaries compelled him to withdraw to Provence, where he took part in repressing the revolts at Marseilles and Toulon. It was on this mission that he met and helped his compatriot Bonaparte. On account of his friendship with Robespierre, Saliceti was denounced at the revolution of 9 Thermidor, and was saved only by the amnesty of the year IV. He subsequently organized the army of Italy and the two departments into which Corsica had been divided, was deputy to the Council of the Five Hundred, and accepted various offices under the Consulate and Empire, being minister of police and of war at Naples under Joseph Bonaparte (1806–1809).

He died at Naples on the 23rd of December 1809—it has been alleged by political means—that he was murdered.

SALICIN, SALICINUM, C₇H₁₀O₅, the bitter principle of willow-bark, discovered by Leroux in 1831. It exists in most species of Salix and Populus, and has been obtained to the extent of 3 or 4% from the bark of S. helix and S. pentandra.

Salicin is prepared from a decoction of the bark by first precipitating the tannin by milk of lime, then evaporating the filtrate to a soft extract with the aid of alcohol. The residue is dissolved in water and the commerce it is usually in the form of glossy white scales or needles. It is neutral, odorless, unaltered by exposure to the air, and has a bitter taste. It is soluble in about 30 parts of water and 80 parts of alcohol at the ordinary temperature, and in 0.7 of boiling water or in 2 parts of boiling alcohol, and more freely in alkaline liquids. It is also soluble in acetic acid without alteration, but is insoluble in chloroform and benzol. From phloridzin it is distinguished by its ammonical solution not becoming coloured when exposed to the air. Chemically, it is a glucoside derived from glucose and saligenin (o-oxy-benzyl alcohol, into which it is decomposed by the enzymes present in the bark). The Latin name of the glucoside is salicin (from aldehyd-glucose). Populin, a benzyol salicin, is a glucoside found in the leaves and bark of Populus tremula.

Salicin is used in medicine for the same purposes as salicylic acid and salicylates. It is also used as a gastric stimulant, in doses of five grains. The ordinary dose may go up to forty grains or more with perfect safety, though the British Pharma- copoeia limits it to twenty. The remote action of the drug is that of salicylic acid or the numerous compounds that contain it (see SALICYLIC ACID).

SALICAN LAW, AND OTHER FRANKISH LAWS. The Salic Law is one of those early medieval Frankish laws which, with other early Germanic laws (see GERMANIC LAWS), are known collectively as leges barbarorum. It originated with the Salian Franks, often simply called Saliens, the chief of that conglomeration of Germanic peoples known as Franks.

The Salic Law has come down to us in numerous MSS., and in divers forms. The most ancient form, represented by Latin MSS. of the 11th century (Novellae Reipublicae Salicae), consists of six chapters.

The second form has the same 65 chapters, but contains interpolated provisions which show Christian influence. The third form consists of 93 chapters, and is divided into two groups, according to the two component or original parts of the law, which were added at different periods, and which do not possess the original form of the compilation.

Even the most ancient text, that in 65 chapters, contains interpolated materials; and besides the MSS., a number of Latin texts show the exact composition to be pronounced. It is more probable, however, that these words served the Franks, who were ignorant of Latin, as clues to the general sense of each paragraph of the law. The fourth version, as emended by Charlemagne, consists of 70 chapters with the Latinity corrected and without the glosses. Though he added some new provisions, Charlemagne respected the ancient texts, even where they differed, which indicates that the law was published by B. J. Herold at Basel in 1557 (Originum de Germania carum antiquitatem libris) from a MS. now lost, is founded on the second recension, but contains additions of considerably later date. However, a considerable number of other MSS. containing different versions, do not possess the original form of the compilation. The most ancient text, that in 65 chapters, contains interpolated materials; and besides the MSS., a number of Latin texts show the exact composition to be pronounced. It is more probable, however, that these words served the Franks, who were ignorant of Latin, as clues to the general sense of each paragraph of the law.

The law as originally compiled underwent modifications of varying importance before it took the form known to us in Latin MS. No. 4994, to which the edict of Childebert I. and Clotaire I. is already appended. The classes of MSS. distinguished above give evidence of further changes, the law being supplemented by other capitularies and sundry extraromania, prologues and epilogues, which some historians have wrongly assumed to be parts of the main text. Finally, Charlemagne, who took a keen interest in the law, added, among other things, by order of the emperor, a number of interpolated chapters, and adding others which had obtained general sanction.

The Salic Law is a collection of ancient customs put into writing by order of the prince. In the sense that they already existed and came ready-made to the prince’s hand, it is legitimate to speak of these customs as a popular law, a Volksrecht; but it was the prince who gave them force of law, emended them, and rejected such of the ancient usages as appeared to him antiquated. The king, moreover, had the right to add provisions to the law; and he found capitularies of Charlemagne and Louis the Pious in the form of additions to the Salic Law.

From this it will be seen that the Salic Law is not a political law; it is in no way connected with the succession to the throne of France, and it is absolutely false to suppose that it was the Salic Law that was invoked in 1316 and 1322 to exclude the daughters of Louis X. and Philip V. from the succession to the throne. The Salic Law is pre-eminently a penal code, which shows the amount of the fines for various offences and crimes, and contains, besides, some civil law enactments, such as the law that a woman who marries a foreigner (a salica) does not thereby acquire citizenship (as aforesaid), which declares that daughters cannot inherit land. The text is filled with valuable information on the state of the family and property in the 6th century, and it is astonishing to find Montesquieu describing the Salic Law as the law of a people ignorant of landed property. The code also contains abundant information on the organization of the tribunals (tribunal of the hundred and tribunal of the king) and on procedure. Like all the barbarian laws, the law of the Salian Franks
was a personal law; it applied only to the Salian Franks. As the Salians, however, were the victorious race, the law acquired an even greater importance for the other barbarian laws, and in the additions made to the Ripuarian, Lombard, and other allied laws, the Carolingians endeavoured to bring these laws into harmony with the Salic Law. Moreover, many persons, even of foreign race, declared themselves willing to live under the Salic Law. The principle of personality, however, gradually gave way to that of territoriality; and in every district, at least north of the Loire, customs were formed in which were combined varying proportions Roman law, ecclesiastical law and the various Germanic laws. So late as the 10th and 11th century it is noticeable, in various charters and in the documents of the church, that these customs were often brought back into harmony with the Salic Law, but only in a vague and general way; and it would be rash to conclude from this that the Salic Law was still in force.

Of the numerous editions of the Salic Law only the principal ones can be mentioned: J. M. Pardessus, Loi salique (Paris, 1883), 8 texts; G. Waiz, Das alle Recht der salischen Franken (1886), text of the first version; J. F. Behrend, Lex Salica (1873; 2nd ed., Weimar, 1897); J. H. Hessels, Lex Salica: The Ten Texts with the Glosses, and the Lex Emsiadea, with notes on the Frankish words in the Lex Salica by H. Kern (1880), the various texts shown in synoptic tables; A. Holdt, Lex Salica (1879 seq.), reproductions of all the MSS. with all the abbreviations; H. Geffcken, Lex Salica (Leipzig, 1896), the text in 65 unpublished manuscripts with parallel text, and appendices of addittamenta; and the edition undertaken by Mario Krammer for the Mon. Germ. hist. Further information see the dissertations prefixed to the editions of Pardessus, Waiz and Hessels; useful for the history of the science are the studies of Krammer, "Die fränkische Rechts- und Gerichtsverfassung und ihre Reglementierung", in Gesammelte Arbeiten, I, 140-200 (Berlin, 1876); R. Sohm, Der Proces der Weimar (Weimar, 1867; French trans. by M. Thévenin) and Die fränkische Reichs- und Gerichtsverfassung (Berlin, 1877); and a commentary paragraph by Krammer and B. Brunner, Deutsche Rechtsgeschichte (2nd ed., Leipzig, 1906), I. 427 seq.

The Lex Ripuaria was the law of the Ripuarian Franks, who dwelt between the Meuse and the Rhine, and whose capital was Cologne. We have no ancient MSS. of the law of the Ripuarians; the 35 MSS. which now lost which served as the basis of the old editions, do not go back beyond the time of Charlemagne (end of 8th century and 9th century). In all these MSS. the text is identical, but it is a revised text—in other words, we have only a lex emendata. On analysis, the law of the Ripuarians, which contains 89 chapters, falls into three heterodinasic divisions. Chapters i-viii. is a conspectus of composition; but, although the fines are calculated, not on the unit of 15 solidi, as in the Salic Law, but on that of 18 solidi, it is clear that this part is already influenced by the Salic Law. Chapters xxxii-xxxv. are taken directly from the Salic Law; the provisions follow the same arrangement; the unit of the compositions is 15 solidi; but capillitaries are interposed, and the provisions are in the affluence and sale of immovable property. Chapters lxxx. to lxxxix. consists of provisions of various kinds, some taken from lost capillitaries and from the Salic Law, and others of unknown origin. The compilation apparently goes back to the reign of Dagobert I. (528-639), to a time when the power of the mayors of the palace was still feeble, since we read of a mayor being threatened with the death penalty for taking bribes in the course of his judicial duties. It is probable, however, that the first two parts are older than the third. Already in the Ripuarian Law the divergences from the old Germanic law are greater than in the Salic Law. In the case of the praevarication attaches to written deeds; the clergy are protected by a higher woesig—1,000 solidi for a priest, and 500 for a bishop; on the other hand, more is given to the cojurator (sworn witnesses); and we note the appearance of the judicial duel, which is not mentioned in the Salic Law.

There is an edition of the text of the Ripuarian Law in Mon. Ger. hist., v. 1250-1258, by M. Waiz; a separate edition in 1885 for the use of schools. For further information see the prefaces to Sohm's editions; Ernst Mayer, Zur Entstehung der Lex Ripuariorum (Munich, 1886); Julius Ficker, Die Heimat der Lex Ripuariorum, in Die Mitteilungschriften für österreichische Geschichtsforschung (suppl., vol. v.); H. Brunner, Deutsche Rechtsgeschichte (2nd ed., Leipzig, 1906), i. 442.

Lastly, we possess a judicial text in 48 paragraphs, which bears the title of Notitia vel commemoaratio de illa eea (law), quae se ad Amorem habet. This was in use in the district along the Yssel formerly called Hamalant. The name Hamalant is unquestionably derived from the Frankish tribe of the Chamavi, and the document is often called Lex Francorum Chamavorum. This text, however, is not a law, but rather an abstract of the special usages obtaining in those regions—what the Germans call a Weisstum. It was compiled by the itinerant Frankish officials known as the missi Dominici, and the text undoubtedly goes back to the time of Charlemagne, perhaps to the year 800, and is annexed to various customs in list form. It is possible to discern the questions of the missi and the answers of the inhabitants.


SALICYLIC ACID (ortho-hydroxybenzoic acid), an aromatic acid, C₆H₅(OH)(CO₂H), found in the free state in the buds of *Spiraea Ulmaria* and, as its methyl ester, in gaultheria oil and in the essential oil of *Andromeda Lucensohi*. It was discovered in 1838 by Piaira as a decomposition product of sallcin. It may be made by the distillation of the essential oil of gaultheria or by the distillation of copper benzoate; by the decomposition of an anticlastic acid with nitric acid; by fusion of ortho-chlor or ortho-brom benzoic acid with potash; by heating ortho-cyanphenyl with alcoholic potash; by heating a mixture of phenol, carbon tetrachloride and alcoholic potash to 100° C. (F. Tiemann and K. Reimer, Ber., 1876, 9, p. 1285); and by the action of sodium on a mixture of phenol and chlorobenzoic ester (T. Wilm and G. Wissin, Zetas. f. Chemie, 1868, 6).

It is a liquid, colorless or very slightly yellow, with a very weak odor and a very acrid taste; the specific gravity is 1.0268; the boiling point is 262° C.; the melting point is 158° C.; the density is 1.0268; and the specific heat is 0.9626; it is highly soluble in water, more soluble in alcohol, and to a much smaller extent in ether, benzine, and glycerin.

SALICYLIC ACID is produced by the fermentation of *Schoenomanes* (H. Kölbe, Ann., 1860, 115, p. 201; R. Schmitt, Jut. Prakt., Chem., 1895 (2), 31, p. 470) modified the process by saturating sodium phenolate at 130° C. with carbon dioxide, in an atmosphere of CO₂, and converting *C₆H₅CO₂Na* being thus formed; by continuing the heating under pressure this carbonate gradually changes into mono-sodium salicylate. S. Manasse (German patent, 12363, 1896) by preparing sodium phenolate with ethyl phenyl carbonate at 200° C.: *C₆H₅CO₂Na* + *C₆H₅CO₂CH₂CH₂OH* = *Na⁺CO₂⁻ + *C₆H₅CO₂⁻ + *C₆H₅CO₂⁻ + *C₆H₅CO₂⁺*, by heating sodium phenolate with ethyl phenyl carbonate at 200° C.: *C₆H₅CO₂⁺* + *C₆H₅CO₂⁺ + *C₆H₅CO₂⁻ + *C₆H₅CO₂⁻ + *C₆H₅CO₂⁺*, is to be noted in the Kolbe method of synthesis that potassium phenolate may be used in place of the sodium salt, provided that the temperature is kept below 150° C. When the temperature (200° C.) the isomer para-ox-benzoic acid is produced. 

SALICYLIC ACID crystallizes in small colourless needles which melt at 153° C. It is sparingly soluble in cold water, but readily dissolves in hot. It sublimes, but on rapid heating decomposes into carbon dioxide and phenol. It is volatile in steam. Ferric chloride colours its aqueous solution violet. Potassium bromide and sulphuric acid to it to form a white precipitate; and when heated with chloroform and hydrochloric acid to chloral. On boiling with concentrated nitric acid it yields picric acid. When heated with ascorbic acid it gives trioxynbenzene. Bromine water in dilute aqueous solution gives a white precipitate of tribromophenol-bromide *C₆H₅Br·OBr*. Sodium reduces salicylic acid in boiling amyl alcohol solution to n-pemic acid (A. Ehrenreich and R. Willstätter, Ber., 1893, 26, pp. 2, 913; 1894, 27, p. 331). Potassium persulphate oxidizes it in alkaline solution, the product on boiling with acids giving
hydroquinone carboxylic acid (German Patent 81,297). When boiled with calcium chloride and ammonia, salicylic acid gives a precipitate of insoluble basic calcium salicylate, \( \text{C}_9\text{H}_7\text{O}_4\text{Ca} \), a reaction which serves to distinguish it from the isomeric meta- and para-hydroxybenzoic acids. It yields both esters and ethers since it is an acid and also a phenol.

**Methyl Salicylate**, \( \text{C}_9\text{H}_8\text{O}_4\text{CH}_3 \), found in oil of wintergreen, in the oil of **Viola tricolor** and in the root of varieties of *Polygala*, is a pleasant-smelling liquid which boils at 222°C. On passing dry ammonia into the boiling ester, it gives *salicylamide* and acetaldehyde. When boiled with aniline it gives methylaniline and phenol.

**Ethyl salicylate**, \( \text{C}_9\text{H}_8\text{O}_4\text{CH}_2\text{CH}_3 \), is obtained by boiling salicylic acid with alcohol and a little sulphuric acid, or by dropping an alcohol solution into a solution of potassium hydrogen sulphite at a temperature of 140-150°C. (German Patent 76,574). It is a pleasant-smelling liquid which boils at 233°C. It is practically unchanged when boiled with aniline. *Phenyl salicylate*, \( \text{C}_9\text{H}_7\text{O}_4\text{C}_6\text{H}_5 \), or *salicylanilide*, is obtained by boiling salicylic acid, phenol and phosphorus oxichloride to 120-125°C; by heating salicylic acid to 220°C; or by heating salicylaldehydophosphoric acid and phenol to 140-150°C. (German Patent 85,569). It crystallizes in rhombic plates which melt at 42°C and boil at 172°C (12 mm.). Its sodium salt is transformed into the isomeric \( \text{C}_9\text{H}_7\text{O}_4\text{Na} \) \( \text{CO}_2 \text{H} \) when heated to 300°C. When heated in air for many hours over a strong flame it is changed into acetyl salicylic acid (saletic acid), \( \text{C}_9\text{H}_7\text{O}_4\text{CO}\text{CH}_3 \), obtained by the action of acetyl chloride on the acid or its sodium salt (K. Kraut, Ann., 1865, 150, p. 93), after which it gives salicylaldehydophosphoric acid of the latter proposition. Hydrolysis with baryta water gives acetic and salicylic acids. It is used in medicine under the names aspirin, acetylsalicylaldehyde, salasin, *ximo*, etc. It has the same action as salicylic acid and is believed to be much freer from the secondary effects. *Salicylo-salicylic acid* \( \text{C}_9\text{H}_7\text{O}_4\text{C}_6\text{H}_5 \) \( \text{O} \) \( \text{C}_6\text{H}_5 \text{CO} \) \( \text{C}_9\text{H}_7\text{O}_4 \), is obtained by continued heating of salicylic acid and acetic chloride to 130-140°C. It is an amorphous yellow mass which is easily soluble in alcohol.

**Applications.**—The addition of a little of the acid to glue renders it more tenacious; skins to be used for making leathers do not undergo decomposition if steamed in a dilute solution; butter containing a small quantity of it may be kept sweet for months even in the hottest weather. It also prevents the mouldiness of preserved fruits and has been found useful in the manufacture of vinegar. The use of salicylic acid as a food preservative, was, however, condemned in the findings of the commission appointed by the government of the United States of America, in 1904.

**Medicine.**—The pharmacopoeial dose of the acid is 5-20 grains, but it is so unrelated to experience and practice that it may be ignored. The British Pharmacopoeia contains only one preparation, an ointment containing one part of acid to 49 of white paraffin ointment. Salicylic acid is now never given internally, being replaced by its sodium salt, which is much cheaper, more soluble and less irritating to mucous membranes. The salt has a sweet, mawkish taste.

Salicylic acid and salicin (q.v.) share the properties common to the group of aromatic acids, which, as a group, are anisotropic without being toxic to man—a property practically unique; are unstable in the body; are antipyretic and analgesic; and diminish the excretion of urea by the kidneys. As an antipyretic salicylic acid is less powerful than carbolic acid, but its insolubility renders it unsuitable for general use. It is much more powerful than carbolic acid in its inhibitory action upon unorganized ferments such as peptones and yeasts. In the body it is transformed into salicylic acid, and it rapidly kills the cells of the epidermis, without affecting the immediately subjacent cells of the dermis ("true skin"). It has a very useful local antihydric action. Salicylic acid is a powerful irritant when inhaled or swallowed in a concentrated form, and even when much diluted it causes pain, nausea and vomiting. When salicin is taken internally no irritant action occurs, nor is there any antiseptic. Whatever drug of this group be taken, the product absorbed by the blood stream is salicylic acid. When the salt is taken by the mouth, absorption is extremely rapid, the salt being present in the peripheral blood within ten minutes.

Salicylates are substances in which the acid is unchanged, decomposition occurring in the kidney, and probably in tissues suffering from the *Diplococcus rheumaticus* of Poynton and Paine. It is used to be stated that these drugs are marked cardiac depressants; and the heart muscle has been implicated, and it is even thought that these drugs must be given with great caution. It has now been established that, provided the kidneys be healthy, natural salicylic acid, sodium salicylate prepared from the natural acid, and salicin, are not cardiac depressants. Of the two latter, 300 grains may be given in a dose of 1/2 oz. in twenty-four hours, without any toxic symptoms. The habit of swallowing salicylic acid crystals, or solutions of the acid, or of the acid in acid, is the next safest to quinine of all antipyretics, whilst being much more powerful in all leethe states except malaria. Sodium salicylate escapes from the blood mainly by being escaped by the kidneys, and also necessitates the very frequent administration of the drug.

**Therapeutics.**—Salicylic acid is used externally for the removal of corns and similar epidermic thickenings. It causes some pain, so that it is not used for a sore over a joint. When used too much, it gives rise to uric acid on the skin, and sometimes the urine contains urates of the acid, 3, of extract of Indian hemp, and 86 of coldation. There is probably no better remedy for corns. Perspiration of the feet cannot be attacked locally with much success than by a powder consisting of salicylic acid, starch and chalk.

These drugs are specific for acute rheumatism (rheumatic fever). The drug is not a true specific, as quinine is for malaria, since it produces no cure of the disease but leaves the patient as before. When a salicylate is used for rheumatic fever, it but entirely removes the agonizing pain, shortly after its administration, and, an hour or two later, brings down the temperature to normal. In thirty-six hours no symptoms are left. In other diseases not painful in a rheumatic sense, the action is very much slower. When used internally, salicylates are useless. They may thus afford a means of diagnosis. In rheumatic hyperpyrexia the salicylates render the patient free from pain. In acute gonorrheal arthritis, simulating rheumatic fever, salicylates are useless. They may thus afford a means of diagnosis. In rheumatic hyperpyrexia the salicylates render the patient free from pain. In acute gonorrheal arthritis, simulating rheumatic fever, the patient is rendered free from pain when he uses the drug. The salicylates are used in acute gout, in rheumatic patients, and in such delirium of salicylates, practically identical with the symptoms of cinchonism. The drug must be at once withheld if haemorrhages (subcutaneous, in the case of quinine, the administration of small doses of hydrobromic acid often relieve the milder symptoms.**

**SALIERI, ANTONIO** (1750-1823), Italian composer, was born at Legnano, on the 18th of August 1750. His father was a mercer, and died a bankrupt. Through the family of Mocenigo he obtained free admission to the choir school of St Mark's, Venice. In 1766 he was taken to Vienna by F. L. Gassmann, who introduced him to the emperor Joseph. His first opera, *Le Donne letterate*, was produced at the Burg-Theater in 1770. Others followed in rapid succession, and his *Armida* (1771) was a triumphant success. On Gassmann's death in 1774, he became Kapellmeister and, on the death of Bonno in 1778, Hofkapellmeister. He held his offices for fifty years, though he made frequent visits to Italy and Paris, and composed music for many European theatres. His chef d'oeuvre was Tarare (afterwards called *Axar, d'Ormos*), a work which was then performed with the Duke of Austria and Count Mosel, at Vienna and Dresden. This was first produced at Vienna on the 8th of June 1787, and was revived at Leipzig in 1846, though only for a single representation. His last opera was *Die Neger*, produced at St Petersburg in 1794, and devoted to the composition of church music, for which he had a very decided talent. Salieri lived on friendly terms with Haydn, but was a bitter enemy to Mozart, whose death he was suspected of hastening by a wound produced by a sword which he thrust into Mozart's body to give colour to the accusation. He retired from office on his full salary in 1824, and died at Vienna on the 7th of May 1825. Salieri gave lessons in composition to Cherubini and to Beethoven, who dedicated to him his "Three Sonatas for Piano and Violin." Op. 12. See also Albert von Hermann, *Antonio Salieri, eine Studie* (1867); J. F. Edele von Mosele, *Über das Leben und die Werke des Antonio Salieri* (1862). Sali, the "dancers," an old Italian priesthood, said to have been instituted by Numa for the service of Mars, although later tradition derived them from Greece. They were originally twelve in number, called Sali Palatini to distinguish them from...
a second college of twelve, Salii Agonales or Collini, said to have been added by Tullius Hostilius; the Palatini were consecrated to Mars, the Collini to Quirinus. All the members were patricians, vacancies being filled by co-optation from young men whose parents were both living; membership was for life, subject to certain exceptions. The official term of the college were the magister, the praesul, and the vates (the leaders in dance and song).

Each college had the care of twelve sacred shields called ancilia. According to the story, during the reign of Numa a small oval shield fell from heaven, and Numa, in order to prevent its being stolen, had it put together and dedicated to the gods. The story of the shield is said to have been traced by the word Mamuris. This shield, which bears the name Mamuris Veturius, probably identical with the god Mamaris (Mars) himself. These twelve shields (amongst which was the original one) were in charge of the Salii Palatini. The great religious festival of seven days in the month of March, during which the taking of the shields on which the day the anciel was said to have fallen from heaven and the campaigning season began, was devoted to various ceremonies connected with the Salii. On the 1st, they marched in procession through the city, dressed in an embroidered tunic, a brazen breast-plate and a peaked cap; each carried a sword by his side and a short staff in his right hand, with which the shield, borne on the left arm, was struck from time to time. A halt was made at the altars and temples, where the Salii, singing a special chant, danced a war dance. Every day the procession stopped at certain stations (mansiones), where the shields were deposited for the night, and the Salii partook of a meal. At the end of the week the procession passed on to another mansion; this continued till the 24th, when the shields were replaced in their sacraum. During this period the Salii performed various ceremonies: (1) On the 14th, a chariot race in honour of Mars on the Campus Martius (in later times called Mamuraria, in honour of Mamurius), at which a skin was beaten with staves in imitation of hammering; (2) In 1893, a festival of eight days, at which the shields were cleansed; the Tubilustrium on the 23rd, when the trumpets of the priests were purified. On the 19th of October, at the Armilustrum or purification of arms, the anciel was again brought out and laid away for another year. Other lines of the Salii, calles axonia, was written in the old Saturnian metre, in language so archaic that even the priests themselves could hardly understand it.

Salius was an interesting Romance church which has been well restored and is the chief town of the county. Salius was chartered in 1293 and a university was established there in 1593 by a Jesuit chaplain. The 17th century contains a library (established in 1593) and a museum. Salina owes its name to its saline waters, used for bathing and drinking. There are also salt workings and gypsum deposits.

The territory of Salina, which was enfeoffed in the 10th century by the abbey of Saint Maurice in Salina to the counts of Mâcon, remained in possession of their descendants till 1175. Maurette de Salin, one of the great dukes of Burgundy, married the Princess of Vienne, and her grandson sold it in 1295 to Hugh IV., duke of Burgundy, who ceded it in 1327 to John of Chalon (d.1327) in exchange for the countship of Chalon-sur-Saône. John's descendants—counts and dukes of Burgundy, emperors and kings of the house of Austria— bore the title of sire de Salins. In 1477 Salins was taken by the French and temporarily made the seat of the parlement de Franche-Comté by Louis XI. In 1668 and 1674 it was retaken by the French and the ordinances remained in their power. In 1855 the town was almost destroyed by fire. In 1871 it successfully resisted the German troops.

SALISBURY, EARLS OF. The title of earl of Salisbury was first created about 1149, when it was conferred on Patrick de Salisbury (sometimes from an early date called in error Patrick de Salisbury), a descendant of Edward de Salisbury, mentioned in Domescay as viscount of Wiltshire. His granddaughter Isabella became countess of Salisbury suis jure on the death of her father, William the 2nd earl, without male heirs, in 1196, and the title was assumed by her husband, William de Longespes (d. 1226), illegitimate son of King Henry II., possibly by Rosamond Clifford ("The Fair Rosamond"). Isabella survived her husband, and outlived both her son and grandson, both called Sir William de Longespe, and on her death in 1261 her great-granddaughter Margaret (d. 1310), wife of Henry de Lacy, earl of Lincoln, probably became suo jure countess of Salisbury; she transmitted the title to her daughter Alice, who married Thomas Plantagenet, earl of Lancaster. Lancaster having been attainted and beheaded in 1322, the countess made a surrender of her lands.
Edward In February 14 began Commons The statesman the was Palmerston a year as head of the British government, and co-heiress, Isabel, became by a separate creation earl of Salisbury in 1472, but by his attainer in 1478 this title was forfeited, and immediately afterwards was granted to Edward Plantagenet, eldest son of Richard Neville, earl of Salisbury, on whose death in 1484 it became extinct.

Richard III’s queen, Anne, was a sister of the above-mentioned Isabel, duchess of Clarence, and co-heiress with her of Richard Neville, earl of Salisbury. On the death of Queen Anne in 1485 the abeyance of the older creation terminated, Edward Plantagenet then being 15 years of age. He also contributed to the Saturday Night, becoming earl of Salisbury as successor to his mother’s right. He was attainted in 1504, five years after his execution, but the earldom then forfeited was restored to his sister Margaret (1474-1541), widow of Sir Richard Pole, in 1513. This lady was also attainted, with forfeiture of her titles, in 1539.

Sir Robert Cecil, second son of the 1st Lord Burghley (q.v.), was created earl of Salisbury (1605), having no connexion in blood with the former holders of the title. (See SAlISBURY, ROBERT CECIL, 1ST EARL OF.) In his family the earldom has remained till the present day, the 7th earl of the line having been created marquess of Salisbury in 1780.


SALISBURY, ROBERT ARTHUR TALBOT GASCOYNE-CECIL, 3rd Marquess of (1830-1903), British statesman, second son of James, 2nd marquess, by his first wife, Frances Mary Gascoyne, was born at Hatfield on the 3rd of February 1830, and was educated at Eton and Christ Church, Oxford, where he took his degree in 1850. At Oxford he was an active member of the Union Debating Society. The first few years after leaving the university were spent by Lord Robert Cecil (as he then was) in travel, as far afield as New Zealand; but in 1853 he was returned unopposed to the House of Commons as Conservative member for Stamford, being elected in the same year a fellow of All Souls. He made his maiden speech in Parliament on the 7th of April 1854, in opposition to Lord John Russell’s Oxford University Bill. The speech was marked by scepticism as to the utility of reforms, and Lord Robert prophesied that if the wishes of founders were disregarded, nobody would in future care to found anything. In 1857 he appeared as the author of his first Bill—for establishing the voting-paper system at parliamentary elections; and in the same year he married Georgiana Caroline, daughter of Sir Edward Holt Alderson, a baron of the Court of Exchequer, a large share of whose great intellectual abilities she inherited. Lord Robert Cecil continued to be active not only in politics, but, for several years, in journalism, the income he earned by his pen being then a matter of pecuniary importance to him. One of his contemporaries at Oxford had been Thomas Hamber of Oriol, who became editor of the Standard, and during these years Cecil was an occasional contributor of “In Camera” (dark blue) columns to the Gentleman’s Magazine. He was the editor of Beresford Hope’s Review, founded in 1855 by his brother-in-law Beresford Hope, and edited by his friend Douglas Cook: not infrequently he wrote for the Quarterly (where, in 1860, he was to publish his famous article on “the Conservative Surrender”); and in 1858 he contributed to Oxford Essays a paper on “The Theory of Parliamentary Reform,” giving expression to the more intellectual and aristocratic antagonism to doctrinaire Liberal views on the subject, while admitting the existence of many anomalies in the existing electoral system. In February of the next year, when Disraeli introduced his Reform Bill with its “fancy franchises,” the member for Stamford was prominent among its critics from the Tory point of view. During the seven years that followed Lord Robert was always ready to defend the Church, or the higher interests of Conservatism and property; and his speeches then, not less than before, showed a caustic quality and a tendency to what became known as “blazing indiscertions.” For example, when the repeal of the paper duty was being discussed in 1861, he asked whether it “could be maintained that a person of any education could learn anything worth knowing from a penny paper”—a question the answer to which has been given by the popular press. He later organized and admirable Conservative penny press of a subsequent day. A little later he declared the parliamentary “more worthy of an attorney than of a statesman”; and on being rebuked, apologized—to the attorneys. He also charged Lord John Russell with adopting “a sort of tariff of insolence” in his dealings with foreign Powers, strong and weak.

It was not, however, till the death of Palmerston and the removal of Lord John Russell to the House of Lords that Lord Robert Cecil—who became Lord Privy Seal in 1867—turned again to politics. He was brother of the 4th of June 1865—became to accept a position as a politician of the first rank. His emergence coincided with the opening of the new area in British politics, ushered in by the practical steps taken to extend the parliamentary franchise. On the 12th of March 1866 Gladstone brought forward his measure to establish a £7 franchise in boroughs and a £14 franchise in counties, which were calculated to add 400,000 voters to the existing lists. Lord Cranborne met the Bill with a persistent opposition, his rigorous logic and merciless hostility to clap-trap tending strongly to restrain the enthusiasm of the more liberal-minded. But though he attacked the Government Bill both in principle and detail, he did not absolutely commit himself to a position of hostility to Reform of every kind; and on the defeat of Gladstone’s Ministry no surprise was expressed at his joining the Cabinet of Lord Derby as secretary of state for India, even when it became known that a settlement of the Reform question was part of the Tory programme. The early months of the new Government’s tenure were marked by the incident of the Hyde Park riots; and if there had been members of the Cabinet and the House of Commons on whose conduct there was no complaint, it was on the 26th of June, 1870, that the action of the Reform League and the London populace forced them to a different conclusion. On the 11th of February Disraeli informed the House of Commons that the Government intended to ask its assent to a series of thirteen resolutions; but when, on the 26th of February, the Liberal leaders demanded that the Government should produce a Bill, Disraeli at once consented to do so. The introduction of a Bill was, however, delayed by the resignation of Lord Cranborne, General Peel and Lord Carnarvon. The Cabinet had been considering two alternative measures, widely different in kind and extent, and the final decision between the two was taken in ten minutes (whence the nickname of the “Ten Minutes Bill”) at an informal gathering of the Cabinet held just before Derby was engaged to address a general meeting of the party. At a Cabinet council held on the 23rd of February measure A had been agreed upon, the three doubtful ministers having been persuaded that the checks and safeguards provided were sufficient; in the interval between Saturday and Monday they had come to the conclusion that the checks were inadequate; on Monday a meeting of the Cabinet was called. He arrived at half past two o’clock the rest of the Cabinet, hastily summoned, had been informed of the new situation, and had there and then, before the meeting at half-past two, agreed, in order to retain their three colleagues, to throw over measure A, and to present measure B to the country as the fruit of their matured and unanimous wisdom. Derby at the meeting, and Disraeli a few hours later in the House of Commons, explained their new
measure—a measure based upon a £6 franchise; but their own side did not like it, the Opposition were furious, and the moral sense of the country was revolted by the undisguised adoption of almost the very Bill which the Conservatives had refused to accept from their opponents only a year before. The result was that the Government reverted to measure A, and the three ministers again handed in their resignations. In the debate on the third reading of the Bill, when its passage through the House of Commons without a division was assured, Lord Cranborne showed with caustic rhetoric how the "precautions, guarantees, and securities with which the Bill had bristled in its second reading had been dropped one after another at the bidding of Gladstone.

In countries where politics are conducted on any other than the give-and-take principles in vogue in England, such a breach as that which occurred in 1867 between Lord Cranborne and his former colleagues, especially Disraeli, would have been beyond repair. But Cranborne, though an aristocrat both by birth and by conviction, was not impracticable; moreover, Disraeli, who had himself risen to eminence through invective, admired rather than resented that gift in other people. The Commons of the time had decided Gladstone and Cranborne were certain to reunite the two colleagues. In the session of 1868 Gladstone announced that he meant to take up the Irish question, and to deal especially with the celebrated "Upas tree," of which the first branch was the Established Church. By way of giving full notice to the electorate, he brought in a series of resolutions on this question; and though the attitude adopted by the official Conservatives towards them was not one of serious antagonism, Lord Cranborne vigorously attacked them. This was his last speech in the House of Commons, for on the 1st of April his father died, and he became 3rd marquess of Salisbury. In the House of Lords the new Lord Salisbury's style of eloquence—terse, incisive and wholly free from false ornament—found an even more appreciative audience than it had met with in the House of Commons. The questions with which he was first called upon to deal were questions in which his interest was keen—the recommendations of the Ritual Commission and, some time later, the Irish Church Suspension Bill. Lord Salisbury's argument was that the last session of an expiring parliament was not the time in which to give a matter as the Irish Church Establishment should be judged or prejudged; that a Suspension Bill involved the question of disestablishment; and that such a principle could not be accepted by the Lords until the country had pronounced decisively in its favour. Even then there were those who raised the cry that the only business of the House of Lords was to register the decisions of the Commons, and that if they refused to do so it was at their peril. Lord Salisbury met this cry boldly and firmly:

"When the opinion of your countrymen has declared itself, and you see that their convictions—their firm, deliberate, sustained convictions—are in favour of any course, I do not for a moment deny that it is your duty to yield."

In the very next session Lord Salisbury was called upon to put his view into practice, and his influence went far to persuade the peers to pass the Irish Church Disestablishment Bill. In his opinion the general election of the autumn of 1868 had been fought on this question; his friends had lost, and there was nothing for them to do but to bow to the necessities of the situation. The story of his conduct in the matter has been told in some fulness in the Life of Archbishop Tait, with whom Salisbury acted, and who throughout those critical weeks played a most important part as mediator between the two extreme parties—those of Lord Cairns (representing Ulster) and Gladstone. October 1869 saw the death of the old Lord Derby, who was succeeded, the titular leader of his party; and he was succeeded as leader of the House of Lords by Cairns. For the dignified post of chancellor of the university of Oxford Convocation unanimously chose as Derby's successor the marquess of Salisbury. Derby had translated the Iliad very well, but his successor was far more able to sympathize with the academic mind and temper. He was at heart a student, and found his best satisfaction in scientific research and in scientific speculation; while still a young man he had made useful contributions to the investigation of the flora of Hertfordshire, and at Hatfield he had his own laboratory, where he was able to satisfy his interest in chemical and electrical research. As regards his connexion with Oxford may be mentioned in particular his appearance, in 1877, of a second University Commission, and his appearance, in September 1894, in the Sheldonian Theatre as president of the British Association.

It is not necessary to dwell at any length upon the part taken by Lord Salisbury between 1869 and 1873 in respect of the other grievances in the measure. The second reading had been dropped one after another at the bidding of Gladstone.

In the House of Lords.

SALISBURY, 3RD MARQUESS OF

The Eastern Question.

In the House of Lords.
SALISBURY, 3RD MARQUESS OF

Cabinet. On the 20th of January the conference broke up, Turkey having declared its recommendations inadmissible; and Europe withdrew to await the inevitable declaration of war. Very early in the course of that war the intentions of Great Britain were clearly indicated in a despatch of Lord Derby to the British representative at St Petersburg, which announced that so long as the struggle concerned Turkish interests alone Great Britain would be neutral, but that such matters as Egypt, the Suez Canal, the regulations affecting the passage of the Dardanelles, and the possession of Constantinople itself would be regarded as matters to which she could not be indifferent. For some nine months none of these British interests appeared to be threatened, nor had Lord Salisbury's own department to concern itself very directly with the progress of the belligerents. One or two, indeed, the Indian secretary committed himself to statements which laid him open to a good deal of attack, as when he rebuked an alarmist by bidding him study the Central Asian question "in large maps." But with the advance of Russia through Bulgaria and across the Balkans, British anxiety grew. In mid-December explanations were asked from the Russian Government as to their intentions with regard to Constantinople. On the 23rd of January the Cabinet ordered the fleet to sail to the Dardanelles. Lord Carnarvon resigned, and Lord Derby handed in his resignation, but withdrew it. The restoration of it should be waited on the 3rd of March; and three weeks later, when its full text became known, the Cabinet decided upon measures which finally induced Lord Derby, at the end of the month, to retire from the Foreign Office, his place being immediately filled by Lord Salisbury. The new foreign secretary at once issued the famous "Salisbury circular" to the British representatives abroad, which appeared in the newspapers on the 2nd of April. This elaborate and dignified State paper was at once a clear exposition of British policy, and practically an invitation to Russia to regard Russia instead of for a European congress. These negotiations, indeed, had been proceeding for several weeks past; but Russia having declared that she would only discuss such points as she pleased, the British Cabinet had withdrawn, and the matter for the time was at an end. The bulk of the document consisted of an examination of the Treaty of San Stefano and its probable effects, Lord Salisbury justifying such an examination on the ground that as the position of Turkey and the other countries affected had been settled by Europe in the Treaty of Paris in 1856, the powers which signed that treaty had the right and the duty to see that no modification of it should be made on the 3rd of March; and the effect of the circular was great and immediate. At home the Conservatives were encouraged, and many moderate Liberals rallied to the Eastern policy of the Government. Abroad it seemed as if the era of divided councils was over, and the Russian Government promptly recognized that the circular meant either a congress or war with Great Britain. For the latter alternative it was by no means prepared, and very soon negotiations were reopened, which led to the meeting of the congress at Berlin on the 15th of June. The history of that famous gathering and of its results is narrated elsewhere under Europe. Lord Beaconsfield on two or three subsequent occasions referred to the important part that his colleague had played in the negotiations, and he was not using merely the language of politeness. Rumours had appeared in the London press as to a supposed Anglo-Russian agreement that had been signed between Salisbury and the Russian ambassador, Count Shuvaloff, and these rumours or statements were described by the foreign secretary in the House of Lords, just before he left for Berlin, as "wholly unauthentic." But on the 14th of June what purported to be the full text of an agreement was published by the Globe newspaper through a certain Charles Marvin, at that time employed in occasional transcribing work at the Foreign Office, and afterwards known by some strongly anti-Russian books on the Central Asian question. Besides the general inconvenience of the disclosure, the agreement, which stipulated that Batum and Kars might be annexed by Russia, made it impossible for the congress to insist upon Russia entirely withdrawing her claim to Batum, though at the time of the meeting of the congress it was known to some of the negotiators that she was not unwilling to do so. In one respect Salisbury's action at the conference was a failure, for he was not without a certain sentimentalism of his own, and at the Berlin Congress this took the form of an unexpected and, as it happened, useless pushing of the claims of Greece. But in the main Salisbury must be held to deserve, almost equally with his great colleague, the credit for the Berlin settlement. Great, however, as was the work done at Berlin, and marked the relief to all Europe which was caused by the signing of the treaty, much work, and of no pleasant kind, remained for the British Foreign Office and for the Indian Government before 1879. After the congress had ended and the Government had to render up its accounts to the nation. Russia, foreseeing a possible war with Great Britain, had during the spring of 1878 redoubled her activity in Central Asia, and, almost at the very time that the treaty was being signed, her mission was received at Kabul by the Amir Sher Ali. Out of the Amir's refusal to receive a counterbalancing British mission there grew the Afghan War; and though he had ceased to control the India Office, Salisbury was naturally held responsible for some of the preliminary steps which, in the judgement of many, led to the Afghan War. The treaty was signed, and the Liberals entirely failed to fix upon Salisbury the blame for a series of events which was generally seen to be inevitable. A defence of the foreign policy of the Government during the year which followed the Berlin Treaty was made by Salisbury in a speech at Manchester (October 1879), which had a great effect throughout Europe. In it he justified the occupation of Cyprus, and approved the beginnings of a league of central Europe for preserving peace.

In the spring of 1880 the general election overthrew Beaconsfield's Government and replaced Gladstone in power, and the country entered upon five eventful years, which were to lay the foundations of the Liberal policy. To see the consolidation of the Pall Mall party, the reign of outrage in Ireland, disasters in Zululand and the Transvaal, war in Egypt, a succession of costly mistakes in the Sudan, and the final collapse of Gladstone's Government on a trilling Budget question. The defeat of 1880 greatly depressed Beaconsfield, who till then had really believed in that "heteroporean" theory upon which he had acted in 1867—the theory that beyond and below the region of democratic storm and violence was to be found a region of peaceful conciliation and of counterbalancing national interests. But in April 1880 Beaconsfield seems to have lost heart and hope, and to have ceased to believe that wealth, birth and education would count for much in future in England. Salisbury, who on Beaconsfield's death a year later was chosen, after the claims of Cairns had been withdrawn, as leader of the Conservative peers (Sir Stafford Northcote continuing to lead the Opposition in the House of Lords), was not so disposed to counsels of despair. After the Conservative reaction had come in 1886, he was often taunted with pessimism as regards the results, and he certainly spoke on more than one occasion in a way which appeared to justify the caricatures which appeared of him in the Radical press as his character of Hamlet; but in the days of Liberal ascendancy Salisbury was confident that the tide would turn. We may pass briefly over the years of Opposition between 1880 and 1885; the only policy that could then wisely be followed by the Conservative leaders was that of giving their opponents sufficient rope. In 1884 a new Reform Bill was introduced, extending household suffrage to the counties; this was met in the Lords by a resolution, moved by Cairns, that the peers could not pass it unaccompanied by a Redistribution Bill. The Government, therefore, withdrew their measure. In the summer and autumn there was a good deal of agitation; but in November a redistribution scheme was settled between the leaders of both parties, and the Bill passed. When, in the summer of 1885, Gladstone resigned, it became necessary for the country to know whether Salisbury or Northcote was the real Conservative leader; and
the Queen settled the matter by at once sending for Lord Salisbury, who became prime minister for the first time in 1885. The "Forwards" among the Conservatives, headed by Lord Randolph Churchill, brought so much pressure to bear that Northcote was induced to enter the House of Lords as earl of Iddesleigh, while Sir Michael Hicks Beach was made leader of the House of Commons, Lord Randolph Churchill secretary for India, and Mr Arthur Balfour president of the Local Government Board. The new Government had only to prepare for the general election in the autumn. The ministerial programme was put forward by Salisbury on the 7th of October in an important speech addressed to the Union of Conservative Associations assembled at Newport, in Monmouthshire; and in this he outlined large reforms in local government, poured scorn upon Mr Chamberlain's Radical policy of "three acres and a cow," but promised cheap land transfer, and opposed the disestablishment of the Church as a matter of life or death to the Conservative party. In this Lord Salisbury was declaring war against what seemed to be the danger should Mr Chamberlain's "unauthorized programme" succeed; while the comparative slightness of his references to Ireland showed that he had no more suspicion than anybody else of the event which was about to change the whole face of British politics, to break up the Liberal party and to change the most formidable of the advanced Radicals into an ally and a colleague. The general election took place, and there were returned to parliament 335 Liberals, 249 Conservatives and 86 Home Rule. Salisbury was made leader of the House of Commons, and he and his followers, to the great surprise of everybody, were returned. The Conservatives met parliament, and after a short time were put into a minority of 79 on a Radical land motion, brought in by Mr Chamberlain's henchman, Mr Jesse Collings. Mr Gladstone's return to office, and his announcement of a Bill giving a separate parliament to Ireland, were quickly followed by the secession of the Unionist Liberals; the defeat of the Bill; an appeal to the country; and the return of the Unionist party to power with a majority of 118. Salisbury at once asked to the way for Lord Harington, but the suggestion that the latter should form a Government was declined; and the Conservatives took office alone, with an Irish policy which might be summed up, perhaps, in Salisbury's words as "twenty years of resolute government." For a few months, until just before his sudden death on the 12th of January 1887, Lord Iddesleigh was foreign secretary; but Salisbury, who meantime had held the post of lord privy seal, then returned to the Foreign Office. Meanwhile the increasing friction between him and Lord Randolph Churchill, who, amid many qualms on the part of more old-fashioned Conservatives, had become chancellor of the exchequer, had led to the latter's resignation, which, to his own surprise, was accepted; and from that date Salisbury's effective primacy in his own party was unchallenged.

Only the general lines of Salisbury's later political career need here be sketched. As a consequence of the practical monopoly of political power enjoyed by the Unionist party after the Liberal disruption of 1886—for even in the years 1892—1895 the situation was dominated by the permanent Unionist majority in the House of Lords—Salisbury's position became unique. These were the long-looking for days of Conservative reaction, of which he had never dreamed. The situation was complicated, so far as Salisbury personally was concerned, by the coalition with the Liberal Unionists, which was confirmed in 1893 by the inclusion of the duke of Devonshire, Mr Chamberlain, and other Liberal Unionists in the Cabinet. But though it appeared anomalous that old antagonists like Lord Salisbury and Mr Chamberlain should be working together in the same ministry, the prime minister's position was such that he could disregard a superficial criticism which paid too little heed to his political faculty and his patriotic regard for the regeneration of the English people. Moreover, the practical work of reconciling Conservative traditions with domestic reform depended rather on Salisbury's nephew, Mr Balfour, who led the House of Commons, than on Salisbury, who devoted himself almost entirely to foreign affairs. The new Conservative movement, moreover, in the country at large, was, in any case, of a more constructive type than Salisbury himself was best fitted to lead, and he was not the real source of the political inspiration behind the Conservative rising of the Unionist party during this period. He began to stand to some extent outside party and above it, a moderator with a keenly analytic and rather sceptical mind, but still the recognized representative of the British empire in the councils of the world, and the trusted adviser of his sovereign. Though himself the last man to be selected as the type of a democratic politician—for his references to extensions of popular government, even when made by his own party, were full of mild contempt—Salisbury gradually acquired a higher place in public opinion than that occupied by any contemporary statesman. His speeches—which, though carelessly composed, continued to blaze on occasion with their old fire and their somewhat mordant cynicism—were weightier in tone, and became European events. Without the genius of Disraeli or the personal magnetism of Gladstone, he yet inspired the British public with a quiet confidence that under him things would not go far wrong, and that he would not act rashly or unworthily of his country. Even political opponents came to look on his cautious and balanced conservatism, and his intellectual aloofness from interested motives or vulgar ambition, as standing between them and something more distasteful. Moreover, in the matter of foreign affairs his weight was supreme. He had lived to become, as was indeed generally recognized, the most experienced working diplomatist in Europe. His position in this respect was shown in nothing better than in his superiority to criticism. In foreign affairs many among his own party regarded him as too much inclined to "split the difference" and to make "peaceful concessions"—as in the case of the cession of Heligoland to Germany—in which it was complained that Great Britain got the worst of the bargain. But though occasionally, as in the withdrawal of British ships from Port Arthur in 1898, such criticism became acute, the plain fact of the preservation of European peace, often in difficult circumstances, reconciled the public to his conduct of affairs. His patience frequently justified itself, notably in the case of British relations with the United States, which were for a moment threatened by President Cleveland's message concerning Venezuela in 1895. And though his loyalty to the European Concert in connexion with Turkey's dealings with Armenia and Crete in 1895—1898 proved irritatingly ineffectual—the pace of the concert, as Lord Salisbury explained, being rather like that of a steam-roller—no alternative policy could be contemplated as feasible in any other statesman's hands. Salisbury's personal view of the new situation created by the partition of the sultan of Turkey was indicated not only by a solemn and unusual public warning addressed to the sultan in a speech at Brighton, but also by his famous remark that in the Crimean War Great Britain had "put her money on the wrong horse." Among his most important strokes of diplomacy was the Anglo-German agreement of 1890, delimiting the British and German spheres of influence in Africa. The South African question from 1896 onwards was a matter for the Colonial Office, and Salisbury left it in Mr Chamberlain's hands.

A peer premier must inevitably leave many of the real problems of democratic government to his colleagues in the House of Commons, and in the Upper House Lord Salisbury was paramount. Yet while vigorously opposing the Radical agitation for the abolition of the House of Lords, he never interposed a non possumus to schemes of reform. He was always willing to consider plans for its improvement, and in May 1888 himself introduced a bill for reforming it and creating life peers; but he warned reformers that the only result must be to make the House stronger. To abolish it, on the other hand, would be to take away a necessary safeguard for protecting "Philip drunk" by an appeal to "Philip sober."

Lord Salisbury suffered a severe loss by the death in 1900 of his wife, whose influence with her husband had been great, as her devotion had been unswerving. Her protracted illness was
one among several causes, including his own occasional ill-health, which after 1895 made him leave as much as possible of the work of political leadership to his principal colleagues—Mr Arthur Balfour more than once acting as foreign secretary for several weeks while his uncle stayed abroad. But for some years it was felt that his attempt to be both prime minister and foreign secretary was a mistake; and after the election of 1900 Salisbury handed over the seals of the foreign office to Lord Lansdowne, remaining himself at the head of the government as lord privy seal. In 1902, upon the conclusion of peace in South Africa, he felt that the time had come to retire from office altogether; and on the 11th of July his resignation was accepted by the king, and he was succeeded as prime minister by Mr Arthur Balfour.

From this moment he remained in the political background, and his ill-health gradually increased. He died at Hatfield on the 22nd of August 1903, and was succeeded in the marquessate by his eldest son Lord Cranborne (b. 1861), who entered the house of commons for the Darwin division of Lancashire (1885-1892) and since 1893 had been member for Rochester. The new marquessate had been under-secretary for foreign affairs since 1902, and in October 1903 he became lord privy seal in Mr Balfour's ministry. Of the other four sons, Lord Hugh Cecil (b. 1869) became a prominent figure in parliament as Conserva-
tive member for Greenwich (1895-1906), first as an ardent and eloquent High Churchman in connexion with the debates on education, &c., and then as one of the leaders of the Free-Trade Unionists opposing Mr Chamberlain; and his elder brother Lord Robert Cecil (b. 1864), who had at first devoted himself to the bar and become a K.C., entered parliament in 1906 for Maryle-
bone, holding views in sympathy with those of Lord Hugh, who had been defeated through the opposition of a Tariff Reformer Unionist in a triangular contest at Greenwich, which gave the victory to the Radical candidate. In the elections of January 1910 Lord Robert Cecil resigned his candidature for Marylebone, owing to the strong opposition of the Tariff Reformers, which threatened to divide the party and lose the seat; he stood for Blackburn as a Unionist Free Trader and was defeated. On the other hand Lord Hugh Cecil was returned for Oxford University in place of the Rt. Hon. J. G. Talbot. Lord Hugh's candidature, which was announced in 1909 simultaneously with the resignation of the sitting member, was opposed by some who disagreed with his fiscal views and his attitude on Church questions; but it was found that he had the support of the great majority of the electors, and he was ultimately returned un-opposed.

H. Cnr.)

SALISBURY, ROBERT CECIL, 1ST EARL OF (c. 1565-1612),
English lord treasurer, the exact year of whose birth is unrecorded,
was the youngest son of William Cecil, 1st Lord Burghley,
and of his second wife Mildred, daughter of Sir Anthony Cooke,
of Gidea Hall in Essex. He was educated in his father's house
and at Cambridge University. In 1584 he was sent to France,
and was returned the same year to parliament, and again in
1586, as member for Westminster. In 1588 he accompanied
Lord Derby in his mission to the Netherlands to negotiate peace
with Spain, and sat in the parliament of 1588, and in the assemblies
of 1593, 1597 and 1601 for Hertfordshire. About 1585 he appears
to have entered upon the duties of secretary of state, though he
did not receive the official appointment till 1596. On the 20th
of May 1591 he was knighted, and in August sworn of the privy
council. In 1597 he was made chancellor of the duchy of
Lancaster, and in 1598 despatched on a mission to Henry IV.
of France, to prevent the impending alliance between that
country and Spain. The next year he succeeded his father as
master of the court of wards. On Lord Burghley's death on
the 4th of August both Essex and Bacon desired to succeed him
in the supreme direction of affairs, but the queen preferred the
son of her last great minister. On Essex's disgrace, consequent
on his sudden and unauthorized abandonment of his command
in Ireland, Cecil's conduct was worthy of high praise. "By
employing his credit with Her Majesty in behalf of the Earl,"
wrote John Petit (June 14, 1600), "he has gained great credit
to himself both at home and abroad." At this period began
Cecil's secret correspondence with James in Scotland. Hitherto
Cecil's enemies had persuaded James that the secretary was
unfavourable to his claims to the English throne. An under-
standing was now effected by which Cecil was able to assure
James of his succession, secure his own power and predominance
in the new reign against Sir Walter Raleigh and other competitors,
and secure the tranquillity of the last years of Elizabeth, the
conditions demanded by him being that all attempts of James
to obtain parliamentary recognition of his title should cease,
that he should not make any absolute claims, and that the
communications should remain a profound secret.

Writing later in the reign of James, Cecil says: "If Her Majesty
had known all I did, how well these (7 she) should have known
the innocency and constancy of my present faith, yet her age
and orbyt, joined to the jealousy of her sex, might have moved her
to think ill of that which helped to preserve her."

Such was the nature of these secret communications, which,
while they aimed at securing for Cecil a fresh lease of power
in the new reign, conferred undoubted advantages on the country.
Owing to Cecil's action, the death of Elizabeth on the 24th of
March 1603, James was proclaimed king, and took the
throne of the crown without opposition. Cecil was continued in his
office, was created Baron Cecil of Essendon in Rutlandshire
on the 13th of May, Viscount Cranborne on the 20th of August
1604, and earl of Salisbury on the 4th of May 1605. He was
elected chancellor of the University of Cambridge in February
1601, and obtained the Garter in May 1606. Meanwhile Cecil's
success had completed the discontent of Raleigh, who, exasperated
at his dismissal from the capteniay of the guard, became involved
—whether innocently or not is uncertain—in the treasonable
conspiracy known as the "B 의사 Plot." Cecil took a leading part
in his trial in July 1603, and, though probably convinced
of his guilt, endeavoured to ensure him a fair trial and rebuked
the attorney-general, Sir Edward Coke, for his harshness towards
the prisoner. On the 6th of May 1608 the office of lord treasurer
was added to Salisbury's other appointments, and the whole
conduct of public affairs was placed solely in his hands. His
real policy is not always easy to distinguish, for the king
constantly interfered, and Cecil, far from holding any absolute
or continuous control, was often not even an adviser but merely
an ally of Elizabeth, his sovereign. "He was an able man and
had a taste for intrigue, but he was an ungrateful companion." In foreign affairs his aim was to preserve the balance of power between France and Spain, and to secure the independence of the Netherlands from either state. He also hoped, like his father, to make England the head of the Protestant alliance abroad; and his last energies were expended in effecting the marriage in 1612 of the princess Elizabeth, James's daughter,
with the Elector Palatine. He was in favour of peace, preoccupied
with the state of the finances at home and the decreasing revenue,
and, though sharing Raleigh's dislike of Spain, was instrumental
in making the treaty with that power in 1604. In June 1607
he promised the support of the government to the merchants
who complained of Spanish ill-usage, but declared that the
commons must not meddle with questions of peace and war.
In 1611 he disapproved of the proposed marriage between
the prince of Wales and the Infanta. His bias against Spain
and his fidelity to the national interests render, therefore, his accept-
ance of a pension from Spain a surprising incident in his career.
At the conclusion of the peace in 1604 the sum Cecil received was
£1000, which was raised the following year to £1500; while in 1609
he demanded an augmentation and to be paid for each piece of information separately. If, as has been stated, he
received a pension also from France, it is not improbable that,
like his contemporary Bacon, who accepted presents from
suitors on both sides and still gave an independent decree,
Cecil may have maintained a freedom from corrupting influences,
while his acceptance of money as the price of information concerning the intentions of the government may have formed

1 Correspondence of King James VI. of Scotland with Sir R. Cecil,
ed. by J. Bruce (Camden Soc., 1861), p. x1.
2 Gardiner, History of England, i. 214.
part of a general policy of cultivating good relations with the
two great rivals of England (one advantage of which was the
communication of plots formed against the government), and
of maintaining the balance of power between them. It is difficult,
however, in the absence of complete information, to understand
the exact nature and significance of these strange relations.

As lord treasurer Salisbury showed considerable financial
ability. During the year preceding his acceptance of that
office the expenditure had risen to £500,000, leaving, with an
ordinary revenue of about £320,000, and the subsidies voted by
parliament, a yearly deficit of £73,000. He improved his
advantage of the decision by the judges in the court of exchequer
in Bates's case in favour of the king's right to levy impositions;
and (on the 28th of July 1668) imposed new duties on articles of
luxury and those of foreign manufacture which competed with
English goods, while lowering the duties on currants and tobacco.
By this measure, and by a more careful collection, the ordinary
income was raised to £460,000, while £700,000 was paid off
the debt, leaving at the beginning of 1670 the sum of £300,000.
This was a substantial reform, and if, as has been stated, the
"total result of Salisbury's financial administration was to
halve and by an estimate of the deficiency," the failure to secure a permanent improvement must be a
manifestation of the extravagance of James, who, disregarding his minister's
treaties and advice, continued to exceed his income by £149,000.
But a want of statesmanship had been shown by Salisbury
in forcing the king's legal right to levy impositions against the
remonstrances of the parliament. In the "great contract," the
scheme was put forward by Salisbury for settling the finances,
his lack of political wisdom was still more apparent. The
Commons were to guarantee a fixed annual subsidy, on condition
of the abandonment of impositions and of the redress of grievances
by the king. An unworthy and undignified system of haggling
and haggling was initiated between the crown and the parlia-
ment. Salisbury could only attribute the miscarriage of his
scheme to the fact "that God did not bless it." But Bacon
regarded it with severe disapproval, and in the parliament of
1673, after the treasurer's death, he begged the king to abandon
these humiliating and dangerous bargains, "that your
majesty do for this parliament put off the person of a merchant
and contractor and rest upon the person of a king." In fact,
the vicious principle was introduced that a redress "ought to
be obtained by the means of subsidies." The identity of
interests between the crown and the nation which had made
the reign of Elizabeth so glorious, and which she herself had
consummated on the occasion of her last public appearance
by a free and voluntary concession of these same impositions,
was now destroyed, and a divergence of interests, made patent
by vulgar bargaining, was substituted which stimulated the
disastrous struggle between sovereign and people, and paralysed
the national development for two generations.

This was scarcely a time to expect any favours for the Roman
Catholics, but Salisbury, while fearing that the Roman Church
in England would become a danger to the state, had always been
averse from prosecution for religion, and he attempted to dis-
tinguish between the large body of law-abiding and loyal Roman
Catholics and those connected with plots and intrigues against
the throne and government, making the offer in October 1677
that if the pope would communicate those that rebelled against
the king and oblige them to defend him against invasion, the
fines for recusancy would be remitted and they would be allowed
to keep priests in their houses. This was a fair measure of
tolerant. His want of true statesmanship was shown with
regard to the Protestant Nonconformists, towards whom his
attitude was identical with that afterwards maintained by Laud
and the same ideal pursued, namely that of material and outward
conformity, Salisbury employing almost the same words as the
archbishop later, that "unity in belief cannot be preserved
unless it is to be found in worship." 1

Bacon's disparaging estimate of his cousin and rival was
probably tinged with some personal animus, and instigated by
the hope of recommending himself to James as his successor;
but there is little doubt that his acute and penetrating description
of Salisbury to James as one "fit to prevent things from growing
worse but not fit to make them better," as one "greater in
operations than in opere," is a true one. 2 Elsewhere Bacon
accuses him of an artificial animating of the negative —in
modern language, of official obstruction and "red tape." But
in one instance at least, when he advised James not to press forward
too hastily the union of England and Scotland, a measure which
had appealed to Bacon's imagination and was ardently desired
by him, Salisbury excelled his superior to his illustrious critic.
It can scarcely be denied that he rendered substantial services to the state in times of great
difficulty and perplexity, and these services would probably have
been greater and more permanent had he served a better king and
in more propitious times. Both Elizabeth and James found a
security in Salisbury's calm good sense, safe, orderly official mind
and practical experience of business, of which there was no
guarantee in the restlessness of Essex, the enterprise of Raleigh
and the speculation of Bacon. On the other hand, he was neither
great enough nor inspired with the pride of statesmanship to
oppose anything towards the settlement of the great national
problems, and he precipitated by his ill-advised action the disastrous
struggle between crown and parliament.

Lord Salisbury died on the 24th of May 1612, at the parsonage
house at Marlborough, while returning to London from taking
the waters at Bath. During his long political career he had amassed
a large fortune, besides inheriting a considerable portion of Lord
Burlingham's landed estate. In 1607 he exchanged, at the king's
request, his estate of Theobalds in Hertfordshire for Hatfield.
Here he built the magnificent house of which he himself conceived
the plans and the design, but which he did not live to inhabit,
its completion almost coinciding with his death. In person
and figure he was in strange contrast with his rivals at court, being
diminutive in stature, ill-formed and weak in health. Elizabeth
styled him her pygmy; his enemies delighted in vitilifying his
"wry neck," "crooked back" and "flay foot," and in Bacon's
essay on "Deformity," it was said, "the world takes notice that
he paints out his little cousin to the life." 3 Molin, the Venetian
ambassador in England, gives a similar description of his person,
but adds that he looked "a noble countenance and features." 4
Lord Salisbury wrote The State and Dignity of a Secretary
of State's Place (publ. 1642, reprinted in Harleian Miscellany, ii.
and Somers Tracts (1809), v.; see also Harleian M.S. 350 and
354), and An Answer to Certain Scandalous Papers scattered
abroad under Colour of a Catholic Admonition (1660), justifying
his attitude towards recusants after the discovery of the
Gunpowder Plot (Harl. Misc. ii.; Somers Tracts, v.). He married
Elizabeth, daughter of William Brooke, 5th Baron Cobham,
by whom, besides one daughter, he had William (1591-1668),
his successor as earl.

No complete life of Robert Cecil has been attempted, but the
materials for it are very extensive, including Hist. MSS. Comm.
Series, Marquis of Salisbury's MSS. (superseding former reports in
the series 305 and 535), Selections from the same, ed. by
J. S. Haynes, Wm. Murdin in 1759, John Bruce, in The Corre-
respondence of King James VI. with Sir Robert Cecil, in 1831
(Camden Society), and by E. Todd, in Illustrations of English History, in 1838.

The earl of Salisbury, who sided with the parliament
during the Civil War and represented his party in negotiations
with the king at Uxbridge and at Newport, was succeeded by his
grandson James (1648-1683) as 3rd earl. James's descendant,
James, the 7th earl (1748-1823), who was lord chamberlain
of the royal household from 1783 to 1804, was created marquess
of Salisbury in 1789. His son and successor, James Brownlow
William, the 2nd marquess (1791-1868), married Frances Mary,
daughter of Bamber Gascoyne of Coldhall Hall, Lancashire,
and took the name of Gascoyne before that of Cecil. He was
lord privy seal in 1852 and lord president of the council in 1858-
1859, his son and heir was the famous prime minister.

1 Spedding, Life and Letters of Bacon, iv. 276. 2
Gardiner, History of England, i. 199.

3 Chamberlain to Carleton, Birch's Court of King James, i. 214.
4 Col. of State Papers: Venetian, x. 515.

1 Spedding, Life and Letters of Bacon, iv. 276 note. 279.
SALISBURY, THOMAS DE MONTACUTE, 4TH EARL OF (1385–1428), was son of John, the third earl, who was executed in 1400 as a supporter of Richard II. Thomas was granted part of his father's estates and summoned to parliament in 1409, though not attached to Stratford's (or Rich's) retinue. By his first marriage, the champaign of Agincourt in 1415, and at the naval engagement before Harfleur in 1416. In the expedition of 1417–18 he served with increasing distinction, and especially at the siege of Rouen. During the spring of 1419 he held an independent command, capturing Fécamp, Honfleur and other towns, was appointed lieutenant-general of Normandy, and created earl of Perche. In 1420 he was in chief command in Maine, and defeated the Maréchal de Rieux near Le Mans. When Henry V. went home next year Salisbury remained in France as the chief lieutenant of Thomas a Becket. The duke, through his own rashness, was defeated at Baugé on the 21st of March 1421. Salisbury came up with the archers too late to retrieve the day, but recovered the bodies of the dead, and by a skilful retreat averted further disaster. He soon gathered a fresh force, and in June was able to report to the king "this part of your land stood in good plight never so well as now." (Poedra, x. 131). Salisbury's success in Maine marked him out as John of Bedford's chief lieutenant in the war after Henry's death. In 1423 he was appointed governor of Champagne, and by his dash and vigour secured one of the chief victories of the war. In 1428, in the absence of the English, Salisbury's operations completed the conquest of Champagne, and left Salisbury free to join Bedford at Verneuil. There on the 17th of August, 1424, it was his "judgment and valour" that won the day. During the next three years Salisbury was employed on the Norman border and in Maine. After a year's visit to England he returned to the chief command in the field in July, 1428. Against the judgment of Bedford he determined to make Orleans his principal objective, and began the siege on the 12th of October. Prosecuting it with his wonted vigour he stormed Tourelles, the castle which protected the bridge of the Loire, on the 30th of October. Three days later whilst surveying the city from a window in Tourelles he was wounded by a cannon-shot, and died on the 3rd of November 1428. Salisbury was the most skilful soldier on the English side after the death of Henry V. Though employed on diplomatic missions both by Henry V. and Bedford, he took no part in politics save for a momentary support of Humphrey, duke of Gloucester, during his visit to England in 1427–1428. He was a patron of John Lydgate, who presented to him his book The Pilgrim (now Harley MS. 4565, with a miniature of Salisbury, engraved by Weatogue, 1417) and the Chrise de la Pucelle by G. Cousinot, edited by Vallet de Virville (Paris, 1585). For modern accounts see Sir J. H. Ramsay, Lancaster and York (Oxford, 1892); and C. Oman, Political History of England, 1377–1485 (London, 1906).

WILLIAM, SALLISBURY, 4TH EARL OF (LONGETSPE), EARL OF (d. 1226), was an illegitimate son of Henry II. In 1198 he received from King Richard I, the hand of his first Ela (d. 1261), daughter and heiress of William, earl of Salisbury, and was granted this title with the lands of the earldom. He held many high offices under John, and commanded a section of the English forces at Bouvines (1214), when he was made a prisoner. He remained faithful to the royal house except for a few months in 1216, when John's cause seemed hopelessly lost. He was also a supporter of Hubert de Burgh. In 1225 he went on an expedition to Gascony, being wrecked on the Isle of Ré on the return voyage. The hardships of this adventure undermined his health, and he died at Salisbury on the 7th of May 1226, and was buried in the cathedral there. The eldest of Longespes' four sons, William (d. 1250) did not receive his father's earldom, although he is often called earl of Salisbury. In 1247 he led the English crusaders to join the French at Damietta and was killed in battle with the Saracens in February 1250.

SALISBURY, a township of Litchfield county, in the northwestern corner of Connecticut, U.S.A. Pop. (1910) 3522. Area, about 38 sq. m. Salisbury is served by the Central New England and the New York, New Haven & Hartford railways. In the township are several villages, including Salisbury, Lakeville, Lime Rock, Chaplinville and Ore Hill. Much of the township is hilly, and Bear Mountain (2355 ft.), near the Massachusetts line, is the highest elevation in the state. The Housatonic river forms the eastern boundary. The township is a summer resort. In it are the Scoville Memorial Library (about 8000 volumes in 1910); the Hotchkiss preparatory school (opened in 1892, for boys); the Salisbury School (Protestant Episcopal, for boys), removed to Salisbury from Staten Island in 1901 and formerly St Austin's school; the Taconic School (1865, for girls); and the Connecticut School for Imbeciles (established as a private charitable institution by Mr. and Mrs. Charles Housatonic, 1874, for private boys, and was eventually incorporated by them as the Connecticut School for Imbeciles, 1878, for boys and girls). In 1910 it had an enrolment of 200 boys, 44 girls, and 16 nurses; there were 80 boys in the dormitory, 46 in the cottage, and 26 in the hospital. The school manufactures are chiefly pig-iron, car wheels and general castings at Lime Rock, cutlery at Lakeville, and knife-handles and rubber brushes at Salisbury. The iron mines are among the oldest in the country; mining began probably as early as 1721.

The first settlement within the township was made in 1720 by Dutchmen and Englishmen, who in 1740 had bought from the Indians the land along the Housatonic river. "Wampanoag" is an Indian word said to mean "the wigwam place." In 1732 the township was surveyed with its present boundaries, and in 1738 the land (exclusive of that held under previous grants) was auctioned by the legislature, and the present name was adopted, and in 1741 the township was incorporated.


SALISBURY, a city and municipal and parliamentary borough, and the county town of Wiltshire, England, 532 m. W. by S. of London, on the London and South-Western and Great Western railways. Pop. (1901) 17,117. Its situation is beautiful. Viewed from the hills which surround it the city is seen to lie among flat meadows mainly on the north bank of the river Avon. The cathedral stands on the north side of the city, the streets of which are in part laid out in squares called the 'Cheques.' To the north rises the bare upland of Salisbury Plain.

The cathedral church of St Mary is an unsurpassed example of Early English architecture, begun and completed, save its spire and a few details, within one brief period (1220–1266). There is a tradition, supported by probability, that Elias de Derham, canon of the cathedral (d. 1245), was the principal architect. He was at Salisbury in 1220–1229, and had previously taken part in the erection of the shrine of Thomas à Becket at Canterbury. The building is 474 ft. in extreme length, the length of the nave being 229 ft. 6 in., the choir 151 ft., and the lady chapel 68 ft. 6 in. The width of the middle of the nave at the transept is 73 ft. 9 in. It rises to a height of 120 ft. 9 in. in the central portion (measured by the poet Browning) and 128 ft. in the other sections. The walls of the nave are painted in a white ashlar, with the design of a basket-work pattern. The nave and aisles are divided by marble columns, with capitals in the Early English style. The capitals of the choir, the chapter house and the cloister are of Purbeck marble, the spires being of greenish stone, and the tower of the external walls of white stone. The organ is in the south aisle. The present building has been much altered and restored, the majority of the spires being of comparatively modern date. The magnificent new choir screen of the early Perpendicular style was designed by Mr. E. G. Maufe, C.H.E., and was made at Limpsfield, Surrey, by Messrs. Swain and Son. The screen is of oak and stallion and is a perfect reproduction of the old. The altar of the cathedral is of green serpentine marble, and is of extremely recent date. The west front is a perfect example of the Perpendicular style, and is quite unique in England. In the nave and aisles are five detached Perpendicular chapels, and the detached belfry which stood to the north-west of the cathedral. One of the memorials is a...
small figure of a bishop in robes. This was long connected with the
ceremony of the "boy bishop," which, as practised both here and
elsewhere in the English church, consisted in the annual election of a choir-boy as "bishop" during the period between St.
Nicholas' and Holy Innocents' Days. The figure was supposed to
represent a boy who died during his tenancy of the office, and
small figures occur elsewhere, and have been supposed to mark
the separate burial-place of the heart. The lady chapel is the earliest
part of the original building, as the west end is the latest. The
colonnades and arches were added at a later period of architectural
bequest.
The chapter-house is of the time of Edward I., a very fine octagonal
example, with a remarkable series of contemporary sculptures.
The library contains many valuable MSS. and ancient printed books.
The choir- -covering nearly the whole of Dorsetshire, the greater part
of Wiltshire and very small portions of Berkshire, Hampshire,
Somersetshire and Devonshire.

There are three ancient parish churches: St. Martin's, with square
tower and spire, and possessing a Norman font and Early
English portions in the choir; St. Thomas's (of Canterbury), founded in 1240
as a chapel to the cathedral, and rebuilt in the 15th century; and St.
Edmund's, founded as the collegiate church of secular canons in
1268, but subsequently rebuilt in the Perpendicular period. The
residence of the college of secular priests is occupied by the modern
ecclesiastical college of St. Edmund's, founded in 1873. St. John's
chapel, founded by Bishop Robert Bingham in the 15th century, is
occupied by a dwelling-house. There is a beautiful chapel attached
to the St. Nicholas hospital. The poultry cross, or high cross, an
old Saxon church tower, and a central pillar, was erected by
Lord Montacute before 1335. In the market-place is Marochetti's
statue to Sidney Herbert, Lord Herbert of Lea. The modern public
buildings include the court-house, market, corn exchange and theatre.
A park was laid out by Osmund of Milford, on the site of the
jubilee of Queen Victoria, and in the same year a statue was erected to
Henry Fawcett, the economist, who was born at Salisbury. Among remaining
specimens of ancient domestic architecture may be mentioned the
banqueting-hall of John Hall, wool merchant, built about 1470
and Audley House, belonging also to the 15th century, and repaired
in 1881 as a diocesan church house. There are a large number of
educational and other charities, including the bishop's grammar
school, Queen Elizabeth's grammar school, the St. Nicholas hospital
and Trinity hospital, founded by Agnes Bottenham in 1379. Brewing,
tanning, carpet-making and the manufacture of hardware and of
wool goods are the chief industries, and the city is a centre of
the wool trade. The city is governed by a mayor, 7 aldermen
and 21 councillors. Area, 1710 acres.

History.—The neighbourhood of Salisbury is rich in antiquities.
The famous megalithic remains of Stonehenge (p. 2) are
not far distant. From Milford Hill and Fisherton many prehistoric relics have been brought to the fine
Old Sarum. Blackmore Museum in the city. But the site most
intimately associated with Salisbury is that of Old Sarum, the
history of which forms the preface to that of the modern city.
This is a desolate place, lying a short distance north of Salisbury,
with a huge mound guarded by a fosse and earthworks. The
summit is hollowed out like a crater, its rim surmounted by a
large cairn. Two miles away that its inner side rises like a
sheer wall of chalk 100 ft. high.

Old Sarum was probably one of the chief fortresses of the early
Britons and was known to the Romans as Sorbiodunum. Cerdic,
founder of the West Saxon kingdom, fixed his seat there in the
beginning of the 6th century. Alfred strengthened the castle,
and it was selected by Edgar as a place of national assembly to
devise means of checking the Danes. Under Edward the
Confessor it possessed a mint. The ecclesiastical importance of
Old Sarum begins with the establishment of a nunnery by Eadwine, the first Bishop of Sarum. Early in the 8th century Wiltshire had
been divided between the Sarum and Winchester dioceses. About
920 a bishopric had been created at Ramsbury,
east of Savernake Forest; to this Sherborne was joined in
1058 and in 1075/6 Old Sarum became the seat of a bishopric.
transferred hither from Sherborne. Osmund, the second bishop,
revised the form of communion service in general use, compiling
a misal which forms the groundwork of the celebrated "Sarum
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Tuesday, in 1888 this was reported as of bad character and it is now discontinued. A grant of a weekly market on Tuesday was obtained from Henry III. In 1227. In 1240 this privilege was being abused, a daily market being held, which was finally prohibited in 1361. In 1376 a market on Saturday was granted by Edward III. and in 1658 another on every second Tuesday by Cromwell. In 1760 a wholesale cloth market was appointed to be held yearly on August 24. In 1888 and 1891 the market days were Tuesday and Saturday. A great corn market is now held every Tuesday, a cattle market on alternate Tuesdays, and a cheese market on the second Thursday in the month. Salisbury returned two members to parliament until 1885 when the number was reduced to one. As early as 1334 the town took part in foreign trade and was renowned for its breweries and woollen manufactories, and the latter industry continued until the 17th century, but has since completely declined. Commerce in timber gave rise to numerous confraternities amongst the various trades, such as those of the tailors, weavers and cutlers. The majority originated under Edward IV., though the most ancient—that of the tailors—was said to have been formed under Henry VI. and still existed in 1385. The manufacture of cutlery, once a flourishing industry, is now decayed.

See Victoria County History. Wilts.; Sir R. C. Hoare, History of New Sarum (1843); and History of Old Sarum (1843).

SALISBURY, a town and the county-seat of Wicomico county, Maryland, U.S.A., about 120 m. W. by S. of Raleigh. Pop. (1910) 6425; (1920) 8000. Its population increased very rapidly after 1860. It is served by the Baltimore, Chesapeake & Atlantic (which has shops here), and the New York, Philadelphia & Norfolk railways, and by steamers on the Wicomico river, which has a channel 9 ft. deep; Salisbury is the head of navigation. Grain, vegetables and lumber are shipped along the coast. Salisbury was founded in 1732, organized as a town in 1812, and incorporated in 1834 and again in 1888.

SALISBURY, a city and the county-seat of Rowan county, North Carolina, U.S.A., about 120 m. W. by S. of Raleigh. Pop. (1820) 1443; (1860) 6937; (1920) 7143. Salisbury is served by the Southern railway, which has repair shops here. It is the seat of Livingstone College (African Methodist Episcopal, removed from Concord to Salisbury in 1882, chartered 1885). There is a national cemetery here, in which 12,147 Federal soldiers are buried. The city has various manufactures and is the trade centre of the surrounding farming country. Salisbury was founded about 1753, was first incorporated as a town in 1755 and first chartered as a city in 1770. During the Civil War there was a Confederate military prison here. On the 12th of April 1865 the town was entered by General George Stoneman's cavalry encamped near Salisbury, and a force of about 3000 Confederates under General William M. Gardner, and captured 1364 prisoners and 14 pieces of artillery.

SALISHAN, the name of a linguistic family of North American Indian tribes, the more important of which are the Salish (Flatheads), Bellacoola, Clallam, Colville, Kalispel, Lummi, Nezqually, Okinagan, Puypell, Quinault, Sanpoil, Shushwap, Skokomish, Songees, Spokan and Tulalip. They number about 20,000, and live in the southern part of British Columbia, the coast of Oregon, and the north-west of Washington, Montana and Idaho. The coast Salish divide into the oceanic coast of Oregon, and the north side of the Bu Rragar opposite Rabat (q.v.). Pop. about 30,000. The shrine of Sidi Abd Allah Hasin in Salli is so sacred as to close the street in which it stands to any but Moslems. Outside the town walls there is no security for life or property. A bar at the mouth of the river excludes vessels of more than two hundred tons; steamers lie outside, communicating with the port by lighters of native build manned by descendants of the pirates known as "Salli Rovers." (See Barbary Pirates.)

SALLO, DENIS DE, Sieur de la Courdraye [pseudonym Sieur d'Hedemunde] (1626-1660). French writer, and founder of the first French literary and scientific journal, was born at Paris in 1626. In 1665 he published the first number of the Journal des savants. The Journal, under his direction, was suppressed after the thirteenth number, but was revived shortly afterwards. He died in Paris on the 14th of May 1669.

SALLUST [GAIUS SALLUSTIUS CRISPUS] (86-34 B.C.), Roman historian, belonging to a well-known plebeian family, was born at Amitynium in the country of the Sabines. After an ill-spent youth, which terminated too, he dwells upon the tribulicity of people in 52, the year in which Clodius was killed in a street brawl by the followers of Milo. Sallust was opposed to Milo and to Pompey's party and to the old aristocracy of Rome. From the first he was a decided partisan of Caesar, to whom he owed such political advancement as he attained. In 50 he was removed from the senate by the censor Appius Claudius Pulcher on the ground of gross immorality, the real reason probably being his friendship for Caesar. In the following year, no doubt through Caesar's influence, he was reinstated and appointed quaestor, which Sallust was opposed, and there may be of Caesar in his African campaign, which ended in the decisive defeat of the remains of the Pompeian party at Thapsus. As a reward for his services, Sallust was appointed governor of the province of Numidia. In this capacity he was guilty of such oppression and extortion that only the influence of Caesar enabled him to escape condemnation. On his return to Rome he purchased and laid out in great splendour the famous gardens on the Quirinal known as the Horti Sallustiani. He now retired from public life and devoted himself to historical literature. His account of the Catilina conspiracy (De conjuratis Catilinace deck Bar! Bellum Catilinarianum) and of the Jugurthine War (Bellum Jugurthianum) have come down to us complete, together with fragments of his larger and most important work (Historiae), a history of Rome from 78-67, intended as a continuation of L. Cornelius Sisenna's work. The Catilina Conspiracy (his first published work) contains the history of the memorable year 63. Sallust adopts the usually accepted view of Catilina, and describes him as the deliberate foe of law, order and morality, without attempting to give any adequate explanation of his views and intentions. Catilina, it must be remembered, had supported the party of Sulla, to which Sallust was opposed. There may be truth in Mommsen's suggestion that he was particularly anxious to clear his patron Caesar of all complicity in the conspiracy. Anyhow, the subject gave him the opportunity of showing off his rhetoric at the expense of the old Roman aristocracy, whose degeneracy he delighted to paint in the blackest colours. On the whole, he is not unfair towards Cicero. His Juxurgthine War, again, though a valuable and interesting monograph, is not a satisfactory performance. We may assume that he had collected materials and put together notes for it during his governorship. The difficulty of the narrative is in the sentences and the conciseness, too often in a tiresome, moralizing and philosophizing vein, but as a military history the work is unsatisfactory in the matter of geographical and chronological details. The extant fragments of the Historiae (some discovered in 1886) are enough to show the political partisan, who took a keen pleasure in describing the reaction against the dictator's policy and legislation after his death. The loss of the work is to be regretted, as it has thrown up much light on a very eventful period, embracing the war against Sertorius, the campaigns of Lucullus against Mithradates of Pontus, and the war against Jugurtha. There is also a work of letters (Dea epistolae de republica ordinata), letters of political counsel and advice addressed to Caesar, and an attack upon Cicero (Invectiva or Declamation in Ciceroem), frequently attributed to Sallust, are probably the work of a rhetorician of the first century a.d., also the author of a counter-invective by Cicero. Sallust is highly spoken of by Tacitus (Annals, iii. 30); and Quintilian (ii. 5, x. 1), who regards him as superior to Livy, does not hesitate to put him on a level with Thucydides. On the whole the verdict of antiquity was favourable to Sallust as an historian. He must struck out for himself practically a new line in literature, his predecessors having been little better than mere dry-as-dust chroniclers, whereas he endeavoured to explain the connexion and meaning of events, and was a successful delineator of character. The contrast between his early life

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and the high moral tone adopted by him in his writings was frequently made a subject of reproach against him; but there is no reason why he should not have reformed. In any case, his knowledge of his own former weaknesses may greatly have assisted the majority of his fellow-men, and to judge them severely. His model was Thucydides, whom he imitated in his truthfulness and impartiality, in the introduction of philosophizing reflections and speeches, and in the brevity of his style, sometimes bordering upon obscurity. His fondness for old words and phrases, in which he imitated his contemporary Cato, was ridiculed as an affectation; but it was just this affectation and his rhetorical exaggerations that made Sallust a favourite author in the 2nd century A.D. and later.

Editions and translations in various languages are numerous. Editions in Latin and French are W. Muller (1787—1874); H. Jordan (1857); A. Eusenck (1887); (text and notes) F. D. Gerlach (1823—1831); F. Kritz (1828—1853; ed. minor, 1856); C. H. Frotscher (1830); C. Merivale (1852); F. Jacobs, H. Warz (1894); G. Long, revised by J. G. Frazer, with chief fragments of Histories (1884); W. W. Capes (1884); English translation by A. W. Pollard (1882).

There are many separate editions of the Catilina and Jugurtha, chiefly for schools.

His work, which was principally used for the revision of Florus. He then returned to Burgundy, and qualified for the succession to his father's post, which he eventually lost on account of his quarrels with the Grand Condé, who was his chief rival for the future dictatorship of France. Sallust, in his Histories, with copious additions of his own. In 1623 he married Anne Mercier, a Protestant lady of a distinguished family; the union was by no means a happy one, his wife being represented as a second Xanthe. His friendship with the scholar and humanist Salmianus prompted him to write his life of this critic, his commentary on Solinus's Polyhistor, or rather on Pliny, to whom Solinus is indebted for the most important part of his work. As greatness of this commentary may have been overlooked by his contemporaries, it is a monument of learning and industry. Salmianus learned Arabic to qualify himself for the botanical part of his task. After declining overtures from Oxford, Padua and Bologna, in 1631 he accepted the professorship formerly held by Joseph Scaliger at Leiden.

Although the appointment in many ways suited him, he found the climate trying; and he was persistently attacked by a jealous clique, led by Daniel Heinsius, who as university librarian refused access to the books which he wished to consult. After his removal to Holland, he composed at the request of Prince Frederick of Nassau, his treatise on the military system of the Romans (De re militari Romanorum), which was not published until 1657. Other works followed, mostly by way of diminishing the reputation of wigs and hair-powder, and a vindication of moderate and lawful interest for money, which, although it drew down upon him many expositions from lawyers and theologians, induced the Dutch Church to admit money-lenders to the sacrament.

His treatise De pristaiina Popae (1645), accompanying a republication of the tract of Nilus Cabasilas, excited a warm controversy in France, but was not noticed in England.

In November 1649 appeared the work by which Salmianus is best remembered, his Defensio regia pro Caroli I. His advice had already been sought on English and Scottish affairs, and, inclining to Presbyterianism or a modified Episcopacy, he had written against the Independents. It does not appear by whose influence he was induced to undertake the Defensio regia, but Charles II. defrayed the expense of printing, and presented the author with £100. The first edition was anonymous, but the author was universally known. A French translation which speedily appeared under the name of Cassian, was the work of Salmianus himself. His treasured work, in our day principally famous for the reply it provoked from Milton, even in its own time added little to the reputation of the author. His reply to Milton, which he left unfinished at his death, and which was published by his son in 1660, is insipid as well as abusive. Until the appearance of Milton's rejoinder in March 1651 the effect of the Defensio was no doubt considerable; and it probably helped to procure him the flattering invitation from Queen Christina which induced him to visit Sweden in 1658. Christina loaded him with gifts and distinctions, but upon the appearance of his book went over to the house of Gustavus, and in May 1659 he was bullied by an agent of his antagonist. Milton, addressing Christina herself, ascribes Salmianus's withdrawal from Sweden in 1651 to mortification at this affront, but this appears to be negated by the warmth of Christina's subsequent letters and her pressing invitation to return. The claims of the university of Leiden and dread of a second Swedish winter seem fully adequate motives. Nor is there any foundation for the belief that Milton's invectives hastened his death, which took place on the 3rd of September 1653, from an injudicious use of the Spa waters.

SALMARIUS, CLAUDIUS, the Latinized name of Claude Saumaise (1588—1653), French classical scholar, born at Semur-en-Auxois in Burgundy on the 15th of April 1658. His father, a councillor of the parliament of Dijon, sent him, at the age of sixteen, to Paris, where he became intimate with Casaubon. He proceeded in 1666 to the university of Heidelberg, where he devoted himself to the classics.

Here he embraced Protestantism, the religion of his mother; and his first publication (1668) was an edition of a work by Nilsus Cabasilas, archbishop of Thessalonica, in the 14th century, against the primacy of the pope (De primatu Popae), and of a similar tract by the Calabrian monk Barbaram (d. c. 1384). In 1669 he brought out an edition (1863) and B. Maurenbrecher (1891—1893); and there is an Italian translation (with notes) of the apostolic letters by G. Vittori. On Sallust generally J. W. Löboll's Zur Beurtheilung des S. 1849; and the late W. Curtius, Sallustiana (1863); S. Lebeau's Sallustiana (1857) and M. Jäger (1879 and 1884). T. Rambaud (1879): L. Constans, De sermone Salustiano (1880); P. Bellezza, De fonti e dell'autori di Sallustio (1880—1883). The Sallustiana of Teuffel-Schwabe's History of Roman Literature are full of information; see also bibliography of Sallust for 1879—1890 by B. Maurenbrecher in C. Burser, Jahresberichte über die Fortschritte der klassischen Altertumswissenschaften (1900).

The life of Salmianus was written at great length by Philippet de la Mare, counsellor of the parliament of Dijon, who inherited his MSS. from his son. Papillon says that this biography left nothing to desire, but it has never been printed. It was, however, used by Papillon himself, whose account of Salmianus in hisBibliothèque des ouvriers de Bourgogne (Dijon, 1745) is by far the best extant, and contains, beside the life, the extant letters of the author, and a biographical notice prefixed by an éloge by A. Clément prefixed to his edition of Salmianus's Letters (Leiden, 1656), and another by C. B. Morisot, inserted in his own Letters (Dijon, 1696). See also E. Haag, La France protestante, (ix. 149—173); and, for the Defensio regia, G. Masson's Life of Milton.

SALMERON Y ALFONSO, NICOLAS (1838—1906), Spanish statesman, was born at Alhama la Seca in the province of Almeria, on the 10th of April 1838. He was educated at Granada and Madrid, and distinguished himself in the Army of Andalusia, where he took part in the attack made on him in the Cortes on the 3rd of January 1874, which provoked the generals into closing the
chamber and establishing a provisional military government. Salmoner went into exile and remained abroad till 1881, when he was recalled by Sagasta. In 1886 he was elected to the Cortes as Progressive deputy for Madrid, and unsuccessfully endeavoured to combine the jarring republican factions into a party of practical moderate views. On the 18th of April 1907 he was shot at, but not wounded, in the streets of Barcelona by a member of the more extreme Republican party. He died at Pau on the 21st of September 1908.

**SALMON, GEORGE** (1839-1904), British mathematician and divine, was born in Dublin on the 29th of September 1819 and educated at Trinity College in that city. Having become senior moderator in mathematics and a fellow of Trinity, he took holy orders, and was appointed regius professor of divinity in Dublin University in 1866, a position which he retained until 1888, when he was chosen provost of Trinity College. He was provost until his death on the 22nd of January 1904. As a mathematician Salmon was a fellow of the Royal Society, and was president of the mathematical and physical section of the British Association in 1878. He was a D.C.L. of Oxford and an LL.D. of Cambridge.

His published mathematical works include: *Analytic Geometry of Three Dimensions* (1862), *Treatise on Conic Sections* (4th ed., 1863) and a Treatise on the Plane and Spherical Polyhedra (1873). The books of the highest value, and have been translated into several languages. As a theologian he wrote *Historical Introduction to the Study of the New Testament* (1885), *The Infalibility of the Church* (1888), *Non-Miraculous Christianity* (1881) and *The Reign of Law* (1873).

**SALMON and SALMONIDAE**. The Salmonidæ are an important family of fishes belonging to the Malacopterygian Teleosteans, characterized as follows: Margin of the upper jaw formed by the premaxillaries and the maxillaries—supra-occipital in contact with the frontals, but frequently overlapped by the parietals; there is a well-developed cavum auditory; the postclavicle is well developed. Ribs sessile, parapophyses very short or absent; epineurals, sometimes also epipleurals, present. Post-temporal forked, the upper branch attached to the epiotic, the lower to the opisthotic; postclavicle, as usual, applied to the inner side of the clavicle. A small adipose dorsal fin. Air-bladder usually present, large. Oviducts rudimentary or absent, the ova falling into the cavity of the abdomen before extrusion.

The Salmonidæ are very closely related to the Clupeidæ, or herring family, from which they are principally distinguished by the presence of postclavicles and by the presence of a rayless fin on the back, at a considerable distance from the tail or rayed dorsal fin; this so-called adipose fin is an easy recognition-mark of this family, so far as British waters are concerned, for, if it is present in several other families, these have no representatives in the area occupied by the fresh-water salmonids, with the exception of the North American Siluridæ and Percopidæ, which are readily distinguished by the pungent spine or spines which precede the rays of the first dorsal fin.

The imperfect condition of the oviducts, quite exceptional among fishes, owing to which the large ripe eggs may be easily squeezed out of the abdomen, is a feature of great practical importance, since it renders artificial impregnation particularly easy, and to it is due the fact that the species of Salmo have always occupied the first place in the annals of fish-culture.

The Salmonidæ inhabit mostly the temperate and arctic zones of the northern hemisphere, and this is the case with all fresh-water forms, with one exception, *Retropinna*, a salt-water fish from the coasts and rivers of New Zealand. A few deep-sea forms (*Argentinia*, *Microstoma*, *Nanuseus*, *Bathylyagus*) are known from the Atlantic, in the Mediterranean and the Antarctic ocean, down to 2000 fathoms. The question as to whether the salmonids, so many of which live in the sea, but resort to rivers for breeding purposes, were originally marine or fresh-water. The balance of opinion is in favour of the former hypothesis, which is supported by the fact that the overwhelming majority of the members of the suborder to which the salmonids form part permanently inhabit the sea. The clupeids, for instance, which are their nearest allies, are certainly of marine origin, as proved by their abundance in Cretaceous seas, yet a few, like the shads, ascend rivers to spawn, in the same way as the salmon does, without this ever having been adduced as evidence in favour of a fresh-water origin of the genus *Clupea* to which they belong.

No remains older than Miocene (*Osmorus*, *Prokymylus*, *Taumaturus*) are certainly referable to this family, the various Cretaceous forms originally referred to it, such as *Osmeroides* and *Pachyrhizobius*, belonging to the *Elophidæ*. There is probably no other group of fishes to which so much attention has been paid as to the Salmonidæ, and the species have been unduly multiplied by some writers. Perhaps not more than 80 should be regarded as valid, but some of them fall into a number of local forms which are distinguished as varieties or subspecies by some authors, whilst others would assign them full specific rank. These differences of opinion prevail whether we deal with *Salmo* proper or with *Coregonus*.

**Classification.**—The recent genera may be arranged in five groups: The first, which includes the so-called *Brachyrynchus*, *Slenodus*, *Coregonus*, *Phylogyphtyx* and *Tymallus*, has 8 to 13 rays in the ventral fin, the pyloric appendages more or less numerous (17 to 200) and breeding takes place in fresh water. The second group, genera *Coregonus*, *Brachypinnus*, *Post-branchial* and *branchial* favourites, marine, and is characterized by 6 branchiostegal rays, 11 to 14 ventral rays, the stomach caecum with pyloric appendages in moderate numbers (12 to 20). The third group, genera *Osmorus*, *Thaleichthys*, *Altus*, *Sapthurus* and *Hypomesus*, has 10 to 16 branchiostegal rays, 6 to 8 ventral rays, the stomach caecal, with pyloric appendages few (2 to 11) or rather numerous. The fourth group, genera *Microstoma*, *Nannodes*, *Bathylyagus*, with the branchiostegal rays reduced to 3 or 4, ventral rays 8 to 10; the stomach caecal and pyloric appendages absent; whilst the fifth group, with the genera *Retropinna* and *Salanx*, is distinguished from the preceding in having no air-bladder, branchiostegal rays reduced to 2 or 3, ventral rays 6 or 7, stomach siphonal and pyloric appendages absent.

The genus *Salmo*, the most important from the economical and commercial points of view, is characterized by small smooth scales, which are sometimes so abundant that they are used for making paper. A moderately high dorsal fin with 10 to 12 well-developed rays, and a large mouth provided with strong teeth, which are present not only in the jaws and on the palate, but also on the tongue; the maxillary or posterior bone of the upper jaw extends to below or beyond the eye. Young specimens (see *Parr*) are marked with dark vertical bars on the sides (parr-marks), which in some trout are retained throughout life.

The teeth, which include the caudal fin more or less deeply forked or marginated, the form of the fin changing with the age and sexual development of the fish. Adult males have the jaws more produced posteriorly, the males and females, and both snout and chin may be curved and hooked. As pointed out by Dr. G. A. B. Salter, it is necessary to make a profound study of the members of this genus, and especially of the British forms, there is probably no other group of fishes which can be quite as difficult in its distinctions of species. The discrimination of species, as well as to certain points in their life-history, the almost infinite variations which they undergo being dependent on age, sex and sexual development, food and the properties of the water. The difficulties in their study have rather been increased by the excessive multiplication of so-called specific forms. Opinions also vary as to the importance to be attached to the characters which serve to group the principal species into natural divisions. Whilst A. Günther divided two genera, *Salmo* and *Oncorhynchus*, D. S. Jordan and B. W. Evermann go so far as to recognize five, *Oncorhynchus*, *Salmo*, *Hucho*, *Cristovomer* and *Salvelinus*. The latter arrangement is certainly one more logical than that of the first genus and the second being of rather less importance than that between the second and the third. However, considering the slightness of the distinctive characters on which these divisions are based, it is not unreasonable that the various species which the writer of this article thinks it best to maintain the genus *Salmo* in the wide sense, whilst retaining the divisions as subordinate divisions or sub-genus, with the following distribution.

**Oncorhynchus** (Pacific salmon).—*Vomer* flat, toothed along the shaft, at least in the young: anal fin with 12 to 17 well-developed rays.

**Salmo** (true salmon and trout).—*Vomer* flat, toothed along the shaft, at least in the young: anal fin with 8 to 12 well-developed rays.

**Salvelinus** (char).—*Vomer* boat-shaped, the shaft strongly depressed and the head, which alone is toothed, the teeth forming an isolated fascicle in a slightly curved row of widely-spaced rays.

**Hucho** (huchen).—*Vomer* as in the preceding, but teeth forming a single arched transverse series continuous with the palatine teeth: anal fin with 8 to 10 well-developed rays.

The salmon itself (*Salmo salar*), the type of the family, is a large fish, attaining a length of 4 or 5 ft., and living partly in the
The grilse, after spawning in autumn, return again to the sea in the winter or following spring, and reascend the rivers as mature salmon. The hatching of the grilse into salmon in the river commences early in the season; the salmon are grilse, or "kelts." The following chart at the end of this section illustrates the growth of grilse into salmon: a grilse-kelt of 2 lb was marked on March 31, 1858, and recaptured on August 2 of the following year as a salmon of 8 lb.

The ascent of rivers by adult salmon is not so regular as that of grilse, and the knowledge of the subject is not complete. Although salmon scarcely ever spawn before the month of September, they do not always appear in the river in the same season; the period extends throughout the spring and summer. A salmon newly arrived in fresh water from the sea is called a clean salmon, on account of its shining, well-formed scales; but as the fish lose the brilliancy of their scales and deteriorate in condition, the time of year at which clean salmon ascend from the sea varies greatly in different rivers; and rivers are, in relation to this subject, very difficult to determine. Salmon emaciated, as the German Ocean and Pentland Firth are almost early, while those of the Atlantic slope are late. The Thurso in Caithness and the Naver in Sutherlandshire contain fresh-run salmon in December and January the same is the case with the Tay. In Yorkshire salmon commence their ascent in July, August or September if the season is wet, but if it is dry their migration is delayed till the autumn rains set in. In all rivers more salmon ascend immediately after a spate or flood than when the river is low, and more with the flood tide than during the ebb. In their ascent salmon are able to pass obstructions, such as waterfalls and weirs of considerable height, and to ascend the least navigable part of the river. The impediments and the persistence of their efforts are very remarkable.

We reproduce here, with additions, Professor Noel Paton's summary (published first in the tenth edition of this Encyclopædia) of observations on the life-history of the salmon. "Advances in our knowledge of the life-history of the salmon have been made through the investigations of Professor F. Miescher on the Rhine at Basel, of Professor P. P. C. Hoek in Holland, of Mr. Archer's observations in the River Sands in Norway, and as lessee of the river Sands in Norway and as inspector of salmon fisheries for Scotland in conjunction with Messrs Gray and Tosh, and of a number of workers in the laboratory of the Royal College of Physicians of Edinburgh. With regard to the food of salmon, the enormously rapid growth of smolts to grilse and of salmon from year to year shows that they feed in the sea. In a few months a smolt will increase from a few ounces to 4 or 5 lb; while Archer's observations of 16 salmon which had been marked in the sea during the following year showed an average gain of 36% reckoned on from kelting stage to kelting stage. During the season of 1895 Tosh, at the mouth of the Tay in Scotland, discovered a young salmon 3 lb. 14 oz. and found food in the stomachs of 76, or over 14% of the whole. As to the nature of the food, it was found to be as follows:

- **Herring**
- **Casseters, ammphipods, etc.**
- **Sand eels**
- **Haddock and whiting**
- **Feathers and vegetable matter**

Excluding the feathers and vegetable matter, which are not really food, the principal item of food of salmon is fish, and the bulk of the food is marine origin. Hoek, out of 2000 fish examined by him, found 7 with food in the stomach, and, curiously enough, 4 of these were taken on the same day. The food of salmon consists of various sorts of fish. As to where salmon go to feed in the sea, our information is still very deficient, but the prevalence of herring in the stomach would seem to indicate that they must follow the schools of these fish which approach the coast during the summer months. While there can be no doubt that salmon feed in the sea, the question of whether they feed in fresh water has been much debated. It is difficult for the popular mind to conceive of an active fish like the salmon subsisting for several months without food, and the fact that the fish so frequently not only takes into its mouth but actually swallows worms and various lures has still further tended to confirm many people that salmon do not feed in fresh water. In defence of the question it is well clearly to understand what is meant by feeding. It is the taking, digesting and absorbing of material of use in the economy in such quantities as to be of benefit to the animal. A salmon which has not fed during a month is not said that all the evidence we possess is entirely opposed to the view that salmon feed when in fresh water. Miescher examined the stomachs of about 2000 salmon captured at Basel, about 500 m. from the mouth of the Rhine. He found only two did he find any fish, but the rest contained feeding. These two fish were male kelts. One contained the remains of a cyprinoid fish, and the other had a diluted stomach with an empty secretionary coating. It has long been known that salmon examined about 2000 fish, found food of marine origin in 7, but in none food derived from fresh water. Of the 132 stomachs of salmon from the estuaries and upper waters of Scottish rivers 126 had no food, but 8 contained any food remains. The stomach of salmon captured in fresh water is collapsed and shrunkken. Its mucous membrane is thrown into folds, and it contains a small amount of mucus of a neutral reaction. The intestine, which usually contains numerous
tadpoles, is full of a greenish-yellow viscous material which, when examined under the microscope, is found to consist of mucus with abundant numerous small flaccid eggs. It is possible that for certain periods of time, the supply of food would be insufficient, and that large quantities of albuminous material accumulated in their bodies. In the early running fish this material is largely confined to the muscles, but in the later coming fish it is more equally distributed between muscles and genitalia. The latter, as in the case of the female fish, would be incapable of digesting albuminous material, and if we express the results of all the fish examined in terms of fish of uniform size—100 cm. in length—the following results are obtained:

<table>
<thead>
<tr>
<th>Month</th>
<th>Muscles</th>
<th>Ovaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov.</td>
<td>2481</td>
<td>2214</td>
</tr>
<tr>
<td>Feb.</td>
<td>2355</td>
<td>2599</td>
</tr>
<tr>
<td>Mar.</td>
<td>2201</td>
<td>2270</td>
</tr>
<tr>
<td>April</td>
<td>1759</td>
<td>496</td>
</tr>
<tr>
<td>May</td>
<td>2504</td>
<td>2257</td>
</tr>
<tr>
<td>June</td>
<td>2342</td>
<td>955</td>
</tr>
</tbody>
</table>

It would thus appear that, when the salmon has in the sea accumulated a certain definite amount of nourishment, it ceases to feed, and returns to the river irrespective of the state of its genital organs. Nutrition, and not the _nius generalis_, appears to be the motive power which urges the fish to return to the river.

### Course of Migration

It is well known that while salmon run all the year through in greater or lesser numbers, the run of grilse takes place in the spring, and that of salmon in the autumn. It is not possible to divide the salmon into classes—the so-called winter salmon of the Rhine, large fish running from October to February, and the summer salmon, running for the most part from March to October, with salmon in the intermediate stage or less ripe. These summer fish are small in the early months, but increase in size as the autumn advances. The winter salmon, along with the male grilse and spring fish, appear to pass directly to the upper reaches of the river, and to spawn there, while the larger late-comers fish appear to populate the lower waters. This seems to be indicated by the comparison of upper-water and estuary fish throughout the year. The method adopted to detect salmon in the estuary consists in adding a trace of some material to the fish, and it is thus possible to determine what proportion of females as well as captured during the early months of the season must have a more prejudicial effect upon the breeding stock.

### Rate of Migration

By comparison of the first appearance of winter salmon and of grilse in the markets of Holland and of Basel—500 m. up the river—Mischers gives some data for the determination of the rate at which salmon run. He found that 20% of salmon caught by the billion trees near the mouth of the Tweed were taken between the end of March and the end of April, and that 30% was taken between the end of April and the end of May. It was found that winter salmon appeared at Basel about 54 days after their appearance in Holland, which would give a rate of passage of about 10 m. per day. From a smaller number of observations on the Rhine, Lull and others have recorded a rate of 20 miles per day. This is, however, doubtful, how far these figures are of value in deciding the rate at which fish pass up the lower reaches of the river.

Great difficulties have been experienced in ascertaining the age and rate of growth of salmon. The practice has long ago been resorted to of marking salmon, the most satisfactory mark being a small oblong silver label, oxidized or blackened, bearing distinctive letters and numbers, to the dorsal fin. But of late the structure of the scales has been studied with the object of obtaining indications of the age, growth and spawning habit. H. W. Johnston in 1905 contributed an interesting paper on the subject. The scales bear concentric lines, which vary in number and relative distance according to the growth of the fish, and during the feeding periods these lines are added with more rapidity and a greater degree of separation than at other times. Johnston has endeavoured to ascertain the age of the fish from the number of these rings and as a result of the number of lines external to their last annual rings some clue to the time at which they left the sea; he is thus able to distinguish among ascending salmon such as are on their first return from such as have made the journey once or oftener before.

The group of Pacific salmon, or king salmon, commonly designated as _Oncorhynchus_, contains the largest and commercially the most important of the Salmonidae. This genus includes species inhabiting the North Pacific and entering the rivers of America as well as of Asia. The best known and most valuable is the quinnat (S. quinnat), ascending the large rivers in _spring_ and _summer_, and _fall_ and _winter_ as far as the head of the salmon season is over, and never return to the sea. For the important _Salmonidae_ known as _TROUT_, _CHAR_, _WHITEFISH_, _SMelt_, _GRAYLING_, _&c., see the article on _FRESHWATER FISHES_. 

1 Winter fish not due to spawn till following November.
SALOMEUS—SALONICA

as the salmon, of silvery coloration, with numerous small black dots, eyes reaching to the dorsal fin. Allied to it are S. fluviatilis from Siberia and S. perryi or blackstoni from the northern island of Japan. The genus Stenodus is intermediate between Salmo and Coregonus (whitefish). S. lucioperca is the inhabitant of the Arctic ocean, inhabiting the Carsea and ascending the Volga and the Ural; it is also found in the Arctic ocean, ascending the Ob, Lena, &c. It grows to a length of 5 ft. A second species occurs in Arctic North America; this is S. salvelinus, from the Mackenzie river and its tributaries.

The capelin (Mallotus villanus, so called from the villous bands formed by the scales of mature males) is a salmonoid of the Arctic sea region, which, in its native land, lays its eggs in the sand along the shores in incredible numbers, the beach becoming a quivering mass of eggs and sand. Plecoscossus, a salmonoid from Japan, leaves the eggs covered with a layer of spongy, transparent, pale, lateral teeth. The sid-smelts, Argentina, are deep-sea salmonoids, of which examples have occasionally been taken off the coasts of Scotland and Ireland. Bathylogy, another salmonid distantly related by the "Challenger" expedition, is still better adapted for life at great depths (down to 1700 fathoms), the eyes being of enormous size.


SALOMONEUS, in Greek mythology, son of Aeolus (king of Magnesia in Thessaly, the mythic ancestor of the Aeolian race), grandson of Helen and brother of Sisyphus. He removed to Elis, where he built the town of Salomone and became ruler of the country. His subjects were ordered to the care of the hero, who protected them against the attacks of the Thracian Thracians; he also rose to prominence as a hero of braves over which he drove at full speed in his chariot to imitate thunder, the effect being heightened by dried skins and caldrons trailing behind, while torches were thrown into the air to represent lightning. At last Zeus smote him with his thunderbolt, and destroyed the town (Apollodorus i. 9. 7; Hyginus, Fab. 60, 61; Strabo viii. p. 356; Manlius, Astronom. 5. 91; Virgil, Aen. vi. 585, with Heyne's excursus). Joseph Warton's idea that the story is introduced by Virgil as a protest against the Roman custom of dedication is not supported by the general tone of the Aeneid itself. According to R. W. Evermann, Fishes of North America, 1903, see also Golden Bough, i., 1900, p. 82), the early Greek kings, who were expected to produce rain for the benefit of the crops, were in the habit of imitating thunder and lightning in the character of Zeus. At Cnannon in Thessaly there was a bronze chariot, which in time of drought was shaken and prayers offered for rain (Antigonus of Carystus, Historiae mirabiles, 15). S. Reinach (Revue archéologique, 1903, i. 154) suggests that the story that Salomeus was struck by lightning was due to the misinterpretation of a picture, in which a Thessalian magician appeared bringing down lightning and rain from heaven; hence arose the idea that he was the father of the jealousy of Zeus, and that the picture represented his punishment.

SALOME, in Jewish history the name borne by several women of the Herod dynasty. (1) Sister of Herod the Great, who became the wife successively of Joseph, Herod's uncle, Costobar, governor of Idumea, and a certain Alexas. (2) Daughter of Herod by Eipsis, his eighth wife. (3) Daughter of Herodias by her first husband Herod Philip. She was the wife successively of Philip the Tetrarch and Aristobulus, son of Herod of Chalchis. This Salomea is the only one of the Gulf of Salomea (St. John 111. 50), who is mentioned in the New Testament (Matt. xiv. 3 sqq.; Mark vi. 17 sqq.) and only in connexion with the execution of John the Baptist. Herod Antipas, pleased by her dancing, offered her a reward "unto the half of my kingdom"; instructed by Herodias, she asked for John the Baptist's "head in a charger" (see HEROD II. ANTIPAS).

Salome is also the name of one of the women who are mentioned as present at the Crucifixion (Mark xv. 40), and afterwards in the Sepulchre (xvi. 1). Comparison with Matt. xxviii. 53 suggests that she is the same who also accompanied the sepulchre later. It is further conjectured that she was a sister of Mary the mother of Jesus, in which case James and John would be cousins of Jesus. In the absence of specific evidence any such identification must be regarded with suspicion.

SALON, a town of south-eastern France, in the department of Bouches-du-Rhône, 40 m. N.N.W. of Marseilles by rail. Pop. (1906), town, 9927; commune, 14050. Salon is situated on the eastern border of the plain of Cteau and on the irrigation canal of Craponne, the engineer of which, Adam de Craponne (1355-1436), was also   a   celebrated   astrologer. The chief buildings are the church of St. Laurens (14th century), which contains the tomb of Michael Nostradamus, the famous astrologer, who died at Salon in 1565, and the church of St Michel (12th century), with a fine Romanesque portal. The central and oldest part of the town preserves a gateway of the 15th century and the remains of fortifications. There are remains of Roman walls near Salon, and in the hôtel-de-ville (17th century) there is a milestone of the 4th century. The town carries on an active trade in oil and soap, which are the chief of its numerous manufactures. Olives are largely grown in the district, and there is also a trade in the manufacture of cloth.

SALONICA, SALONIK or SALONIK (anc. Thessalonica, Turkish Selanik, Slav. Salon); the capital of the Turkish vilayet of Salonika, in western Macedonia, and one of the principal seaports of south-western Europe. Pop. (1905) about 130,000, including some 60,000 Sephardic Jews, whose ancestors fled hither in the 16th century to escape religious persecution in Spain and Portugal: their language is a corrupt form of Spanish, called Ladino (i.e. Latin), and spoken to some extent by other communities in the city. Salonica lies on the west side of the Chalcidic peninsula, in Macedonia, near the opening of the Bay of Salonica, on a fine bay whose southern edge is formed by the Calamarian heights, while its northern and western side is the broad alluvial plain produced by the discharge of the Vardar and the Bistriza, the principal rivers of western Macedonia. Built partly on the low ground along the edge of the bay and partly on the hill to the north (a compact mass of mica schist), the city with its white houses enclosed by white walls runs up along natural ravines to the castle of the Heptapyrgion, or Seven Towers, and is rendered picturesque by numerous domes and minarets and the foliage of elms, cypresses and mulberry trees. The commercial quarter of the town, lying to the north-west, towards the great valleys by which the inland traffic is conveyed, is pierced by broad and straight streets paved with lava. There are electric tramways and a good water-supply, but most of the older houses are fragile wooden structures coated with lime or mud, and the sanitation is defective. Apart from churches, mosques and synagogues, there are a few noteworthy modern buildings, such as the Ottoman Bank, the baths, quarantine station, schools and hospitals; but the chief architectural interest of Salonica is centred in its Roman and Byzantine remains.

The Via Egnatia of the Romans (mod. Jassijol or Grande Rue de Vardar) traverses the city from east to west, between the Vardar Gate and the Calamarian Gate. Two Roman triumphal arches used to span the Via Egnatia. The arch near the Vardar Gate—a massive stone structure probably erected towards the end of the 1st century A.D., was destroyed in 1867

Charger, a large flat plate (see CHARGE).
to furnish material for repairing the city walls; an imperfect inscription from it is preserved in the British Museum. The other arch, popularly called-the arch of Constantine but with greater probability the arch of Galerius (A.D. 305–311), is built of brick and partly faced with sculptured marble. A third example of Roman architecture—the remains of a white marble portico supposed to have formed the entrance to the hippodrome—is known by the Judeo-Spanish designation of Las Incantadas, from the eight Caryatides in the upper part of the structure. There are also numerous fragments of Roman inscriptions and statuary. The conspicuous mosques of Salonica are nearly all of an early Christian origin; the remarkable preservation of their mural decorations makes them very im-
pressive, and the inscriptions are by no means negligible. Most of the four hundred mosques are those dedicated to St. Sophia, St. George and St. Demetrius. St. Sophia (Aya Sofya), formerly the cathedral, and probably erected in the 6th century by Justinian's architect Anthemius, was converted into a mosque in 1458. It is 110 ft. wide, with walls of white marble. The whole length of the interior is 310 ft. The nave, forming a Greek cross, is surmounted by a hemispherical dome, the 600 sq. yds. of which are covered with a rich mosaic representing the Ascension. The doors, which frame the main entrance, are 18 ft. thick, and at the angles of an inscribed octagon are arches formed in the thickness of the wall, and roofed with wagon-headed vaults visible on the exterior; the eastern chapel, however, is en-
laced with a bema and a portico projected beyond the circle, and the western and southern chapels constitute the two entrances of the building. The dome, 72 yds. in circumference, is covered throughout its entire surface of 600 sq. yds., with what is the largest work in ancient mosaic still extant, representing a series of fourteen saints standing in the act of adoration in front of temples and colonnades. The Esaki Juma, or Old Mosque, is another interesting example of the use of mosaic, and contains an apse without side chapels. The churches of the Holy Apostles and of St. Elias also deserve mention. Of the secular buildings, the Caravanserai, usually attributed to Murad II. (1422–1451), probably dates from Byzantine times.

Salonica is the see of an Orthodox Greek archbishop. Each religious community has its own schools and places of worship, among the most important being the Jewish high-school, the Greek and Bulgarian gymnasia, the Jesuit college, a high-school founded in 1880 and supported by the Jewish Mission of the Established Church of Scotland, a German school, dating from 1887, and a college for the study of law. The town has been both within the French and early Austrian; in 1856 the Normans of Sicily took Thessalonica after a ten days' siege, and perpetrated endless barbarities, of which Eustathius, then bishop of the city, has left an account. In 1204 Baldwin, conqueror of Constantinople, conferred the kingdom of Thessalonica on Boniface, marquis of Montferrat; but in 1222 Theodore, despot of Epirus, one of the natural enemies of the new kingdom, took the city and had himself there crowned by the patriarch of Macedonian Bulgaria. On the death of Demetrius, who had been supported in his endeavour to recover his father's throne by Pope Honorius II., the city fell into the hands of the Turks, who massacred the population. In 1566 the house of Burgundy received a grant of the titular kingdom from Baldwin II., who was titular emperor, and it was sold by Eudes IV. to Philip of Tarentum, titular emperor of Romania, in 1320. The Venetians to whom the city was transferred by one of the Palaeologi, were in power when Murad II. appeared, and on the 1st of May 1430, in spite of the desperate resistance of the inhabitants, took the city, which had thrice previously been in the hands of the Turks. They cut to pieces the body of St. Demetrius, the patron saint of Salonica, who had been the Roman proconsul of Greece under Maximian, and was martyred in A.D. 306. In 1876 the French and German consuls at Salonica were murdered by the Turkish populace. On the 4th of September 1890 more than 2000 houses were destroyed by fire in the south-eastern quarters of the city. During the early years of the 20th century Salonica was the headquarters of the Committee of Union and Progress, the central organization of the Young Turkey Party, which carried out the constitutional revolution of 1908. Before this event the weakness of Turkey had encouraged the belief that Salonica would ultimately pass under the control of Austria-Hungary or one of the Balkan States, and this belief gave rise to many political intrigues which helped to delay the solution of the Macedonian Question.

Viyet.—The viyayet of Salonica has an area of 13,510 sq. m., and an estimated population of 1,150,000. It is rich in minerals, including chrome, manganese, zinc, antimony, iron, argentiferous...
SALON—SALT

lead, arsenic and lignite, but some of these are unworked. The chief agricultural products are grain, rice, beans, cotton, opium and poppy seed, sesame, linseed, red pepper, and much of the finest tobacco grown in Europe; there is also some trade in timber, livestock, skins, furs, wool and silk cocoons. The growth of commerce has been impeded by the ignorance of cultivators, the want of good roads, and the great diversity of types in the soil. Apart from the industries carried on in the capital, there are manufactures of wine, liqueurs, sesame oil, cloth, macaroni and soap. The principal towns, Seres (pop. 30,000), Duma (25,000) and Cavalla (24,000), are described in separate articles; Tikvesh (21,000) is the centre of an agricultural region, Carasferia (14,000) a manufacturing town, and Drama (13,000) one of the centres of tobacco cultivation.

SALON, a large room for the reception of guests in Napoleon's time. The French salon itself is described in Old English by the cognate sal, hall, properly “abiding-place,” from the root seen in Gothic saljan, to dwell, cf. Russ. selo, village. The word in its proper sense has now a somewhat archaistic flavour, being chiefly used of the 18th century, and it has come principally to be used (1) of the large rooms on passenger steamer; (2) on English railways of carriages for the accommodation of large parties not divided into compartments, and in the United States of the so-called “drawing-room cars”; and (3) of a bar or place for the sale of intoxicating liquors. SALSIFY, Tragopogon porifolius, a hardy biennial, with long, cylindrical, fleshy, esculent roots, which, when properly cooked, are extremely delicate and wholesome; it occurs in meadows and pastures in the Mediterranean region, and in Britain is confined to the south of England, but is not native. The salsify requires a free, rich, deep soil, which should be trenched in autumn, the manure used being placed at two spades' depth from the surface. The first crop should be sown in March, and the main crop in April, in rows a foot from each other, the plants being thinned to 18. in. apart. In November the unerotted plants should be taken up and stored in sand for immediate use, others being secured in a similar way during intervals of mild weather. The genus Tragopogon belongs to the natural order Composite, and is represented in Britain by goat's beard, T. pratensis, found in meadows, pastures and waste places. The flowers close at noon, whence the popular name "John-go-to-bed-at-noon.”

SALSETTTE ("sixty-six villages"), a large island in British India, N. of Bombay city, forming part of Thana district. Area, 246 sq. m. It is connected with Bombay by a causeway which was introduced with the Mahul Railway line. Salsette is a borderland, a well-wooded tract, its surface being diversified by hills and mountains, of considerable height, while it is rich in rice fields. In various parts of the island are ruins of Portuguese churches, convents and villas; while the cave temples of Kanheri form a subject of interest. There are 109 Buddhist caves, which date from the end of the 2nd century A.D., but are not so interesting as those of Ajanta, Ellora and Karli. Salsette is crossed by two lines of railway, which have encouraged the building of villa residences by the wealthier merchants of Bombay. The population in 1901 was 146,633. The island was taken from the Portuguese by the Marathas in 1730, and from them by the British in 1774; it was formally annexed to the East India Company's dominions in 1782 by the treaty of Salbai. There is another Salsette in the Portuguese settlement of Goa, a district with a population (1900) of 18,600.

SALSO MAGGIORE, a village of Emilia, Italy, in the province of Parma, 6 m. S.W. of Borgo San Donnino by steam train. Pop. (1901) 1387 (village); 7274 (commune). It is situated 525 ft. above sea-level at the foot of the Apennines, and is a popular watering-place, the baths being especially frequented. The water is strongly saline.

SALT, SIR TITUS, BART. (1803-1870), English manufacturer, was born on the 20th of September 1803, at Morley, Yorkshire. In 1820 he was apprenticed to learn wool-stapling at Bradford, and his father, having followed him there and started in that business, took him into partnership in 1824. His success in introducing the coarse or Vit-Vol wool, and much of the finest English worsted manufacture, due to special machinery of his own devising, gave him a great impetus. In 1836 he solved the difficulties of working alpaca (q.v.) wool, created an enormous industry in the production of the staple goods for which that name was retained, and became one of the richest manufacturers in Bradford. In 1853 he opened, a few miles out of the city on the Aire, the extensive works and model manufacturing town of Saltaire. From 1859-1861 Salt was Mayor of Bradford, of which city he had been mayor in 1848, and in 1869 he was created a baronet. He died on the 20th of September 1876, and was accorded a public funeral. After his death his many benevolent institutions at Saltaire, at first continued by his widow, were transferred to a trust.

See R. Balgarnie, Sir Titus Salt, His Life and its Lessons.

SALT (a common Teuton word, cf. Dutch zout, Ger. Salz, Scand. salt; cognate with Gr. άιον, Latin salis) is a substance which is given up or evolved by substituting the hydrogen of an acid by a metal or a radical acting as a metal, or what comes to the same thing, by eliminating the elements of water between an acid and a base (see ACID; CHEMISTRY).

Common Salt.

Common salt, or simply salt, is the name given to the native and industrial forms of sodium chloride, NaCl. Pure sodium chloride, which may be obtained by passing hydrochloric acid gas into a saturated solution of the salt, is precipitated, forms colourless, crystalline cubes (see also below under Rock salt) which melt at 815.4°, and begins to volatilize at slightly higher temperatures. It is readily soluble in water, 100 parts of which dissolve 35.52 parts at 0° and 39.16 parts at 100°. The saturated solution at 100° contains 40-35 parts of salt to 100 of water. On cooling a saturated solution to -10°, or by cooling a solution in hot hydrochloric acid, the hydrate NaCl·2H₂O separates; on further cooling an aqueous solution to -20° a cryohydrate containing 23.7% of the salt is deposited. The consideration of this important substance is not included here.

SALT, the word is probably derived from the other, most rock salt deposits bearing evidence of having been formed by the evaporation of lakes or seas.

Salt—Generally the term salt alludes to any compound of sodium (q.v.) or potassium, KCl, and chlorine, Cl₂. Common salt or table salt, NaCl, and rock salt, NaCl·2H₂O, are the substances which are usually meant when the term salt is employed. Salt is of various kinds, and occurs in various forms. The common salt of commerce is a well-known variety of rock salt, which is used in the preparation of the other forms of salt, and is essentially the same as the common salt of the sea. Common salt of the sea water contains 0.2% of NaCl, and, allowing an average density 2.25 for rock-salt, it has been computed that the entire ocean if dried up would yield no less than four and a half million cubic miles of rock-salt, or about fourteen and a half times the bulk of the entire continent of Europe above high-water mark. The proportion of sodium chloride in the water of the ocean, where it is mixed with small quantities of other salts, is on the average about 3.3%, ranging from 2.9% for the polar seas to 3.5% or more at the equator. Enclosed seas, such as the Mediterranean, the Red Sea, the Black Sea, the Dead Sea, the Caspian and others, are dependent of course for the proportion and quality of their saline matter on local circumstances (see OCEAN).

At one time almost the whole of the salt in commerce was produced from the evaporation of sea water, and indeed salt so made still forms a staple commodity in many countries possessing a seaboard, especially those where the climate is dry and the summer of long duration. In Portugal there are salt works at Setubal, Alacer do Sal, Figueira and Aveiro. Spain has salt works at the Bay of Cadiz, the Balearic Islands, &c.; Italy at Sicily, Naples, Tuscany and Sardinia. France has its "marais salants du midi" and also works on the Atlantic seaboard; whilst Austria has "Salzgärten" at various places on the Adriatic (Sabbioncello, Trieste, Pirano, Capo d'Istria, &c.). In England and Scotland the industry has greatly fallen off under the competition of the rock-salt works of Cheshire.

The process of the spontaneous evaporation of sea water was studied by Ussigio on Mediterranean sea water at Cetee. The density at first was 1-02. Primarily but a slight deposit is formed (none until the concentration arrives at specific gravity 1-050), this deposit consisting for the most part of calcium carbonate and ferric oxide. This goes on till a density of 1-35 is attained, when hydrated calcium sulphate begins to deposit, and continues till specific gravity 1-246 is reached. At a density of 1-218 the deposit becomes augmented by sodium chloride, which goes down mixed with a little magnesium chloride and sulphate. At specific gravity 1-246 a
little sodium bromide has begun also to deposit. At specific gravity 1·311 the volume of the water contained—

<table>
<thead>
<tr>
<th>Salt</th>
<th>Volume %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium sulfate</td>
<td>11·45%</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>19·53%</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>15·90%</td>
</tr>
<tr>
<td>Sodium bromide</td>
<td>2·004%</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>3·30%</td>
</tr>
</tbody>
</table>

Up to the time then that the water became concentrated to specific gravity 1·218 only 0·150 of deposit had formed, and that chiefly composed of lime and iron, but between specific gravity 1·218 and 1·313 there is deposited a mixture of—

<table>
<thead>
<tr>
<th>Salt</th>
<th>Volume %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium sulfate</td>
<td>0·028%</td>
</tr>
<tr>
<td>Magnesium sulfate</td>
<td>0·0624%</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>0·0153%</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>2·1707%</td>
</tr>
<tr>
<td>Sodium bromide</td>
<td>0·0222%</td>
</tr>
<tr>
<td>Total</td>
<td>2·8590%</td>
</tr>
</tbody>
</table>

Of this about 95% is sodium chloride. Up to this point the separation of the salts has taken place in a fairly regular manner, but now the temperature begins to exert an influence, and some of the salts deposited in the cold of the night dissolve again partially in the heat of the day. By night the liquor gives nearly pure magnesium sulphate; in the day the same sulphate mixed with sodium and potassium chlorides is deposited. The mother-liquor now falls to a specific gravity of 1·308 to 1·2665, and yields a very mixed deposit of magnesium bromide and chloride, potassium chloride and magnesium sulphate, with the double magnesium and potassium sulphate, in the locality of Stassfurt. There is also deposited a double magnesium and potassium chloride, similar to the carnallite of Stassfurt, and finally the mother-liquor, which has now been reduced to specific gravity 1·3374, contains only pure magnesium chloride.

The application of these results to the production of salt from sea water is obvious. A large piece of land, barely above high-water mark, is levelled, and if necessary puddled with clay. In tidal seas a "jas" (or storage reservoir) is constructed alongside, similarly rendered impervious, in which the water is allowed to settle and separate to a certain extent. In non-tidal seas this storage basin is not required. The prepared land is partitioned off into large basins (adermes or manants) and others (called in France aires, aquedus or tables salantes) which get smaller and more shallow in proportion as they are intended to receive the water as it becomes more and more concentrated, just sufficient fall being allowed from one set of basins to the other to cause the water to flow slowly through them. The flow is often assisted by pumping. The sea salt thus made is collected into small heaps on the paths around the basins or the floors of the basins themselves, and here it undergoes a first partial purification, the more deliquescent salts (especially the magnesium chloride) being allowed to drain away. From these heaps, it is collected into larger ones, where it dries, and becomes more and more purified. The salt is collected from the surface by means of a sort of wooden scoop or scraper, but in spite of every precaution some impure salt is collected, and it is inevitably taken up with it, communicating a red or grey tint.

Generally speaking this salt, which may contain up to 15% of impurities, goes into commerce just as it is, but in some cases it is taken first to the refinery, where it either is simply washed and then stoved-dried before being sent out, or is dissolved in fresh water and then boiled down and crystalized like white salt from rock-salt brine. The salt of the "salines du midi" of the south-east of France is far purer, containing about 5% of impurities. In northern Russia and in Siberia sea water is concentrated by freezing, the ice which separates containing little salt; the brine is then boiled down when an impure sea salt is obtained.

**Rock-salt.**—To mineralogists rock-salt is often known as halite—a name suggested in 1847 by E. F. Gluck from the Greek ἅλιτος (salt). The word halite, however, is sometimes used not only for the species rock-salt but as a group-name to include a series of haloid minerals, of which that species is the type. Halite or rock-salt crystallizes in the cubic system, usually in cubes, rarely in octahedra; the cubes being solid, unlike the skeleton-cubes obtained by rapid evaporation of brine. The mineral has perfect cubic cleavage. Percussion-figures, rectilinear, the cleavage-faces, the cubes parallel to faces of the rhombic dodecahedron; whilst figures etched with water represent the four-faced cube. Rock-salt commonly occurs in cleavable masses, or sometimes in laminar, granular or fibrous forms, the finely fibrous variety being known as "hair-salt." The hardness is 2 to 2·5 and the spec. grav. 2·1 to 2·6. Rock-salt when pure is colourless and transparent, but is usually red or brown by mechanical admixture with ferric oxide or hydroxide. The salt is often grey, through bituminous matter or other impurity, and rarely green, blue or violet. The blue colour, which disappears on heating or dissolving the salt, has been variously ascribed to the presence of bromide, chlorine, subchloride, sodium sulphur or of a certain compound of iron, or again to the existence of minute cavities with parallel walls. Halite occasionally exhibits double refraction, perhaps due to natural pressure. It is remarkably diathermanous, or capable of transmitting heat-rays, and has therefore been used in certain physical investigations. Pure halite consists only of sodium chloride, but salt usually contains certain magnesium compounds rendering it deliquescent. Minute vesicular cavities are not infrequently present, sometimes as negative cubes, and these saline chambers may be filled with air, or else the salt contains gas hydrocarbons. Some salt deprecitates on solution (Kaliaste), the phenomenon being due to the escape of condensed gases.

Halite may occur as a sublimate on lava, as at Vesuvius and some other volcanoes, where it is generally associated with potassium chloride; but its usual mode of occurrence is in bedded deposits, often lenticular, and sometimes of great thickness. The salt is commonly associated with gypsum, often also with anhydrite, and occasionally with sylvin, carnallite and other minerals containing potassium and magnesium. Deposits of rock-salt occur near the place of separation of salt water, probably in areas of inland drainage, in closed basins, like the Dead Sea and the Great Salt Lake of Utah, or perhaps in some cases in an arm of the sea partially cut off, like the Kara Bughaz, which forms a natural salt-pan on the east side of the Caspian. Such beds of salt are found in strata of very varied geological age; the Salt Range of the Punjab, for instance, is probably of Cambrian age, while the famous salt-deposits of Wieliczka, near Cracow, have been referred to the Triocene period. In many parts of the world, including the Peruvian salt-lands, the Triassic age offered conditions especially favourable for the formation of large salt-deposits.

In England extensive deposits of rock-salt are found near the base of the Keuper marl, especially in Cheshire. The mineral occurs generally in lenticular deposits, which may reach a thickness of more than 100 ft.; but it is mined only to a limited extent, most of the salt being obtained from brine springs and wells which derive their saline character from deposits of salts. Much salt is obtained from north Lancashire, as also from the brine pits of Staffordshire, Worcestershire, Yorkshire, Durham and the Isle of Man (Point of Ayre). The salt from N.E. Yorkshire has been worked in some parts by a company, and other companies have also been active, particularly in Westmoreland, Cumberland, Durham and Yorkshire. The salt from the New Forest, Wiltshire, and from jersey, is obtained by means of a peculiar apparatus, and for medicinal purposes is especially valuable. A similar result is obtained in the district of the "Ghers," in which saline waters of a high salinity are collected in the manner from which the word "gamal," meaning salt, is derived. A salt of the same kind has been obtained in the district of Marienbad, in Bohemia.

The Pennine system (Zechstein) yields the great salt-deposits worked at Stassfurt and at Halle in Prussian Saxony. The Stassfurt deposits are of special importance for the sake of the associated salts of potassium and magnesium, such as carnallite and kainite. These deposits, and in addition to having a high commercial importance, present certain problems of a geological kind, particularly at the hands of van't Hoff and his collaborators, whose results are embodied in his Zur Bildung der oceanischen Salzbildungen, vol. i. (1908), vol. ii. (1910). (A summary is given in A. W. Stewart, Recent Advances in Physical and Inorganic Chemistry, 1909; see also vant Hoff, Lectures on Theoretical and Physical Chemistry, vol. i.). A typical section is as follows: Beneath the surface of the sea, a saline layer of salt is found, varying in thickness of carnallite, MgCl₂-KCl⋅6H₂O, mixed with a little salt; this is followed by a thicker deposit of kieserite, MgSO₄⋅H₂O, containing ravenite, MgSO₄⋅2H₂O, salt rock-salt, and then a saline layer of penheterite, 3H₂O, and anhydrite, CaSO₄, interspersed with regular layers of rock-salt; whilst below the anhydrite we have the main rock-salt-deposits. A solution of rock-salt has been prepared by boiling to have a thickness of upwards of 4000 ft. The salt of Bex in Switzerland is Jurassic, whilst Cretaceous salt occurs in Westphalia and Aligres. Important deposits of salt are developed in many parts of the Trent valley and the Fucino district near Barcelona. Tertiary salt forms hill-masses, while the Carpathian
sandstone in Galicia and Transylvania is rich in salt. The extensive marine evaporites of Tertiary age at the salt of Kalasz in Galicia, which is associated with sylvinite, KCl.

In North America salt is widely distributed at various geological horizons. In New York it occurs in the Salina beds of the Onondaga series, containing salt of Tertiary origin, also in Ordovician rocks near Michigan and in Ontario, Canada. Some of the salt of Michigan is regarded as Carboniferous. Rock-salt is mined in several states, as New York, Kansas and Louisiana; but American deposits of it are chiefly obtained from the South and South West, the chief field being in the Cotton Belt. East Texas, and in the area of the Ouachita and Ouachita Tertiary, occur in the island of Petite Anse, west of Vermilion Bay, in Louisiana. Salt often occurs in association with petroleum and has been mined almost continuously on the shore of the Bahamas valley in boring for petroleum. In the dry regions of the West salt occurs as an incrustation on the surface of the soil—a mode of occurrence found in desert areas in various parts of the world.

For use in America the salt has been largely produced in strata which have been deposited in shallow water, especially on the margin of a salt lake. The salt has been dissolved out of its original matrix, and the cavity so formed has then been filled with fine clays or other mineral matter, forming a cubic solid. Such cavities are not infrequent in the Keuper marls and sandstones, and in the Purbeck beds of England.

Manufacture.—The chief centres of manufacture in England are at Northwich, Middlewich, Winsford and Sandbach in Cheshire, Weston-on-Trent in Staffordshire, Stoke Prior and Droitwich in Worcestershire and Middlesborough in Yorkshire. The Cheshire and the Winsford are the largest. Between 1782 and 1797 72,000 tons of salt were worked. Although brine springs have been known to exist in both counties ever since the Roman occupation, and salt had been made there from time immemorial, it is the usual belief that the Cheshire salt was not worked until 1748. It was discovered at Marbury near Northwich by some men exploring for coal, at a depth of 34 yds. In 1779 three beds of rock-salt were discovered at Lawton, separated from one another by several hundred feet of sandy clay. The largest of these salt beds is the Northwich mine, and the rock-salt of the Northwich mine is the largest and perhaps the oldest in England. It was worked for about a hundred years in only its upper bed, but in 1871, after traversing a layer of indurated clay intersected with small salt beds, the miners reached a formation of rock-salt 33 to 37 yds. thick. As this was found beneath the others, the salt is thin and impure. The total depth of the mine to the bottom of the lower level is 93 yds. The depth of the salt beds from the surface is 115 yds. from the surface. The Marston mine covers an area of about 40 acres. The salt is first reached at 35-40 yds. in the Northwich district, and the upper layer is 25-50 yds. in thickness (Marston 23-26 yds.); it has above it, apparently lying in the recesses of its surface, a layer of saturated brine. This is the brine which is raised at the various pumping stations in Northwich and elsewhere around, and which serves to produce white salt. The beds are reached by sinking through the clays and variegated marls typical of this formation. The salt is blasted out with gunpowder. The Middlesbrough deposit was discovered by Bolckow and Vaughan in boring for water in 1804 at a depth of 600 yds., but the mine is not utilized, and was abandoned after being sunk for 60 yds. at Port Cliffe to a depth of 376 yds. In Cheshire the surface-water trickling through the overlying strata dissolves the salt, which is subsequently pumped as a brine, and is then made into salt. In the South there are many salt mines, but those in the salt region of Germany have been of much greater importance in the past. Of these the most extensive is that of 1891, at Stettin, where two million tons of salt are produced. In 1891, at Stettin, where two million tons of salt are produced. In the United States extensive deposits and brine springs are worked, and also irrigations (see above). Canada also is a producer. South America possesses several salt deposits and brine springs, and the most important are those of Bolivia, likewise is China; and Persia is perhaps one of the countries most abundantly endowed with this natural and useful product. In India there is the great salt range of the Punjab, as well as the South American deposits, containing sea water at many places along its extensive seaboard.

1 The termination "wich" in English place-names often points to ancient salt manufacture—the word "wich" (creek, bay: Icel. réi) having acquired a special sense in English usage. In Germany the various forms of the non-Teutonic words Hall, Halle occurring in place-names point in the same way to ancient salt-works.

Rock-salt is the origin of the greater part of the salt manufactured in Britain. It occurs as layers and pockets of coarse-grained, yellowish-grey salt clay to that of the most transparent crystals. In the former case it is often difficult to obtain the brine at a density even approaching saturation, and chambers and galleries are sometimes excavated and brine is forced in by pressure. In the latter case, the water let down fresh is pumped up as brine. Many brine springs also occur in a more or less saturated condition. In cases where the atmospheric conditions are suitable the brine is run into large tanks and the brine heated by steam. When a certain amount of crustic over faggots are arranged in a large open sheds called "graduation houses" (Gradühräuser), whereby a more extensive surface of evaporation is obtained. After settling it is evaporated in iron pans. The use, however, of the "graduation houses" is dying out, as both their construction and their maintenance are expensive. The purer rock-salt is often imported into Britain and those parts of the northern counties which have not been worked for a century, are supplied by this means. It is frequently pumped as brine, produced either by artificial solution as at Middlesbrough and other places, or by natural means, as in China and Worcestershire. One great drawback to the use of even the purest rock-salt simply ground is its tendency to revert to a hard unwieldy mass, when kept any length of time in sacks. As usually made, white salt from rock-salt may be classified into two parts: (1) boiled: known as fine table, lump, stoved, superfine, basket, butter and cheese salt (Fr. sel finfin, sel à la minute, &c.); (2) unboiled: common, chemical, fishery, Scotch fishery, extra fishery, double extra fishery and bay salt (Fr. sel de 12 heures, sel de 24 heures, sel des 48 heures, &c.). The coarser grades, as coarse salt, are mostly used on account of the size and appearance of the crystals, their uses and the modes of their production. The boiled salts, the crystals of which are small, are stowed in a medium constantly agitated by boiling. The fine or powdered table salt, as well as much of the salt known as "dried" or "rock" salt, is treated in this manner. The size of the crystals and the smaller ones being formed more quickly. The temperature varies from 55° to 180° F. The difference between the manufacture of salt from rock-salt brine as carried on in Britain and on the Continent lies in the use in the latter case of closed or covered pans, except in the making of fine salt, whereas in Britain open ones are employed. With open pans the vapour is free to diffuse itself into the atmosphere, and the evaporation is perhaps more rapid. When covered pans are used, the loss of heat by radiation is less, and the salt made is also cleaner. It has also been proposed to concentrate the brines under diminished pressure, for instance at Stettin. Pickeringick's paper on the subject has been read before the Society of Arts. The difference is that the evaporating chamber of the present system is open to the air, while in this closed system the steam from one heats the second into which it is led (see Soc. of Eng., 1891, p. 115).

In the manufacture of salt from rock-salt brine, the criterion of running into the pan to replace the losses by evaporation and the removal of the salt, it only necessary occasionally (not often) to reject the mother-liquor when at last it becomes too impure with magmas. The works are not subject to the slightest inconvenience from the saltpetre (niter) formed in the process, as the amount of water is absorbed prior to crystallisation. The brine contains more of this impurity but becomes quite brown from organic matter on concentration, and totally unfit for further service after yielding but two or three crops of salt crystals. Sometimes, to get rid of these impurities, the brine is treated in a large tub (besoïer) with lime; on settling it becomes clear and colourless, but the dissolved lime forms a skin on its surface in the pan, retards the evaporation and impedes the crystallisation. At times sodium sulphate is added to the brine, producing sodium chloride and magnesium sulphate by double decomposition with the magnesium chloride. A slight degree of acidity seems more favourable to the crystallisation. The amount of salt produced from the saline brine varies between certain amount of 12.5 lb per pan, especially when, as in fishery salt, fine crystals are required. The salt is "drawn" from the pan and placed (in the case of boiled salts) in small conical boxes, with round plugs, and again boiled. The salt is finally put into boxes and afterwards stove-dried, or (in case of unboiled salts) "drew" in a heap on to the "hurdles," on which it drains, and dried in the open atmosphere.

In most European countries a tax is laid on salt; and the coarser as well as the finer crystals are therefore often dried so as to not pay duty on more water than can be helped. Despite the large demands in England is very nearly saturated, containing 25 or 26% of sodium chloride, the utmost water can take up being 27%; and it ranges from 38 to 42 oz. of salt per gallon. In some other countries the brine has to be concentrated before its use.

Salt-making by no means an unhealthy trade, some slight soreness of the eyes being the only affection sometimes complained of; indeed the atmosphere of steam saturated with salt in which
the workmen live seems specially preservative against colds, rheumatism, neuralgia, &c.

A parliamentary commission was appointed in 1881 to investigate the causes of the disastrous subsidences which are constantly taking place in all the salt districts, and the provision of a remedy. It led to no legislative action; but the phenomenon has been officially recognized in all quarters.

At the same time it is difficult to see how this grievance can be remedied without inflicting serious injury, almost ruin, upon the salt trade. The workings in Great Britain represent the annual abstraction of rather more than a mass of rock equal to a foot in thickness spread over a square mile. The table gives the outputs in metric tons of the most important producers in 1900 and 1905 (from Rothwell, Mineral Industry, 1908).

<table>
<thead>
<tr>
<th>Country</th>
<th>1900</th>
<th>1905</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>330,277</td>
<td>343,375</td>
</tr>
<tr>
<td>France</td>
<td>1,088,634</td>
<td>1,130,000</td>
</tr>
<tr>
<td>Germany</td>
<td>1,514,027</td>
<td>1,777,557</td>
</tr>
<tr>
<td>Hungary</td>
<td>1,016,000</td>
<td>1,012,600</td>
</tr>
<tr>
<td>Italy</td>
<td>1,021,426</td>
<td>1,212,600</td>
</tr>
<tr>
<td>Spain</td>
<td>305,457</td>
<td>437,659</td>
</tr>
<tr>
<td>Japan</td>
<td>669,644</td>
<td>493,506</td>
</tr>
<tr>
<td>Russia</td>
<td>1,760,000</td>
<td>2,444,957</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,873,601</td>
<td>1,920,149</td>
</tr>
<tr>
<td>United States</td>
<td>2,651,278</td>
<td>3,297,285</td>
</tr>
</tbody>
</table>

See F. A. Führer, Sälichgewinn und Sälicenerze (Braunschweig, 1910); J. Friesen, Der Salzhandel in Deutschland: Darstellung der Vorfahren und Verwertung (Leipzig, vol. 1, 1909; vol. 2, 1906). (X)

Ancient History and Religious Symbolism.—Salt must have been quite unattainable to primitive man in many parts of the world. Thus the Odyssey (xxi. 122 seq.) speaks of inlanders in (Epirus) who do not know the sea and use no salt with their food. In some parts of America, and even of India (among the Todas), salt was first introduced considerable progress was made in their use of salt, and the fact that the use of it is a luxury confined to the rich. Indeed, where men live mainly on milk and flesh, consuming the latter raw or roasted, so that their salts are not lost, it is not necessary to add sodium chloride, and thus understand how the Numidians nomads in the time of Sallust and the Bedouins of Hadramaut at the present day never eat salt with their food. On the other hand, cereal or vegetable diet calls for a supplement of salt, and so does boiled meat. The importance of this natural salt to the health and religion depends on this fact; at a very early stage of progress salt became a necessary of life to most nations, and in many cases they would suffer it only from abroad. On the sea, in coastal, or in districts like that of Palmyra where salt incursions are found on the surface of the soil. Sometimes indeed a kind of salt was got from the ashes of saline plants (e.g. by the Umbrians, Aristotel, Met. ii. p. 261 a, 32) or there were small springs of salt water trickling over a fire of (saline) wood and collecting the ashes, as was done in ancient Germany (Tac. Ann. xiii. 57), in Gaul and in Spain (Plin. H.N. xxxi. 7, 82 seq.); but these were imperfect surrogates. Among inland peoples a salt spring was regarded as a special gift of the gods. The Chaconians in Ephesus had one which flowed into a stream where there were no fish; and the legend was that Hercules had allowed their forfathers to have salt instead of fish (Arist. lec sfr). The German waged war for saline streams, and believed that the presence of salt in a stream invested it with peculiar sanctity and made it a place where prayers were most readily heard (Tac. sfr sfr). That a saline stream sanctified attached sanctity to the places around so that the mountains so that and which was often obtained with difficulty is no more than natural. And it must also be remembered that the habitual use of salt is intimately connected with the advance from nomadic to agricultural life. i.e. with the practice of agriculture. The agrarians who had a "divine," and Plato names it a substance dear to the gods (Timaeus, p. 60; cf. Plutarch, Sympos. v. 16). As covenants were once made over a sacrificial meal, in which salt was a necessary element, the expression "salt of the earth" easily understood; it is probable, however, that the preservative qualities of salt were held to make it a peculiarly fitting symbol of an enduring compact, and influenced the choice of this particular element of the covenant meal as that which was regarded as sealing an obligation to fidelity. Among the ancients, as among Orientals down to the present day, salt from the Chaco salt, the sacred character and created a bond of piety and guest friendship between the participants. Hence the Greek phrase ἀλατον παρατηρεῖν, the Arab phrase "there is salt between us, whone the salt is understood as the element which property in the modern Persian phrase namak harām, "unto salt," i.e. disloyal or ungrateful, and many others. Both early in the history of the Roman army and in later times an allowance of salt was made to efface a breach. In imperial times, however, this zaturam was an allowance of money for salt (see Salary).

It has been conjectured that some of the old salt trade routes were taken from the time when the discovery of the chief economic and religious necessities of the ancient world, play a great part in all that we know of the ancient highways of commerce. Thus one of the oldest roads in Italy is the Via Salaria, by which the port of Ostia was carried up into the Sabine country. Herodotus's account of the caravan route uniting the salt-cases of the Libyan desert (iv. 181 seq.) makes it plain that this was mainly a salt-road, and to the present day the caravan trail of the Saltara is largely a trade in salt. The salt of Palmyra was an important element in the vast trade between the Syrian ports and the Persian Gulf (see Palmyra), and long after the glory of the great merchant city was past "the salt of Tadmor" retained its reputation (Mas'ādī viii. 398). In like manner the ancient trade between the Aegean and the coasts of southern Russia was largely dependent on the salt pans at the mouth of the Dnieper and on the salt fish produced by attaching this district to the George. The Phoenician commerce salt and salt-fish—the latter a valued delicacy in the ancient world—always formed an important item. The vast salt districts of the northwestern part of India worked before the time of Alexander (Strabo v. 2, 6, xvi. 100) and must have been in considerable trade spread trade. The economic importance of salt is further indicated by the almost universal prevalence in ancient and medieval times, and especially among the most chapel kings or of government monopolies, which have not often been directed, as they were in ancient Rome, to enable one to procure so necessary a commodity at a moderate price. In Oriental systems of taxation high impost on salt are seldom lacking and are often carried on in a very oppressive way, one result of this being that the article is apt to reach the consumer in a very impure state largely marred with earth. The salt which has lost its savour (Matt. v. 13) is simply the earthy residuum of such an impure salt after the sodium chloride has been washed out.

Cakes of salt have been used as money in more than one part of the world—for example, in Abyssinia and elsewhere in Africa and in Tibet and adjoining parts. See the testimony of Marco Polo (bk. ii. ch. 48) and Colonel Yule's note upon analogous customs elsewhere and on the use of salt as a medium of exchange in the elephant markets down to our own time, in his translation of Ptolemy ii. 38 seq. In the same work interesting details are given as to the salt of the financial system of the Mongol emperors (lii. 200 seq.).

Salon, a N.W. province of Argentina, bounded N. by Bolivia and the province of Jujuy, E. by the territories of Formosa and the Chaco, S. by Santiago del Estero and Tucuman, and W. by the Los Andes territory and Bolivia. Area, 62,184 sq. m.; pop. (1904, estimated) 1,056,059. The western part of the province is desolate, thinly inhabited, and traversed by the eastern chains of the Andes. Indentur this, however, are large valleys, or bays, of highly fertile and comparatively level land, like that in which the city of Salta is situated. The eastern part of the province is chiefly composed of extensive areas of alluvial plains belonging to the Chaco formation, whose deep, fertile soils are among the best in Argentina. This part of the province is well wooded with valuable construction timbers and furniture woods. The drainage to the Paraguay is through the Bermejo, whose tributaries cover the northern part of the province and discharge into the Parana, called Salado on its lower course, whose tributaries cover the southern part of the province and whose waters are discharged into the Parana. The climate is hot, and the year is divided into a wet and a dry season, the latter characterized by extreme aridity. Irrigation is necessary in a great part of the province, though the rainfall is abundant in the wet season, about 21 in. Fever and ague, locally called chuchu, is prevalent on the lowlands, but in the mountain districts the climate is healthy. There is considerable undeveloped mineral wealth, including gold, silver and copper, but the inhabitants are all but exclusively agriculturists. Its principal products are sugar, rum, tobacco, coffee, and gourds. The Cuyafaye wines are excellent, but are chiefly consumed in the province.
SALTA—SALT-CELLAR

Various tropical fruits are produced in abundance, but are not sent to market on account of the cost of transportation. Stockraising is carried on to a limited extent for the home and Bolivian markets. The province is traversed by a government railway (the Central Northern) running northward from Tucuman to the capital, and by a branch from General Güemes westward to the city of Salta (q.v.), the provincial capital. The principal towns are Oran (1904, 3000) on a small tributary (the Zenta) of the Bermejo, in the northern part of the province, formerly an important depot in the Bolivian trade, and nearly destroyed by earthquakes in 1871 and 1873; Rosario de Lerma (pop. 1904, 2500), 30 m. N.W. of Salta in the great Lerma valley; and Rosario de la Frontera (pop. 1904, 1200) near the Tucuman frontier, celebrated for its hot mineral baths and gambling establishment.

Salta was at one time a part of the great Inca empire, which extended southward from Tucuman and Rioja. It was overrun by adventurers after the Spanish conquest. The first Spanish settlement within its borders was made by Hernando de Lerma in 1582. Salta was at first governed from Tucuman, but in 1776 was made capital of the northern intendencia, which included Catamarca, Jujuy and Tucuman. After the War of Independence there was a new division, and Salta was given its present boundaries with the exception of the disputed territory on the Chilean frontier, now the territory of Los Andes.

SALTA, a city of Argentina, capital of a province of the same name, and see of a bishopric, on a small tributary (the Arias) of the Pasage, or Juramento, 976 m. by rail N.W. of Buenos Aires. Pop. (1904, estimated) 18,000. Salta is built on an open plain 3360 ft. above the sea, nearly enclosed with mountains. The climate is warm and changeable, malarial in summer. The city is laid out regularly, with broad, paved streets and several parks. Some of the more important public buildings face on the Plaza Mayor. There are no manufactures of importance. Salta was once largely interested in the Bolivian trade, and is still a chief distributing centre for the settlements of the Andean plateau. Near the city is the battlefield where General Belgrano won the first victory from the Spanish forces (1812) in the War of Independence. There is a large mestizo element in the population, and the Spanish element still retains many of the characteristics of its colonial ancestors. In Salta Spanish is still spoken with the long-drawn intonations and melodies of "Il" of southern Spain.

Salta was founded in 1582 by Governor Abreú under the title of San Clemente de Nueva Sevilla, but the site was changed two years later to the new settlement called San Felipe de Lerma. In the 17th century the name Salta came into vogue.

SALTA (Italian for "Jump!"). A table-game for two introduced at the end of the 19th century, founded on the more ancient game of Halma. It is played on a board containing 100 squares, coloured alternately black and white. Each player has a set of 15 pieces, one set being green, the other pink. These are placed upon the black squares of the first three rows nearest the player, and are classified in these rows as stars, moons and suns. The pawns move forward one square at a time, except when a pawn is situated on the first row of a hostile piece with an unoccupied space on the further side, in which case the hostile pawn must be jumped, as at draughts, but without removing the jumped pawn from the board. The object of the game is to get one's pieces on the exact squares corresponding to their own on the enemy's side, the stars in the star-line, the moons in the moon-line, &c. Salta tournaments have taken place in which chess masters of repute participated. See Salta, by Schubert (Leipzig, 1900).

SALTASH, a municipal borough in the Bodmin parliamentary division of Cornwall, England, 5 m. N.W. of Plymouth, on the Great Western railway. Pop. (1901) 3357. It is beautifully situated on the wooded shore of the Tamar estuary, on the lower part of the estuary. The town of Saltash, built on the right bank of the Tamar.

Local communications are maintained by river steamers. At Saltash the Royal Albert bridge (1857–1859) carries the railway across the estuary. It was built by Isambard Brunel at a cost of £230,000, and is remarkable for its great height. The church of St Nicholas and St Faith has an early Norman tower, and part of the fabric is considered to date from before the Conquest; but there was much alteration in the Decorated and Perpendicular periods. The church of St Stephen, outside the town, retains its ornate Norman font. The fishery for which Saltash was famous have suffered from the chemicals brought down by the Tamar; but there is a considerable sea-faring population, and the town is a recruiting ground for the Royal Navy. The borough is under a mayor, 4 aldermen and 12 councillors. Area, 104 acres.

The Sunday market established by the count of Mortain at his castle of Trematon, which ruined the bishop of Exeter's market at St John's, was probably held at Saltash a short distance from the castle. Saltash (Esse, 1297; Ash, 1302; Asseburgh, 1392) belonged to the manor of Trematon and the latter at the time of the Domesday Survey is held by Reginald de Valletort, in chief. Reginald de Valletort was a descendant of a Norman family of that name (q.v.) who held Saltash about 1190. It confirms to his free burgesses of Esse the liberties enjoyed by them under his ancestors, viz.: burgage tenure, exemption from all jurisdiction save the "hundred courth of the said town," of suit limited to courts three times a year, a reeve of their own election, pasturage in his demesne lands on certain terms, a limited control of trade and shipping, and a fair in the middle of the town. This charter was confirmed in the fifth year of Richard II. Roger de Valletort, the last male heir of the family, gave the honour of Trematon and with it the borough of Saltash to Richard, king of the Romans, after the first Edward's death. Then it was given to St John's to set aside the grant, the earls and subsequently the dukes of Cornwall were the lords of Saltash. It was probably to this relation that the burgesses owed the privilege of parliamentary representation, confirmed by Edward the second. There is no evidence of incorporation to Saltash. This was superseded by another in 1683 under which the governing body was to consist of a mayor and six aldermen. In 1771, the corporation being in danger of extinction, burgesses were added, but it was not until 1886 that the ratepayers acquired the right of electing representatives to the council, the right up to that time having been exercised by the members of the corporation. The parliamentary franchise was enjoyed by the mayor, aldermen and the holders of burgage tene- ments. In 1814 they numbered 120. In 1832 Saltash was deprived of its two members. The count of Mortain's Sunday market had given up its licence in 1337 and the charter, although in Elizabeth's charter provided for one on Tuesday also, but this has disappeared. A fair on the feast of St Faith yielded 65. 8d. in 1337. This is no longer held, but fairs at Cindlesam and St James, of ancient but uncertain origin, remain. Saltash was sufficiently con- siderable as a port in the 16th century to furnish a frigate at the town's expense against the Armada. This probably represents the zenith of its prosperity.

SALTBURN BY THE SEA, a seaside resort in the Cleveland parliamentary division of the North Riding of Yorkshire, England, 21 m. E. of Middlemarch, 6 m. N.E. of Redcar, in the Cleveland Eastern railway. Pop. (1901) 2578. A firm sandy beach extends westward to Redcar and the mouth of the Tees, while eastward towards Whitby the cliffs become very fine, Boulby Cliff (666 ft.) being the highest sea cliff in England. Several fishing villages occur along this coast, of which none is more picturesque than Staithes, lying in a steep gully in the cliff. There are brine baths supplied from wells near Middlemarch, a pier, gardens and promenades. Inland the county is hilly and picturesque, though in part defaced by the Cleveland iron mines.

SALT-CELLAR, a vessel containing salt, placed upon the table at meals. The word is a combination of "salt" and "cellar," assimilated in the 16th and 17th centuries to "cellar" (Lat. cellarium, a storehouse). "Sailer" is from the Fr. (Mod. salière), Lat. salarium, that which belongs to salt, cf. "salary." Salt cellar, therefore, a tautological expression. There are two types of salts, the large ornamental salt which during the medieval ages and later was one of the most important pieces of household plate, and the smaller "salts," actually used and placed near the plates or trenchers of the guests at table; they were hence styled "trencher salts." The great salts, belonging to the interior of the salt, were larger than usual shapes, like an hour-glass and have a cover. New College, Oxford, possesses a magnificent specimen, dated 1403. Later salts take a square or cylindrical shape. The Elizabethan salt, kept with the regalia in the Tower of London, has a cover with numerous figures. The London Livery Companies possess many salts of a still later pattern, rather low in height and without a
SALTER—SALT LAKE CITY

cover. The "trecher salts" are either of triangular or circular shape, some are many-sided. The circular silver salt with legs came into use in the 18th century.

SALTER, JOHN WILLIAM (1802-1869), English naturalist and paleontologist, was born on the 15th of December 1802. He was apprenticed in 1825 to James de Carle Sowerby, and was engaged in drawing and engraving the plates for Sowerby's *Conchology*, the *Supplement* to his *English Botany*, and other works. In 1824 he was employed for a short time by Sedgwick in arranging the fossils in the Woodwardian Museum at Cambridge, and he accompanied the professor on several geological expeditions (1842-1845) into Wales. In 1846 he was appointed on the staff of the Geological Survey and worked under Edward Forbes until 1854; he was then appointed paleontologist to the survey and gave his chief attention to the palaeozoic fossils, spending much time in Wales and the border counties. He contributed the palaeontological portion to A. C. Ramsay's *Memoir on the Geology of North Wales* (1860), assisted Murchison in his work on *Silurian* (1854), and later prepared by Sedgwick *A Catalogue of the Collection of Cambrian and Silurian Fossils contained in the Geological Museum of the University of Cambridge* (1873). Salter prepared several of the Decades of the Geological Survey and became the leading authority on Trilobites, contributing to the Palaeontographical Society four parts of *A Monograph of British Trilobites* (1864-1867). He resigned his post on the Geological Survey in 1863, and died on the 2nd of August 1869.

SALTILLO, a city and the capital of the state of Coahuila, Mexico, about 615 m. by rail N.W. by W. in the city of Mexico. Pop. 10,119. Saltillo is on the Mexican Northern railroad, and another railway connects it with the important mining and industrial town of Torreon, on the Mexican Central. The city is on the great central plateau of Mexico, about 5200 ft. above sea-level. It has a cool and healthy climate, and is a resort in summer for the people of the tropical coast districts, and in winter for invalids from the north. The city is laid out in regular squares, with shady streets and plazas. The residences are of the Spanish colonial type, with heavy walls and large rooms to insure coolness during the heat of the day. Among its public institutions are a national college, the *Siluria* (1854), and the *Bicentenario*, a public library, and a good academic and manufacturing town, and an important railway centre. Its manufactures include cotton and woolen fabrics, knitted goods and flour. The woollen "zarapes" or "ponchos" of Saltillo are among the finest produced in Mexico. There are undeveloped coal deposits in the vicinity.

Saltillo was founded in 1856 as an outpost against the Apache Indians. It became an incorporated city by 1877. In 1824 the capital of the state of Coahuila and Texas was at Saltillo. A partisan controversy removed the seat of government to Monclova in 1833, but it was returned to Saltillo in 1835. The battle of Buena Vista was fought near Saltillo on the 22nd-23rd of February 1847. After leaving San Luis Potosi, President Juarez established his capital at Saltillo for a brief period.

SALT LAKE CITY, the capital city of Utah and the county-seat of Salt Lake County, in the N.W. part of Utah, immediately E. of the Jordan river in the Salt Lake Valley, near the base of the Wasatch mountains, at an altitude of about 4350 ft., about 11 m. S.E. of the Great Salt Lake, about 710 m. W. by N. of Denver and about 930 m. E. of San Francisco. Pop. (1860) 8236; (1900) 53,531; (1910 census) 92,777. Area, 51-25 sq. m. Of the population in 1900, 12,741 (nearly one-fourth) were foreign-born, including 51-57 English, 1687 Swedes, 965 Danes, 963 Germans and 912 Scotch; 35,152 were of foreign-parentage (one or the other parent foreign-born); 276 were negroes, 214 Chinese, 22 Japanese. Salt Lake City is served by the Denver & Rio Grande, the Union Pacific, the Western Pacific, the Oregon Short Line, and the San Pedro, Los Angeles & Salt Lake railroads; it is also a terminus of shorter roads to Ogden, to Los Angeles and to Mercur, a mining town in the Oquirrh mountains.

The early Mormon missions in England were very successful, and many of the leaders of the church and those otherwise prominent in Salt Lake City are of English birth. (S. of Great Salt Lake) whose ores are reduced by the cyanide process. The Oregon Short Line and the San Pedro, Los Angeles & Salt Lake have a union railway station (1909), and the Denver & Rio Grande and the Western Pacific also have a large union railway station (1910). The street railway system is excellent; electric cars were introduced in 1889; and the street railways were reorganized by E. H. Harriman, who bought a controlling interest in them.

The situation of the city is striking, with views of mountains and of the lake. Salt Lake City is the headquarters of the Church of Jesus Christ of Latter-Day Saints (see Mormons). The streets are laid out, according to the plan of Brigham Young, with city blocks of 10 acres each (660 ft. sq.) and streets 100 ft. wide. There are 86,000 ft. of street running, 75 ft. wide, for irrigating ditches, fed by mountain streams. Brigham (or South Temple) Street is a fine boulevard running 3 m. from the Temple to Fort Douglas. Among the streets are numbered and named "East" or "West," "North." The library, from the centre of the city, the Temple Block. State street is the official name of First East Street; and East Temple Street is called Main Street, the Beehive (the beehive is the symbol of the industry of the Mormon settlers in the desert and appears on the state seal), and the Amelia Palace or Gardo House (1872), which is now privately owned houses an excellent private art gallery. Three blocks E. of the Temple is St Mark's Cathedral (Roman Catholic cathedral), 100-200 ft.; with two towers 175 ft. high. Other large churches are: St Mark's Cathedral (1869, Protestant Episcopal) and the City Temple (mormon), which was built as City Hall in 1887, incorporated as a temple in 1891. The Beehive Temple (1894), built of rough grey sandstone from Utah county; it has a dome on the top of which is a statue of Columbia; over its entrances are statues of Commerce, Liberty and Justice; its baldacchino was designed by John Spencer. The building is 660 ft. high, with 1000 seats, and 1000 tickets where it was built. At the present time it is a beautiful structure, and 65,000 dollars were spent on it. The Beehive Temple, the church, the Temple Block, have become a prominent part of the city.

The public institution of the city is the great building of the Zion's Co-operative Mercantile Institution, a concern established by Brigham Young in 1866; there are several large factories connected with it, and its annual sales average more than $5,000,000. A monument to Brigham Young and the Utah Pioneers, crowned by a statue of Brigham Young, by C. E. Dallin, was unveiled in 1897, at the university of Utah, the University of Macneil Hospital and Charity, and there is a state penitentiary here. In the S.E. part is the Judge Jusser's Home and Hospital (Roman Catholic), a memorial to John Judge, a successful Utah miner; a bath house; a public library block, which houses in 1910 about 40,000 volumes; and several business buildings. Typical of the city is the great building of the Zion's Co-operative Mercantile Institution, a concern established by Brigham Young in 1866; there are several large factories connected with it, and its annual sales average more than $5,000,000. A monument to Brigham Young and the Utah Pioneers, crowned by a statue of Brigham Young, by C. E. Dallin, was unveiled in 1897, at the university of Utah, the University of Macneil Hospital and Charity, and there is a state penitentiary here. In the S.E. part is the Judge Jusser's Home and Hospital (Roman Catholic), a memorial to John Judge, a successful Utah miner; a bath house; a public library block, which houses in 1910 about 40,000 volumes; and several business buildings.
SALTO—SALT PETER

and Westminster College (1897: Presbyterian). There is a State Art Association, which exhibits competitors for a number of public lectures on art, and houses in its building the state art collection. The city has always been interested in music and the drama: the regular choir of 500 voices of the Mormon Tabernacle (organized in 1890) is one of the best choirs in the country, and closely connected with its development are the Symphony Orchestra and the Salt Lake Choral Society. Brigham Young was an admirer of the drama, and the city has always been a brilliant center for the theatricals of the country. There is a Young Men's Christian Association (organized in 1890). The principal clubs are the Alta, University, Commercial, Country, and Women's. There are a Masonic Temple and buildings of the Elks, Odd Fellows, and Woodmen of the World.

Salt Lake City is the great business center of Utah and one of the main shipping points of the West for agricultural products, live stock (especially sheep), precious metals and coal; and the excellent railway facilities have made it a great commercial center for the state. In 1905 the value of the factory products was $7,543,983, being 79.3% more than in 1900 and nearly one-fifth of the total value of the factory products of all Utah. There are many steam-car repair shops in the city. Among the more valuable manufactures are: newspapers, books, &c. ($2,421,405 in 1905), malt liquors, confectionery, flour, foundry and machine-shop products, dairy products, salt, knit goods, mattresses, sugar, cement, &c. Electricity is largely used in the newer factories, the power being derived from Ogden river, near Ogden, about 35 m. away, and from cataracts in Cottonwood canyon and other canyons. The city is supplied with water by a series of dams on the Salt River.

The history of the city is largely that of the Mormons (q.v.) and in its earlier years that of Utah (q.v.). The Mormons first came here in 1847; an advance party led by Orson Pratt and Erastus Snow entered the Salt Lake Valley on the 22nd of July. President Brigham Young upon his arrival on the 24th approved of the site, saying that he had seen it before in a vision; on the 28th of July he chose the site for the temple. In August the city was named "The City of the Great Salt Lake," and this name is well in keeping with the soil in which it was established. The city was incorporated by a charter of the state in 1851. The government is in the hands of a mayor, elected for two years, and of a unicameral municipal council, consisting of fifteen members, elected from the five wards of the city. The city owns the water works. In 1909 the assessment, valuation, real and personal, was $2,180,789; the tax levy was $677,411; and the city debt was $3,499,400 (exclusive of $1,528,000, the bonded indebtedness of the state). The city is well supplied with water, the city having the water works.

The city was largely of brick, being practically all brick. Brigham Young counseled the Mormons not to abandon agriculture for prospecting—but they made themselves rich by outfitting those of the gold-seekers who went to California overland and who were reduced by the journey to the soil and the sweat of their brow.

The city is supplied with water by a system of dams on the Salt River. The city was incorporated by a charter of the state in 1851; the charter was amended in 1864. Immigration from Europe and especially from England was large in the earlier years of the city, beginning in 1848. Salt Lake City was prominently identified with the Mormon church in its struggle with the United States government; in 1858 it was entirely deserted upon the approach of the United States troops. Since the Civil War, the non-Mormon element (locally called "Gentile") has steadily increased in strength, partly because of industrial changes and partly because the city is the natural point of attack on the Mormon church of other denominations, which are comparatively stronger here than elsewhere in Utah, and the commercial and industrial life of the city is on a constantly increasing scale.

See the bibliography under Mormons and under Utah; and particularly E. W. Tuftidge, History of Salt Lake City (Salt Lake City, 1886), the famous descriptions in Captain Stansbury's report (1850) and the works of the earliest settlers in the city (1860), and H. H. Bancroft, History of Utah (San Francisco, 1890).

SALTO, a town and river port of Uruguay and capital of a department of the same name, on the Uruguay river 60 m. above Paysandú. Pop. (1900, estimate) 12,000. It has railway connection with Montevideo via Paysandú and Rio Negro (594 m.), and with Santa Rosa, on the Brazilian frontier (114 m.). It is also connected with Montevideo and Buenos Aires by river steamers, Salto being at the head of high water navigation for large vessels. There are reefs and rocks in the river between Paysandú and Salto that make navigation dangerous except at high water. Above Salto the river is obstructed by reeds all the way to the Brazilian frontier, about 95 m., and is navigable for light-draft vessels only at high water. Farther up, the river is freely navigable to Santo Tomé (Argentina)—a distance of about 170 m. Travellers wishing to ascend the river above Salto usually cross to Concordia, Entre Ríos, Argentina, by railway to Ceibo, near Monte Caseros, from which point small steamers ascend to Uruguay, Itaqui, and other river ports. The streets of Salto are well paved and lighted with electricity, and there are some good public buildings. The town has two meat-curing establishments (saladeros) and is the shipping port for north-western Uruguay and, to some extent, for western Rio Grande do Sul (Brazil). Behind Salto lies a rich, undulating grazing country, whose large herds supply its chief exports.

SALT PETRE (from the Lat. sal, petra, a rock), the commercial name given to three naturally occurring nitrates, distinguished as (1) ordinary salt petre, nitre, or potassium nitrate, (2) Chile salt petre, cubic nitre, or sodium nitrate, (3) wall-salt petre or calcium nitrate. These nitrates generally occur as efflorescences caused by the oxidation of nitrogenous matter in the presence of the alkalies and alkaline earths.

1. Ordinary Salt Petre or Potassium Nitrate. KNO₃ occurs, mingled with other nitrates, on the surface and in the superficial layers of the salt in many countries, especially in certain parts of India, Persia, Arabia and Spain. The deposits in the great limestone caves of Kentucky, Virginia and Indiana have been probably derived from the overlying soil and accumulated by percolating water; they are of no commercial value. The actual formation of this salt is not quite clear; but it is certainly conditioned by the simultaneous contact of decaying nitrogenous matter, alkalies, air and moisture. The demand for salt petre as an ingredient of gunpowder led to the formation of salt petre plantations or nitrailires, which at one time were common in many countries; the natural deposits were simulated by exposing heaps of decaying organic matter mixed with alkalies (lime, &c.) to atmospheric action. The salt is obtained from the soil in which it occurs naturally, or from the heaps in which it is formed artificially, by extracting with water, and adding to the solution wood-ashes or potassium carbonate. The liquid is filtered and then crystallized. Since potassium nitrate is generally more serviceable than the sodium salt, whose deliquescence properties inhibit its use for gunpowder manufacture, the latter salt, of which immense natural deposits occur (see below (2) Chile salt petre), is converted into ordinary potassium nitrates. This is generally effected by adding the calculated amount of potassium chloride (of which immense quantities are obtained as a by-product in the Stassfurt salt industry) dissolved in hot water to a saturated boiling solution of sodium nitrate; the common salt, which separates on boiling down the solution, is removed from the hot solution, and on cooling* the potassium nitrate crystallizes out and is separated and dried.

As found in nature, salt petre generally forms aggregates of delicate acicular crystals, and sometimes silky, but more distinctly developed crystals are not found in nature. When crystallized from water, crystals belonging to the orthorhombic system, and having a prism angle of 6½°, are obtained; they are often twinned on the prism planes, giving rise to pseudo-hexagonal groups resembling aragonite. There are perfect cleavages
SALT RANGE—SALUTATIONS

parallel to the dome (011). The hardness is 2, and the specific gravity 2.1. It is fairly soluble in water; 100 parts at 0° dissolve 13.3 parts of the salt, and at 25° 18.4 parts; 100 parts of a saturated solution contain 3.27; 4 parts of the salt in 100 of water; this solution boils at 114.1°. It fuses at 359° to a colourless liquid, which solidifies on cooling to a white fibrous mass, known in pharmacy as sal prunella. It is an energetic oxidizing agent, and on this property its most important applications depend. At a red heat it evolves oxygen with the formation of potassium nitrate, which, in turn, decomposes at a higher temperature. Heated with many metals it converts them into oxides, and with combustible substances, such as charcoal, sulphur, &c., a most intense conflagration occurs. Its chief use is as a substitute for gunpowder; but it is liable to spontaneous combustion and to oxidize impurities, as a constituent of gunpowder and in pyrotechny; it is also used in the manufacture of nitric acid.

Potassium nitrate was used at one time in many different diseased conditions, but it is now never administered internally, as its extremely depressant action upon the heart is not compensated for by any useful properties which are not possessed by many other drugs. One most valuable use it has, however, in the treatment of asthma. All nitrates (e.g. sodium nitrate, ethyl nitrite, amyl nitrite) cause relaxation of involuntary muscles in the bronchial tubes. Saltpetre may be made to act as a nitrite by dissolving it in water in the strength of about fifty grains to the ounce, soaking blotting-paper in the solution and letting the paper dry. Pieces about 2 in. square are then successively put into a jar and lighted. The patient inhales the fumes, which contain a considerable proportion of nitrogen oxides. This treatment is frequently very successful indeed in relaxing the bronchial spasm upon which the most obvious features of an attack are based.

2. Chile saltpetre, cubic nitre or sodium nitrate. NaNO₃ occurs under the same conditions as ordinary saltpetre in deposits covering immense areas in South America, which are known locally as caliche or terra saldrua, and abound especially in the provinces of Tampaca and Antofagasta in Chile. The nitrate fields are confined to a narrow strip of country, averaging 2½ m. in width, situated on the eastern slopes of the coast ranges and extending from north to south for 250 geographical miles, between the latitudes 25° 45' and 19° 12' S. The nitrate forms beds, varying in thickness from 6 in. to 12 ft., under a covering of conglomerate locally known as lestra, which is itself overlain by a loose sandy soil. The conglomerate consists of rock fragments, earth, and salt, cemented together by gypsum to form a hard compact mass 6 to 10 ft. thick. The caliche has a granular structure, and is yellowish-white in colour. The nitrate is obtained from the caliche by breaking it up and washing it free from the sand and salt. The nitrate was formed by the nitrification of this kind of excremental matter. The caliche is worked up in loco for crude nitrate by extracting the salts with hot water, allowing the suspended earth to settle, and then filtering the clarified liquid, first to a cistern where it deposits part of its sodium chloride at a high temperature, and then to another where, on cooling, it yields a crop of crystals of purified nitre. The nitre thus refined is exported chiefly from Valparaiso, whence the name of "Chile saltpetre." The mother liquids used to be thrown away, but are now utilized for the extraction of their iodine (q.v.).

Crude Chile saltpetre can be obtained by repeated recrystallization of Chile saltpetre or by synthesis. It forms colourless, transparent rhomboids, like those of Iceland spar; the angles are nearly equal to right angles, being 73° 30' so that the crystals look like cubes; hence the same name. It is of a perfect cleavage parallel to the rhombohedral faces, and the crystals exhibit a strong negative double refraction, like calcite. One hundred parts of crude nitre at 0° dissolve 100 parts of water and 180 parts of salt; at 120° the boiling-point of the saturated solution, 216 parts. The salt fuses at 316°; at higher temperatures it loses oxygen (more readily than the corresponding potassium salt) with the formation of nitric acid. When heated, a very high temperature is reduced to a mixture of peroxide, NaO₂, and oxide, NaO. The chief applications of Chile saltpetre are in the nitric acid industry, and in the manufacture of saltpetre for making gunpowder, ordinary Chile saltpetre being unsuitable by reason of its deliquescent nature, a property, however, not exhibited by the perfectly pure salt. It is also employed as a manure. For references to memoirs descriptive of the Chilian nitrate deposits see G. P. Merrill, The Non-Metallic Minerals (New York, 1904).

3. Wall-saltpetre or lime saltpetre, calcium nitrate, Ca(NO₃)₂, is found as an efflorescence on the walls of stables; it is now manufactured in large quantities by fixating superphosphate, i.e. by passing a powerful electric discharge through moist air and absorbing the nitric acid formed by lime. Its chief applications are as a manure and in the nitric acid industry.

SALT RANGE, a hill system in the Punjab and North-West Frontier Provinces of India, deriving its name from its extensive deposits of rock-salt. The range commences in Jhelum district in the lofty hill of Chel (3700 ft.), on the right bank of the river Jhelum, at a distance of 2 miles, then traverses Shahpur district, crosses the Indus in Mianwali district, then runs north to Jhelum district, and thence to the plains of Banni and Dera Ismail Khan, and finally merges in the Waziristan system of mountains. The salt range contains the great mines of Mayo, Warcha and Kalabagh, which yield an inexhaustible supply of salt, and supply the wants of all Northern India. Coal of an inferior quality is also found.

SALTYKOV (STCHEDRIN), MICHAEL EVGAPOVICH (1826-1888), Russian satirist, was born on his father's estate in the province of Tula, 15th (27th) January 1826. His early education was completely neglected, and his youth, owing to the severity of Ryazan and then of Tula, was made up of nothing but melancholy experiences. Left entirely to himself, he developed a love for reading; but the only book in his father's house was the Bible, which he studied with deep attention. At ten years of age he entered the Moscow Institute for the sons of the nobility, and subsequently the Lyceum at St Petersburg, where Prince Lobanov Rostofski, afterwards minister for foreign affairs, was one of his schoolfellows. While he there published poetry, and translations of some of the works of Byron and Heine; and in leaving the Lyceum he obtained employment as a clerk in the Ministry of War. In 1834 he published Zapalennyye Dyelo ("A Complicated Affair"), which, in view of the revolutionary movements at that time in France and Germany, was the cause of his banishment to Vyatka, where he spent eight years as a minor government official. This experience enabled him to study the life and habits of civil servants in the interior, and to give a clever picture of Russian provincial officials in his Gubernskie Otcherki ("Provincial Sketches"). On his return to St Petersburg as he was quickly promoted to administrative posts of considerable importance. After making a report on the condition of the Russian police, he was appointed deputy governor, first at St Petersburg, and then at Ryazan.

His predilection for literary work induced him to leave the government service, and he found himself for difficulties soon compelled him to re-enter it, and in 1864 he was appointed president of the local boards of taxation successively at Penza, Tula and Ryazan. In 1868 he finally quitted the civil service. Subsequently he wrote his principal works, namely, Poshekonskaya Storia ("The Old Times of Poshekonsa"), which possess a certain autobiographical interest; Istoria odnovo Goroda ("The History of a Town"); A Satirical History of Russia; Messieti e Medesmai Pompadoure; and Messieti Golosoff. At one time, after the death of the poet Nekrasov, he acted as editor of a leading Russian magazine, the Contemporary. He died in St Petersburg on the 2nd of April (12th May) 1889.

(S. D.)

SALUS, in Roman mythology the personification of health and prosperity. In 302 B.C. a temple was dedicated to Salus on the Quirinal (Liv. x. 1); and in later times public prayers were offered to her on behalf of the emperor and the Roman people at the beginning of the year, in time of sickness, and on the emperor's birthday. In 180 B.C., on the occasion of a plague, vows were made to Apollo, Asclepius and Salus (Liv. xl. 37). Here the special attribute of the goddess appears to be health; and in later times she was identified with the Greek goddess of health, Hygieia.

SALUTATIONS, or GREETINGS, the customary forms of kindly or respectful address, especially on meeting or parting or on occasions of ceremonious approach. Etymologically the word salutation (Lat. salutatio, "wishing health") refers only to words spoken.
Forms of salutation frequent among savages and barbarians may last on almost unchanged in civilized custom. The habit of affectionate clasping or pulling together of both hands is an example. Among the Andaman islanders and Australian blacks, or among the Fuegians in friendly salutations, "like the grip of a bear." This natural gesture appears in old Semitic and Aryan custom: "Esaun ran to meet him (Jacob) and embraced him, and fell on his neck, and kissed him," (Gen. xxxiii. 4); so, when Odysseus makes himself known, Philoelius and Eumaeus cast their arms round him with kisses on the head, hands and shoulders (Odys. xxi. 223). The idea of the kiss being an instinctive gesture is negatived by its lack of known occurrence all through the world, where the prevalent salutation is by smelling or sniffing (often called by travellers "rubbing noses"), which belongs to Polynesians, Malays, Burmese and other Indo-Chinese, Mongols, &c., extending thence eastward to the Eskimo and westward to Lapland, where Linnaeus saw relatives saluting by putting their noses together. This seems the only appearance of the habit in Europe. On the other hand the kiss, the salute by tasting, appears constantly in Semitic and Aryan antiquity, as in the above cases from the book of Genesis and the Odyssey, or in Herodotus's description of the Persians of his day. The kiss is certainly a salute; on the other hand, the kissing seems to be somewhat inferior on the cheek (Herod. i. 134). In Greece in the classic period it became customary to kiss the hand, breast or knee of a superior. In Rome the kiss of inferiors became a burdensome civility (Martial xii. 59). The early Christians made it the sign of fellowship: "greet all the brethren with an holy kiss" (1 Thess. v. 26; cf. Rom. xvi. 16, &c.). It early passed into more ceremonial form in the kiss of peace given to the newly baptized and in the celebration of the Eucharist; this is retained by the Oriental Church. After a time, however, its indiscriminate use between the sexes gave place to the double kiss of ceremony and reverence—men being only allowed to kiss men, and women women, and eventually in the Roman Church the ceremonial kiss at the communion being only exchanged by the ministers, but a relic or cross called an osculatorium or pax being carried to the people to be kissed. While the kiss has thus been adopted as a religious rite, its original social use has continued. Among men, however, it has become less effusive, the alteration being marked in England at the end of the 17th century by such passages as the advice to Sir Willfull by his London-bred brother: "A kiss is the greatest and most solemn token of respect and honor any one can give to another, &c. ... 'T is not the fashion here. Court ceremonial keeps up the kiss on the cheek between sovereigns and the kissing of the hand by subjects, and the pope, like a Roman emperor, receives the kiss on his foot. A curious trace which these oscillations have left behind is that when ceasing to be performed they are still talked of by way of politeness: Austrians say, "Kiss d'Hand!" and Spaniards, "Beso a Vd. las manos!" I kiss your hands!"

Strokings, patting and other caresses have been turned to use as salutations, but have not a wide enough range to make them important. Weping for joy, often occurring naturally at meetings, is sometimes affected as a salutation; but this seems to be different from a sobs, and it was restricted by ecclesiastical regulations. In Greece, embraces with kisses on one hand, while with the other she catches her face till the blood drops. Only this is the joy-weeping, but mourning, and the same is true of the New Zealand tangi, which is performed at the reception of a distinguished visitor, whether he has really dead friends to mourn or not. Cowering or crouching is a natural gesture of fear or inability to resist, which among savages acts as a form of kissing or laying prostrate face to ground. In barbaric society, as soon as

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1 W. P. Snow in Trans. Ethnol. Soc., n.s., i. 263. 2 J. E. Smith, Linnaeus's Tour in Lapland, i. 315. 3 Bingham, Antiquities of the Chr. Church, bk. xii. c. 4, xv. c. 3. 4 In the Hebrew language with its term for a kiss, psg, Welsh pws; see Rhys, Revue Celtique, vii. 43. 5 Congreve's Way of the World, act iii. 6 Grey, Journalis, ii. 255. 7 A. Taylor, New Zealand, p. 221.
SALUZZO—SALVADOR.

SALUZZO, a city and episcopal see of Piedmont, Italy, in the province of Cuneo, 42 m. S. of Turin by rail, 1206 ft. above sea-level. Pop. (1901) 10,306 (town), 16,208 (commune). The upper town preserves some part of the fortifications which protected it when, previous to the plague of 1630, the city had upwards of 30,000 inhabitants. The old castle of the marquises of Saluzzo now serves as a prison. Besides the Gothic cathedral (1480–1511), with the tombs of the marquises, the churches of San Giovanni (formerly San Domenico), San Bernardo and the Casa della Banda, the municipal museum, are noteworthy. Railways run to Cuneo and Alassa (the latter on the Turin–Pinerolo line) and steam tramways in various directions. The castle of Manta, in the vicinity, contains interesting 15th-century frescoes by a French artist (see P. d'Ancona in L'Art for 1905; 94, p. 184).

The line of the marquises of Saluzzo began (1142) with Manfred, son of Boniface, marquis of Savoy, and continued till 1548, when the city and territory were seized by the French. They would not carry them on so universally unless it found them useful. They serve the purpose of keeping up social intercourse, and establishing relations between the parties in an interview, of which their tongues make the best use.

(S. B. T.)

SALZBURG, a city on the river Leitha, in the southeastern part of Austria, on the northern side of the Salzkammergut, 63 m. S.E. of Vienna, 235 ft. above the level of the sea. Pop. (1910) 166,926. The coal-field of the city is the source of its wealth.

SALVADOR, or SAN SALVADOR (República del Salvador), the smallest but most densely populated of the republics of Central America, bounded on the N. and E. by Honduras, S. by the Pacific Ocean, and W. by Guatemala. (For map, see Central America.) Pop. (1906) 1,116,252; area, about 7225 sq. m. Salvador has a coastline extending for about 160 m. from the mouth of the Rio de la Paz to that of the Coasconor in the Bay of Fonseca (p.). Its length from E. to W. is 140 m., and its average breadth about 50 m. It is traversed by the Rio de la Paz and by several smaller rivers.

Physical Features.—With the exception of a comparatively narrow seaboard of low alluvial plains, the country consists mainly of a plateau about 2000 ft. above the sea, broken by a large number of volcanic cones. These are geologically of more recent origin than the main chain of the Cordillera which rises farther N. The principal river of the republic is the Rio Lempa, which, rising just beyond the frontier of Guatemala and crossing a corner of Honduras, enters Salvador N. of Citalá. After receiving the surplus waters of the Laguna de Guía, it flows E. through a magnificent valley between the plateau and the Cordillera, and then turning S. skirts the base of the volcano of Siguatepeque and reaches the Pacific in 88° 40' W. Among its numerous tributaries are the Rio Santa Ana, rising near the city of that name, the Asijiguate, which passes the capital, San Salvador, the Sumpul, and the Torola, draining the N.E. of Salvador and part of Honduras. The Lempa is for two-thirds of its course navigable by small steamers. The Rio San Miguel drains the country between the bay of Fonseca and the basin of the Lempa. The volcanic mountains do not extend in Chile but a series of clusters: the Izalco group in the W., including Izalco (formed in 1770), Marcelino, Santa Ana, Naranjo, Aguila, San Juan de Dios, Apaneca, Tamajaso and Lagunita; the San Salvador group, about 30 m. E.; Cojutepeque to the N.E. and the San Vicente group to the E. of the great volcanic lake of Ilopango; the Siguatepeque summits to the N.E. of San Vicente; and the great S.E. or San Miguel group—San Miguel, Chinameca, Buenapa, Usulutan, Tecapa, Taburete, Catacatepeque and Sociedad volcanoes in the N.E. belong to the inland Cordillera. Santa Ana (8500 ft.) and San Miguel (11,750 ft.) are two of the highest of the range. November 1879 and the 11th of January 1880 the lake rose 4 ft. above its level. The Jiboa, which flows out at the S.E., became, instead of a very shallow stream 20 ft. broad, a raging torrent which soon scooped out for itself in the volcanic rocks a channel 30 to 35 ft. deep. A rapid subsidence of the lake was thus produced, and by the 6th of March the level was 34 ft. below its maximum. Towards the centre of the lake a volcanic centre about 500 ft. in diameter rose 130 ft. above the water, surrounded by a number of small islands.

Climate.—The lowlands are generally hot and, on the coast, mountain; but on the uplands and mountain slopes of the interior the climate is temperate and healthy. There are only two: the wet, which Salvadorians call winter, from May to October; and the dry, or summer, season, from November to April. In July and August there are high winds, followed by torrents of rain and thunderstorms; in September and October the rain, not heavy, is continuous. For an account of the geology, fauna and flora of Salvador, see Central America.

Inhabitants.—The population in 1887 was stated to be 664,513, (1901) 1,066,548, (1906) 1,116,253. The number of Lázarines (persons of half-blood) was 12,975 in 1875; of pure-blooded Indians about 230,000. The various elements were before 1901, estimated as follows, and the proportion still holds good in the main: whites (creoles and foreigners) 10%, half-castes 50%, Indians 40% and a very small proportion of negroes. The whites of pure blood are very few, a liberal estimate putting the proportion at 2-5%. There is no immigration into the country, and the rapid increase with which the population is credited can be due only to a large surplus of births over deaths. The chief towns, which are described in separate articles, comprise San Salvador the capital (pop. 1905, about 60,000), Santa Ana (8500), San Miguel (35,000), San Vicente (18,000), Sonsonate (17,000), Nueva San Salvador or Santa Tecla (18,000) and the seaport of La Unión (4000). For the ancient Indian civilization of Salvador, see Central America: Archaeology, and Mexico: History.

Agriculture.—The only industry extensively carried on is agriculture, but the methods employed are still primitive. The more important products are coffee, sugar, indigo and balsam. The country is rich in medicinal plants. Peruvian balsam (Myroxylon balsamum or Myroxylon Pereira) is an indigenous balm, native to the region. The Balsam Coast, as the region is known, is rich in medicinal plants. Cape Remedios is named. It is not cultivated in Peru, but owes its name to the fact that, during the early period of Spanish rule, it was forwarded to the Peruvian port of Callao for transport to Europe. Rubber is collected; tobacco is grown in small quantities; cocoa, rice, cereals and fruits are cultivated. The government seeks to encourage cotton-growing, and has
established in the suburbs of the capital an agricultural college and model farm.

Mining.—In the Cordillera, which runs through Salvador, there are veins of various metals—gold, silver, copper, mercury and lead being found mostly in the E., and iron in the W. Coal has been discovered at various points in the valley of the Lempa. In the republic there are about 180 mining establishments, about half of them being in the department of Morazan; they are owned by British, United States and Salvadorian companies. Only gold and silver are worked. The output, chiefly gold, was valued at $330,000 in 1907.

Commerce.—Salvador is almost entirely confined to the import of cotton goods, woollen goods, sacks and machinery, and to the export of coffee and a few other agricultural products. In 1900 the formation of a statistical office was decreed. The average yearly value of the imports for the five years 1904-1908 was $804,000, of the exports $1,250,000. The coffee exported in 1908 was valued at $380,000. The imports, comprising foodstuffs, hardware, drugs, cottons, silk and yarn, come in (order of value) chiefly from Great Britain, the United States, France and Germany; the exports are mostly to the United States and France.

Communications.—Until 1855 the roads of Salvador were little better than bridle-paths, and ferries or fords were the sole means of crossing the larger rivers. During the next half-century about 2000 m. of highways were built, and the rivers were bridged. The first railway, a narrow-gauge line, between the port of Acajutla and Sonsonate, was opened in 1882, and afterwards extended to Ateos on the E. and Santa Ana on the N.W. A railway from the capital to Nueva San Salvador was also constructed, and in 1900 was linked to the older system by a line from Ateos to San Salvador. In 1903, a concession was granted for an extension from Nueva San Salvador to the port of La Libertad. From 350 to 450 vessels annually entered and cleared at Salvadorian ports (chiefly Acajutla, La Libertad and La Union), during the years 1895 to 1905. The old port of Acajutla has been closed, and a new port opened in a more sheltered position about 1 m. N., where an iron pier, warehouses and custom-house have been erected. Salvador joined the postal union in 1879.

Currency and Credit.—In 1910 there were three commercial banks and an agricultural bank within the republic. In 1897 a law was passed adopting a gold standard. The currency of the country in 1910 consisted entirely of silver pesos, the fractional money under 1000 fine having, by arrangement with the government, been exported by the banks. The peso or dollar at par is valued at four shillings; its actual value was about 15.8d. in 1910. The metric system of weights and measures was adopted by decree of January 1886, but the old Spanish weights and measures still continue in general use.

Finance.—The revenue is mainly derived from import and export duties, but considerable sums are also obtained from excise, and smaller amounts from stamps and other sources. The principal branches of expenditure are the public debt, debt service and internal administration. The official figures showing the revenue and expenditure for the five years 1904-1908 are as follows (pesos being converted into sterling at the rate of £1 to £1):—

<table>
<thead>
<tr>
<th>Years</th>
<th>Revenue</th>
<th>Expenditure</th>
</tr>
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<tbody>
<tr>
<td>1904</td>
<td>675,000</td>
<td>734,000</td>
</tr>
<tr>
<td>1905</td>
<td>711,000</td>
<td>837,000</td>
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<tr>
<td>1906</td>
<td>707,000</td>
<td>1,024,000</td>
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<tr>
<td>1907</td>
<td>728,000</td>
<td>880,000</td>
</tr>
<tr>
<td>1908</td>
<td>1,064,000</td>
<td>1,019,000</td>
</tr>
</tbody>
</table>

The foreign debt, amounting to £726,420 (€240,000 of a 6% loan of 1889, and €287,320 of another of 1892) was in 1890 converted into 5% mortgage debentures of the Salvador Railway Company Limited, to which the government has guaranteed, for eighteen years from the 1st of January 1899, a fixed annual subsid of £4,240. In March 1908 a new foreign loan was raised, amounting to £1,000,000. The bonds were issued at 86, and bore 6% interest, secured partly upon the special import duty of $3.60 (American gold) on every kilogramme of importated merchandise, partly upon the export duty of 40 c. (American gold) on every quintal (100 lb) of coffee up to 500,000 lb. The 4% internal debt amounted in 1905 to £840,170.

Government.—The constitution proclaimed in 1824, and modified in 1859, 1864, 1871, 1872, 1880, 1883 and 1886, vests the legislative power in a chamber of 70 deputies, including 42 landowners (3 for each department), all chosen by the direct vote of the people. The president and vice-president are likewise chosen by direct popular vote, and they hold office for 4 years.

Religion and Education.—The Roman Catholic religion prevails throughout the republic, but there is complete religious freedom, so far as is compatible with public order. Civil marriage is legal, monastic institutions are prohibited, and education is in the hands of laymen. Primary education is gratuitous and obligatory. For secondary instruction there are about 30 high schools, including 3 technical institutes, and 2 schools for teachers, one for men and the other for women; these five institutions being supported by the government. At San Salvador there is a national college for the higher education of women. Superior and professional instruction is provided at the national university in the capital.

Justice is administered by a supreme court, and in districts, circuit and local courts. The active army consists of about 3000 men, and the militia, of about 18,000. In time of war all males between the ages of eighteen and sixty are liable for service. The navy consists of one customs cruiser.

History.—Salvador received its name from Pedro de Alvarado, who conquered it for Spain in 1525-26. Its independence of the Spanish Crown dates from 1822; (see CENTRAL AMERICA: History). Revolutions have been frequent. In July 1906 war broke out between Salvador, Honduras and Guatemala, but was terminated within the month by the arbitration of the United States president (see above). In 1907 Salvador supported Honduras (q.v.) against Nicaragua; its prosperity was not, however, seriously impaire by the defeat of its ally.

See E. G. Squier, The States of Central America (London, 1868); D. Guzman, Apuntemientos sobre la topografia física de la república del Salvador (San Salvador, 1883); D. Gonzalez, Datos sobre la república de El Salvador (San Salvador, 1901); No. 58 of the Bulletin of the Bureau of American Republics (Washington, 1892); annual reports of the Council of the Corporation of Foreign Bondholders (London) and of the British Foreign Office.

SALVAGE (from Lat. salvis, safe). There is no general rule or principle of law which entitles one who saves the life or property of another to be rewarded by him. But in certain special classes of cases the law does require the appointed courts to reward those who by their exertions have rescued lives or property from probable destruction. The reward so given is called salvage and the same word is often used to denote the service rewarded. Apart from the application of the term by analogy to the saving of property from fire on land, the recovery of property from destruction by the aid of voluntary payments (as in the case of payments to prevent the forfeiture of an insurance policy), or a solicitor's charges for property recovered by his means, the subject of salvage divides into (1) civil salvage, (2) military salvage.

1. Civil Salvage in English law is defined as such a service as may become the ground of a reward in the (admiralty) courts on the civil side of its jurisdiction, and consists in the preservation of life or property from some of the dangers of the sea. The jurisdiction to give it is an admiralty jurisdiction. But the right to reward was recognized in the courts of common law before the admiralty court became, as it now is, a part of the High Court of Justice, e.g. by enforcing a possessory lien of the salvor over the salvaged property. The origin of the rule has been traced...
Salvage

to the doctrine of Roman law that “spontaneous services” in the protection of lives and property should be rewarded. But that doctrine has not found a place in English law except, as part of the maritime law administered in the court of admiralty. Thus services on land, say in rescuing lives or houses or goods from fire, do not entitle the person rendering those services to reward, unless he has acted under some contract or employment. But at sea the right to reward springs from the service itself if it has been rendered to a ship, or her passengers, crew or cargo, or to property which has been thrown or washed out of her. And such a service entitles to salvage though the ship may be in harbour, or within a river, or even in a dock. This connexion of the lives or property with a ship seems essential. The right does not arise upon saving goods which have got adrift in river or sea, unless they have been dashed out to sea or upon saving property of other kinds which may be in peril on the sea or on the seashore. Thus a claim to reward for saving a gas- buoy or beacon, which had broken from its moorings in the Upper Humber, and was aground on the Lincolnshire coast, was disallowed by the House of Lords, affirming the court of appeal, in the case of the gas-float "Whitton No. 2," 1897, A.C. 337.

The definite right to salvage for saving lives from ships is the creation of modern statutes. Formerly the Admiralty judges treated the fact that lives had been saved as enhancing the merit of salvage of property by the same salvors, where the two could be connected; and so indirectly gave life salvage. And this is still the position in cases where the Merchant Shipping Act of 1894 does not apply. This act (§ 544) applies to all cases in which the “services are rendered wholly or in part within British waters in saving life from any British or foreign vessel, or elsewhere in saving life from any British vessel.” Also (§ 545) it can be applied, by Order in Council, to life salvage from ships of any foreign country whose government “is willing that salvage should be awarded by British courts for services rendered in saving of lives from ships belonging to that country where the ship is beyond the limits of British jurisdiction.” By section 544, the life salvage is made payable “by the owner of the vessel, cargo or apparel saved”; and is to be paid in priority to all other claims for salvage. Where the value of the vessel, cargo and apparel saved is insufficient to pay the life salvage, the Board of Trade may in their discretion make up the deficiency, in whole or in part, out of the Mercantile Marine Fund. The effect of the act is to impose a common responsibility upon the owners of ship and cargo to the extent of their property saved. Whatever is saved becomes a fund out of which life salvors may be rewarded, and to which they are entitled, in priority to other salvors. In the case of the cargo ex “Schiller” (1877, 2 P.D. 145) salvage was allowed out of specie raised by divers from the sunken wreck, to persons who had saved some of the passengers and crew.

This limitation of liability to the amount of the property salved is also true with regard to salvage of property. The ordinary remedy of the salver is against the property itself; by proceedings in rem, to enforce the maritime lien given him by the law upon that property. This enables him to arrest the property, if within the jurisdiction into whose handssoever it may have come; and, if necessary, to obtain a sale, and payment of his claim out of the proceeds. The salver has also a remedy in personam, used only in exceptional cases, against the owners or others interested in the property saved (Five steel barges, 15 P.D. 142); but it seems certain that that depends upon property having been saved, and having come to the owner’s hands; and that the amount which can be awarded is limited by the value of that property.

An essential condition is that the lives or property saved must have been in danger—either in immediate peril, or in a position of “difficulty and reasonable apprehension.” Danger to the salver is not essential, though it enhances his claim to reward; but to constitute a salvage service there must have been danger to the thing salved. Again, the service must have helped usefully towards saving the lives or property. Infeoffed efforts, however strenuous and meritorious, give rise to no claim. But the service need not be completely successful. If it has contributed to an ultimate rescue it will be rewarded, though that may have been accomplished by others. And as we have seen, there must have been ultimate success. Some of the property involved in the adventure must have been saved, and the value of that, or the fund realized by its sales, limits the total of the awards to all the salvors. Cases, of course, occur in which services at sea are employed by ships in danger: as where a steamer with a broken propeller shaft employs another steamer to tow her; or where a vessel which has lost her anchors employs another to procure anchors for her from shore. In such cases the conditions of reward above set out may not apply. Reward may be payable, notwithstanding entire failure of salvors, when the express or implied terms of the employment. But such a reward is not truly “salvage.”

Services rendered in the performance of a duty owed do not entitle to salvage. The policy of the law is to stimulate voluntary effort, not to weaken obligation. Thus the crew cannot (while still the crew) be salvors of the ship or cargo; nor can the passengers, unless they have voluntarily stayed on the ship for the purpose of saving her. Nor can a pilot employed as such be salver, unless he has boarded her in such exceptional circumstances that his doing so for pilotage fees could not reasonably be required; or unless the circumstances of the service, entered upon as pilotage or as a matter of hazard, have a paramount character; and it may be doubted whether such a change of circumstances is a valid ground for a claim of salvage remuneration by the pilot where he has had no opportunity of leaving the ship. So again of the owners and crew of a tug employed to tow a ship. They cannot claim salvage for rescuing her from a danger which may arise during the towage, unless circumstances have supervened which were not contemplated, and are such as to require extraordinary aid from the tug, or to expose her to extraordinary risk. Officers and crew of a ship of the royal navy may have rendered services outside the protection which ship owned to afford. But by the Merchant Shipping Act 1894, § 557, such a claim must be with consent of the Admiralty; and no claim can be made in respect of the ship herself.

The kinds and degrees of service are very various. The rewards given vary correspondingly. Reward is paid, first, to the degree of the danger to the property salvaged, to its value, and to the effect of the services rendered; next, to the risks run by the salvors, the length and severity of their efforts, the enterprise and skill displayed, and to the value and efficiency of services rendered, and to the risks to which they have exposed her. In a modern case (the "Glenyle" 1898, A.C. 540) a specially large award was given to vessels kept constantly ready for salvaging operations in Gibraltar Bay. It was owing to that readiness that the rescue had been possible. On the other hand, any negligent or improper conduct of the salvors will be considered in diminution of the award: as where they have negligently exposed the ship to damage, or have plundered the cargo, or dealt with it contrary to the owner’s interests. And where the rescue has been from a danger which could have been averted, against salvors, or made an improper conduct of those who effected the rescue, no salvage is allowed. Where two colliding ships were both to blame for the collision, the master and crew of one of them were not allowed salvage for services in saving cargo of the other (cargo ex “Capello,” L.R. 1 A. and E. 356).

In apportioning the total award given for a salvage service among the owners, master and crew of the vessel by means of which it has been rendered, the special circumstances of each case have to be considered. In nearly all cases a large portion goes to the owners, and as in recent times the value and efficiency of ships (especially of steamships) have increased, so the proportion of the whole usually awarded to the owners has also increased. In an ordinary case of salvage by a steamship towing a distressed ship into safety, the share of the owners is usually about three-fourths; of the remainder the master usually gets about one-third,
and the officers and crew divide the rest in proportion to their ratings. But where the salvaging ship has sustained special damage in the service, or her owners have been put to loss by it, that is taken into account. On the other hand, where special personal services have been rendered by members of the crew they are specially rewarded.

As an illustration take the case of the "Rasche" (L.R. 4 A. and E. 127). The brigantine "Rasche," derelict, was fallen in with by the ship "Scythia" (carrying a very valuable cargo) 220 m. N. of the Lizard. The mate and three hands of the "Scythia" were left on board, and in circumstances of much hardship and danger they brought her after eighteen days safely to Liverpool. After deducting expenses incurred by the owners of the "Scythia," the valuable cargo was set by arbitrators awarded £3900; and of this he gave £500 to the mate, £510 to each of the three men who had accompanied him; £500 to the owners of the "Scythia" and £550 to her other officers and crew.

An agreement as to the salvage to be paid is sometimes made at the time the assistance is given. When made fairly the court will act upon it, though it may turn out to be a bad bargain for one or other of the parties. But if the facts were not correctly apprehended by one or both, or if the position was one of such difficulty that those salvaged had no real option as to accepting the salvor's terms, the courts will set the agreement aside.

This happened, for instance, where the salvaging ship refused to rescue 350 wrecked pilgrims from the Parkin Rock in the Red Sea (1909). An agreement had in fact been signed for their conveyance for that sum to Jeddah, two or three days' sail. The Parkin Rock stands 6 ft. above the water, and had the salvors not been present a considerable sum would have been lost. It was held that the sum asked for was exorbitant; and that the agreement, made under practical compulsion, could not stand (the "Medina," 2 F.D. 5). On the other hand, an agreement to divide the salvage equally among the salvors, which was agreed to on the spot, was held to bevalid, after the owners had entered their hands for the salvaging of the property. The same was held in the case of the "Insignia," which was 127 m. S.W. of the Scilly Islands, and was salvaged after a loss of 127,000; and in the case of the "Philip" (1864, 17th Mar.) valued at £600, which was 86 m. S.W. of the Scilly Islands, and was salvaged after a loss of £500. The court held that the owners had not been on board the "Philip" when the contract was made (the "Kingston," r. Spink, 265).

The award of salvage is generally made in one sum against ship, freight and cargo; and those interests contribute to the amount in proportion to the value saved. No distinction is made between the degree of service rendered to one interest and another. But, with a possible exception in the case of life salvage, there is not a joint liability of the several interests. Each is liable to the salvors for his own share, and for no more. The ship cannot be made to pay the cargo's share, nor the cargo the ship's. If, however, the shipowner pays the cargo's share, he has a lien upon it for the amount. In practice the liabilities for salvage are ordinarily adjusted as part of general average. State laws and the interests of the salvors control. The Half-Sail is a direct liability to the salvors, arising at once, e.g., at the port of refuge, and proportional to the values there; whereas the liability to contribute to a general average loss or expenditure is postponed until the completion or break up of the adventure, and depends upon the values of the interests which have arrived there; which may be very different. (See AVERAGE, INSURANCE, MARINE, and also ADMIRALTILITY JURISDICTION.)


2. Military Salvage is analogous to civil salvage. It is defined as such a service as may become the ground for the demand of a reward in the court as a prize court, and consists in the rescue of property from the enemy in time of war. In such cases almost invariably relate to ships and their cargoes; and they have always been dealt with by courts having Admiralty jurisdiction, sitting as prize courts. They involve the determination of two questions: first, whether the property is to be restored to its original owner or condemned as prize to the recaptor; and second, what amount of salvage, if any, is to accompany restitution. Generally speaking, the first question depends upon the law of nations, which may be taken to be that where a ship has been carried by an enemy infra praesidium, and especially after a sentence of condemnation, the title of the original owner is divested, and does not revert upon recapture by third parties. In such a case, therefore, jure gentium restitution cannot be claimed. The municipal law of civilized countries, however, does not encourage subjects to "make reprisals upon one another" (the "Renard," Marr. Adm. Dec. 222), and laws are generally found, as in England, which as between subjects of that particular state provide for restitution irrespective of any change in the title to the subject matter which may have occurred. But (speaking henceforth of England) in cases which do not fall strictly within these acts, the old maritime law, which was in union with the general law of nations, is applied by the courts. Moreover, the English Prize Acts do not apply to foreign owners of recaptured prizes, and therefore no award can be made against them unless in accordance with the law of nations. In practice the courts have acted upon the "rule of reciprocity" where recaptures have been made of the property of formal allies, dealing with them as the allied state would have dealt with English property. In the case of neutral recaptures restitution is always ordered. An exception to the rule of restitution as between British subjects is made in the case of a British ship which has been "set forth as a ship of war" by the captor, and subsequently retaken by a British ship. Such a ship is not liable to restoration, but is the prize of the recaptor. This exception, the object of which is to encourage the capture of armed ships, dates from 1793, previous acts having provided for restitution upon payment of a moiety as salvage. The condition of setting forth as a ship of war is satisfied, where under a fair semblance of authority, which is not disproved, the ship "has been used in the operations of war, and constituted a part of the naval force of the enemy." (The "Ceylon," 2 D. O. 105.)

Such a user permanently alters the ship's original character and extinguishes all future claims to restitution ("L'Actif," Edw. 185).

As to the right to salvage and the amount which will be allowed, this is also a question of the jus gentium, though usually governed by municipal law. The right was recognized so long ago as the 11th century, when the "Consolato dei Mare" (see CONSULATE OF THE SEA) laid down elaborate provisions on the subject. In England the first statutory recognition of the right occurs in 1648, when an act of the Commonwealth, which in its outline has been the model for all subsequent Prize Acts, provides that British vessels captured by the enemy or taken by British ships shall be restored upon payment of one-eighth of the value of the property in lieu of salvage, or one-half in the case of a prize "set forth as a ship of war." From that date until 1864, the date of the act now in force, there have been thirteen Prize Acts dealing with recapture, each of which, except that of 1864, has been passed to meet a particular occasion, and has expired with the cessation of the then existing hostilities. Since the first act, and down to the act of 1805 inclusive, a distinction has always been drawn between a recapture effected by one of the royal ships of war and a recapture by a privateer or other vendetta ship. The case of the British vessels captured by the enemy and which, in the latter part, was usually one-sixth. In the act of 1692 a clause taken from a Dutch law gave salvage to a privateer, rising in amount from one-eighth to one-half according to the number of hours the prize had been in the enemy's possession, but this clause has disappeared since 1756. There is no provision in the present act for the payment of salvage, except in case of recapture by one of His Majesty's ships, but it seems beyond question that recaptors are entitled at law to salvage, although they may hold no commission from the crown. It is the duty of every subject of the king to assist his fellow-subjects in war, and to take care that the property in the possession of the enemy: no commission is necessary to give a person so employed a title to the reward which the policy of the law allots to that meritorious act of duty" (the "Helen," 3 C. Rob. 226, per Sir W. Scott). Though it is improbable that privateers will figure in any future war, it may reasonably be anticipated that recaptures may be made by private vessels, and in such cases salvage would probably be awarded, the proportion lying in the discretion of the court. Similarly, salvage is awarded in the case of recapture from pirates or from a mutinous crew. In the case of royal ships the question of the salvage, which in cases of "special difficulty or danger" the court may increase to a quarter. The latter provision is an innovation.
SALVAGE CORPS—SALVATION ARMY

It may appear that the grant of salvage to ships of war, the duty of whose commanders it is, according to the naval instructions, "in places to be determined," is a dangerous business. The term "salvage" is here used loosely, and would be more correctly called "salvage on board," and comprises two distinct classes—(1) services at fires; (2) working and working salvage.

(1) Services at Fires form the most important feature of the work. Much depends upon the method of dealing with the salvage. If, for instance, a large Manchester goods warehouse was on fire in the top part, it would be very little advantage to the fire officer to burn the contents, and remove the stock of goods beneath the floor, with the object of removing the stock off the ground floor. The best method would be to cover up with tarpaulin all goods there, and prevent the water from collecting on the lower floors. It will be gathered that the most important work of the corps is to prevent damage to goods, and that water is mostly looked after. The damage from fire is left almost entirely to the fire brigade. The traps, which immediately on receipt of an alarm proceed to the scene of the fire with their crew of men, carry every kind of appliance for the saving of goods from destruction by fire or damage by water, as well as lime-light apparatus for use in working after the fire has become extinguished, thus enabling the men to note the position of dangerous materials, &c.; and a portable coal-gas apparatus, which can be employed in the interior of buildings when the ordinary means of illumination has failed; in addition to ambulance appliances for emergencies.

(2) Working Salvage.—When a fire takes place, a man is left behind in charge of the salvage if the property is insured; or if that fact cannot be ascertained, but it appears probable that it is, a man is left until the information is obtained later. The duty, if an important one, is divided into a day and night duty. This enables an experienced man to be sent on day duty to meet the surveyor, and to carry out his instructions regarding the working out of the salvage; and a junior man at night. The day man, if working out salvage, would employ a number of men called strangers, over whom he acts as a kind of foreman. The "working out" may take the form of dividing up damaged goods into lots ready for a sale to be held by the surveyor, or of sorting over the debris to find remains of certain articles claimed for. If, for instance, a large fire occurred at a pianoforte manufacturer’s, and the debris was all in one common heap, the London Salvage Corps might have to arrange certain quantities of pegs and wires in order to give an idea of the value of pianos before the fire. The watching continues until the loss is settled, when the charge of the premises is given over to the assured.

There are also salvage corps on similar lines, but on a smaller scale, in Liverpool and Glasgow.

SALVANDY, NICARISSE ACHILLE (1795-1856). French politician, was born at Condum (Gers) on the 11th of June 1795, of a poor family Irish by extraction. He entered the army in 1813, and next year was admitted to the household troops of Louis XVIII. A patriotic pamphlet, La Coalition et la France (1816) attracted the attention of Decazes, who employed him to disseminate his views in the press, and he waged war against the Villèle ministry of 1822-1828. Under the July monarchy he sat almost continuously in the Chamber of Deputies from 1830 till 1848, giving his support to the Conservative party. Minister of education in the Molé cabinet of 1837-1839, and again in 1845, he superintended the reconstitution of the Council of Education, the foundation of the French School at Athens and the restoration of the École des Chartes. For short periods in 1841 and 1843 he was ambassador at Madrid and Turin, and for several years was a member of the French Academy, published the Études and wrote a History of Spain. During the Empire he took no part in public affairs, and died at Graveron (Eure) on the 16th of December 1856.

SALVATION ARMY, a religious philanthropic organization founded by William Booth (q.v.), who in 1865 began to hold meetings for preaching in the streets in London and in tents, music halls, theatres and other hired buildings. Large numbers attended, many of whom had never entered a place of worship, and presently an organized society was formed called The Christian Mission. Booth was assisted by his wife, Catherine Booth, a woman of remarkable gifts, who won for the new movement the sympathy of many among the cultivated classes. In 1878 the Mission, which had spread beyond London, was reorganized on a quasi-military basis, and the title of “The Salvation Army” was definitely adopted in June 1886. The local societies became “Corps,” and their evangelists “Field Officers,” with Booth as “General” of the whole body. The spiritual operations of the Army at once rapidly expanded in spite of much disorderly opposition in some places. In 1858 there were 75 corps and 120 officers in the United Kingdom, the number of the French outside France being 185. Since then the number of corps and officers has greatly increased. Very large numbers who have “professed conversion” are reported annually. No figures of membership, however, are published. In doctrine, the Army is in harmony with the main principles of the evangelical bodies, “as embodied in the three creeds of the Church.” Its preaching is practical and direct, asseverating the reality of Sin, “the everlasting punishment of the wicked,” and Redemption. The Army proclaims the
supreme duty of self-sacrifice for the sake of the salvation of others.

The Army is under the control of the General for the time being, who issues all orders and regulations. Large powers devolve upon other officers, such as the "Chief of the Staff," the "Foreign Secretary," and the "Chancellor," who direct affairs from the "International Headquarters" in London. The system of government is autocratic, "unquestioning obedience" being required throughout all ranks. The Army is divided, usually in harmony with national boundaries, into "territories," each under a "Commissioner," with headquarters in the capital of the country. The Territories are generally divided into "Provinces" and these again into "Divisions," which include a number of corps, each supporting its own "Captain" and "Lieutenant." The "soldiers" or members are drawn from all classes of the community. The property of the Army in the United Kingdom is held by the General for the time being, for the benefit of the Army exclusively, he being constituted the sole trustee of the property, in the disposal of which and in the appointment of his successor he is placed under the government of a deed poll, executed by Booth while the body was still known as "The Christian Mission," and enrolled in the Court of Chancery in August 1878. In other countries various modifications have been necessary, but the General's ultimate control has been practically assured. A further deed poll providing for the removal of a General in the contingency of "mental incapacity" or other "unfitness," and for the election of a successor, was executed by Booth in July 1904.

Funds are raised from the voluntary offerings of the corps, from open-air and other collections, from friends interested in evangelical and charitable work, and from the profits on publications and general trading. The financial statements of the various national headquarters funds are annually published, certified by public accountants, in each country. In 1909 the general income and expenditure account of International Headquarters in London dealt with a total of £64,145. Details of the aggregate income raised in the United Kingdom by the corps are not published. The annual Self-Denial offering (Great Britain) was £12,663 in 1888, £72,562 in 1906 and £69,034 in 1910. The value of the assets of the spiritual work in the United Kingdom increased from £338,992 in 1891 to £1,357,706 in 1909, the liabilities on account of loans upon mortgage and otherwise amounting at the latter date to £662,235. The assets of the Trade Departments were valued at £110,657 in 1909.

Statistics of Spiritual Operations (Compiled from the "S.A. Year-Book, 1910").

<table>
<thead>
<tr>
<th>Corps and Outposts</th>
<th>Officers and Cadets.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The British Isles</td>
<td>1417</td>
</tr>
<tr>
<td>The United States</td>
<td>871</td>
</tr>
<tr>
<td>South America and West Indies</td>
<td>128</td>
</tr>
<tr>
<td>Canada and Newfoundland</td>
<td>455</td>
</tr>
<tr>
<td>Australasia and Java</td>
<td>1283</td>
</tr>
<tr>
<td>India, Ceylon, Japan and Korea</td>
<td>2584</td>
</tr>
<tr>
<td>South Africa and St Helena</td>
<td>113</td>
</tr>
<tr>
<td>France, Belgium, Switzerland and Italy</td>
<td>374</td>
</tr>
<tr>
<td>Germany and Holland</td>
<td>248</td>
</tr>
<tr>
<td>Sweden, Norway, Finland, Denmark and Iceland</td>
<td>1067</td>
</tr>
<tr>
<td>Gilgit and Balt.</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,562</strong></td>
</tr>
</tbody>
</table>

Employees (without rank), 3,629.

Booth's scheme for Social Relief, described in In Darkest England, and the Way Out (1890), attracted wide-spread interest, and was started with subscriptions amounting to over £100,000. A separate deed poll, making the General sole trustee, was executed by Booth in regard to the property and funds of this branch of work. Since then, both in Great Britain and abroad, the scheme has been actively carried on. The amount received in the year ending 30th September 1909 for cheap food and lodging in the United Kingdom was returned at £42,022 for the men's work, and £61,717 for the women's. Large numbers of unemployed, ex-criminal and other needy persons have been aided or dealt with. In the year ending 30th September 1909, the number of persons received into the "elevators" or factories was reported as 6425, of women and girls received into rescue homes as 2559. The farm colony at Hadleigh in Essex has a large acreage under cultivation, with fruit and market gardens and various industrial undertakings. The emigration department, although a development of the Darkest England Scheme, has no connexion with the rescue work; in 1907 the passage money received amounted to £85,614, and in 1909 to £58,170. An "anti-suicide bureau" was opened in 1907, and at_boxed, near Colchester, a scheme for Small Holdings has been initiated. In 1909 the value of the property held under the Darkest England Scheme in the United Kingdom was returned at £349,645, and the income of the central fund at £50,504.

Summary of Social Operations throughout the World (Compiled from the "S.A. Year-Book, 1910").

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<tr>
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<tbody>
<tr>
<td>Men's Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelters and Food Depots</td>
<td>31</td>
<td>156</td>
<td>187</td>
<td>18,831</td>
</tr>
<tr>
<td>Labour Bureaux</td>
<td>8</td>
<td>50</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Labour Homes and Factories</td>
<td>28</td>
<td>117</td>
<td>145</td>
<td>4,936</td>
</tr>
<tr>
<td>Ex-Criminal Homes</td>
<td>1</td>
<td>18</td>
<td>18</td>
<td>486</td>
</tr>
<tr>
<td>Farm Colonies</td>
<td>2</td>
<td>15</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Women's Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rescue and Maternity Homes</td>
<td>32</td>
<td>107</td>
<td>139</td>
<td>3,459</td>
</tr>
<tr>
<td>Shelters and Food Depots</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>1,034</td>
</tr>
<tr>
<td>Children's Homes and Crèches</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>58</td>
</tr>
<tr>
<td>Slum Posts</td>
<td>44</td>
<td>103</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Other Social Institutions</td>
<td>17</td>
<td>87</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td><strong>Total Institutions</strong></td>
<td><strong>174</strong></td>
<td><strong>730</strong></td>
<td><strong>904</strong></td>
<td><strong>29,356</strong></td>
</tr>
</tbody>
</table>

Total number of officers engaged exclusively in social work, 2520.

There are a number of subsidiary branches of work, such as the Young People's Legion, and the Navy and Military League for work among men in the military, naval and merchant services. In England there is a bank (the Reliance Bank, Ltd.) and a Life Assurance Society, the funds of the latter amounting to £566,309 in 1909. All officers and many of the rank and file wear a uniform. Music is universally employed. While the organization has succeeded in securing recognition and favour in high places both in England and abroad, it has been seriously criticized at times, notably by Huxley and others in 1890-1891, and more recently by J. Manson in The Salvation Army and the Public, a work which led to much public discussion of the Army's religious, social and financial operations and methods. In 1909 some resignations took place among the higher officials.

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SALVER—SALVIAN

Manson, The Salvation Army and the Public (1906; 3rd ed., 1908); Salvation Army Headquarters, A Calumny Refuted: A Reply to the Unfounded Charges of Swearing, &c. (1908); United Workers' Anti-Sweating Committee, Salvation Army Sweating; A Reply to the Mis-statements of General Booth and his Officials (1908; 2nd ed., 1910); Reports of the Trades Union Congress (1907 to 1910).

SALVER, a flat tray of silver or other metal used for carrying or serving glasses, cups, dishes, &c., at table for the purpose of presenting a letter or card by a servant. In a royal or noble household the fear of poisoning led to the custom of tasting the food or drink before it was served to the master and his guests; this was known as the "assay" of meat and drink, and in Spanish was called salva (savor, to preserve from risk, Lat. salvare, to save). The term salva was also applied to the dish or tray on which the food or drink was presented after the tasting process. There seems no doubt that this Spanish word is the source of the English "savor"; a parallel is found in the origin of the term "credence-table," which is from the Ital. credenza, Lat. credere, to believe, trust (see CREDENCE and CREDENCE-TABLE).

SALVIA, a large genus belonging to the natural order Labiatae (g.v.), containing about 500 species in the temperate and warmer regions of both hemispheres. The name is derived from the Lat. salve, from the healing properties of sage, S. officinalis (see figure under LABIATAE). S. verbena, Clary, is a native of Britain found in dry pastures and waste places.

Some of the Salvas are among the most showy of the soft-wooded winter-flowering plants, the blooms being of a blue resembling scarlet. The three most useful species are S. splendens, S. Heeris and S. gesnerifora, the first beginning to flower early in the autumn and lasting till Christmas, while the others follow immediately in succession, and continue in full beauty till April. Young plants should be propagated annually about February, and after nursing through the spring should be grown outdoors in a fully exposed situation, where they can be plunged in some non-conducting manure to form strong roots. The young shoots should be stopped to secure bushy plants, but not later than the middle of August. The most suitable compost for them is a mixture account in her own district and not obscure in family " (Ep. i.). He was certainly a Christian when he married Palladia, the daughter of heathen parents, Hypatius and Quetia, whose displeasure he incurred by persuading his wife to retire with him to a distant monastery, which is almost certainly that founded by St Honoratus at Lerins. For seven years there was no communication between the two branches of the family, till at last, when Hypatius had become a Christian, Salvian wrote him a most tender letter in which he reproached his daughter Auspiciola, begging for the renewal of the old affection (Ep. iv.). This whole letter is a most curious illustration of Salvian's reproach against his age that the noblest man at once forsook all esteem if he became a monk (De gub. iv. 7; cf. viii. 4).

It was presumably at Lerins that Salvian made the acquaintance of Honoratus (ob. 429), Hilary of Arles (ob. 449), and Eucherius of Lyons (ob. 449). That he was a friend of the former and wrote an account of his life we learn from Hilary (Vita Hon., ap. Migne, l. 773; Salv., Ep. ii.). Salvian continued his friendly intercourse with both father and sons long after the latter had left his care; it was to Salonius (then a bishop) that he wrote his explanatory letter just after the publication of his treatise Ad ecclesiam; and to the same prelate a few years later he dedicated his work on the Mass, which the bishop pronounced to be right in assigning Hilary's Vita Honorei to 430, Salvian, who is there called a priest, had probably already left Lyons for Marseille, where he is known to have spent the last years of his life (Gennadius, ap. Migne, lviii. 1906). It was probably from Marseille that he wrote his first letter—presumably to Lerins—begging the community there to receive his kinsman, the son of a widow of Cologne, who had been reduced to poverty by the barbarian invasions. It seems a fair inference that Salvian had divested himself of all his property in favour of that society and that the reference to it in his works (Ep. i., when he compares Ad eccles. ii. 9, 10; iii. 5) has been misconstrued that Salvian paid a visit to Carthage; but this is a mere inference based on the minute details he gives of the state of this city just before its fall (De gub. vii. 8.). He seems to have been still living at Marseilles when Gennadius wrote under the papacy of Gelasius (492-496).

Of Salvian's writings there are still extant two treatises, entituled respectively De gubernatione Dei (more correctly De predicentis iudicio) and Ad ecclesiam, and a series of nine letters. The De gubernatione, Salvian's greatest work, was published after the capture of Litorius at Toulouse (439), to which he plainly alludes in viii. 40, and after the Vandal conquest of Carthage in the same year (vi. 12), but before Attila's invasion (450), as Salvian speaks of the Huns, not as enemies of the empire, but as serving in the Roman armies (vii. 9). The words "maximum belii, " seem to denote a year very soon after 439. In this work, which furnishes a valuable if prejudiced description of life in 5th-century Gaul, Salvian deals with the same problem that had moved the eloquence of Augustine and Gildas. Why were the miseries of the time so terrible? Could it be, as the pagans said, because the age had forsaken its old gods? or, as the semi-pagan creed of some Christians taught, that the nation constantly overrule the world he had created (i. 1)? With the former Salvian will not argue (iii. 1). To the latter he replies by asserting that, "just as the navigating steersman never loosens the helm, so does God never remove his care from the world," hence the title of the treatise. In his misrule, according to Salvian, we have the apostrophing of the impost, escape comparatively free (v. 7). The great towns are wholly given up to the abominations of the
circuit and the theatre, where decency is wholly set at nought, and Minerva, Mars, Neptune and the old gods are still worshipped (vi. 1; cf. vi. 2 and viii. 2). Treves was almost destroyed by the barbarians; yet the first petition of its few surviving notables was that the emperor would return for a brief visit (Cod. 1184 vi. 15). And this was the prayer of Christians, whose baptismal oath pledged them to renounce "the devil and his works... the pomp and shows (spectacula)" of this wicked world (vi. 6). Darker still was the situation when the licentiousness of Gaul and Spain (iv. 5); and more fearful to Salvian than all else was to hear men swear "by Christ" that they would continue their familiars' Socratic custom if God left such a state of society unpunished (iv. 12). Especially among Christians, whose sin, since they alone had the Scriptures, was worse than that of barbarians, even if equally wicked, work for the propagation of the faith had fostered the shining virtues mingled with their vices, whereas the Romans were wholly corrupt (vii. 15, iv. 14). With this iniquity of the Romans Salvian contrasted the life of the Vandals, the piety of the Goths, and the rude virtues of the Franks, to whom, though heretic Arians or unbelievers, God is giving in reward the inheritance of the empire (vii. 9, 11, 21). It is curious that Salvian shows no such hatred of the heretics as was rife in Gaul seventy years later. It is difficult to credit the universal wickedness adduced by Salvian, especially in face of the contemporary testimony of Symmachus, Ausonius and Sidonius. Salvian's picture is more exterminating than impartial. 

15. Ad ecclesiam is explained by its common title, Contra avaria rerum. It strongly commends meritorious almsgiving to the church. It is quoted more than once in the De gubernatione. Salvian published it at Rome about the middle of the fifth century, and there is a letter in his old pupil, Bishop Salomians (Ep. ix.). This work is chiefly remarkable because in some places it seems to require parents not to bequeath anything to their children, on the plea that it is better for the children to suffer want in this world than that their parents should be damned in the next (iii. 4). Salvian is very clear on the duty of absolute self-denial in the case of sacred virgins, priests and monks. The last is corroborated by a well-known passage, notably a poem "in morem Graecorum" on the six days of creation (hexaemeron), and certain homilies composed for bishops, are now lost (Genn. 67). 

The De conversations was first printed in Siecheid's Antitologia (Basel, 1528); the De gubernatione by Brascian (Basel, 1530). The two appeared in one volume at Paris in 1575. Pithecus added various sections and the first seven letters (Paris, 1580); Ritterhusius made various conjectural emendations (Altiori, 1611), and Baluzius many more based on MS. authority (Paris, 1653-1669). Numerous other editions appeared from the 16th to the 18th century, all of which are now superseded by the excellent ones of C. Halm (Berlin, 1877) and F. Pauly. (Vienna, 1883). The two oldest MSS. of the De gubernatione belong to the 10th century (Cod. Paris, No. 13.38) and the 13th (Brussels, 10.568); of the Ad ecclesiasticum the 10th (Paris, 1177); the 12th (Cod. Paris, 1822); of the Satires (Cod. Paris, 1785-1786); of Epist. VIII. 7th to the 5th century (Paris, 95.559) and to the 9th or 10th century (Paris, 12.227, 12.230). Of the first seven patients there is only a MS. extant, of which one part is now at Berne (Berlin, 1807) and the other at Paris (1855). See Bellet, De la Collection de manuscrip des Satires de Fr. France, vol. ii.; Zimmermann, Saluianus (Halle, 1875). Salvian's works are reprinted (after Baluzius) in Migne's Cursus patr. lat. vol. iii. For bibliography, see T. G. Schneemuller, Bibliotheca patrum (ii. 832), and the prefaces to the editions of C. Halm (Monum. Germ., 1877) and F. Pauly (Vienna, Corp. sacr. aec. Lat. 1883). Cennadis, Hillary and Eucharius may be consulted in Migne, vol. vii., and also see S. Dill, Roman Society in the First Century of the Western Empire, pp. 115-120. (T. A. A.)

SALVINI, TOMMASO (1829- ), Italian actor, was born at Milan on the 1st of January 1829. His father and mother were both actors, and Tommaso first appeared when he was barely fourteen as Pasquino in Goldoni's Dona curiae. In 1847 he joined the company of Adelaide Ristori, who was then at the beginning of her brilliant career. It was at Elettra that he won his first success in tragedy, playing the title rôle in Alferio's Orote at the Teatro Valle in Rome. He fought in the cause of Italian independence in 1849; otherwise his life was an unbroken series of successes in his art. He acted frequently in England, and made visits to America in 1854 and in 1856. He died in 1880. In 1886 he played there Othello to the Iago of Edwin Booth. Apart from Othello, which he played for the first time at Vicenza in June 1856, his most famous impersonations included Conrad in Paolo Giacometti's La morte civile, Egisto in Alferio's Meropè, Saul in Alferio's Saul, Paolo in Silvio Pellico's Francesca da Rimini, Oedipus in Niccolini's play of that name, Macbeth and King Lear. Salvini retired from the stage in 1850, but in January 1902 took part in the celebration in Rome of Ristori's eightieth birthday (see the Century Magazine for June 1902, vol. lix.). Salvini published a large volume of letters entitled Ricordi, and edizioni impresioni (Milan, 1895). Some ideas of his career may be gathered from Leaves from the Autobiography of Tommaso Salvini (London, 1893).

SALWEN, a river of Burma. This river, called Nam Kông by the Shan, Thanlin by the Burmese, Lu Kang, or Nu Kang, or Lu Tzu Kang by the Chinese, is the longest river in Burma, running for 750 miles through the wildest and most picturesque streams in the world. Its success and uniformity, however, are slight causes to doubt that it rises in the Tanla mountains, S. of the Kuen Lun, somewhere in 32° or 33° N., and that perhaps it draws some of its water from the Kara Nor. It is thus a much longer river than the Irrawaddy. From the time it leaves Tibet it has a very narrow basin, and preserves the character of a gigantic ditch, or railway cutting, with for long stretches no other affiliates than the mountain torrents from the hills, which rise from 3000 to 5000 or 6000 ft. above the level of the river-bed. In the dry season the banks are alternate stretches of blinding white sand, and sand, and streams of shifting sand; in the rainy season, long stretches of shingle. In the rains all these disappear, and the water laps against forest trees and the abrupt slope of the hills. The average difference between high and low water level of the Salween throughout the Shan States is between 50 and 60 ft., and in some places it is as much as 90. There are many rapids, caused by reefs of rock running across the bed, or by a sudden fall of one from several feet, which produce very rough water below the swift glide; but the most dangerous navigation is where a point juts out into the stream, and the current, turning, causes a奋f of water. Nevertheless, long stretches of the river, extending to scores of miles, are habitually navigated by native boats. The current is extremely variable, from 3 m. an hour to ten knots. Launches ply regularly from Moulmein to the mouth of the Yonzalin, in Lower Burma. The worst part of the whole Salween, so far as is known, is the gorge between the mouth of the Yonzalin and Kyauknyat. It is quite certain that steam launches could ply over very long sections of the river above that, perhaps as far as the Kawkerry, or even the Kunlong ferry. In British territory, there are two steamers named Salween, one itself, and frequently the ferry vessels are built 1000 ft. above the mouth.

The Chinese believe the Salween valley to be deadly to all strangers, but it is in Chinese territory—particularly in the Lu Kang, or Mong Hsü state—that there is the largest population on the river until Lower Burma is reached. A description of the Salween resolves itself into a list of the ferries at which it can be crossed, for no one marches up the river. The river is bridged by the Chinese on the main route from Teng Yüeh (Momien) and Bhamo to Talu-fu. There are two spans; these are not in a straight line, but parallel to one another at a distance of the breadth of the central pillar. Each span is formed by twelve or fourteen massive iron chains, with planks laid across them. There was a bridge some 20 m. lower down, but this was destroyed in 1894. In British territory there are no bridges, and the ferries are the same as those maintained before annexation. There are a great number of these ferries, but only a few are used, except by the local people. From Ta Hsing Lo large trading boats ply regularly to Kyauknyat, whence the traders make their way by land over the hill to Papun, and so down the Yonzalin. The chief tributaries of the Salween in British territory are the Nam Yu and the Nam Oi or Nam Mwe on the right bank, and the Hsiaa Haw on the left. These are short but fair-sized streams. Near the Kunlong ferry the Nam Nin, on the right bank, and the Nam Ting, on the left, are considerably longer, and the Nam Ting is navigable by native craft for considerable stretches up to Męng Ting and farther. To the S. the two tributaries is the Nam Kyek, on the right bank, down the valley of which the railway will reach the Salween. Below this the Na Mla, on the left, is the Na Mla entering on the right bank, the other on the left, at no great distance from one another, but of no great length. A little below is the Nam Nang, on the right, which, coming from the land to the Näm, falls as a cascade of nearly 200 ft. in the cold weather from the right, and then there are no affluents till the Nam Hka comes in on the left.
This has a great volume of water, but is un navigable because of its steep gradient and many gorges. After the Hwe Long, entering from the left at Ta Kow, is passed, the Nam Pang comes in the right down the valley. This is the largest tributary of the Salween; some distance above its mouth, at Keng Hiam, it is 400 yds. wide and quite unfordable. The next important tributary is the Nam Haim, on the left bank, rising in the latitude of Keng Tung. It is a large but quite un navigable stream. Except the Me Si and Me Sala, from opposite sides, and the Nam Hang, which burrows its way through a range of hills from the E., and the Nam Pan, coming from the W., there is no considerable tributary till near Nga-wa, where the Nam Teng comes in on the right from the central Shan States. This is a considerable river, and navigable for long stretches in its upper course, but the last few miles before it enters the Salween is little better than a cataraft. Below this the only large affluent is the Nam Pawn, which drains all Kareni and a considerable portion of the Shan States, but is quite un navigable. Below this the tributaries are again only mountain streams till the Taung-yin comes in from the S.E. Thirty m. lower down is Kyodan, the great timber depot. Here a cable, stretched across the river, catches all the timber, which is then made up into rafts and floated down to Kado, near Moumein, where the revenue is collected. The Yonzalin enters the Salween from the right about 10 m. below Kyodan. Boats can ply from Kyodan S., and light draught steamers ascend as far as Shwegon, 63 m. from Moumein. The Salween cuts the British Shan States nearly in half, and is a very formidable natural obstacle. It seems probable, however, that long stretches of it can be opened to trade. It is certainly no less navigable than the Middle Meikong or the Yangtze; but it is a fanghwa.

**SALWEEN**, a district in the Tenasserim division of Lower Burma. Area, 2666 sq. m. Pop. (1905) 37,837, consisting largely of aboriginal tribes, Karens (33,448) and Shan (2816). Nearly the whole district is a maze of mountains intersected by deep ravines, the only level land of any considerable extent being found in the valley of the Yonzalin, while the country is covered with dense forest, of which 128 sq. m. are reserved. The district is drained by three principal rivers, the Salween, Yonzalin and Bilin, fed by mountain torrents. The Yonzalin, which rises in the extreme N., is navigable with some difficulty in the dry season, but the Bilin cannot be navigated even at the limits of the district except by small boats and rafts. The district is in charge of a superintendent of police, with headquarters at Papun. The total rainfall in 1905 was 11448 in., recorded at Papun. Apart from cotton-weaving, there are no manufactures. A considerable trade is carried on with Siam by bridle paths across the mountains. **SALYANY**, a town of Russian Transcaucasia, in the government of Baku, 80 m. S.S.W. from Baku, on the river Kura, and on an island of the same name. In 1897 its population was 10,168, chiefly Russians and Greek Orthodox, fishing being the chief occupation. The town is connected with all parts of Russia during the season. Salyany was annexed to Russia in the 18th century, but was re taken by the Persians, and only became Russian finally in 1813. **SALYES (Gr. Σαλέως: also SALLYES, SALY, SALLUVI), in ancient geography, a people occupying the plain S. of the Druentia (Durance) between the Rhone and the Alps. According to Strabo (iv. p. 203) the older Greeks called them Ligyes, and their territory Ligystiké. By some authorities they were considered a mixed race of Galli and Ligurians (hence Celtoligyes); by others a purely Celtic people, who subdued the Ligures in the Pyrenees. They are said to have been the first transalpine people subdued by the Romans (Flor us i. 2). In 154 B.C. the inhabitants of Massilia, who had been connected with the Romans by ties of friendship since the second Punic war, appealed for aid against the Oxybhi and Deciates (or Deciates). These people, called by Livy (Eclit. 47) transalpine Ligurians, were perhaps two smaller tribes included under the general name of Salyes. They were defeated by Quintus Opimius. In 125-124 hostilities broke out between the Romans and the Salyes from the same cause. The successful operations of Marcus Fulvius Flaccus were continued by Gaius Sextius Calvinus (123-122), who finally subdued the Salyes, destroyed their chief town, and founded near its ruins the colony of Aquae Sextiae (Aix). Part of their territory was handed over to the Massaliots. Their king, Tuto matulus (or Teutomatius), took refuge with the Allobroges. From this time the Salyes practically disappear from history. Among other important Roman towns in their territory is mentioned Taruso or Tarasco (Tarascon), Arelate (Arles), Glanum (St. Remy) and Ernagninum (St. Gabriel). For ancient authorities see A. Hölzer, Altechischer Sprachw. ii. 113, 114.)

**SALZA, HERMANN VON** (c. 1170-1239), Master of the Teutonic Order, and councillor of the emperor Frederick II., was a son of the family of Langensalza in Thuringia. He entered the Teutonic Order in early life, became very intimate with Frederick II., took part in the expedition to Damietta in 1221, and accompanied the emperor on the crusade of 1228, which was joined by many princes owing to his influence. About 1210 he was appointed master of the Teutonic Order, and was offered, in 1226, the province of Kulm by Conrad I., duke of Masovia, in return for help against the Prussians; this he accepted and obtained the investiture from Frederick. In 1230 the conquest of Prussia was begun by the Order, although not under his immediate leadership. In 1225 he reconciled Valdemar II., king of Denmark, with Henry I., count of Schwerin, and thus again won the land on the right bank of the Elbe for the Empire, and the recognition of imperial superiority over Denmark. Trusted by Pope Gregory IX. and the emperor alike, he brought about the treaty of San Germano between them in 1230, was the only witness when they met in conference at Anagni in the same year, and it was he who, in 1235, induced Frederick's son, Henry, to submit to his father. He was on the side of the emperor when he first cruised in Apulia, and was buried there in the chapel of his Order.


**SALZBRUNN,** a watering-place of Germany, in the Prussian province of Silesia, at the foot of a well-wooded spur of the Riesengebirge, 12 m. S.W. of Breslau, by the railway to Halberstadt. Pop. (1905) 10,412. It consists of Ober-, Neu- and Nieder-Salzbrunn, has a Roman Catholic and an Evangelical church and manufactures of glass, bricks and porcelain. Its alkalo-saline springs, especially efficacious in pulmonary and urinary complaints, were known as early as 1316, but fell into disuse until rediscovered early in the 19th century. The waters are used both for drinking and bathing, and of the two chief springs, the Oberbrunn and the Kronenquelle, nearly two million bottles are annually exported. The number of summer visitors is about 7000 a year.

See Valentiner, Der Kurort Obersalzbrunn (Berlin, 1877); Biefel, Der Kurort Salzbrunn (Salzbrunn, 1872); and Deutsch, Schlesisches Heilquellen und Kurorte (Breslau, 1873).

**SALZBURG,** a duchy and crownland of Austria, bounded E. by the Bayrisch-Österreich, S. by Carinthia and Styria, W. by Bavaria and Tirol and S. by Carinthia and Tirol. It has an area of 2762 sq. m. Except a small portion in the extreme S., near Bavaria, the country is mountainous and belongs to the N. and central zone of the Eastern Alps. It is divided into three regions; the region of the Hohe Tauern, extending S. of the Salzach, the region of the limestone Alps and the undulating foothill region. The Hohe Tauern contains many high lying valleys, traversed by the streams which flow into the Salzach, as well as numerous depressions and passes, here called popularly Tauern. The deepest depression of the whole range is the Velser Tauern valley (8334 ft.) between the Velser and the Tauern, and the principal pass is the Niederer (Mallnitzer) Tauern (5920 ft.). This pass which leads from the Gastein valley to Carinthia is the oldest bridle-path over the Hoher Tauern. Between the passes is the ridge of Sonnbliek, where a meteorological observatory was established in 1886 at an altitude of 10,170 ft. The region of the limestone Alps is composed of several detached groups: a portion of the Kitzbühler Alps, which contain the famous Thurn pass (4663 ft.); then the Salzburg Alps, which contain the Loferer Steinberge and the peak of the Steinberg (8375 ft.); the Reiteralm at the Retteleap with the peak of the Stadelhorn (7405 ft.); and the broad mass of the Schönfeldspitz (8708 ft.) from which the great glacier-covered block of the Ewiger Schnee, or Übergossene Alps projects into the Salzach valley. Farther N. are the Hagengebirge (7844 ft.); the beautiful summit of the Hoher Göll (8263 ft.); the Tennengebirge (7217 ft.); and the Untersberg, an outpost of the Berchtesgaden
group. Between the Hagengebirge and the Tennenengebirge, which are situated on each side of the Salzach valley, is one of the most magnificent narrow passes of the Alps. It is below Werfen, and near its exit past at the narrowest part, is the Lueg Pass, which was fortified as early as 1316 and offered a firm resistance to the French in the years 1800, 1805 and 1809. A portion of the Ischler Alps, as well as of the Dachstein group, also belongs to Salzburg. The principal river of Salzburg is the Salzach. The Enns and the Mur also rise in this province. The four Krimmler falls, together 2085 ft. high, are the most important falls in the Eastern Alps. The two falls at Wildbad-Gastein (196 and 206 ft.); the fall, by which the Gasteiner Ache discharges itself into the Salzach; the Tauern fall (666 ft.), formed by the Tauern Ache on the N. slope of the Tauern; and the Gollinger fall (302 ft.) also deserve notice. Among the Klammen, i.e. narrow passages leading from the Salzach valley to the valleys of smaller rivers, the most celebrated are the Kitzloch Klamm and the Liechtenstein Klamm. The Kitzloch Klamm is formed by the Rauris Thal and the Liechtenstein Klamm by the Gross-Arle Thal. A path through the last Klamm leads to the magnificent fall (174 ft.) of the Gross-Arle river, which discharges itself in a series of cascades into the Salzach.

The most important lake is the Zeller-see (2424 ft. above sea-level, 2 sq. mi.). In it, in 1808, 1847, and 1688 fires are carried off by the Salzach. The Waller-see or Lake of Sankt Veit in the middle of the Alps (2424 ft. above sea-level), the Fuschl-see (205 ft.), the Hinter-see (2580 ft.), the Ober-Trummer-see and Nieder-Trummer-see are all situated in the Alpine foothill region. The Mond-see (1560 ft.) and Aher-see, or Lake St Wolfgang, are on the frontier between Salzburg and Upper Austria. The climate, although healthy, is very changeable, with great extremes of temperature and heavy rainfall, especially in the summer. The most settled season is the autumn. The annual mean temperature at Salzburg is 46°-4 F. The climate of the duchy in 1900 was 193,247, which is equivalent to 69 inhabitants per square mile. It is the most sparsely populated province of Austria. Between 1880 and 1900 the population increased by 17.5%. The inhabitants are a handsome and powerfully built peasant race, very conservative in religion, manners, customs and national costume. They are almost exclusively of German stock and are Roman Catholics. Elementary education is much more advanced here than in any other Alpine province. Although 13.71% of the soil is unproductive and 32.64% is covered with forests, Salzburg is one of the principal pastoral regions of Austria. Of its total area, 28.9% consists of meadows, while only 9.5% is arable. Cattle-breeding and dairy-farming are very developed and constitute the chief resources of the province. Next in importance comes the timber trade; game is also plentiful. The mineral wealth of Salzburg includes salt at Hallein, copper at Mitterberg, iron-ore at Werfen, marble in the Untersberg region and small quantities of gold near the Goldberg in the Rauris valley and at Bockstein in the Gastein valley. The duchy contains also a great many mineral springs, as the celebrated springs at Gastein, alkaline springs at Mauterndorf and at St Wolfgang, and saline springs at Golling and Hallein. Commerce and manufacture are also developed. The duchy is divided into six departments, of which the capital, Salzburg, is one and its environs the second. The other four are Hallein, St Johann, Tamsweg and Zell-am-See. The local diet, of which the archbishop is a member ex-officio, is composed of 28 members, and the duchy sends 7 members to the reichsrath at Vienna. At Hallein, pop. (1900) 6608, with celebrated saline springs known since the beginning of the 13th century, in 1780, encounters between the French and the Tirolean under Joseph Johann Hasinger took place. To the N.E. lies Adnet with extensive marble quarries, and to the N. Oberalm, with manufacture of marble articles. The ascent of the Hoher Goll is made from here. Zell-am-See (2473 ft.), pop. 1561, is a favourite tourist resort. To the E. is the Schmittenhoehe (6455 ft.), which is easily accessible. On the summit is a meteorological station. Sankt Johann (pop. 1343) was one of the earliest settlements in the Salzach valley, and was a principal centre of Protestantism. Near it is the Liechtenstein Klamm.

For the history of the archbishopric and duchy see the article on the town of Salzburg (below).

Salzburg, capital of the Austrian duchy and crownland of Salzburg and formerly of the archbishopric of the same name, 105 m. W. by S. of Vienna by rail. Pop. (1900) 32,934. The city possesses a qualification of singular beauty on the Salzach which passes at this point between two isolated hills, the Mönchberg (1464 ft.) on the left and the Capuzinerberg (2132 ft.) on the right. The river, from the low valley, so formed, and stretching into the plain beyond, lies Salzburg. The old and main part of the city lies on the left bank of the Salzach, in the valley between the Stadttor, the ruined old palace of the bishops, and the Knoll at the base of the Mönchberg; the newer town is on the right bank at the foot of the Capuzinerberg, which is separated from the river by the narrow suburb of Stein. At the S. of the old town, below the Nonnberg, of S.E. spur of the Mönchberg, is the suburb of Nonnthal; and at the N. end is Mülln. The steep sides of the Mönchberg rise directly from amidst the houses of the town, some of which have cellars and rooms hewn out of the rock. At the ancient cemetery of St Peter, the oldest in Salzburg, is bounded the river flows out in the side of the hill. The narrowest part of the ridge, which has a length of above 2 m., is pierced by the Neu Thor, a tunnel 436 ft. long and 23 ft. broad, completed in 1767, to form a convenient passage from the town to the open plain. The S. end of the Mönchberg is occupied by the imposing Hohen-Salzburg, a citadel originally founded in the 9th century, though the present buildings, the towers of which rise 400 ft. above the town, date chiefly from 1496-1519. Its chapel contains statues of the twelve apostles in red marble. The citadel is now used for barracks. The streets in the older part are narrow and gloomy; but the newer parts of the city, especially those laid out since the removal of the fortifications about 1861, are handsome and spacious. Owing to the frequent fires the private buildings of Salzburg are comparatively modern; and the existing houses, lavishly adorned with marble, are, like many of the public buildings, monuments of the gorgeous taste of the archbishops of the 17th and 18th centuries. From the style of the houses, the numerous open squares, and the abundant fountains which give an Italian aspect to the town, Salzburg has received the name of the "German Rome." Both sides of the river are bordered by fine promenades, planted with trees. Salzburg is spanned by four bridges, including a railway bridge.

Salzburg is full of objects and buildings of interest. The cathedral, one of the largest and most perfect specimens of the Renaissance style in Italy, was built in 1614-1668 by the Italian architect Santino Solari. It is round plan in style, and is surrounded by a square with low arcades. It is bounded by the Dom-Platz, the Kapitel-Platz and the Residenz-Platz; and opening on the N.E. and N.W. of the last are the Mozart-Platz and the Mariaplatz or Mariahilf Platz. The Emperor was, in 1852, in relative, near the cave in the side of the Mönchberg, said to have been the hermitage of St Maximus, who
was martyred by the pagan Heruli in 477. The Franciscan church, with an elegant tower built in 1806, is an interesting example of the transition from the baroque epoch to the classical style in Austria. St. Sebastian's, on the right bank, built in 1505-1512 and restored in 1812, contains the tomb of Paracelsus, who died there. The oldest and most valuable church in Salzburg is the abbey church of the Benedictine abbey of St. Peter founded by St. Rupert as the nucleus of the city. It was completely rebuilt in 1131 and contains a library of 40,000 volumes, besides MSS. The Capuchin monastery, dating from 1618, the Capuchin church, and the abbey church of St. Peter are noteworthy buildings. Since the time of the foundation of the abbey church of St. Peter, the university of Salzburg, founded in 1623 and suppressed in 1810. The city is the seat of an archbishop with a cathedral chapter and a diocese. Salzburg, situated at the forks of the Salzach and Traun rivers, has a population of 45,591. The town carries on a variety of small manufactures, including the manufacture of marble ornaments. Oner industries are breeding and book-binding. It was the birthplace of Mozart and of the painter Hans Makart (1840-1884). The house in which Mozart was born has been transformed into a museum, which contains many interesting relics.

Numerous places of interest and beautiful spots are to be found round Salzburg. To the E. rises the Gaisberg (2206 ft.), which is used for the transportation of mails. The Post road is the old road of the Gaisberg is Aigen, a renowned castle and park. Three miles S. of Salzburg is the palace of Hellbrunn, built about 1615, which is used as a theatre and contains a fine collection of Chinese porcelain. About 2 m. to the S.W. of Salzburg are the ruins of Leopoldskron, from this point the Leopoldsadler Moos stretches S. to the base of the Untersberg. The city of Untersberg is about 3 m. distant, attracting the attention by its fine and interesting church, and by the pleasant walks that can be taken from it. Half a mile N. of Salzburg, at an altitude of 720 ft., stands the pilgrimage church of Maria Plain, erected in 1674.

The origin and development of Salzburg were ecclesiastical, and its history is involved with that of the archbishopric to which it gave its name. The old Roman town of Juvavum was laid in ruins, and the incipient Christianity of the district was often clashing, by the fruits of its position between the Rhine and Danube, it was the monastery and bishopric of St. Peter, which was founded about 700 by t Rupert of Worms, who had been invited by Duke Theodo of Bavaria to preach Christianity to their land. The modern name of the town, due to several others in the district to the abundance of salt found there, appears before the end of the 8th century. From the year 963, when Charlemagne had taken possession of Bavaria in the 8th century, Bishop Arno of Salzburg was made an archbishop and papal legate. Thenceforward the dignity and power of the see steadily increased and in the course of time the archbishops obtained high secular honours. In 1278 Rudolph of Habsburg made them imperial princes.

The archbishopric has always been a centre of foreign policy and has always been keen in Salzburg. Archbishop Leonard II., who expelled the Jews from Salzburg in 1498, had to face a conspiracy of the nobles and was besieged in Hohen-Salzburg by the inhabitants in 1511. The Peasants' War rapidly rose to 1525 and was again enforced by the aid of the Swabian League. From the beginning an orthodox stronghold of the Roman Catholic faith, Salzburg energetically opposed the Reformation. Under Archbishop Wolfgang Dietrich (1511-1533), the archbishopric attempted to rid itself of the power of the humanists and of the Jesuits from their houses demolished. In spite, however, of rigorous persecution the new faith spread, and a new and more searching edict of expulsion was issued by Archbishop Leopold I. von Firmian (1517-1512), who ruled with energy and justice but without gaining concessions. By the peace of Lunville (1802) the see was secularized and given to the archduke of Austria and grand-duke of Tuscany in exchange for Tuscany, its new owner being enrolled among the electoral princes. In the redistribution following the peace of Pressburg in 1805, Salzburg fell to Austria. Four years later it passed to Bavaria, but after the peace of Paris it was restored to Austria in 1816, except a portion on the left bank of the Salzach. Under the designation of a dukedom, it formed part of the Prince-archbishopric of Salzburg until 1849, when it was made a separate crownland, and finally in 1861 the management of its affairs was entrusted to a local diet. Salzburg is governed by a diet elected by universal and exact suffrage.

Salzburg embraced at the time of the peace of Westphalia (1648) an area of 3821 sq. m. with a population of 190,000. A part of its territory was ceded to Bavaria in 1814, and when Salzburg became a crownland, ceded in 1849 several of its districts were added to Tirol.

For the history of the archbishopric see Mellert, Regesta archbish. Salzburgensium, 1700-1746 (Vienna, 1866); Dümmler, Beiträge zur Geschichte des Erzbistums von Salzburg im 9. 12. Jahrhundert (Vienna, 1895); the Salzburger Urkundenbuch, edited by W. Hautehler (Salzburg, 1895); Pichler, Salzburger Landesgeschichte (Salzburg, 1898); Thamm, Das Herzogtum Salzburg (1881); Thamm, Der Staatskanzler (1881); Riedl, Der Erzögeschichte Salzburg (1885); See also E. A. von Falch, Der Staatskanzler (1881); Neurer, Der Staatskanzler (1881); J. F. von Falch, Die Staatskanzler (1881).
obtained a clerkship in the Préfecture de la Seine, which he held for most of his life. He presently began to send poems to the Mercure de France, and these attracted attention. In 1893 he allowed a friend to print his earliest volume of poems, Au Jardin de l’infante, in a very small edition. This led to the sudden recognition of his talent, and to applause from critics of widely different schools. In 1897 this book was reprinted in a much larger form, with the addition of a section entitled L’Utencia. Samain’s second volume, Aux flancs du vaste, appeared in 1898. His health began to fail and he withdrew to the country, where he died, in the neighbourhood of the village of Magny-les-Hameaux, on the 18th of August 1900. A third volume of his poems, Le Charroi d’or, appeared after his death, with a lyrical drama, Polyphème (1901), which was produced at the Théâtre de l’Oeuvre in 1904. The fame of Samain rapidly advanced when he was dead, and the general public awakened to the fact that this isolated writer was a poet of rare originality. He cultivated a delicate, languid beauty of imagery and an exquisite sense of verbal melody without attempting any revolution in prosody or identifying himself with any theory. Samain had no great range of talent, nor was he ambitious of many effects. Samain’s natural life was patiently spent in squalid conditions; he escaped from them into an imaginative world of the most exquisite refinement. He has been compared to Watteau and Schumann; in his own art he bore some resemblance to Charles Baudelaire, and to the English poet Arthur O’Shaughnessy.


SAMANA RANGE, a mountain ridge in Kohat district of the N.W. Frontier Province of India, commanding the S. boundary of Tirah. The ridge lies between the Khanki Valley on the N. and the Miranazzi Valley on the S., and extends for some 30 m. W. from Hangu to the Samana Suk. It is some 6000 to 7000 ft. high. Beyond the Samana Suk lies the pass, known as the Chagru Kotal, across which the Tirah Expedition marched in 1897. On the opposite hill on the other side of this road is the famous position of Dirgai (see TIRAH CAMPAIGN). After the Miranazzi Expedition of 1891 this range was occupied by British troops and eleven posts were established along its crest, the two chief posts being Fort Lockhart and Fort Gulistan. In 1897 all the forts on the Samana were attacked by the Orakzais, and this and the Afridi attack on the Khyber Pass were the two chief causes of the Tirah Expedition. When Lord Curzon reorganized the frontier in 1900, British garrisons were withdrawn from the Samana forts, which are now held by a corps of tribal police 450 strong, called the Samana Rifles.

SAMÁNIDS, the first great native dynasty which sprang up in Persia, which was nominally provincial governors under the suzerainty of the caliphs of Baghdad, succeeded in a very short time in establishing an almost independent rule over Transoxiana and the greater part of Persia. Under the caliphate of Mamun, Samân, a Persian noble of Balkh, who was a close friend of the Arab governor of Khorasan, Asad b. Abdallah, was converted from Zoroastrianism to Islam. His son Asad, named after Asad b. Abdallah, had four sons who rendered distinguished services to Mamun. In return they all received provinces: Nûh obtained Samarkand; Ahmad, Ferghana; Yahya, Sughd; Ilyas, Herat. Of these Ahmad and his second son Isma’il overthrew the Samânids (q.v.) and the Zaildites of Tabaristan, and thus the Samânids established themselves with the sanction of the caliph Motamid in their capital Bukhara. The first ruler (824) was Nasr I. (Nasr or Nasr b. Ahmad b. Asad b. Samân). He was succeeded by his brother Isma’il b. Ahmad (892). His descendants and successors, all renowned for the high intelligence which gave both to the patriotic feelings and the national poetry of modern Persia (see Persia; Isma’il, his son Isma’il (907-913); Nasr II. b. Ahmad, the patron and friend of the great poet Khwâja Rûdî (913-942); Nûh I. b. Nasr (942-954); Abdalmâlik I. b. Nûh (954-961); Mansûr I. b. Nûh, whose vizier Bal’ami translated Tabârî’s universal history into Persian (961-976); Nûh II. b. Mansûr, whose court-poet Dahâqî (Dâkîâ) began the Shâhnameh (976-997); Mansûr II. b. Nûh (997-1005); and Abdalmâlik II. b. Nûh (999), under whom the Samânid dynasty was conquered by the Ghaznevids. The rulers of this powerful house, whose silver dirhems had an extensive currency during the 10th century all over the N. of Asia, and were brought, through Russian and Polish trading clowns, to the courts of these eastern peoples, and the Mussulman empire of India. Under Abdalmâlik I. the Turkic slave, Alptagin, had been entrusted with the government of Bokhara, but, showing himself hostile to Mansûr I., he was compelled to take refuge to his own lands, where he soon established a semi-independent rule, to which, after his death in 977 (397 H.), his son-in-law Sabuktâqin, likewise a former slave, succeeded. Nûh II., in order to retain at least a nominal sway over this territory, confirmed him in his high position and even invested Sabuktâqin’s son Mahmûd with the governorship of Khorasan, in reward for the powerful help they had given him. This was a prelude to his making a dash for the small-affected nobles of Bokhara under the leadership of Fâ’iq and the troops of the Daiamâra, a dynasty that had arisen on the shores of the Caspian Sea and wrested already from the hands of the Samânids all their western provinces. Unfortunately, Sabuktâqin died in the same year as Nûh II. (997, 387 A.H.), and Mahmûd (q.v.), confronted with an internal contest against his own brother Isma’il, had to withdraw his attention for a short time from the affairs in Khorasan and Transoxiana. This interval sufficed for the old rebel leader Fâ’iq, supported by a strong Tatar army under the Ilek Khan Abu’l Yosum Nasr I., to turn Nûh’s successor Mansûr II. into a mere puppet and independent governor of Transoxiana. Even in the time of Mansûr’s successor Abdalmâlik II., and assumed as an independent monarch for the first time in Asian history, in the title of “Emir,” the dynasty of Samân, Montasîr, a bold warrior and a poet of no mean talent, was even for some years a kind of guerilla warfare against both Mahmûd and the Ilek Khan, who had occupied Transoxiana, till he was assassinated in 1005 (401 H.). Transoxiana itself was annexed to the Ghaznevid realm eleven years later, 1016 (407 A.H.).

See S. Lane Poole, Mohammediân Dynasties (1894), pp. 131-133; Stockis, Manuel d’histoire de l’Asie, vol. I. p. 115; also articles CALIFHATE and PERSIA, “History, section B,” and for the later period MAHMUD, SELJUKS, MONGOLS.

SAMANIEGO, FELIX MARIA DE (1745-1801), Spanish fabulist, was born at Laguardia (Aлава) on the 15th of October 1745, and was educated at Valladolid. A government appointment was secured for him by his uncle the count de Peñafielo. His Fábulas (1781-1784), one hundred and fifty-seven in number, were originally written for the boys educated in the school founded by the Biscayan Society. In the first instalment of his fables he admits that he had taken Iriarte for his model, a statement which proves that he had read Iriarte’s fables in manuscript; he appears, however, to have resented their publication in 1782, and this led to a rancorous controversy between the former friends. Samaniego holds his own in the matters of quiet humour and moral versatility. His graceful style continues. He died at Laguardia on the 11th of August 1801.

SAMARA, a government of S.E. Russia, on the W. side of the lower Volga, bounded on the N. by the governments of Kazan and Ufa, on the W. by Simbirsk and Saratov, on the E. by Ufa and Orenburg, and on the S. by Astrakhan, the Kirghiz Steppes and the territory of the Ural Cossacks. The area is 58,302 sq. m., and the population, in 1897, 2,703,478. A line drawn E. from the great bend of the Volga—the Samarskaya Luka—would divide the government into two parts, differing in orographical character. In the S.W. are hills and plateaus intersected by deep rivers. In their highest parts these rivers flow in deep beds over 1000 ft. above the sea, while the level of the Volga at Samara is only 43 ft. S. of the Samarskaya Luka the country assumes the character of a low, flat steppe, recently emerged from the post-Pliocene Aral-Caspian basin. The government is built up chiefly of Carboniferous sandstones, conglomerates, clay slates and limestones, representing mostly deep-sea deposits. The Permian formation appears along the rivers Sok and Samara, and is represented by limestones, sands and marls containing gypsum, all of marine origin, and by continental deposits dating from the same period; sandstones impregnated with petroleum also occur. In the N. these deposits are covered with
"variegated marls" and with a variety of Triassic, Jurassic and Cretaceous deposits. The Tertiary formation (Eocene) appears only at Novo-uzensk; the remainder of a vast sheet of this formation, which at one time covered all the region between the Volga and the Urals, was removed during the Glacial period. Post-Tertiary Caspian deposits penetrate far into the government along the main valleys, and a thick layer of loess occurs in the N. Selenites, rock-crystal and agates are found, as also copper ores, rock-salt and sapphire. Extensive oil-yielding plants, potatoes, tobacco and other crops are grown. The soil is on the whole very fertile. All the N. of the government is covered with a thick sheet of black earth; this becomes thinner to the S., clay—mostly fertile—cropping out from underneath it; salt clays appear in the S.E.

Samara is inadequately drained, especially in the S. The Volga flows for 550 m. along its W. border. Its tributaries, the Great Cheremshan (220 m.), the Sok (105 m.), the Samara (340 m.), with its tributaries, are not navigable, partly on account of their shallowness and partly because of water-mills. When the water is high, boats can penetrate up some of them 15 to 30 m. The Great Irgiz alone, which has an exceedingly winding course of 335 m., is navigated to Kushum, and rafts are floated from Nikolayevsk. The banks of both Karamans are densely populated. The Great and Little Uzen drain S.E. Samara and lose themselves in the Kamyshev sands before reaching the Caspian. Salt marshes occur in the S.E.

The whole of the region is rapidly drying up. The forests, which are disappearing, are extensive only in the N. Altogether they cover 8% of the surface; prairie and grazing land occupies 32%, and 12% is uncultivable.

The Caspian is extensive, especially in the steppes, where the depressing heat and drought of summer are followed in winter by severe frosts, often accompanied by snowstorms. The average temperature at Samara (53° 11' N.) is only 39°-2 (January, 9°-3; July, 70°-4). The population, which was 1,388,500 in 1853, numbered 2,763,478 in 1897, of whom 1,308,263 were women and 1,504,815 lived in towns. The estimated pop. in 1906 was 3,276,500. Great and Little Russians formed 60% of the inhabitants; Mordvinians 8-6%, Chuvashes and Voitiaks 2-3%, Germans 8-1%, Tartars 6-6% and Bashkirs 2-5%. The Great Russians immigrated in compact masses. A special feature of Samara is its German colonists, from Wurttemberg, Baden, Switzerland and partly also from Holland and the Palatinate, whose immigration dates from the time of Catherine II. in 1762. Favoured as they were by free and extensive grants of land, by exemption from military service and by self-government, they have developed into wealthy colonies of Roman Catholics, Protestants, Unitarians, Anabaptists, Moravians and Mennonites. As regards religion, the great bulk of the population are Orthodox Greeks; the Non-conformists, who are settled chiefly on both the rivers Uzên and Samara, number officially 100,000, but their real numbers are higher; next come Mahomedians, 12.1%; various Protestant sects, 5.5%; Roman Catholics, about 2%; and some 400 pagans.

The chief occupation is agriculture—wheat, rye, oats, millet, oil-yielding plants, potatoes and tobacco being the principal crops. Owing to its great fertility, Samara usually has a surplus of grain for export, varying from 1 1/2 to 4 million quarters (exclusive of oats) annually. Notwithstanding this production, the government is periodically liable to famine to such an extent that men die by thousands of hunger-typhus, or are forced to go by thousands in search of employment on the Volga. The population have no store of corn, or reserve capital for years of scarcity, and some 210,000 males have each an average of only four acres of arable and pasture land. But even this soil, though all taxed as arable, is often of such quality that only 50% to 55% of it is under crops, while the peasants are compelled to rent from two to two and a half million acres for tillage from large proprietors. Over 72,5 million acres, or not far short of one-quarter of the total area of the government, purchased from the crown or from the Bashkirs—very often at a few pence per acre—are in the hands of no more than 1,704 persons. The general impoverishment may be judged from the death-rate, 46 to 48 per thousand. Out of the total area, 4,143,800 acres belong to the crown, 7,979,000 to private persons and 22,486,700 acres to the peasants, who rent, moreover, about 64 million acres. Water melons and sunflowers are extensively cultivated, and gardening is widely engaged in; mustard and inferior qualities of tobacco are grown. Hemp-seed, linseed, and other oil-seeds and bran are exported, as well as cereals and flour. Livestock are extensively bred. Bee-keeping is another pursuit the fort has widely followed. The export of poultry, especially of geese, has increased greatly. The principal manufactures are flour-mills, tanneries, distilleries, candle and tallow works, breweries and sugar refineries. Petty domestic industries, especially the weaving of woolen cloth, are carried on in the S. Both the external and the internal trade are very flourishing, nearly 250 fairs being held in the government every year; the chief are those at Novo-uzensk and Bugulma. Owing to the efforts of the local semestrows there are more than the average number of primary schools, namely, one for every 1,750 inhabitants. The government is divided into seven districts, the chief towns of which are Samara, Bugulma, Buguruslan, Buzuluk, Nikolayevsk, Novo-Uzen and Stavropol. The Sergiyevsk sulphurous mineral springs, 57 m. from Buguruslan, are visited by numbers of patients.

The territory now occupied by Samara was until the 18th century the abode of nomads. The Bulgarians who occupied it until the 13th century were followed by Mongols of the Golden Horde. The Russians penetrated thus far in the 16th century, after the conquest of the principalities of Kazan and Astrakhan. To secure communication between these two cities, the fort was erected in 1586, as well as Saratov, Tsarsytyn and the first line of Russian forts, which extended from Byely-yar on the Volga to the neighbourhood of Menzelinsk near the Kama. In 1670 Samara was taken by the insurgent leader Stenka Razin. In 1732 the line of forts was removed a little farther E., and the Russian colonists advanced E. as the forts were pushed forwards. In 1762, on the invitation of Catherine II., emigrants from various parts of Germany settled in this region, as also did the Raskolniks, whose communities on the Irgiz became the centre of a formidable insurrection in 1775 under Pugachew. At the end of the 18th century Samara became an important centre for trade. In the first half of the 19th century the region was rapidly colonized by Great and Little Russians. In 1847-1850 the government introduced about 120,000 Polish families; in 1857-1859 Mennonites from Danzig founded settlements; and in 1859 a few Circassians were brought hither by government, while the influx of Great Russian peasants still goes on.

(P. A. K.; J. T. B.)

SAMARA, a town of E. Russia, capital of the government of the same name, 505 m. by rail N.S. E. of Kazan, 63 m. by rail W.N.W. of Orenburg. Its population, which was 63,479 in 1883, numbered 91,672 in 1897. Owing to its situation on the left bank of the Volga, at the convergence of the Siberian and Central Asian railways, it has great commercial importance, especially as a depot for cereals and a centre for flour-milling. A considerable trade is also carried on in animal products, particularly hides. The other industries include iron-foundries, soap, candles, vehicles and glue factories, cooperages, tanneries, breweries and brick-works. The port is the best on the Volga. Three great fairs are held every year. The city, which gives title to a bishop of the Orthodox Greek Church, has been called Razin built in 1685, 1730-1735 and 1894 respectively, three public libraries, and a natural history and archaeological museum. It is famous for its kumis (mare's milk) cures. Its foundation took place in 1580-1591 for the purpose of protecting the Russian frontier against the Bashkirs, the Kalmucks and the Nogai Tatars.

SAMARIA, an ancient city of Palestine. The name Samaria is derived from the Gr. Σαμαρία from the Hebrew שָׂµֵרָיא, 'an outlook hill,' or rather from the Aramaic form סָמָרָיא, whence also comes the Assyrian form Şumaria. According to 2 Kings xvi. 24, Omri, king of Israel, bought Samaria from a
SAMARITANS

SAMARITANS. This term, which primarily means "inhabitants of Samaria, or the region of Samaria," is specially used, in the New Testament and by Josephus, as the name of a peculiar religious community which had its headquarters in the Samaritan country, and is still represented by a few families at Nablus, the ancient Shechem. By the Jews they are called Shomronim, a gentilic form from Shomron = Samaria; among themselves they sometimes use the name Shem'erim (= Heb. "children of Sem"), in which the letter "S" may be taken as signifying the "Samaritan" país. The term as used in the Bible occurs several times: 1 Kings iv. 12, "the inhabitants of Samaria," and sometimes with the addition of another term, as 2 Kings iv. 12, "the inhabitants of Samaria and the inhabitants of the cities which the kings of Israel left standing." In the New Testament, the term occurs in Matt. xxiii. 24, Mark vii. 24, and Rev. vii. 2, "the city of the great king Babylon, which once was, is, and shall be no more." 1

1 Accentuated on the second syllable. Guide- and travel-books generally spell the name Sebas'mye, which is not a correct rendering of the local pronunciation.

certain Shemer (whose name is said to be the origin of that of the city), and transferred thither his capital from Tirzah. But the city, as a superficial inspection of the site shows, must have existed as a settlement long before Omri, as potsherds of earlier date lie scattered on the surface. The city was occupied by Ahab, who here built a temple to "Baal" (I Kings xvi. 32) and a palace of ivory (I Kings xxii. 39). It sustained frequent sieges during the troubled history of the Israelite kingdom. Moreover, Damascus assaulted it in the time of David; it was captured by Sargon in 722 B.C. and again in 701 B.C. by Assyria, which was repulsed and obliged to allow the Israelite traders to establish a quarter in Damascus, as his predecessor Ben-Hadad I. had done in Samaria (I Kings xx. 34). Ben-Hadad II. in the time of Jehoahaz again besieged Samaria, and caused a famine in the city; but some panic led them to raise the siege (2 Kings vii., viii.). The history of the city for the following 120 years is that of Israel (see Jews).

In 727 died Tiglath-Pileser, to whom the small kingdoms of W. Asia had been in vassalage; in the case of Israel at least, since Menahem (2 Kings xv. 19). He was succeeded by Shalmaneser IV., and the king of Israel, with the result, attempted to revolt. Shalmaneser accordingly invaded Syria, and in 724 began a three-years' siege of Samaria (2 Kings xvii. 6). He died before it was completed, but it was finished by Sargon, who reduced the city, deported its inhabitants, and established within it a mixed multitude of settlers (who were the ancestors of the modern Samaritans). These people themselves seem to have joined a revolt against the Assyrians, which was soon quelled. The next event we hear of in the history of the city is its conquest by Alexander the Great (333 B.C.), and later by Ptolemy Lathyros (282 B.C.). It is then that we get the first witness for our two of these injuries: when John Hyrcanus besieged it in 120 B.C. it was "a very strong city" which offered a vigorous resistance (Jos. Ant. xiii. x.). It was rebuilt by Pompey, and restored by Aulus Gabinius: but it was to Herod that it owed much of its later glory. He built a great temple, a hippodrome and a street of columns surrounding the city, the remains of which still arrest the attention. It was renamed by him Sebaste, in honour of Augustus: this name still survives in the modern name Shebat. Philip here preached the gospel (Acts viii. 5). The rise of Neapolis (Shechem) in the neighbourhood caused the decay of Sebaste. It was quite small by the time of Eusebius. The crusaders did something to develop it by establishing a bishopric with a large church, which still exists (as a mosque); here were the tombs of Elisha, Obadiah and St John the Baptist. From this time onward the village dwindled to the poor dirty place it is to-day.

The site of Samaria is an enormous mound of accumulation, one of the most extensive in Palestine. In some places it is estimated the débris is at least 40 ft. deep. The crusaders' church remains, and numerous fragments of carved stone are built into the village houses, beneath which in some places are some interesting tombs. The hippodrome remains in the valley below, and the columns of the street of columns are in very good order. The walls can be traced almost all round the town; at the end of the mound opposite the modern village are the dissipated ruins of a large gate. The site stands in the very centre of Palestine, and on a steep and almost isolated hill, with a long and spacious plateau for its summit, is naturally a position of much strength, commanding two of the most important highways of N. Arabia. In the north it passes immediately under the E. wall, and the road from Shechem to the maritime plain which runs a little to the W. of the city. The hill of Samaria is separated from the surrounding mountains (Amos iii. 9) by a rich and well-watered plain from which it rises in successive terraces of fertile soil to a height of 400 or 500 ft. Only on the E. a narrow saddle, some 200 ft. beneath the plateau, runs across the plain towards the mountains; it is at this point that the traveller coming from Shechem now ascends the hill to the village of Sebustach, which occupies only the extreme E. of a terrace beneath the hill-top, behind the crusaders' church, which is the first thing that attracts the eye as one enters the town. The hill-top, the longer axis of which runs W. from the village, rises 150 ft. above the sea, and commands a superb view towards the Mediterranean, the mountains of Shechem and Mount Hermon. Excavations under the auspices of Harvard University began here in 1908. (R. A. S. M.)
(Ant. xi. 8), who carried the Pentateuch to Shechem, and for whom the temple of Gerizim was perhaps built. For, though the story in Josephus is put a century too late and is evidently based on a confusion, it agrees with Neh. xiii. in essentials too closely to be altogether rejected, and supplies exactly what is wanted to explain the existence in Shechem of a community bitterly hostile to the Jews, yet constituted in obedience to Ezra's Pentateuch.

It is remarkable that, having got the Pentateuch, they followed it with a fidelity as exact as that of the Jews, except in regard to the sanctuary on Mt Gerizim. The text of the sacred book was transmitted with as much conscientiousness as was observed by Jewish scribes; and even from the unwilling witness of the Jews we gather that they fulfilled all righteousness with scrupulous punctiliousness so far as the letter of the law was concerned. They did not however, receive the writings even of the prophets of N. Israel (all of which are preserved to us only by the Jews) not the later oral law as developed by the Pharisees.

But although these differences separated the two communities, their internal development and external history ran parallel courses till the Jewish state took a new departure under the Maccabees. The religious resemblance between the two bodies was increased by the institution of the synagogue, from which there grew up a Samaritan theology and an exegetical tradition. The latter is embodied in the Samaritan Targum, or Aramaic version of the Pentateuch, which in its present form is probably not much earlier than the 4th century A.D., but in general is said to agree with the readings of Origen's Σαμαρητικά. Whether the latter represents a complete translation of the Law into Aramaic is a question.
The Samaritan language properly so-called is a dialect of Palestinian Aramaic, of which the best examples are found in the literature of the 4th century a.d. An archaic alphabet, derived from the old Hebrew script, was still used for another dialect of Aramaic in the Samaritan community in the town of Beth-Shean in Syria and sometimes even Arabic. After the Moslem conquests of Syria in 632 the native dialect of Aramaic gradually died out, and by the 11th century Arabic had become the literary as well as the popular language throughout the whole of Syria. According to Samaritan tradition, the Dyadim (or Beth-Shean) scrolls, with the books of Genesis and Numbers, were not lost when Beth-Shean was destroyed under Hadrian and Commodus, but of the language and contents of them nothing is recorded. There can be no doubt that some, perhaps much, of the literature has been lost, for nothing is explicitly stated about the date of the latest edition before the 14th century a.d. The Targum- or Samaritan-Aramaic version of the Pentateuch was most probably written down about that time, though it was clearly based on a much older tradition and must have undergone various revisions. To the same period belong the liturgical compositions of Amram Daniel and Marqath, and the latter's midrashic commentary (called the "Book of Wonders") on parts of the Pentateuch, all in Aramaic. With the possible exception of one or two hymns there is nothing further till the 11th century when there appears the Arabic version of the Pentateuch, usually ascribed to Abu Sa'id, but perhaps really by Abu'l-Basat, who also wrote three Arabic commentaries on the books of Genesis, Leviticus, and Numbers. Of the same date (1053) is an anonymous commentary on Genesis, preserved in the Bodleian Library at Oxford (Ms. Opp. add. 4,99), interesting because it contains a fragment of an earlier, perhaps a Babylonian, manuscript of the same period, which is translated in the 12th century, MusaJah and his son Shaddath wrote on theology; the earlier part of the chronicle called al-Taulidah was compiled, in Hebrew (1149); and on the same time treatises on Genesis, Leviticus, and Numbers, and Abu al-Sharif and Abu al-Ashraf, the Targum of the Pentateuch, by the 13th century. The next 100 years were rather barren. Ghazal ibn-al-Duwak, who wrote on the story of Balak and on the restoration of the kingdom to Israel, is said to be the author of a commentary before the 18th century, and, as an anonymous writer (in Arabic), called the Book of Joshua, is dated about the same time by T. W. J. Juyböl. In the second half of the 14th century three important liturgical writers, Abaibh b. Phinehas (ib. 1376), Abu'l-Fath b. Shaddath, and Shaddath b. Shaddath, were all born about the same time, and another chronicle, in the 15th century, was composed 1898 of the levitical family; and a theological work, also in Arabic by the present priest-levite, Jacob b. Aaron.


SAMARIA [symbol Sm, atomic weight 150-4 (O = 16)], a rare earth metal (see RARE EARTHS). The separation has been accomplished by A. F. J. Armstrong and A. T. Lacombe (Comptes rendus, 1903, 137 pp. 568, 792); Demarçay (ibid. 1905, 1, p. 1019); Benedek; Felt and Przybilla (Zeit. anorg. Chem., 1905, 43, p. 202) and others. It may be obtained by reduction of its oxide with magnesium. It combines with hydrogen to form a hydride. The salts are mostly of a yellowish colour. The chloroform, SmCl3, H2O, is a deliquescent solid which when heated in hydrochloric acid gas to 180°C. yields the anhydrous chloride. This anhydrous chloride is reduced to a lower chloride, of composition SmCl2, which heated to a temperature of 100°C. in a current of hydrogen and oxygen (Matthiessen and Cotton, Compt. rendus, 1850, 120, 92) and the nonvolatile chlorides, SmCl3 and SmCl4, are obtained. The fluoride, SmF3, H2O, was prepared by H. Moissan by acting with fluorine on the carbide. The sulphate, Sm2(minO4), H2O, is obtained by the action of sulphuric acid on the nitrate. It forms double salts with the alkaline sulphates. The carbide, Sm3C, is formed when the oxide is heated with carbon in the electric furnace.

SAMARKAND, a province of Russian Turkestan, formerly Zaraftshan and formerly Zafrash, was a good deal less known as Sughd to the Moslems of the middle ages. It has on the N. and N.E. the province of Suy-darya, on the E. Fergana, on the W. Bokhara and on the S. the khanates of Hissar, Karr-tagin and Darvaz. Its area is 26,627 sq. m. It is very hilly in the S., where it is intersected by ranges belonging to the Alai system. The Hissar range is the water-parting between the Zarafshan and the upper tributaries of the Amu-darya; another high range, the Zarafshan, runs between the two parallel rivers, the Zarafshan and its tributary, the Yagnob; while a third range, often called the Turkestan chain, stretches W. to E. parallel to the Zarafshan, on its N. bank. It is very probable that the three ranges referred to really possess a much more complicated character than is supposed. All three ranges are snow-clad, and their highest peaks reach altitudes of 15,000 ft. in the W. and 22,000 ft. in the E., while the passes over them, which are difficult as a rule, lie at altitudes of 12,000 ft. Several Alpine lakes, such as Iskander-kul, 7000 ft. high, have been found under the precipitous peaks.

The Alpine zone extends as far N. as the 40th parallel, beyond which the province is steppe-land, broken by only one range of mountains, the Nurata-tai, also known as Sanazar and Mologazar or the gates of קנה-ס functionalities. The important range stretches 160 m. N.W., has a width of about 35 m. and reaches altitudes of 7000 ft. It is pierced, in the Sanazar gorge, or Tamerlane's gate, by the railway leading from Samarkand to Tashkent.

1 Except of course, the Pentateuch itself (see BIBLE) which cannot be properly regarded as a Samaritan work.


3 See Wreschner, Samaritanische Traditionen (Berlin, 1888).

4 Ed. by Neubauer in Journ. asiat. (1896). The chronicle was continued in 1346, and was subsequently brought down to 1557 by the present priest.


7 Ed. by Vilmar (Got., 1863). Partly translated by Payne Smith in Heidelberger Aufgabenblätter, 2. B.

8 Translated by Leitner in Heid. IVth. iv. 1846, 2.

9 An account of the work (of which the only MS. is in Berlin) was given by Geiger in ZDMG, xx. p. 143 and later. Parts of it were published by Halle's apparatus of the texts of the midrashic commentaries (1851).

10 Ed. by E. N. Adler and M. Seligsohn in Revue des études juives, vols. 44-46.

11 The same who compiled Gaster's book of Joshua.

12 Mentioned by Yehuda, op. cit. p. 895, as existing in a Berlin MS.

13 Translated in Bibliotheca sacra (1900), p. 358 &c.
SAMARKAND

The other mountains in the province are well wooded, and it is estimated that nearly 4,500,000 acres are under forests. The N.W. portion is occupied by the Famine Steppe—which probably might be irrigated—and by the desert of Kyzylik-kum. The Famine or Hungry Steppe (not to be confused with another desert of the same name, the Bek-pak-dala, to the W. of Lake Balkhash) occupies nearly 5,000,000 acres, covered with loess-like clay. In the spring the steppe offers good pasture-grounds for the Kirghiz, but the grass withers as summer advances. Nearly 1,500,000 acres might, however, be irrigated and rendered available for the cultivation of cotton; indeed a beginning has been made in that direction. The Kyzylik-kum Steppe, 88,000 sq. m., is crossed by rocky hills, reaching an altitude of 3,500 ft., and covered with a thin carpet of sand and gravel. The sand is especially prevalent on the margin, where the moving barkhans (crecent-shaped sandhills) invade the Kara-kul oasis of Bokhara. The vegetation is very poor, as a rule; grass and flowers (tulips, Rheum, various Umbelliferae) only appear for a short time in the spring. The barkhans produce nothing except Haloxyilon ammonodron, Poligonum, Halimidodron, Atrofaphis and other steppe bushes; occasionally Stipa grass is seen on the slopes of the sandhills, while Artemisiole and Tamarix bushes grow on the more compact sands. Water can only be obtained from wells, sometimes 140 ft. deep. A few Kirghiz are the sole inhabitants, and they are only found in the more hilly parts.

The chief river is the Zarafshan, which, under the name of Mach, rises in the Zarav glacier in the Kok-su mountain group. Navigation is only possible by rafts, from Penjikent downwards. The river is heavily drawn upon for irrigation; and to this it probably owes its name ("gold-spreading") rather than to the gold which is found in small quantities in its sands. Over 80 main canals (arkis) water 1,200 sq. m. in Samarkand, while 1,640 sq. m. are watered in Bokhara by means of over 40 main canals. Beyond Lake Kara-kul it is lost in the sands, before reaching the Amu-darya to which it was formerly tributary. The N.E. of the province is watered by the Syr-darya. One of the lakes, the Tuz-kan (40 m. from Jizakh) yields about 1,500 tons of salt annually.

The average temperature for the year is 53° 4°F. at Samarkand, and 58° at Khojent and Jizakh; but the average temperature for the winter is only 34°, and frosts of 4° and 11° have been experienced at Samarkand and Khojent respectively; on the other hand, the average temperature for July is 90° at Samarkand and 85° at Khojent and Jizakh. The total precipitation (including snow in winter) is only 6.4 in. at Khojent, 12 in. at Samarkand and 24 in. at Jizakh. The hilly tracts have a healthy climate, but malaria and mosquitoes prevail in the lower regions.

The estimated population in 1910 was 1,065,400. The Uzbeks form two-thirds of the population, and after them the Kirghiz and Tajiks (27%) are the most numerous; Jews, Tatars, Afghans and Hindus are also met with.

In 1898 nearly 1,000,000 acres were irrigated, and about 800,000 acres partly irrigated. The chief crops are wheat, rice and barley. Sorghum, millet, Indian corn, peas, lentils, hemp, flax, hemp, poppy, lucerne, madder, tobacco, melons and mushrooms are also grown. Two crops are often taken from the same piece of land in one season. Cotton is extensively grown, and 21,000 acres are under vineyards. Sericulture prosperous, especially in the Khojent district. Live-stock breeding is the chief occupation of the Kirghiz. Weaving, saddlery, boot-making, tanneries, oil works and metal works exist in many villages and towns, while the nomad Kirghiz excel in making felt goods and carpets. There are glass works, cotton-cleaning works, steam flour mills and distilleries. Some coal, sulphur, ammonia and gypsum are obtained. Trade is considerable, the chief exports being rice, raw cotton, raisins, dried fruit, nuts, wine and silk. The Central Asian railway crosses the province from Bokhara to Samarkand and Tashkent. The province is divided into four districts, the chief towns of which, with their populations in 1897, are: Samarkand (q.v.), Jizakh (16,041), Kati-kurgan (19,683) and Khojent (30,076).

SAMARKAND, a city of Russian Central Asia, anciently Maracanda, the capital of Sogdiana, then the residence of the Moslem Samanid dynasty, and subsequently the capital of the Mongol prince Tamerlane, is now chief town of the province of the same name. It lies 220 m. by rail S.W. of Tashkent, and 156 m. E. of Bokhara, in 39° 30' N. and 66° 45' E., 2,250 ft. above the sea, in the fertile valley of the Zarafshan, at the point where it issues from the W. spurs of the Tian-shan before entering the steppes of Bokhara. The Zarafshan now flows 5 m. N. of the city. In 1897 the population numbered 40,000 in the native city, and 15,000 in the new Russian town, inclusive of the military (80% Russians). The total population was 58,194 in 1900, and of these only 23,194 were women.

The Great Uzbak, a great chieftain in 1434, was of the race of Alexander the Great in 329 B.C. It reappears as Samarkand at the time of the conquest by the Arabs, when it was finally reduced by Koutaiba ibn Muslin in A.D. 711-712. Under the Samanids it became a brilliant seat of Arabic civilization, and was so populous that, when besieged by Jenghiz Khan in 1221, it is reported to have been defended by 110,000 men. Destroyed and pillaged by that chieftain, its population was reduced to one-quarter of what it had been. When Timur made it his residence (in 1369) the inhabitants numbered 150,000. The magnificent buildings of the successors of Timur, which still remain, testify to its former wealth. But at the beginning of the 18th century it is reported to have been almost without inhabitants. It fell under Chinese dominion, and subsequently under that of the amir of Bokhara. But no follower of Islam enters it without feeling that he is on holy ground; although the venerated mosques and beautiful colleges are falling into ruins, its influence as a seat of learning has vanished, and its very soil is profaned by infields. It was not without a desperate struggle that the Mahomedans permitted the Russians to take their holy city.

The present city is quadrangular and is enclosed by a low wall 9 m. long. The citadel is in the W., and to the W. of this the Russians have laid out since 1871 a new town, with broad streets and boulevards radiating from the citadel.

The central part of Samarkand is the Righistan—a square fenced in by the three madrasahs (colleges) of Ulug-beg, Shir-dar and Tilla-kari; in its architectural symmetry and beauty this is rivalled only by some of the squares of certain Italian cities. An immense doorway decorates the front of each of these large quadrilateral buildings. A high and deep-pointed porch, reaching almost to the top of the lofty façade, is flanked on each side by a low and broad lateral door flanked by a quadrilateral building profusely decorated, in turn flank these broad pillars. On each side of the high doorway are two lower archways connecting it with two elegant towers, narrowing towards the top and slightly inclined. The whole of the façade and also the interior courts are profusely decorated with enameled tiles, whose colours—blue, green, pink and golden, but chiefly turquoise-blue—are wrought into the most fascinating designs, in striking harmony with the whole and with each part of the building. Over the interior are bulbed or melon-like domes, perhaps too heavy for the façade. The most renowned of these three madrasahs is that of Ulug-beg, built in 1434 by a grandson of Timur. It is smaller than the others, but it was to its school of mathematics and astronomy that Samarkand owes its renown in the 15th century.

A winding street, running N.E. from the Righistan, leads to a much larger square, in which are the college of Biblikhanum on the W., the graves of Timur’s wives on the S. and a bazaar on the E. The college was erected in 1388 by a Chinese wife of Timur. To the N., outside the walls of Samarkand, but close at hand, is the Hazrat Shah-Zindeh, the summer-palace of Timur, and near this is the grave of Shah-Zindeh, or, more precisely, Kasim ibn Abbas, a companion of Timur. This was a famous shrine in the 14th century (Ibn Batuta’s Travels, iii. 52); it is believed that the saint will one day rise for the defence of his religion. The Hazrat Shah-Zindeh stands on a terrace reached by forty marble steps. The decoration of the interior halls is marvellous. Another street running S.W. from the Righistan leads to the
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Gur-Amir, the tomb of Timur. This consists of a chapel crowned with a dome, enclosed by a wall and fronted by an archway. Timur and earthquakes have greatly injured this fine building. The interior walls are covered with elegant turquoise arabesques and inscriptions in gold. The citadel (rebuilt in 1832 and preceding years) is situated on a hill whose steep slopes render it one of the strongest in Central Asia. Its walls, 3000 yds. in circuit and about 10 ft. high, enclose a space of about 90 acres. Within it are the palace of the amir of Bokhara—a vulgar modern building now a hospital—and the audience hall of Timur—a long narrow court, surrounded by a colonnade, and containing the kok-task, or stone of justice. Ruins of former buildings—heaps of plain and enamelled bricks—amid a Cornfield, and in the deep ravines below, have been found by the natives over a wide area round the present city, especially on the W. and N. The name of Aphisraib is usually given to these ruins. Five m. S.W. of Samarkand is the college Khoja Akkar; its floral ornamentation in enamelled brick is one of the most beautiful in Samarkand. Nothing but the ruins of a palace now mark the site of a once famous garden, Bagchi-sarai. Of the Graeco-Armenian library said to have been brought to Samarkand by Timur no traces have been discovered, and Vambery regards the legend as invented by the Armenians. Every trace of the renowned high school of Bokhara has also disappeared.

The present Moslem city is an intricate labyrinth of narrow, winding streets, bordered by dirty courtyards and miserable houses. The chief occupation of the inhabitants is gardening. There is a certain amount of industry in metallic wares, tallow and soap, tanneries, potteries, various tissues, dyeing, harness, boots and silver and gold wares. The best harness, ornamented with turquoises, and the finer products of the goldsmith's art, are imported from Bokhara and Afghanistan. The products of the local potteries are very fine. The bazaars of Samarkand are more animated and kept with much greater cleanliness than those of Tashkent and Namanjan. The trade is very brisk; the chief items being cotton, silk, wheat and rice, horses, asses, fruits and cutlery. Wheat, rice and silk are exported chiefly to Bokhara; cotton to Russia, via Tashkent. Silk wares and excellent fruits are imported from Bokhara, and rock-salt from Hisar.

SAMBALPUR, a town and district of British India, in the Orissa division of Bengal. The town is on the left bank of the river Mahanadi, 495 ft. above sea-level, the terminus of a branch of the Bengal-Nagpur railway. Pop. (1901) 12,878. It contains a large native bazaar, with 2400 guppies. It is also garrisoned by a native infantry, was withdrawn in 1902. There is considerable trade, and hand-weaving of tussore silk and cotton cloth are carried on.

The District of Sambalpur has an area of 3773 sq. m. The Mahanadi, which is the only important river, divides it into unequal parts. The greater portion is a undulating plain, with ranges of rugged hills running in every direction, the largest of which is the Bara Pahar, covering an area of 350 sq. m., and attaining at Debrigarh a height of 2267 ft. above the plain. The Mahanadi affords means of water communication for 90 m.; its principal tributaries in Sambalpur are the Ib, Kelo and Jhira. To the W. of the Mahanadi the district is well cultivated. The soil is generally light and sandy. It is occupied for the greater part by crystalline metamorphic rocks; but part of the N.W. corner is composed of sandstone, limestone and shale. Gold dust and diamonds have been found near Hirakhuda or Diamond Island, at the junction of the Ib and Mahanadi. The climate of Sambalpur is considered very unhealthy; the annual rainfall averages 59 in. The population in 1901 was 610,243, showing an increase of 3·3% in the decade. The registered death-rate for 1897 was only 30 per thousand, as against 68 for the province generally. This figure shows that Sambalpur entirely escaped the famine of 1896-1897, which indeed can be said to have brought prosperity to the district by causing high prices for a good rice crop, rice being the staple of cultivation. It was almost equally fortunate in 1900. The main line of the Bengal-Nagpur railway runs along the N. border of the district, with a branch S. to Sambalpur town.

Sambalpur lapsed to the British in 1849, and was attached to Bengal till 1862, when it was transferred to the Central Provinces. The early revenue administration was not successful. On the outbreak of the Mutiny in 1857, a general rising of the chiefs took place, and it was not until the final arrest of Surandar Sa, in 1864, that tranquillity was restored. In October 1905 Sambalpur was transferred back again to Bengal, without the subdivisions of Phuljhar and Chandarpur-Padampur.

See Sambalpur District Gazetteer (Calcutta, 1899).

SAMBLANCAY, or SEMBLANCAY, a French noble family of Touraine, sprung from the merchant class. The founder of the family was JEAN DE BEAUNE (d. c. 1430), treasurer of Louis XI, who narrowly escaped death for conspiracy under Charles VIII. His son, JACQUES DE BEAUNE, baron de Samblancay, vicomte de Tours, was a man of finance before 1497, and from 1518 was superintendent of finance of Christendom, in connexion with the supplies for the army in Italy, where he was executed at Montfaucon on the 9th of August 1527. His eldest son, MARTIN DE BEAUNE, who became archbishop of Tours in 1520, died in the same year as his father. Another son, GUILLAUME DE BEAUNE, general of finances under his father, and banished from 1527 to 1535, was the father of the famous prelate, RENAUD DE BEAUNE (1527-1606), archbishop of Bourges (1581) and of Sens (1595). His efforts at pacification during the wars of religion culminated in the conversion of Henry IV., and it was he who presided at the ceremony of the king's abjuration of Protestantism on the 25th of July 1598. Renaud was one of the most famous orators of his time, and some of his productions have come down to us, as well as his Réformation de l'université de Paris (1605 and 1657). A less honourable descendant of Jacques de Beaune was CHARLOTTE DE BEAUNE-SAMBLANCAY (c.1550-1617), a courtier whom Catherine de Medicci employed to discover the secrets of her courtly enemies. She counted among her lovers and dupes the king of Navarre (Henry IV.), the duc d'Alençon (Henry III.), Henry L., duc de Guise and others. The duc de Guise was killed when leaving her apartments in the early morning of Christmas day 1560. Charlotte was married early in life to Simon de Fizes, baron de Sauvage, a secretary of state, and again in 1584 to François de la Trémoille, marquis de Noirmoutiers, by whom she had a son, Louis, 1st duc de Noirmoutiers, a ducal line which became extinct in 1733.

SAMBORNE, EDWIN LINLEY (1844-1910), English draughtsman, illustrator and designer, was born in London, on the 4th of January 1844. He was educated at the City of London School, and also received a few months' education at the South Kensington School of Art. After a six years' "gentleman's apprenticeship," he joined the India Office as marine engineers, Greenwich, his humorous and fanciful sketches made surreptitiously in the drawing-office of that firm were shown to Mark Lemon, editor of Punch, and at once secured him an invitation to draw for that journal. In April 1867 appeared his first sketch, "Pros and Cons," and from that time his work was regularly seen, with rare exceptions, in the weekly pages of Punch. In 1871 he was called to the Punch "table." At the beginning he made his name by his "social" drawings and especially by his highly elaborated initial letters. He drew his first political cartoon, properly so-called, in 1884, and ten years later began regularly to design the weekly second cartoon, following Sir John Tenniel as chief cartoonist in 1904. Examples of his best work in book illustration are in Sir F. C. Burnand's New Sandford and Merton (1872), and in Charles Kingsley's Water Babies (1885), which contains some of his most delicate
and delightful drawings. The design for the Diploma for the Fisheries Exhibition (1883) is of its kind one of the most extraordinary things in English art. As a political designer, while distinguished for wit and force, he was invariably refined and good-humoured to the uttermost; yet it is essentially as an artist that he takes his highest place. He died on the 3rd of August 1910.


SAMBUCA, SAMBUTE, SAMBIUT, SAMBUE, SAMBUQUE, an ancient stringed instrument of Asiatic origin generally supposed to be a small triangular harp of shrill tone (Arist. Quint. Melb. ii. p. 101). The sambuche was probably identical with the Phoenician sabeka and the Aramaic sabka, the Greek form being σαβίκη. The sakte is mentioned in Dan. iii. 5, 10, 15, where it is erroneously translated sackett. The sambuche has been compared to the military engine of the same name by some classical writers; Polybius likens it to a rope ladder; others describe it as boat-shaped. Among the musical instruments known, the Egyptian nanga best answers to these descriptions. These definitions are doubtless responsible for the medieval drawings representing the sambuka as a kind of tambourine,1 for Isidor elsewhere defines the symphonia as a tambourine. During the middle ages the word sambuka was applied (i) to a stringed instrument about which little can be discovered, (2) to a wind instrument made from the wood of the elder tree (sambuca). In an old glossary (Fundgraben, i. 368), article sley (flute), the sambuka is said to be a kind of flute. "Sambuka vel sambucus est quaedam arbor parva et mollis, unde haec sambuca spectabilis species symphoninaria quid fit de illa arbores." Isidor of Seville (Etym. 2. 20) describes it as "Sambuka in musicis species est symphonianum. Est enim ligni fragili usque et tibiae componuntur." In a glossary by Papias of Lombardy (c. 1053), first printed at Milan in 1476, the sambuka is described as a cithara, which in that century was generally glossed "harp," i.e. "Sambuka, genus cytherae rusticae."

In Tristam (7503-72) the knight is enumerating to King Marke all the instruments upon which he can play, the sambuial being the last mentioned:

"Was ist das, lieber mann?
-Daz vaste Seitspiel daz ich kann."

In a Latin-French glossary (M.S. at Montpelier, H. 110, fol. 212 v.) Psalterium=sambuce. During the later middle ages sambuka was often translated sackbut in the vocabularies, whether merely from the phonetic similarity of the two words has not yet been established. The great Boulogne Psalter (xi. c.) contains, among other fanciful instruments which are evidently intended to illustrate the equally vague and fanciful descriptions of instruments in the apocryphal letter of S. Jerome, ad Dordinem, a Sambuca, which resembles a small sackbut, and is described as symphonia "qvi fit de illa arbores." Isidor of Seville (Etym. 2. 20) describes it as "Sambuka in musicis species est symphonianum. Est enim ligni fragili usque et tibiae componuntur." In a glossary by Papias of Lombardy (c. 1053), first printed at Milan in 1476, the sambuka is described as a cithara, which in that century was generally glossed "harp," i.e. "Sambuka, genus cytherae rusticae."

SAMMAN, SAMMEN, or SEMNAN, a small province of Persia, which, including the city and district of Damghan, is generally known as "Samman va Damghan." It is bounded on the W. by the districts of Khar (the ancient Chora) and Fjruzukh, on the N. by Mazandaran, and on the E. by Shahrud and Bostam. In the S. it extends beyond the oasis of Jendek in the desert N. of Tezlu. Its northern part is still known as Komush or Komish, the ancient Comissene. The revenue amounts to about 7,000 per annum.

Samman, the capital of the province, is situated 145 m. E. of Teheran, on the high road thence to Meshed, at an altitude of 3,740 ft. in 35° 34' N., 53° 22' E. It has a population of about 10,000, post and telegraph offices, and a fine minaret, built in the 13th century. It exports pistachios, almonds, and coarse tobacco. A dialect with many old Persian forms and resembling the Mazandaran dialect is spoken.


SAMNITES, the name given by the Romans to the warlike tribes inhabiting the mountainous centre of the S. half of Italy. The word Samnites was not the name, so far as we know, used by the Samnites themselves, which would seem rather to have been (the Oscan form of) the word which in Latin appears as Sabini (see below). The ending of Samnites seems to be connected with the name by which they were known to the Greeks of the Campanian coast, which by the time of Polybius had become Sabinus; and it is in connexion with the Greeks of Campania and Naples that we first hear of the connection between Rome and the Samnites.2 We know both from tradition and from surviving inscriptions (see Osca Lingua and R. S. Conway, The Italic Dialects, pp. 169 to 206) that they spoke Oscan; and tradition records that the Samnites were an offshoot of the Sabines (see e.g. Festus, p. 326 Mueller). On two inscriptions, of which one is unfortunately incomplete, and the other is the legend on a coin of the Social War, we have the form Sabinim, which would be in Latin *Sabiniunum, and is best regarded as the nominative or accusative singular, neuter or masculine, agreeing with some substantive understood, such as nummum (see R. S. Conway, ibid. pp. 188 and 276).

The abundance of the ethnica ending in the suffix -no- in all the Samnite districts classes them unmistakably with the great Safine stock, so that linguistic evidence confirms tradition (see further Sabini). The Samnites are thus shown to be intimately related to the patrician class at Rome (see Rome: history, ad init.); so that it was against their own stock that the Romans had to fight their hardest struggle for the lordship of Italy, a struggle which might never have arisen but for the geographical accident by which the Etruscan and Greek settlement of Campania was divided into two halves the Safine settlements in central Italy.

The longest and most important monument of the Oscan language, as it was spoken by the Samnites (in, probably, the 3rd century B.C.) is the small bronze tablet, engraved on both sides, known as the Tabula Agnomenis, found in 1848 at the modern village Agone, in the heart of the Samnite district, not very far from the site of Bovianum, which was the centre of the N. group of Samnites called Pentri (see below). This inscription, now preserved in the British Museum, is carefully engraved in full Oscan alphabet, and perfectly legible (facsimile given by Mommsen's Unterrildische Dialektik, Taf. 7, and by I. Zvetatj, Sylloge inscriptionum Osrarum). The text and commentary will be found in Conway, op. cit. p. 191: it contains a list of deities to whom statues were erected in the precinct sacred to Ceres, or some allied divinity, and on the back a list of deities to whom altars were erected in the same place. Among those whose names are immediately intelligible may be mentioned those of "Jove the Ruler" and of Hercules Cerealis." The other names are full of interest for the student of both the languages

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1 See Michael Praetorianus, Synt. Mus. (Wolfenbüttel, 1618), p. 248 and pl. 42, where the illustration resembles a tambourine, but the description mentions strings, showing that the author himself was puzzled.

2 For the difficult questions involved in the obscure and fragmentary accounts of the so-called First Samnite War, which ended in 341 B.C., the reader is referred to J. Beloch, Campanien, 2nd ed., pp. 442 ff., and to the commentators on Livy vii. 29 ff.
and the religion of ancient Italy. The latest attempts at interpretation will be found in R. S. Conway, *Dialectorum Illyricorum exempla selecta* (s. v.) and C. D. Buck, *Ocean and Umbrian Grammar*, p. 254.

The Samnite towns in or near the upper valley of the Volturnus, namely, Telesia, Allifae, Aesernia, and the problematic Phistelia, learnt the art of striking coins from their neighbours in Campania, on the other side of the valley, Compulteria and Venafrum, in the 4th century B.C. (see Conway, op. cit. p. 106).

The Samnite alliance when it first appears in history, in the 4th century B.C., included those tribes which lay between the Paesini to the N., the Campani to the S., the Campani to the W., the Hirpini and Aburi to the E.: that is to say, the Hirpini, Pentri and Caraceni, and perhaps also the Caudini (J. Beloch, *Italischer Bund*, p. 167, and R. S. Conway, *The Italic Dialects*, pp. 169 and 183); but with these are sometimes classed other friendly and kindred communities in neighbouring territory, like the Frentani and Atina (Liv. x. 30). But after the war with Pyrrhus the Romans for ever weakened the power of the Italic tribes by dividing this central mountainous tract into two halves. The territories of the Latin colony Benvenutum (268 B.C.) and the Aburi (A.D. 4 B.C. C.I. 18 ed. ii. 157) consisted at first of Saticula on the W. (313 B.C.) to that of Luceria on the E., and cut off the Hirpini from their kinsmen by a broad belt of land under Latin occupation (Velleius Pat. i. 14; Liv. lx. 26). At the same time Allifae and Venafrum became praefectures (Fast. p. 233 M.), and the Latin colony of Aesernia was founded in 263 B.C. in purely Samnite territory to command the upper Volturnus valley. We hear of no further resistance in the N. of Samnium till the general rising of Italy in 90 B.C.; but the more southerly Hirpini (g.v.) henceforth acted independently.

**Samos**—the archipelago in the Pacific Ocean, about 150 m. N. of Tonga and nearly midway between the New Hebrides and Tahiti, 1600 m. from Auckland (New Zealand), 2410 m. from Sydney and 4200 m. from San Francisco. (For Map, see *Pacific Ocean*.) It consists of 14 islands forming a slightly curved chain from W. by N. to E. by S., between 13° 30' and 14° 30' S., 168° and 173° W. as follows: Savaii, Manono, Apolima, Upolu, Fanau tapsu, Manua, Nuutele and Nuulua, belonging to Germany, and Tutuala, Anua, Ofo, Olosenga, Tau and Rose, belonging to the United States of America. The principal of these are Savaii (area, 660 sq. m., pop. 13,200), Tutuala (4 sq. m., pop. 1800), Upolu (54 sq. m., pop. 18,400), and the Manua group, which includes Tau and Olesenga (25 sq. m., pop. 2000). Some of the smaller islands are also thickly populated, so that the total population is about 39,000, whites numbering about 500. With the exception of Rose Island, which is an uninhabited coral islet 70 m. E. of its nearest neighbour, and therefore scarcely belongs geographically to the group, all the islands are considerably elevated, with several extinct or quiescent craters rising from 2000 ft. in Upolu to 4000 ft. (Mau) in Savaii. Although there are no active cones, Upolu has in comparatively recent times been subject to volcanic disturbances, and according to a local tradition, outbreaks must have occurred in the 17th or 18th century. In 1836 a submarine volcano near the islet of Olosenga was the scene of a violent commotion, discharging rocks and mud to a height of 2000 ft. Earthquakes are not uncommon and sometimes severe. Coral reefs protect the coasts in many parts; they are frequently interrupted, but the passages through them are often difficult of navigation. The whole group is abundantly watered, and the igneous soil is marvellously fertile. The scenery of the islands is extremely beautiful. Upolu is long and narrow, Tutuala is very long, the other islands small. The three islands are separated by the narrowest part of the sea, which at some points is only 5 ft. 10 in. wide. The trade winds prevail practically all the year round. The temperature is 78° F., the warmest month being December (80°) and the coldest July (75°-76°). The prevalent winds, which temper the heat, are the S.E. trades, but W. winds supervene from January to May and are particularly strong in the area of the air from the Anti-Atlantica which occur usually in this period. On the 16th of March 1899 the heavy tidal waves created havoc in the harbour of Apia. The American naval establishment is not of importance.

**Samoan forests**—The Samoan forest is almost unique in the world. It consists mainly of an indigenous plant, four species of snakes and a few birds, the most interesting member being the *Didunculus striagrostis*, a ground pigeon of iridescent greenish-black and bright chestnut plumage, which according to the extinct dodo and the living African *Tromerina*.

**Naivets.**—The Samoans are pure Polynesians, and according to the tradition of the island, many of their priests arrived by a bastard dispersion of the race over the Pacific Ocean from Hawaii to New Zealand. Apart from tradition, Samoa is the most archaic of all the Polynesian tongues, and still preserves the organic letter s, which is restricted to archaic and foreign words. Its structure is narrow; it has a backbone of consonants and a wide range of vowels. Thus the term *sasasi* itself, originally *Sasawi*, is supposed to have been carried by the Samoan wanderers over the ocean to Tahiti, New Zealand, the Marquesas and Sandwich groups, where it still survives in various forms as *Hawai*, *Hawaiaki*, *Hawai* and *Hawaii*. In any case, the Samoans are the most perfect type of Polynesians, of a light brown colour, splendid physique, and hand- somely formed. Their feature is particularly marked, their mental and social standard is high among Pacific peoples; they are simple, honourable, generous and hospitable, but brave fighters. Their idolatry (polytheistic) was unaccompanied by human sacrifice. The dead were buried, and their spirits believed to travel to a world entered by a pool at the western extremity of Savaii. They have become mainly Protestants, Catholics or Mormons, but retain many superstitions connected with their native religion. The women and children are well treated. A youth is not regarded as eligible to marry till tattooed from the hips to the knees. The principal foods of the Samoans are vegetables, coco-nut, breadfruit, fish and pork. The Samoan liquor is excellent. The Samoan language is soft and liquid in pronunciation, and has been called "the Italian of the Pacific." It is difficult to learn thoroughly, owing to its many inflexions and accents, and its being largely a language of the everyday.

**Administration and Trade.**—The German islands form a crown colony. There is an imperial governor, having under him a native chief assisted by a native council; and there are both German and native judges and magistrates. The United States, on assuming sovereignty over Tutuala and the islands E. of it in 1900, with the written consent of the native chiefs, appointed a naval governor. Cultivation has been extended under European and American rule, and in 1904 the exports from the German islands had reached a value of $83,750, and those from the American islands of $4200. Copra and cocoa beans are the chief articles of export.

**History.**—It is generally considered that the Manua group was sighted by the Dutch navigator Jacob Roggeveen in 1722, and named by him the Baumann islands after the captain of one of his ships. Louis de Bougainville obtained a fuller acquaintance with the archipelago in 1768, and called them the Navigators' Islands (*Iles des Navigateurs*). This name is still used. Settled by the New Zealand Company in 1821, Tutuala lost some of its crew in a conflict with some natives of Upolu visiting the island. Subsequent explorers were Captain Edwards of the "Pandora" in 1791, and Otto von Kotzebue in 1834. In 1830 the respected missionary John Williams paid his first visit to Samoa. Surveys of the archipelago were made by the American explorer Charles Wilkes. The islands, especially Upolu, now began to attract American and European (mostly German) capitalists, and the Hamburg firm of J. C. Godeffroy & Son developed the trade of the island. Meanwhile a series of petty
SAMOS

SAMOS was greatly interfered with the prosperity of the native population, who grouped themselves into two opposing political parties. Americans and Europeans began to discuss the question of annexation, recognizing the importance of the geographical position of the islands. In 1877 the American consul hoisted his country's flag, but the action was repudiated by his government, which, however, in 1878 obtained Pagasus as a coaling station and made a trading treaty with the natives. In 1879 Germany obtained the harbour of Salamata. Great Britain followed suit, but under a political arrangement between the powers no single power was to appropriate the islands. But in 1887 and 1888 civil war prevailed on the question of the succession to the native kingship, the Germans supporting Tamasee, and the British and American residents supporting Malietoa. After the latter had been deported by the Germans, the British and American support was transferred to his successor, Mataafa. In 1889 German sailors and marines were killed or wounded by the adherents of Mataafa. A conference between the three powers was thereupon held at Berlin, and a treaty was executed by those powers and by Samoa, on the 14th of June 1889, by virtue of which the independence and autonomy of the islands were guaranteed, Malietoa was restored as king, and the three powers constituted themselves practically a protectorate over Samoa, and provided a chief justice and a president of the municipality of Apia, to be appointed by them, to aid in carrying out the provisions of the treaty. Thus began a period of considerable friction, until the end of 1898, when, upon the death of Malietoa, two rival candidates for the throne again appeared, and the chief justice selected by the three powers decided against the claims of Mataafa, and in favour of a boy, Malietoa Tanu, a relative of the deceased Malietoa. Civil war ensued, in which several American and British officers and sailors were killed by the natives, the Germans upholding the claims of Mataafa, and the British and Americans supporting the rival candidate. The three powers thereupon sent a commission to Samoa to investigate and adjust the difficulties. The situation, however, was found to be so complicated and embarrassing that, early in 1900, the so-called Berlin treaty was abrogated, Great Britain withdrew her claims to any portion of the islands and received compensation from Germany by cessions in other parts of the world, and the United States withdrew from all the islands W. of Tutuila. In 1902 the king of Sweden, as arbitrator under a convention signed at Washington in 1899, decided that Great Britain and the United States were liable for injuries due to action taken by their representatives during the military operations of 1899.

SAMOS, one of the principal and most fertile of the islands in the Aegean Sea that closely adjoin the mainland of Asia Minor, from which it is separated by a strait of only about a mile in width. It is about 27 m. in length, by about 14 m. in greatest breadth, and is occupied throughout the greater part of its extent by a range of mountains, of which the highest summit, near its western extremity, called Mount Kerkis, is 4725 ft. high. This range is in fact a continuation of that of Mount Mycale on the mainland, of which the promontory of Trigolium, immediately opposite to the city of Samos, formed the extreme point. Samos is tributary to Turkey in the sum of £2700 annually, but otherwise is practically an independent principality, governed by a prince of Greek nationality nominated by the Porte. As chief of the executive power the prince is assisted by a senate of four members, chosen by him out of eight candidates nominated by the four districts of the island—Vathy, Chora, Marathocumbo and Carlovasi. The legislative power belongs to a chamber of 36 deputies, presided over by the metropolitan. The seat of the government is Vathy (6000). There is a telephone service.

The island is remarkably fertile, and a great portion of it is covered with vineyards, producing wine of a specially high reputation. There are three ports: Vathy, Tegani and Carlovasi. The population in 1900 was about 54,830, not comprising 15,000 natives of Samos inhabiting the adjoining coasts. The predominant religion is the Orthodox Greek, the metropolitan district including Samos and Icaria. In 1900 there were 634 foreigners on the island (323 Hellenes, 13 Germans, 29 French, 28 Austrians and 24 of other nationalities).

SAMOS, in the History of the Island: although the history of the island is for the most part a series of invasions, it is singularly defective. At the time of the great migrations it received an Ionian population which traced its origin to Epeidaurus in Argolis. By the 7th century B.C. it had become one of the leading commercial centres of Greece. This early prosperity of the Samians seems largely due to the island's position near the end of the Maenedian and Caister trade-routes, which facilitated the importation of textiles from inner Asia Minor. But the Samians also developed an extensive commerce with the Inner Sea, especially with the Black Sea and with and Egypt, and were credited with having been the first Greeks to reach the Straits of Gibraltar. Their commerce with Africa, which reached its height perhaps abnormally also with Carthage and Chalcis, but made them bitter rivals of their neighbours of Miletus. The feud between these two states broke out into open strife during the Lelantine War (7th century B.C.), in which they were engaged against a Phoenician force, after a naval warfare, the use of the trireme. The result of this conflict was to confirm the supremacy of the Milesians in eastern waters for the time being; for throughout the 6th century B.C. the island of Samos preserved it from those aggressions at the hands of Asiatic kings to which Miletus was henceforth exposed. About 535 B.C., when the existing oligarchy was overturned by the tyrant Polykrates (q.v.), the island enjoyed peace and freedom. In 478 B.C., when it was protected from invasion, but ruled supreme in Aegean waters. The city was beautified with public works, and its school of sculptors, metal-workers and engineers achieved high repute (see below). After the Athenians' success in the battle of Salamis, the Persians conquered and partly depopulated the island. It had regained much of its power when in 499 it joined the general revolt of the Ionians against Persia; but owing to its long-standing jealousy of Miletus it rendered indifferent service, and at the decisive battle of Lade (494) part of its contingent of sixty ships was guilty of downright treachery. In 479 the Samians led the revolt against Persia. In the Delian League they held a position of special privilege and remained actively loyal to Athens until 440, when a dispute with Miletus, which the Athenians had decided against them, induced them to secede. With a fleet of sixty ships they held their own for some time against the Athenian power, but after a protracted siege were forced to capitulate and degraded to the rank of tributary state. At the end of the Peloponnesian War (404 B.C.) Samos was placed under a three-masted archon, who served as a base for the naval war against the Peloponnesians, and as a temporary home of the Athenian democracy during the revolution of the Four Hundred at Athens (411 B.C.), and in the last stage of the war was rewarded with the Athenian franchise. The friendly attitude towards Athens was the result of a series of political revolutions which ended in the establishment of a democracy. After the downfall of Athens Samos was besieged by Lysander and again placed under an oligarchy. In 394 the withdrawal of the Spartan navy induced the island to declare its independence and re-establish a democracy, but by the peace of Antalcidas (387) it fell again under Persian domination. It was recovered by the Athenians in 366 after a siege of eleven months, and received a strong body of military settlers. After the Samian War (322), when Athens was deprived of Samos, the vicissitudes of the island can no longer be followed down to the event of some sort of resistance offered by the Egyptian fleet, at other periods it recognized the overlordship of Syria; in 189 B.C. it was transferred by the Romans to the kings of Pergamum. Escalated from 101 in the Roman province of Asia, it was cedced to Antonius (73 B.C.) and Mithradates (88) against its will, and consequently forfeited its autonomy, which it only temporarily recovered between the reigns of Augustus and Vespasian. New troubles occurred. Samos was unable to contest with Smyrna and Ephesus the title of "first city of Ionia"; it was chiefly noted as a health resort and for the manufacture of pottery (see below). Under Byzantine rule Samos became the seat of the Archimandrite, and in the 11th century it passed through many the same changes of government as Chios (q.v.), and, like the latter island, became the property of the Genoese, and in 1268 was added to Genoese dominions. At the time of the Turkish conquest it was severely depopulated, and had to be provided with new settlers, partly Albanians.
During the Greek War of Independence Samos bore a conspicuous part, and it was in the strait between the island and Mount Mycale that Canaris set fire to and blew up a Turkish frigate, in the presence of the Venetian fleet. This was but one of a series of events that led to the abandonment of the enterprise, and Samos held its own to the very end of the war. On the conclusion of peace the island was indeed again handed over to the Turks, but soon afterwards it was allowed to fall into a semi-independent position, being in fact self-governed, though tributary to the Turkish empire, and ruled by a Greek governor nominated by the Porte, who bears the title of Prince and is the head of a council and assembly. The prosperity of the island bears witness to the wisdom of this arrangement. Its principal article of export is its wine, which was celebrated in ancient times, and still enjoys a reputation in the Levant. It exports also silk, oil, raisins and other dry fruits.

The ancient capital, which bore the name of the island, was situated on the S. coast at the modern Tigani, directly opposite to the modern Samos. During and after the war the town itself, having a large artificial port, the remains of which are still visible, as are the ancient walls that surrounded the summit of a hill which rises immediately above it, and now bears the name of Astypalea. This formed the acropolis of the ancient city, which in its flourishing times covered the slopes of Mount Ampelus down to the shore. The aqueduct cut through the hill by Polycrates may still be seen. Ionian poetry in the 6th century. The far-famed samnite, often which was situated close to the shore, where its site is still marked by a single column, but even that bereft of its capital. This fragment, which has given to the neighbouring islands the name of "Samosata," indicates the temple that was extolled by Herodotus as the largest he had ever seen, and which, vied in splendour as well as in celebrity with that of Diana at Ephesus. Though the temple, with the island of Samos attached to it, has been described as having been completely destroyed in 1717, it is fully accounted for, and its dimensions found fully to verify the assertion of Herodotus, as compared with all other Greek temples existing in his time, though it was afterwards surpassed by the later temple of Aesculapius.

The modern capital of the island was, until recently, at a place called Khora, about 2 m. from the sea and from the site of the ancient city; but since the change in the political condition of Samos has been transferred to Vathy, situated at the head of a deep bay on the N. coast, which has become the residence of the prince and the seat of government. Here a new town has grown up, well built and well provided.

Samos was celebrated in ancient times as the birth-place of Pythagoras. His name and figure are found on coins of the city of imperial date. It was also conspicuous in the history of art, having produced in early times a school of sculptors, commencing with Rhoeus and Theodorus, who are said to have invented the art of casting statues in bronze. Rhoeus was also the architect of the temple of Hera. The vases of Samos are among the most characteristic products of Ionian potteries in the 6th century. The name Samosata, borne by a town itself adjoining the sea and given to a kind of red pottery found wherever there are Roman settlements, has no scientific value. It is derived from a passage in Pausanias xxix. 1. And the famous Samian sculptor was Pythagoras, who migrated to Rhegium.

Among the works of art that have survived from ancient times are:


SAMOSATA (Samosata, -ara), Ptol. v. 15 § 11; Strabo xvi. 749), called in Arabic literature Sumesiit, is now represented by the village of Samiš, occupying a corner of the ancient site. On a broad plain 1500 ft. above sea-level, Samosata practically marks the place where the mountain course of the Euphrates ends (see Mesopotamia). When the water is high enough it is possible to descend in a keleq in one day to Birejik. The rocky banks contain many ancient cave-dwellings.

The stelae found there and published by Humann and Puchstein (Reisen in Kleinasien u. Nord-Syrrien, Atlas, plate xlix. 1-3) shows that it was at an early time a Hittite centre, probably marking an important route across the Euphrates: whether or not it was the place where later the Persian "royal road" crossed the Euphrates, in Strabo's time it was connected by a bridge with a Seleucia on the Mesopotamian side, and it is now connected by road with Serebek and Diyarbek and with Rakk'a, connecting further, through Edessa and Harran, with other eastern roads. The Hittite sculptured object referred to above shows influences of an Assyrian type (P. Jensen, Hittiter u. Armenier, 1898, 13); but no cuneiform text referring to Samosata by name seems yet to have been published. Kummukh, however, the district to which it belonged, was overrun by early Assyrian kings. In consequence of revolt it was made an Assyrian province in 708 B.C. When the Assyrian empire passed through the hands of Babylon and Persia into those of the successors of Alexander, Samosata was the capital of Kummukh, called in Greek Connagene. How soon it became a Greek city we do not know. Although its ruler Ptolemy renounced allegiance to Antiochus IV, the dynasty of Iranian origin which ruled at Samosata, described by Strabo (i. c.) as a fortified city in a very fertile if not extensive district, allied itself with the Seleucids, and bore the dynastic name of Antiochus. There, not long after the little kingdom was in A.D. 72 made a province by the Romans, and its capital received the additional name of Flavia (Suet. Vesp. 8; Eutrop. 8. 19), the celebrated Greek writer Lucan the Satirist was born in the 2nd century (see Lucian), and more than a century later another Lucian, known as the Martyr, in the 3rd century A.D. (Geogr. Journ. xii. 323). Under Constantine Samosata gave place as capital of Euphratesis to Hierapolis (Malal. Chron. iii. p. 317). It was at Samosata that Julian had ships made in his expedition against Sapor, and it was a natural crossing-place in the struggle between Heraclius and Chosroes in the 7th century. Mas'udi in the 10th century says it was known as Kal'at at-Tin ("the Clay Castle"). It was one of the strong forresses included in the county of Edessa (q.v.). In the 13th century, according to Yâqûq, one of its quarters was still inhabited by Armenians. It is now a Kurdish village, which in 1894 consisted of about 100 houses, three of which were Armenian (Geogr. Journ. viii. 322).

SAMOTHRAKE (Turk. Semazde), an island in the N. of the Aegean Sea, nearly opposite the mouth of the Hellespont, and lying N. of Imbros and N.E. of Lemnos. The island is a kaza of the Lemnos sanjak, and has a population of 3,000, nearly all Greek. It is still called Samothraki, and though of small extent is, next to Mount Athos, by far the most important natural feature in the island of Samothrace, from its great elevation—the group of mountains which occupies almost the whole island rising to the height of 5,240 ft. Its conspicuous character is attested by a well-known passage in the Iliad (xiii. 12), where the poet represents Poseidon as taking post on this lofty summit to survey the plain of Troy and the contest between the Greeks and the Trojans. This mountainous character and the absence of any tolerable harbour—Pliny, in enumerating the islands of the Aegean, calls it "importuosissima omnium"—prevented it from ever attaining to any political importance, but it enjoyed great celebrity from its connexion with the worship of the Cabiri (q.v.), a mysterious triad of divinities, concerning whom very little is known, but who appear, like all the similar deities venerated in different parts of Greece, to have been a remnant of a previously existing Pelasgic mythology. Herodotus expressly tells us that the "orgies" which were celebrated at Samothrace were derived from the Pelasgians (ii. 5). The only occasion on which the island is mentioned in history is during the expedition of Xerxes (B.C. 480), when the Samothracians sent a contingent to the Persian fleet, one ship of which bore a conspicuous part in the battle of Salamis (Herod. viii. 90). But the island appears to have always enjoyed the advantage of autonomy, probably on account of its sacred character, and even in the time of Pliny it ranked as a free state. Such was still the reputation of its mysteries that Germanicus endeavoured to visit the island, but was driven off by adverse winds (Tac. Ann. ii. 54).

After visits by travellers, including Ciroc of Canonna (1444), Richter (1822), and Kiepert (1842), Samothrace was explored in 1857 by Conze, who published an account of it, as well as the larger neighbouring islands, in 1860. The "Victory of Samothrace," set up by Demetrius Poliorketes c. 305 B.C., was discovered in the
island in 1863, and is now in the Louvre. The ancient city, of which the ruins are called Palapoci, was situated on the N. side of the island close to the sea; its site is clearly marked, and considerable remains still exist of the ancient walls, which were built in massive Cyclopaean style, as well as of the sanctuary of the Cabeiri, and other temples and edifices of Ptolemaic and later date. The modern village is on the hill above. A considerable sponge fishery is carried on round the coasts by those who dive naked in the hot sulphur springs. In 1873 and 1875 excavations were carried out under the Austrian government.

Conze, Reise auf den Inseln des Thariskischen Meeres (Hanover, 1860); Conze, Hauser and Niemann, Archäologische Untersuchungen auf Samothrake (Vienna, 1875 and 1880); H. F. Tozer, Islands of the Dead (London, 1899).

**SAMOVAR** (Russ. samovar), an urn for making tea after the Russian fashion; it is usually of copper, and is kept boiling by a tube fitted with live charcoal passing through the centre. The word is usually taken in Russia to mean "self-boiler" (самовар, self, and barīt, boil), but it is more probably an adaptation of a Tatar word sanabor, a tea-urn.

**SAMOYEDES**, a tribe of the Ural-Altaic group, scattered in small groups over an immense area, from the Altai mountains down the basins of the Ob and Yenisei, and along the shores of the Arctic Ocean and the Sea of Okhotsk, to the Pacific Ocean and the Sea of Japan. The tribe may be subdivided into three main groups: (a) The Yukars in the coast-region from the Yenisei to the White Sea; (b) the Tavghi Samoyedes, between the Yenisei and the Khatanga; (c) the Ostak Samoyedes, intermingled with Ostaks, to the S. of the others, in the forest regions of Tobolsk and Yeniseisk. Their whole number may be estimated at from 20,000 to 25,000. The so-called Samoyedes inhabiting the S. of the governments of Tomsk and Yeniseisk have been much under Tatar influence and appear to be of a different stock; they are called the Kamass Tatars, the Kaibals, the Motors, the Bellirs, the Karagasses and the Samoyedes on the middle Ob.

The proper place of the Samoyedes among the Ural-Altaicans is very difficult to determine. As to their present name, signifying in its present Russian spelling "self-eaters," many ingenious theories have been advanced, but that proposed by Schrenck, who derived the name "Samojede" from "Syroyadisy," or "raw-eaters," leaves much to be desired. Perhaps the etymology ought to be sought in quite another direction, namely, in the likeness to Samoia. The names assumed by the Samoyedes themselves are Hazovo and Nykyänaz. The Ostaks know them under the names of Orhythy, or Workho, both of which recall the Ugric; the name of Hui is also used in the Osts, and applied to the Tavghi, who resemble the Samoyedes in their language and customs.

The language now spoken by the Samoyedes belongs to the Finno-Ugrian group, and is allied to Finnish but has a more copious system of inflections. There are three principal dialects, which are nearly spoken to the ear. No fewer than three separate dialects and a dozen sub-dialects are known in it.

The conclusions deducible from their anthropological features—apart from the general difficulty of arriving at safe conclusions on this ground alone, on account of the variability of the ethnological type under various conditions of life—are also rather indefinite. The Samoyedes are recognized as having the face more flattened than undoubtedy. Finnish stocks; their eyes are narrower, their complexion and hair darker. Zuev describes them as like the Tunguses, with flattened nose, thick lips, little beard and black, hard hair. All that is true of the Ugric—"the people of the Ob"—but they are undoubtably mixed. Castrén considers them as a mixture of Ugrics with Mongolians, and Zoglaf as brachycephalic Mongolians. Quatrefages classes them, together with the Voguls, as two families of the Ugric sub-branch, this last, together with the Sambres (Lapps), forming part of the Ugric or Boreal branch of the yellow or Mongolic race.

It is probable the Samoyedes formerly occupied the Altai mountains, whence they were driven N. by Turco-Tatars. Thus, the Kaibals left the Sayan mountains and took possession of the Abakan steppe (Minusinsk region), abandoned by the Kirghiz, in the 4th year of the battle of the Tan N.E. Russia the Zyrians are still driving the Samoyedes farther N., towards the Arctic coast. Since the researches of Schrenck it may be regarded as settled that in historical times the Samoyedes were inhabitants of the so-called Ural-Altaic area, and that they have left behind them bones and a considerable number of imprints of bones, found in graves, which are scattered throughout W. Siberia, in the Altai, and on the Yenisei in the Minusinsk region, are relics of Urgo-Samoyedes. According to his views this nation, very numerous at the epoch—which preceded the Iron-Period civilization of the Turco-Tatars,—were pretty well acquainted with mining; the remains of their mines, sometimes 50 ft. deep, and of the furnaces where they melted copper, tin and gold, are often encountered. They were industrious; they had a sort of roof like that of which weighs 75 lb., and their melted and polished bronze and golden decorations testify to a high development of artistic feeling and industrial skill, still the marks of which are seen on their earthenware. They were not nomads, but husbandmen, and their irrigation canals are still to be seen. They kept horses (though in small numbers), sheep and goats, but no traces of their rearing pigs, cattle or buffalo have hitherto been discovered.

The Samoyedes, who now maintain themselves by hunting and fishing on the lower Ob, partly intermingle with the Ob Ostaks, retaining the condition of the inhabitants of France and Germany at the epoch of the reindeer. Clothed in skins, like the troglodytes of the Weser, they are agricultural. They live in small huts, which are so dry and indomitable that carnivorous animals—the wolf included—and cherish the same superstitions (of which those regarding the teeth of the bear are perhaps the most characteristic) as were current among the Stone-Period inhabitants of W. Europe. Their heads are thick, somewhat skull-like, with a low front and the prevalence of smallpox. They still maintain the high standard of honesty mentioned by historical documents, and never admit anyone to the houses by their neighbours. The Yurals Samoyedes are courageous and warlike; they offered armed resistance to the Russian invaders, and it is only since the beginning of the century that they have paid tribute. The exact number of Umbaich Samoyedes is not known; the Tavghi Samoyedes may number about 1000, and the Yuraks, mixed with the former, are estimated at 6000 in Obdorsk (about 150 settled), 5000 in European Russia in the tundras of the Mezen, and 1000 in Yeniseisk.

Of the S. Samoyedes, who are completely Tatarized, the Beltirs live by agriculture and cattle-breeding in the Abakan steppe. They profess Christianity, and speak a language closely resembling that of the Sagi Tatars. The Kaibals, or Koibus, can hardly be distinguished from the Minusinsk Tatars, and support themselves by rearing cattle. Castrén considers that three of their stems are of Ostak origin, the remaining being Samoyedic. The Kamassins, in the Kansk district of Yeniseisk, are either herdmen or agriculturists. They speak a language with an admixture of Tatar words, and some of their stems contain a large Tatar element. The interesting point of the language of the Ostaks is connected with the rapid loss of all the verbal and personal inflections, the few representatives are rapidly losing their anthropological features, their Turkish language and their distinctive dress. The exact number of the Samoyedes in Siberia is unknown, and the tribe emigrated to China and was there exterminated; the remainder have disappeared among the Tuba Tatars and the Soyotes. The Samoyedes on the Ob in Tomsk may number about 7000; they have been divided the last 50 years, and there is no carrying on agriculture, and are a poverty-stricken population with little prospect of holding their own.

The works of M. A. Castrén are still the best authority on the Samoyedes. See Gesellschaft der samoyedischen Sprachen (1854); Dictionary (1855); Ethnologische Vorlesungen über die altasiatischen Volker (1857); Versuch einer koibalisichen und karagassischen Sprachlehre (1857). See also A. Middendorf, Reise in den äusseren Norden und Osten Sibirien (1875).

**SAMPA**, the lightest and the typical light boat of far eastern rivers; a canoe-shaped vessel, being usually propelled by a single scull over the stern, and the canal boat resembles it, being carried by an awning or screen of matting. The word is said to be Chinese, san, thin, and pan, board. Others take it to be Malay origin.

**SAMPIDARENA** (San Pier d'Arena, i.e. St Peter of the Sands), a town of Liguria, Italy, in the province of Genoa, 24 m. by rail W. of the city of that name, 16 ft. above sea-level. Pop. (1906) 37,582 (town); 43,054 ( commune). It is practically a suburb of Genoa and contains a number of handsome palaces, including the Palazzo Spinola and the Palazzo Scassi, both notably by Bernardo Buontalenti. Upon the bank of the river are warehouses, stores, and other buildings for industrial and commercial activity, the Ansaldi ship-building yard being the most important of its works. Near the
neighbouring town of Cornigliano is a bridge, where Masséna slew the capitulation of Genoa.

**SAMPLE** (through the O. Fr. essemble, from Lat. exemplum; a doublet of "example"), a small portion of merchandise taken from the whole to serve as a specimen or evidence of the whole; hence a pattern or model. Sale by sample obviates the necessity on the part of sellers of keeping large quantities of goods on premises unsuitable for storage, and on the part of buyers of having to make a special visit to inspect the goods in bulk. The sale of goods by sample is dealt with in England by the Sale of Goods Act 1893, s. 15, which provides that a contract of sale shall be a contract for sale by sample where there is a term of comparison in the contract. In the case of such a contract, there must be (a) an implied condition that the bulk shall correspond with the sample in quality; (b) an implied condition that the buyer shall have a reasonable opportunity of comparing with the bulk and the sample; (c) an implied condition that the goods shall be free from any defect, rendering them unmerchantable, which would not be apparent on reasonable examination of the sample. (See also **SALE of GOODS**.)

**SAMPLER** (from O. Fr. essemblaire, with dropping of initial **a**, Late Lat. exemplarium, from exemplum, example; it is a destination of Lat. *exemplum*) or, as the latter form is used in this country, "example," a model or pattern to be copied, particularly a small rectangular piece of embroidery worked on canvas or other material as a pattern or example of a beginner's skill in needlework, as a means of teaching the stitches. Down to comparatively recent times every little girl worked her "sampler," and examples of 17th-century work are still found and have become the object of the collector's search. They usually contained the alphabet, the worker's name, the date, and Bible texts, verses, mottoes, the whole surrounded with some conventional design.

The earliest sampler in existence is dated 1643 and is in the Victoria and Albert Museum, South Kensington (see M. B. Huish, *Samplers and Tapestry Embroideries*, 1900, and *List of Samplers in the Collection of Henry Vaughan*, South Kensington, Board of Education, South Kensington, 1906).

**SAMPSON, WILLIAM THOMAS** (1840-1902), American naval commander, was born at Palmyra, New York, on the 9th of February 1840, and graduated at the head of his class from the U.S. Naval Academy in 1861. In this year he was promoted to master, and in the following year was made lieutenant. He was executive officer in the "Patapsco" when she was blown up in the Confederate ironclad "Virginia" January 1862. He served on distant stations and (1868-1871 and 1876-1878) at the Naval Academy, and became lieutenant-commander in 1886 and commander in 1874. He was a member of the International First Meridian and Time Conference in 1884, and of the Board of Fortifications in 1885-1886; was superintendent of the Naval Academy from 1886 to 1890; and was promoted to captain and served as delegate at the International Maritime Conference at Washington in 1888. He was chief of the Bureau of Ordnance in 1893-1897. About 95% of the guns employed in the Spanish-American War were made under his superintendence. His influence was felt decisively in the distribution of guns and armour, and in the training of the personnel of the navy. He superintended the gunnery training and prepared a new drill-book for the fleet. In February 1898 Sampson, then a captain, was president of Board of Inquiry as to the cause of destruction of the "Maine." At the outbreak of the war with Spain he was placed in charge of the N. Atlantic squadron, and conducted the blockade of Cuba. When it was known that Admiral Cervera, with a Spanish fleet, had left the Cape Verde Islands, Sampson withdrew a force from the blockade to cruise in the Windward Passage, and made an attack upon the forts at San Juan, Porto Rico. After his return to the coast of Cuba he conducted the blockade of Santiago, and the ships under his command destroyed the Spanish vessels when they issued from the harbor of Santiago and attempted to escape (see **SPANISH-AMERICAN WAR**). Sampson himself was not actually present at the battle, having started for Siboney just before it began to confer with General Shafter, commanding the land forces. He reached the scene of battle as the last Spanish vessel surrendered, and the engagement was fought in accordance with his instructions. He was promoted to commodore in 1898, to rear-admiral on the 3rd of March 1899, and was made commandant of the Boston (Charlestown) Navy Yard in October of the same year. He died on the 6th of May 1902.

**SAMSON** (cf. Heb. šāmēmšē, "sun"), in the Bible, the antagonist of the Philistines, reckoned as one of the "judges" of Israel (Judg. xv. 20, xvi. 31); the story itself (Judg. xiii. 2-xxvi. 31), however, represents him not as a judge but as a popular hero of vast strength and sarcastic humour. He is consecrated from his birth to be a Nazarite or religious devotee (ch. xii., 13), and it is possible that this consecration was simply as a vow of revenge, which is the meaning it would have in an Arab story (W. R. Smith). But he is inspired by no serious religious or patriotic purpose, and becomes the enemy of the Philistines only from personal motives of revenge, the one passion which is stronger in him than the love of women. The stories of his exploits are plainly taken from the mouths of the people and have all the appearance of folk-tales, not unmixed with mythical motives. Samson commenced his career by strangling a lion on his way to visit a Philistine woman. On (and by shaming himself) he renders that the carcass, like the skull of Oenoseus (Herod. v. 114), was occupied by a swarm of bees; he took the honey and the incident suggested a riddle. The narrative of Samson's marriage and riddle is of peculiar interest as a record of manners; specially noteworthy is the custom of the wife remaining with her parents after marriage.1 His next exploit, an act of revenge for the faithlessness of his wife, was to catch 300 foxes and set them loose in the fields with firebrands tied to their tails. (Analogous customs, e.g. the Roman Cerealia, are referred to in G. F. Moore's *Commentary*, p. 341.) The Philistines retaliated by burning her and her father's household, and Samson in his turn smote them "hips and thighs" and slew a thousand men with the jawbone of an ass.2 The story has apparently been influenced by the existence of a rock, called by reason of its shape, "Ass's Jawbone," from which issued a fountain called *En-hakkōrē* , "the spring of the caller" (a name for the partridge). The well-known removal of the gates of Gaza to Hebron, 40 m. distant — "no journey of the Sabbath day" (Milton, *Samson Agonistes*) — has been rendered still more marvellous by a later exaggeration (xiv. 2). Finally the Philistine Delilah (q.v.) worms out of Samson the secret of his strength, and by shaving his head renders the carcass of the lion incapable. He is blinded and put to menial work, and as his hair grows again his invincible strength returns. At a festival of Dagon he is led out before the Philistines in the temple, and by pulling down the house upon their heads kills more at his death than in all his life-time.

Points of similarity between Samson and the Babylonian Gilgamesh, the Egyptian Horus-Ra and Hercules, have been observed by many writers, and it has been inferred that the whole story of Samson is a solar myth. His name, and the proximity of Beth-shemesh ("house of the sun") to his father's home, favour the view that mythological elements have attached themselves to what may have been originally a legendary figure of the Danites, the tribe whose subsequent fortunes

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1 In Judg. xiv. 1-10 the narrative has been revised; originally Samson went down alone to Timnath to contract his marriage. The metrical riddle and its answer are thus translated by G. F. Moore (*Sacred Books of the Old Testament: Judges*):

"Out of the eater came something to eat. 
And out of the strong came something sweet."

"If with my heifer ye did not plough, 
Ye had not found out my riddle, I trow."

No doubt the Hebrews, like the Arabs, were fond of enigmas; see 1 Kings x. 1, and *Ency. Biblica*, s.v. "Riddle."

2 The meaning of the phrase "jawbone of an ass" thus rendered by G. F. Moore: "with the jawbone of an ass, I assailed my assailants" (more literally "I piled them in heaps," or perhaps "flayed them clean").

3 For the hair as the seat of strength cf. J. G. Frazer, *Golden Bough*, ii. 390 seq. In ch. xiii. the consecration of the hair is regarded differently.
SAMSON—SAMUEL OF NEHARDEA

are narrated in the chapters immediately following (Judg. xvii.—xviii.).


SAMSON (1135-1211), abbot of St Edmund's, was educated in Paris and became a teacher in Norfolk, the county of his birth. In 1160 he entered the great Benedictine abbey of St Edmund's as a monk and was chosen abbot in February 1182. He was a careful and vigilant guardian of the property of the abbey, but he found time to attend royal councils and to take part in public business; also he was frequently entrusted with commissions from the pope. During the absence of Richard I. from England he acted with vigour against John and visited the king in his prison in Germany. He did some building at the abbey, where he died on the 30th of December 1211. Samson is famous for the encouragement which he gave to the town of Bury St. Edmunds, the liberties of which he extended in spite of his own monks. His name is most familiar owing to the references to him in Carlyle's Past and Present.

See the chronicle of Jocelyn of Brakelond in vol. i. of the Memorials of St Edmund's Abbey, edited by T. Arnold (1890); and J. R. Green, Serbia (Studies 1892).

SAMSON, JOSEPH ISIDORE (1793-1877). French actor and playwright, was born at St Etienne on the 25th July 1793, the son of a Jewish family. He took part in the performance at the Conservatoire in 1812, married an actress with whom he toured France, and came to the Comédie Française in 1826. Here he remained until 1863, creating more than 250 parts. He became a professor at the Conservatoire in 1829, and under him Rachel, Rose Chérié (1824-1861), the Brohanis and others were trained. He wrote several comedies, among them La Belle-Mère et le gendre (1856), and La Famille poisson (1840). Samson died in Paris on the 28th of March 1871.

SAMSUN (anc. Amisos), the chief town of the Janic sanjak of the Trebizond vilayet of Asiatic Turkey, situated on the S. coast of the Black Sea between the deltas of the Kizil and Yeshil Irmaks. Pop. about 15,000, two-thirds Christian. It is connected by metalled roads with Sivas and Kaisarleh, and by sea with Constantinople. It is a thriving town, and the outlet for the trade of the Sivas vilayet. Steamers lie about 1 m. from the shore in an open roadside, and in winter landing is sometimes impossible. Its district is one of the principal sources of Turkish tobacco, a whole variety of which is known as "Samsun." Samsun exports cereals, tobacco and wool. Both exports and imports are about stationary, the Agora (the general market) being neutralized by a tendency to rise. Amissah, which stood on the promontory about 1½ m. N.W. of Samsun, was, next to Sinope, the most flourishing of the Greek settlements on the Euxine, and under the kings of Pontus it was a rich trading town. By the 1st century A.D. it had displaced Sinope as the N. port of the great trade route from Central Asia, and later it was one of the chief towns of the Comneni of Trebizond. There are still a few remains of the Greek settlement. (D. G. H.)

SAMUEL, a prominent figure in Old Testament history, was born at Ramah and was dedicated to the service of Yahweh at the sanctuary of Shiloh where he lived till he was 18 (q.v.). His mother, Samuel (q.v.), here he announced the impending fate of the priesthood and gained reputation throughout Israel as a prophet. Best known as "king-maker," two distinct accounts are preserved of his share in the institution of the monarchy. In one, the Philistines overthrew Israel at Ebenezer near Aphek, Eli's sons

The name Samuel (Shim'a'il), on the analogy of Penuel, Reuel, seems to mean "name (i.e. manifestation) of El" (God). Other interpretations are about stationary, the Agora (the general market) being neutralized by a tendency to rise. Amissah, which stood on the promontory about 1½ m. N.W. of Samsun, was, next to Sinope, the most flourishing of the Greek settlements on the Euxine, and under the kings of Pontus it was a rich trading town. By the 1st century A.D. it had displaced Sinope as the N. port of the great trade route from Central Asia, and later it was one of the chief towns of the Comneni of Trebizond. There are still a few remains of the Greek settlement. (D. G. H.)

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are slain, and the ark is captured (1 Sam. iv.). After a period of oppression, Samuel suddenly reappears as a great religious leader of Israel, summons the people to return to Yahweh, and convenes a national assembly at Mizpah. The Philistines are defeated at Ebenezer (near Mizpah) through the direct intercession of Yahweh, and Samuel rules peacefully as a theocratic judge (vii.). But in his old age the elders demand a king, and he taps the ark, that the simple story of Samuel's youth at Shiloh will belong. Next we find that Samuel's interest on behalf of the Israelite king is transferred to David, the founder of the Judaean dynasty, and it is his part to announce the rejection of Saul and Yahweh's new decision (xii. 7b-150), xv. 10-35, xxviii. 17), to anoint the young David, and, as head of a small community of prophets, to protect him from the hostility of Saul (xvi. 1-13, xix. 18-24).

All these features in the life of Samuel reflect the varying traditions regarding a figure who, like Elijah and Elisha, held an important place in the Israelite history. That he was an Ephraimite priest who served at Ramah may only be due to the incorporation of one cycle of specifically local tradition; the name of his grandfather Jeroham (or Jerohemel, or Seputanig) suggests a southern origin, and one may compare the relation between Saul and the Kenites (1 Sam. 6, 6) and Jehu and the Rechabites (1 Kings x. 15). But, although his great victory in 1 Sam. vii. may imply that he was properly a secular leader, comparable to Othniel, Gideon or Jephthah (see * Sam. xii. 11, cf. Heb. xii. 35), the idea of non-hereditary rulers over all Israel in the pre-monarchical age is a later theory (see Judges). However, so-grooth-man, tinent in the institution of the monarchy naturally held a prominent place in later ideas, encouraged by the growth of tradition. The Saul who became the first king of N. Israel must needs be indebted to the influence of the prophet (cf. Jeus, and it is to the former (and later) of them that the disastrous fate of Saul invited explanation, which is found in his previous acts of disobedience (1 Sam. xv, xxviii. 16-18; cf. Ahab, Kings xx. 35-43). Further, while on the one side the institution of the monarchy is subsequently regarded as hostile to the pre-eminence of Yahweh, Samuel's connexion with the history of David belongs to a relatively late stage in the history of the written traditions (see Events in the Time of David and Solomon). samuel's name ultimately becomes a by-word for the inauguration and observance of religious custom (see 1 Chron. ix. 22, xxvi. 28, 2 Chron. xxvii. 18, Ps. cxxv. 6, Ecclus. xiv. 13 seq.). According to a tradition that is frequent in the Hebrew Bible (e.g. 1 Chron. vi. 28, 33). See further David; Samuel, Books of; Saul. (S. A. C.)

SAMUEL OF NEHARDEA, usually called bar Samuel or Yehuden (c. 165-c. 257), Babylonian Rabbi, was born in Nahardea in Babylonia and died there c. 257. He is associated
with the fame of his great contemporary Rab (Abba Araka, g. r.). Besides his mastery in the traditional Law, which added much to the growing reputation of the Rabbinic Academy of his native town, Samuel was famed for his scientific attainments. In particular his knowledge of astronomy, as preserved in the world of the first to compile a Calendar of the Jewish year, thus preparing the way for the fixation of the festivals by means of scientific calculations. But Samuel's fame rests on the service which he rendered in adapting the life of the Jews to the Diaspora to the law of the land. "The law of the State is binding law," was the principle which Samuel enunciated, here conveying to its logical outcome the admonition of Jeremiah. When the king of Persia, Shapur, captured Mazaca-Caesarea, the Cappadocian capital, Samuel refused to mourn for the 12,000 Jews who lost their lives in its defence. As Graetz says: "To Jeremiah and Mar Samuel Judaism owes the possibility of existence in a foreign country.

See Graetz, History of the Jews (English translation), vol. ii, ch. xix.

1. Position and Contents.

The book of Samuel, Books of, two books of the Old Testament, which in the Jewish canon are ranked among the Former Prophets (Joshua-Kings), in contrast to the Latter Prophets (Isaiah-Malachi). The division into two (like the two Hebrew books of Kings) follows the Septuagint and the Vulgate, whose four books of "kingsdoms" correspond to the Hebrew books of Samuel and Kings. Both Samuel and Kings, like Judges, are made up of a series of extracts and abstracts from various sources, worked over from time to time by successive editors, and freely handled by copyists down to a comparatively late date, as is shown by the numerous and often important variations between the Hebrew text and the Greek version (Septuagint). This criticism was made under the influence of the ideas which characterize Deuteronomy, that is, that the reforms ascribed to Josiah (2 Kings xxiii.) but in Samuel the "Deuteronomistic" influence is much less prominent and the chronological system which runs through Judges and Kings occurs only sporadically. The book of Samuel completes the history of the "judges" of Israel, (11th century B.C.), and begins relating the events which led to the institution of the monarchy under Saul, the part played by Samuel being especially prominent (1 Sam. i.-iv.). The interest is then transferred to David, the founder of the Jewish monarchy, and these events are given with great wealth of detail. As Saul loses the divine favour, David's position advances until, after the death of Saul and the overthrow of Israel, he gains the allegiance of a disorganized people (1 Sam. xv.-2 Sam. iv.), and Jerusalem becomes the centre of his empire (v.-viii.). 

- c. 1000 B.C. A more connected narrative is now given of the history of David (ix.-xx.), which is separated from the account of his death and Solomon's accession (1 Kings i. i.) by an appendix of miscellaneous contents (xxi.-xxiv.). Three lines of interest are to be recognized: (a) that naturally taken by Israel (the northern kingdom) in the history of its first king, Saul; (b) the leading position of the prophets in the political and religious events; and (c) the superiority of the Judaean dynasty, a feature of paramount importance in the study of a book which has come ultimately through Judaean hands. (On the ambiguity of the name "Israel," see Jews, § 5.)

Proof of the diversity of sources is found in the varying character of the narratives (historical, romantic, &c.); in the different literary styles (anastilic, detailed and vivid, Deuteronomist); in the representation of different standpoints and tastes; in the concluding summaries, 1 Sam. xiv. 47-51 compared with xv., 2 Sam. viii. compared with x.; in the double lists in 2 Sam. viii. 18, xx. 21-47; &c. The religious views are so varied that a single writer or even a single age cannot be postulated; note especially 1 Sam. xv. 22 seq. contrasted with the use of teraphim in xix. 13; and the different versions of Yahweh (Septuagint, and 2 Kings xx. 21 seq.; or 2 Sam. xxiv. 1) compared with the "Magnificat" as a post-Reconstruction, Hag. i.; or for not attending the Feast of Tabernacles, Zech. xiv. 16-19.

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1 It is of course necessary to note carefully whether the religious ideas have any real historical value. Thus, 1 Sam. xvii. 36, 46 seq. contain ideas of Yahweh characteristic of exilic and post-exilic writings (see T. K. Cheyne, Ency. Bib., col. 1755), but no proof of an early date. (1 Kings xvii. 16, 1 Kings xx. 23, 2 Kings xvii. 26 seq.); or 2 Sam. xxiv. 1 (cf. 1 Kings xxii. 20, Ezek. xlv. 9), or 2 Sam. xxi. 1 (note drought as the punishment for not seeking for water; compare xxv. 16, xxvi. 19).
represents a situation which belongs to (a) rather than to the state of chaos represented in (b); it describes how the newly-elected king proved his worth (cf. x. 27, xi. 12 seq.). The compiler has used a story in which Saul is a private citizen to found a public figure, Gibeah and Gibeon upon whose youth Judaean clans are treated as attacks upon Saul's kingdom (xviii. 28-31). The second stage of the narratives of the relations between David and Saul, of whose first meeting two contradictory accounts are given (contrast xvi. 21 sqq. and xvii. 55 sqq.). The independent stories of David place him in the south of Judah, an outlaw with a large following, or a vassal of the Philistines; the older, upon which Judaeans are treated as attacks upon Saul's kingdom (xviii. 26-28). The two traditions are closely related, the former being the more diffuse. Two very similar narratives describe Saul's pursuit of David in the Judaean desert (xxiv. xxvi.). The main points are Saul's confusion and his recognition that David would prove a threat (xxvi. 21-25); the latter is more emphatic when he foresees that David will gain the kingdom of Israel and he adjures him to spare his seed (xxv. 20-22). This last feature is prominent in xxiii. 15-18 (the prophetic form) and in xxvi. 1-11 (theSolomonic account), as described by the covenant between David and Saul's son Jonathan. The account of David's flight is equally intricate. The tradition that David slew Saul's son Jonathan has been questioned; he fought his battle against Gibeon, and deposited his sword in Nob (xvii. cf. xvi. 9, xxii. 10) is incomplete. In the narrative in 2 Sam. xxi. 19 (1 Chron. xx. 5 seeks to avoid the discrepancy) and even if the name Goliath be a later addition to the story of some later author (cf. A. R. S. Kennedy, Sam., pp. 122, 140), or a descriptive form (W. E. Barnes, Chron., p. 104), it is surely difficult, on historical grounds, to reconcile David's recurring fights with the Philistines with his subsequent escape from Saul to Achish of Gath (xxvi.; already anticipated in xxi. 10-15); see further § 6. Saul's jealousy, however, is in some way kindled, and there is already a hint of David's succession (xviii. 8 seq. Samuel omits 10 seq.). The narrative in xv. 7-17, from David's death (xxvii. seq.) is duplicate, and a number of internal difficulties thoroughly removed in the shorter text of the Septuagint. In xx. David has realized Saul's hatred; but Jonathan scarcely credits it, although in xvii. 1-5 he is shown as having beenモノ了．The prophet has said that Saul had incurred God's anger, and the son had effected a reconciliation. This is ignored also in xiv. 8-12 (cf. xvi. 10 seq., xx. 31 sqq.), and again in xvii. 11-17 where David is saved by Michal his wife (see xxv. 44), and in xxviii. 17-24 (David with a sword in his hand) for which the沛重点是 to explain the absence of Jonathan (see xx. 1-5) and the reconciliation between the two on the understanding that Jonathan had treated David's kindness to his descendants (see 2 Sam. xi. 1, below), and again in xxv. 40-42, where the second meeting with a renewal of the covenant stultifies the preceding plans.

David—All the stories of the relations between the founders of the respective monarchies are so closely interwoven that the disentanglement of distinct series of narratives is a task of the greatest difficulty. They reflect in varying forms the popular interest in David and are of the greatest value in illustrating current traditions, thought and styles of literature. Apart from the more detailed and continuous history, there are miscellaneous passages in a Sam. v.-viii., with introduction (v. 1-3), and a concluding chapter rounding off his reign (viii.). A similar collection in xxi.-xxiv. severally forms a portion of Judges (xv.-xxiv.), and 1 Kings i.-ii. Their contents range over all periods, from the Amalek war (viii. 12, cf. 1 Sam. xxx.) to David's "last words" (xxiii. 1, but see 1 Kings i. and ii. 1). In particular they narrate the capture of Jerusalem from the Jebusites (v. 6-10) and other fights in that district as far as Gezer (v. 17-25), the purchase of land from a Jebusite for the erection of an altar (xxiv.; see 1 Chron. xxii. 1, 2 Chron. iii. i.), and the remarkable story of the pacification of the Gibeonites (xxii. 1-14). With the conflicts in v. are closely connected the exploits in xx. 15 sqq., xxii. 8 sqq., and the probability of some disarrangement is suggested by the repetition of the list of officials in viii. 15-18 and xx. 23-26; which many scholars (after Budde) attribute to the later insertion of ix.-xx. 22. On this view, at an earlier stage the two groups v.-viii., xxii.-xxiv. were contiguous—though

1 Characteristic expressions of Deuteronomic writers are found in 1 Sam. xiv. 47 seq. (cf. Judg. ii. 14 sqq.); similarly in the (north) Israelite writer in 2 Kings xiii. 3 seq. (see Kings).
not necessarily in their present form or order.

Budde's further conclusion that 1 Kings i. ii.-13, 19 seq. were likewise wanting (Sam. p. xi.) is also valuable, since (a) 2 Sam. v.-vii. (with xxiv.-xxv) finds its natural culmination, on the analogy of the Deuteronomic compiler's framework in Kings, in 1 Kings ii. 10-12, iii. 2, and (b) 1 Kings v. 3. seq. (also Deuteronomic) explicitly points back to the summary of the wars in 2 Sam. viii. It is commonly recognized that the compiler of 2 Sam. v.-viii. has wrongly placed after the capture of Jerusalem (v. 6 seq.) the conflict with the Philistines (v. 17 seq.), where the "hold" is not Zion but some place of retreat, perhaps Adullam (cf. xxii. 14).

This being so, the conflicts in xxi. 15 seq., xxiii. 8 seq., which are located around Gath, Lehi (so read xxiil. 11), Pasdammin, Aroer (so also in xii. 13), Bethaven, and Aroer, are in fact, of a stamp with the detailed narratives already noticed (§ 3), and they conflict with the fragmentary traditions of David's steps to Jerusalem as seriously as the popular narratives of Saul conflicted with older evidence. But already Josh. ix. 17, xv. 63; Judg. i. 21, 29, 35, xiv. 10-12; 2 Sam. vi. 6 (cf. xxii. 2), indicate the presence of a line of alien cities including Jerusalem itself, and would point to an important alien district, the existence of which obviously bears upon the trustworthiness of the group of narratives encircling Bethlehem of Judah and Gibeon, especially if the narrative of David's flight from Jerusalem (xxi. 16-32) be taken into account.

On the other hand, this would ignore the representation of (north) Israelite extension over Judah by Joshua and Saul, and it may be inferred that we have to allow for absolutely different and conflicting standpoints in regard to the history of the district, and that the Judaean traditions of David once had their own independent account of the occupation of Jerusalem and its neighbourhood. The fragments preserved in 2 Sam. v.-viii., xxii.-xxiv. are quite distinct from li. 12-iv.; they throw another light upon David's relations to Saul's family (xii. 1-14), and the stories of heroic conflicts with giant-like figures (e.g. xxiv. 10 seq.) promise to find a place by the side of the more detailed records of David's sojourn under the protection of a king of Gath, one of a confederation of Philistine cities (1 Sam. xxvii., xxiii.). It is probable that popular stories of the conquest of the earlier inhabitants have been applied to the Philistines; their general character associates them with the legends of the "sons of Anak" who enter into Judaea (perhaps originally Cælebithe) tradition elsewhere (Num. xiii. 22; Josh. xi. 21 seq., xv. 14; see Budde, Samh., p. 310 seq.4)

Four or five literary problems however at xiii. 20, 27; xiv. 4, 7, 9; xxi. 25, 26; xxiii. 1, 5 (see Literature, below); we accept Budde's suggestion that xii. xxv. were inserted by a hand later than the first Deuteronomic editor of viii.; but the further assumption that this editor had deliberately omitted ix.-xx. from his edition cannot be proved, and deals with a literary stage too early for any confident opinion or even for any critical investigation of value.

"Jerusalem" in 1 Sam. xvii. 54 is usually treated as an anachronism, because of its occupation by the Jebusites, and Kirjath-jearim (vii. 1, 2, perhaps Kirieth-enab, 9 m. W. of Jerusalem) is commonly admitted to be in alien hands.

But it is clear that the Jebusite conquest by David (xxviii.) marks a new and decisive stage in the development of an already existing Jerusalem, without being altogether an Israeliite city, yet the present name of the priests of Shiloh there is essential to the present structure of the book.

4 For Joshua, see the older portions of Josh. x., and for Saul, I Sam. xiv. 47-51 (this war); xiv. 4 (his Judaean army), xxiv. 4 (Jerusalem), xxvii. 7-12 (south Judaean clans under Israeliite suzerainty) and 2 Sam. i. 12 (Septuagint).

For this cf. the "Anakim" of Gaza, Gath and Ashdod, &c., in Josh. xi. 21 seq., with the "Philistine" lords, ch. xiii. 3, and see PHILISTINES.
people. The persistent emphasis upon such features as the rejection of Saul, his enmity towards David, the latter's chivalry, and his friendship for Jonathan, will partly account for the present literary intricacies; and, on general grounds, traditions of quite distinct origin (Calebite or Jerahmeelite; indigenous Judaean; North Israelite or Benjaminite) are to be expected in a work now in post-exilic form.1 David's history is handled independently of Saul in 1 Sam. xxv.; and the narrative, now editorially connected with the context (2 Sam. i, see xxviii. 3, and 2 Sam. iii. 15), gives a valuable picture of his life in the south of Palestine. With 2 Sam. iv. 6-17, and this new defeat with Judah chron. 2 Sam. xxvii. 12-17. His flight northwards to the Phœnician city of Gath (xxvii.) is hardly connected with the preceding situations in xxv., xxvi., xxvii. 21-25, and his previous slaughter of the Philistines at Keilah (xxii. 1-15) raises historical difficulties. This is not to mention his earlier successes over the same people, which are very explicitly ignored in xxix. 5, although the famous coupel there quoted now finds its only explanation in xvii. 7 after the death of Goliath and the defeat of the Philistines. The traditions of varying relations between Judah and the Philistines attached to David (cf. xxvii. 5 seq.) are quite distinct from his narratives. The part of Saul in the joint history of David and Saul. The independent narratives of the latter's fate seem to represent one of those disastrous attacks upon the north which are familiar in the later history of the northern kingdom (xxviii. 4, xxix.; see JEWs: History, § 12). The geographical data are confused by the stories of David (see 1 Sam. xxviii. 4, xxix. 1, and the commentaries), and, while the "Philistines" for once march north to Jezreel to deliver their attack, David's presence is not discovered until Aphek is reached (xxix.). The reason of the opportunity for an Amalekite raid (xxv. 8 seq.) in the new defeat with Judah chron. 2 Sam. xxvi. 1-12. The triumphant return of David, proves a more successful undertaking than that which led to the rejection of Saul (xxv. 20 seq. 26-28). Similarly, Saul's disaster leaves Israel again in the hands of the "Philistines" (xxvi. 7, cf. xxii. 6 seq.), and it is for David to save the people of Israel out of their hands (2 Sam. iii. 18, cf. 1 Sam. ix. 16).2 The sequel to the joint history has another version of Saul's death (2 Sam. i. 6-16, 13-16), and an Amalekite is the opponent; contrast his death in i. 15 seq. with iv. 10 seq. The chapter explains the transference of the royal insignia from Israel to Judah. Here is quoted (from the "Book of Joshua") the old poetical lament over the death of the faithful friends Saul and Jonathan, describing their successful warlike career, the wealth they brought the people, and the vivid sense of national misfortune (i. 19-27). It is utilized for the history of David, to whom its authorship is attributed. In general, it appears that those narratives wherein the histories of Saul and David are combined—very much in the favour of the latter—were originally distinct from those where (a) Saul's figure is more in accord with the old poem from the Book of Jasher, and (b) where David's victories over prehistoric giants and his warlike movements to Jerusalem pave the way for the foundation—from a particular Judaean standpoint—of his remarkably long dynasty.

The literary problems of the books of Samuel are those of the writing of the history of the monarchies from different points of view; and the intimate connexion of the books with the "golden age" that precede and follow shows that a careful consideration of the internal literary and historical features of these also is necessary. The first step is the recognition of a specific Deuteronomic framework of the history of Saul and his court in Jerusalem. For the final form of the book, the only sure basis is Samuel, the peculiar treatment of the lives of David and Solomon (Judaean kings over a united Israel) and of the division of their realms. The present form can be traced to the contents of 2 Sam. v.-vii., xxvi.-xxiv., 1 Kings ii. 10-12, ills. 2. It appears to have been consecutive (in some form) at an earlier stage, the connexion has been broken by ix.-xx., 1 Kings ii. 1-9, 13 seq., and the following authorises the view that the final form (1 Kings ii. 1-11) has been based on a collection of materials not dependent on one Deuteronomic hand in the former group, the latter shows in 1 Kings ii. 2-4 a Deuteronomic revision, on an independent origin or in the combination of the sources in their present form. For 1 Sam. iv.-vii. 13 seq. (in iii.), belongs to the Deuteronomic and later account of Saul's rise, and closes the period of (a) the Israelite "judges" (see Judg. ii. 6-8), the period of Samuel, with one of David and Saul's rise, the Deuteronomic oppression (ib. x. 6 seq.).3 The former follows upon Joshua's two concluding speeches, one given by a Deuteronomic writer in xxxiii., and the other incorporated by another though similar author (cf. Judges xiv. 8-19). Although the prophonic age is viewed as one of kingly "judges," the chiefs are rather local heroes (so Ehud, Gideon, Jephthah), and the boisterous giant Samson (Judg. xiii., xvi.), and the religious leaders Eli and Samuel are judges from Deuteronomic sources. The consideration of Saul's rise refers to a Deuteronomic oppression which has no sequel. It may be conjectured that there was an original literary connexion between the two which has been broken by the insertion of traditions relating to 2 Sam. iv.-vii. 13 and 1 Kings i. 5-12, which records the accession of Saul's rise (1 Sam. ix.) by the sudden introduction of a Philistine oppression which cannot be connected with vii. 2-8, or even vii. 1-2 (see 1 Sam. iv.-vii. 13 seq.). This latter refers to a Philistine oppression which has no sequel. The section 1 Sam. iv.-vii. 13 forms the prelude to Samuel's great victory and belongs to the history of Shiloh and the priesthood of Eli. But the fall of this sanctuary scarcely belongs to this remote age (11th century B.C.); it is no doubt found in the history of Jerusalem in the time of Jeremiah (close of 7th century). This event of supreme importance to north Israel (cf. Judg. xviii. 30 seq.) is already connected with Samuel's prophecy in iii., but the latter is strengthened by the Deuteronomic passage, ii. 27-30, which links the disaster, not with the history of Samuel, but with the rise of the Zadokite Levites of Jerusalem, and thus presents a specifically Judaean standpoint. This is analogous to the Judaean adaptation of the prophetic tradition of Saul's life, and it also reflects certain priestly rivalries (see Levites). With the loss of Shiloh is explained the appearance of the priests at Nob outside Jerusalem (xxi. 1, xxii. 13 seq.), and the connection of the Philistines with this territory (xxii., and the transference of the sacred ephod to David (xxiii. 6).4 Here, however, the emphasis laid upon the ephod brought by Abinadab (xxv. 1 seq.) and its discovery by David (29 seq.) presents a marked difference from the use of the ark from the Philistine territory to the care of Abinadab and Eleazar at Kirjath-jearim (note the "Levitical" type of the names; Budde, Sam. p. 47). From Josh. ix. 17 (post-exilic source) it might indeed be argued that the district was not under Israelite jurisdiction (see Kennedy, 1 Sam. iii. 25 seq.), although to judge from the older

1 The late genealogy of Saul in 1 Chron. viii. 29 seq. ix. 35 seq. is evidence for a keen interest in the Saulidae in post-exilic times. The chapter with the prophecy of Abigail may be of Calebite origin.

2 So also, David's wars (2 Sam. viii. ix.) bear a certain resemblance to those of Saul (1 Sam. xiv. 47).


4 With the length of office in 1 Sam. iv. 18 (cf. vii. 15) compare the Hebrew numbers in 1 Chron. vi. 61. The account of the Michmak (Sam. iv. 1 seq.) is a redaction with the length of oppression in vii. 2, cf. Judg. iii. 8, 14, iv. 3, vi. 1, x. 8, xii. 1.

5 Nowack, p. 49; Richter, TheoL. Lit., Bibl. (1904), No. 3, col. 28.


7 Although writers sought to explain Saul's disastrous end (cf. 1 Sam. x. 13), it is only in his defeat at Jezreel that the attribution of Saul's end is to the Philistines. The significance of the tradition is unknown; some connection with Saul's religious zeal at Gibeah has been conjectured (2 Sam. xx. 2). That the actual murderer was an Edomite may perhaps be associated with other traditions of Edomite hostility.
traditions of Saul it was doubletless part of his kingdom. It may be that the narrative (which presupposes some account of the fall of Shiloh) is part of an attempt to co-ordinate different traditions of the period of David.

Consequently, the literary structure of the Book of Samuel is throughout involved with a careful criticism of the historical traditions present in the period of the Persian-Ptolemaic Empire.

The perspective of the past has often been lost, earlier views have been subordinated to later ones, conflicting standpoints have been incorporated. The intricacy of the sources and the later introduction of a subordinated literature (which have had their own vicissitudes) complicates the literary evidence. Greater care than usual was taken to weave into the continuous narrative the divergent strains of the apocryphal texts, and it is impossible here at present to do more than indicate some of the more important features in the composition of a book, one of the most important of all for the critical study of biblical history and tradition.

The Hebrew text is often corrupt but can frequently be corrected with the help of the Septuagint. The parallel portions in Chronicles also sometimes preserve better readings, but must be used with caution as they may represent other recensions or the result of rewriting and reshaping. As a whole, Chronicles presents the period from a later ecclesiastical standpoint, presupposing (in contrast to Samuel) the full development of the Israelite monarchy.

After tribal and priestly lists (1 Chron. 1-ix.), Samuel's end is suddenly introduced (x., note v. 13 seq.). David appears no less abruptly, the sequence being 2 Sam. v. 1-3, 6-10, xxii, 38-59 (with additions, 11-40), and the plan of the book is completed and Hastings's broad view of the period is articulated. 2 Sam. vi. 2-11 there is a "Levitical" prelude (xiii. 1-5), then follow vi. 11-25, and vii-12, which is embedded in novel material. Next, 2 Sam. vii. seq., x., xi. 1, xii. 30 seq., xxi. 16, and the famous inscription of the preparations for the temple and the future sovereignty of Solomon, and ends with David's army and government (Chron. xxiv-xvii.), and his conclusion in parallel sections of 2 Chron. xxvii-xxviii., and with the assumption that the Samaritans who had inherited the traditions of their land. See further Jews, §§ 6-8, 20-23, Paleslne: Old Testament, pp. 614-616.

LITERATURE.—See further the commentaries of M. Löhr (1898); W. Nowack, K. Budde (1902); H. P. Smith in the International Critical Commentary (1899), with his Old Testament History, pp. 107-155, and the small but well-annotated edition of A. R. S. Kennedy in the Century Bible (1895). All these give fuller bibliographies, for which see also S. R. Driver, Introduction to Literature of Old Testament, and the articles by J. Stenning in Hastings's Dictionary and B. Stade in Encyc. Brit. v. 1.1015. J. W. Müller, Ägyptische Bücher Sam. (1871); S. R. Driver, Text of Samuel (1890); K. Budde's edition in Haupt's Sacred Books of the Old Testament (1894); P. Duchrow, Livres de Samuel (1910). Of the critical work, the most valuable is that of H. Gressmann in his Schriften d. A.T. in Auswalt, i-iii. (Göttingen, 1909-1910). In so far as the present article takes other views of the results of literary analysis in the light of historical criticism, see A. Cook, American Journ. of Semitic Language, (1900), pp. 145 sqq. and Critical Notes on Old Testament History (1907) (passim). (S. A. C.)

SANA
(Sendā'), a town in S. Arabia, the capital of the Turkish vilayet of Yemen. It is situated in 15° 22' N. and 44° 10' E. in a broad valley running nearly N. and S., 7250 ft. above sea-level, on the W. slope of the great meridional range, over which the road runs to Hodeida, on the Red Sea coast 130 m. distant, crossing the Karn al-Wal pass, over 9000 ft., about 25 m. W. of the city. The mean temperature of the year is 68° F., with a summer maximum of 77°, and a regular rainfall which falls chiefly during the S.W. monsoon from June to September. The usual cereals, fruits and vegetables of the temperate zone, wheat, barley, apples, apricots, vines, potatoes, cabbages, beans, &c., are abundant and excellent.

The town consists of three parts—(1) the Medina, the old city, now the Arab quarter, on the E. slope of the great meridional range, over which the road runs to Hodeida, on the Red Sea coast 130 m. distant, crossing the Karn al-Wal pass, over 9000 ft., about 25 m. W. of the city. The mean temperature of the year is 68° F., with a summer maximum of 77°, and a regular rainfall which falls chiefly during the S.W. monsoon from June to September. The usual cereals, fruits and vegetables of the temperate zone, wheat, barley, apples, apricots, vines, potatoes, cabbages, beans, &c., are abundant and excellent.

(2) The Bahr, a large marsh, with its entrance on the E. at the town Kasr, at its S.E. corner at the foot of Jebel Nukum on the crest of which 2000 ft. above the valley are the ruins of the old fort of el Birash, traditionally attributed to Shem the son of Noah, and the Mutawakkil, hitherto containing the palace and gardens of the imams, covering its W. face; (3) the Bir Azab W. of the city, consisting of detached houses and gardens, chiefly occupied by the higher Turkish officials, and on the extreme W. the Ka'el Yahud or Jewish quarter. The city with the Kasr and Mutawakkil is surrounded by ramparts built of clay and sun-dried brick, 25-30 ft. high and of great thickness, of the Bir Azab and Ka'el Yahud are enclosed in a similar enceinte but of more recent construction, connected with that of the city by the Mutawakkil; the whole forms a rough figure of eight, some 2-3 m. long from E. to W., and 3 m. in breadth. The walls are pierced by several gates; the principal are the Bab es Shu'b and the Bab el Yemen in the N. and S. faces of the city respectively, and the Bab es Sahab in its W. face leading into the Mutawakkil, and thence by a broad street through the Bir Azab and Ka'el Yahud to the Bab el Ka', the main entrance to the town from the Mokalla road. The layout of the streets, with massive, flat-roofed houses of several storeys, and many extensive groups of buildings, mosques, serais and baths. The Jami 'Masjid, or principal mosque, stands on the site of the Christian church built by Abraha ruler of Yemen during the period of Ethiopian domination, about A.D. 530. It consists of a great rectangular courtyard paved with granite, surrounded by a triple arcade, the domed roofs of which are supported by numerous columns of stone or brick; in the centre there is a model of the Ka'ba at Mecca covered with stone flags of various colours arranged chequer-wise. Among the other mosques of note are the three which are subordinated to the great vizier ed din with its beautiful minaret is one of the finest. Of the Kasr Ghumdan and other ancient buildings, the splendours of which were sung by the poets of the early days of Islam, nothing but mutilated remains remain; the old palace of the imams, the Mutawakkil, was destroyed during the years of anarchy preceding the Turkish occupation, and the site is now occupied by a military hospital standing in well-kept gardens. The houses consist generally of a ground floor built of dressed stone, surmounted by two or three storeys of burnt brick; a rule the lower storey has 40 openings hewn into doorways; the façade of the upper storeys is pierced by long narrow window recesses, divided into three parts, the lowest of which forms a square window closed by carved wooden shutters, while the upper ones contain round or pointed windows fitted with coloured glass, or thin slabs of alabaster which admit a subdued light.

The valley in which Sana lies is generally sterile, but in places where water is brought from the hill streams on the W. fields of barley, lucerne and market gardens are to be seen, particularly at Randa, the garden suburb, 6 m. S. of the town, and the Judd, which is the source of the Wadi Dir.; and W. Hadda, the terraced orchards of which are celebrated for their fine fruit-trees. The water supply of the town is derived from numerous wells, and from the Ghall Aswad, a small canal which supplies the military cantonment outside and S. of the walls, and runs through the gardens in the Mutawakkil.

The population was estimated by R. Manzoni in 1887 at 20,000 Arabs, 3000 Turks and 1700 Jews, or less than 25,000 altogether; H. Burchardt in 1893 put it at 30,000; the city has, however, suffered severely from the state of unrest which has been characteristic of Yemen since 1883, and particularly in 1913, when it was taken by the insurgents, and held by them for three months, and the actual numbers at present do not probably exceed Manzoni's estimate.

Arabic writers give many discordant and fabulous traditions about the oldest history of Sana and its connexion with the ancient kingdom of Hīmyar. But most agree that its oldest name was Amol, mentioned to be the same word with Azilā in Gen. x. 27. A Himyīrate nation of Aza'ilater occurs in a Syriac writer of the 6th century. The better-informed Arab writers knew also that the later name is due to the Abyssinian conquerors of Yemen, and that it meant in their language "fortified" (Bakfr, p. 606; Nödelke, Gesch. d. Pers. u. Arab., p. 187). Sana was the capital of the Abyssinian Abraha (c. 330 A.D.) who built here the famous church (Kalas), which was restored in the 12th century by order of the caliph Mansur (Azzari, p. 91).
SANÁ'I, the common name of ABDULMAJID MAJEED B. ADAM, one of the earliest great Sufic poets of Persia, was a native of Ghazni (in Afghanistan). He flourished in the reigns of the Ghaznavid sultans Ibrãhim (1059–1099, 431–492 A.H.), his son Mas'ûd (1099–1114), and his grandson Bahram (1115–1132). Persian authorities are greatly at variance as to the dates of the poet's birth and death. At any rate, he must have been born in the beginning of the second half of the 11th century and have died between 1131 and 1150 (529 and 545 A.H.). He composed chiefly ghâzâs in honour of his sovereign Ibrâhim and the great men of the realm, but the ridicule of a half-mad jester is said to have caused him to abandon the career of a court panegyrist and to devote his poetical abilities to higher subjects. For forty years he led a life of retirement and poverty, and, although Bahram offered him a high position at court and his own sister in marriage, he remained faithful to his austere and solitary life. But, partly to show his gratitude to the king, partly to leave a lasting monument of his genius behind him, he began to write his great double-thymbed poems. These contain his whole life, which served as model to the masterpieces of Farid-uddin 'Attar and Jâlîl ud-din Rûmî, the Ḥadîqât ul-ḥaqiqat, or “Garden of Truth” (also called Alikhâbâl al-fâharî) in ten canôts. This poem deals with such topics as: the unity of the Godhead, the divine word, the excellence of the prophet, reason, knowledge and faith, love, the soul, worldly occupation and inattention to higher duties, stars and spheres and their symbolic lore, friends and foes, separation from the world. One of Sanâ'î's earliest disciples, Mohammed b. Ali Raqâm, generally known as 'Ali al-Raffâ, who wrote a preface to this work, assigns to its composition the date 1131 (525 A.H.), and states besides that the poet died immediately after the completion of his task. Now, Sanâ'î cannot possibly have died in 1131, as another of his mathnâwîs, the Ṭarîq-i-taḥqîq, or “Path to the Verification of Truth,” was composed, according to a chronogram in its last verses, in 1134 (528 A.H.), nor even in 1140, if he really wrote, as the Atashakada says, an elegy on the death of Amîr Mu'izz; for this court-poet of Sultan Sinjar lived till 1147 or 1148 (542 A.H.). It seems, therefore, that Taqî Kašâ is right in fixing Sanâ'î's death in 1150 (545 A.H.), the more so as 'Ali al-Raffâ himself distinctly says in his preface that the poet breathed his last on the 11th of Sha'ba'n, “which was a Sunday,” and it is only in 1150 that this day happened to be the first of the week. Sanâ'î left, besides the Ḥadîqât and the Ṭarîq-i-taḥqîq, several other Sufic mathnawîs of similar purport: for instance, the Sair ul-ḥâlât tâ'dîma'âd, or “Man's Journey towards the Other World” (also called Kanîsā-urrahmîn, “The Treasures of Mysteries”); the Ishqânâmât, or “Book of Love”; the Aqshânâmât or “Book of Intellect”; the Kârânâmât, or “Record of Stirring Deeds,” &c.; and an extensive dîwân or collection of lyrical poetry. His tomb, called the “Mecca” of Ghazni, is still visited by numerous pilgrims.

See Abdullatif al-'Abbâsi's commentary (completed 1632 and preserved in a somewhat abridged form in several copies of the India Office Library) on the poet's life and works, Ouseley, Biogr. Notices, 53, 189; Skârâb and Fuglîd's Câdît, &c.; E. Browne, Literary History of Persia (1906), ii. 517-522; H. Ethê in W. Geiger's Grundriss der iranischen Philologie, i. 282-284.

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SANÂ'Î, SAN ANTONIO

Long considered the center of the city according to the charter, which describes the city as including “six miles square, of which the sides shall be equidistant from what is known as the capela of the cathedral of San Fernando and three miles therewith.”
SAN ANTONIO DE LOS BAÑOS—SANCERRE

Roman Catholic bishops. Among the charitable institutions are the City Hospital (1886), the Santa Rosa Infirmary (1863), maintained by the Sisters of Charity, a House of Refuge (1897), a House of Industrial Training (1895), a home for destitute children and aged persons (1897), the St Francis Home for the Aged (1893), St. John's Orphan Asylum (1878), St Joseph's Orphan Asylum (1871) and the Protestant Home for Destitute Children (1887).

The principal manufactures are malt liquors, flour and grist-mill products and steam railway cars. San Antonio is the commercial centre of a great live stock and farming region.

Under the charter of 1893, as amended in 1897, the municipal government consists of a city council, composed of the mayor, four aldermen, two city commissioners, an assessor, a collector, a treasurer, an auditor and judge of the Corporation Court. Any elective officer may be removed by the vote of eight members of the council. Other officers are appointed by the mayor with the confirmation of the council. The city water supply, owned by a private corporation, is obtained from artesian wells with a capacity of 40,000,000 gallons a day. The city has a sewer-farm of 530 acres which the charter forbids it to sell.

San Antonio was the capital of Texas during the periods of Spanish and Mexican rule. The presidio of San Antonio de Bezar and the mission of San Antonio de Valero were founded in 1718 under the direction of Martin de Alarcón, governor of Coahuila. San Antonio was accordingly from the beginning a combination of two of the three types of Spanish settlement, the military and the ecclesiastical (see Texas: History). To these was added the third, the civil type, in 1731, when the villa of San Fernando was established. Several missions were established in the neighbourhood, including those already mentioned and San Xavier de Náxera (1722), a new foundation. All of these missions decreased in importance with the disappearance of the Indians and by the close of the period of Spanish rule (1821) had been abandoned. San Antonio was captured by the Magee-Gutierrez party in 1813, but was recovered by the Mexican royalists (see Texas: History). It was besieged by the Texan army under General Stephen F. Austin and Edward Burleson in 1835 and was finally taken early in December as the result of an attack led by Colonel Benjamin R. Milam. Its recapture by Santa Anna, February–March 1836, was distinguished by the heroic defence of the mission (particularly the chapel and the convent) by the children of the place, James Bowy and Davy Crockett, and 178 others against the attack of about 4000 Mexicans. After a bombardment lasting from the 23rd of February to the 6th of March, the Mexicans assaulted on the 6th, were twice beaten back, and then overpowered and slaughtered the garrison, the five survivors being subsequently bayoneted in cold blood. Three women, one a Mexican, two children and a negro servant were spared. "Remember the Alamo" became a war-cry of the Texans. The Mexicans again invaded Texas in 1842, and San Antonio was twice captured and held for short periods, first by General Vasquez and later by General Wool. After 1836 there was a large influx of Anglo-Americans and Germans, and the Mexican element long ago ceased to predominate. Charters of incorporation were granted in 1837, 1842, 1852, 1856, 1870 and 1903. At San Antonio in February 1861 General David E. Twiggs (1790–1862), a veteran of the Mexican War, surrendered the Department of Texas, without resistance, to the Confederate general, Ben McCulloch; for this General Twiggs was dismissed from the United States army, and in May he became a major-general in the Confederate service. The rapid growth of San Antonio dates from 1878, when the first railway entered the city.

See William Corner, San Antonio de Bezar (San Antonio, 1890); The Quarterly of the Texas State Historical Association, II, 217–226, VIII, 277–352; and George P. Garrison, Texas (Boston and New York, 1903), in the "American Commonwealths Series.

SAN ANTONIO DE LOS BAÑOS, a small town in Havana Province, Cuba, about 23 m. (by rail) S.W. of Havana. Pop. (1907) 9125. San Antonio de los Baños is served by the W. branch of the United Railways of Havana. It is on the banks of the Ariguanabo river, which drains a lake of the same name, and is itself one of the many "disappearing rivers" of the island; it disappears in a cave near San Antonio. The town has mineral springs and baths, and is a summer resort of the people of Havana. Though spreading over hills, the plan of the town is regular. The tobacco of the Vueltas Abajo lands immediately around the city is famous. The pueblo arose in the middle of the 18th century as a camp for convicts from Mexico. It became a villa in 1794. Early in the 19th century refugees from Santo Domingo settled here and founded coffee estates that gave the place great prosperity until the expulsion of the French in 1809; subsequently the production of tobacco removed its prosperity.

SANATORIUM (a modern Latinism, from Latin sanare, to cure, restore to health, sanos, whole, healthy, well; often wrongly spelled sanatorium or sanitarium), an establishment where persons suffering from disease, or convalescents, may be received for medical treatment, rest cures and the like; in recent modern usage particularly used for establishments where patients suffering from phthisis may undergo the open-air treatment (see Therapeutics). The mis-spellings of the word, sanatorium and sanitarium, are due to a confusion of "sanatory," i.e. giving health, from sanare, and "sanitary," pertaining to health, from sanata, health.

SANATRUCES (Sanatruces, Pers. Sanatruks), Parthian king. In the troublous times after the death of Mithradates II. (c. 88 B.C.) he was made king by the Sacaraucæ, a Mongolian tribe who had invaded Iran in 76 B.C. He was eighty years old and reigned seven years; his successor was his son Phrautes III. (Lucian, Macrob. 15; Phlegon, fr. 12 ap. Phot. cod. 97; Appian, Milhr. 104; Dio Cass. xxxvi. 45). Another Sanatruces (Sanatruclus) is mentioned as an ephemeral Parthian king in A.D. 115 (Malalas, Chron. p. 170, 273).

SAN BERNARDINO, a city and the county-seat of San Bernardino county, California, U.S.A., about 60 m. E. of Los Angeles. Pop. (1900) 6150 (873 foreign-born; 1910) 12,779. It is served by the Atchison, Topeka & Santa Fé, the Southern Pacific and the San Pedro, Los Angeles & Salt Lake railways, and by an interurban electric line. The city is situated in a valley at an altitude of about 1000 ft., at the S. base of the San Bernardino mountain range and 20 m. W. of San Bernardino mountain (11,000 ft.). Among the public buildings are a Carnegie library (1903; the library was established in 1891), with 10,000 volumes; a county courthouse; the courthouse of the county, the home of the county's daily newspaper, the Lugo, near the centre of the city, and Meadowbrook, on the outskirts. San Bernardino is one of several places (Redlands, Highland, Rialto, Colton, Bloomington, Riverside, Pomona) that lie near together in part of the citrus fruit, alfalfa and grain region of S. California. The Santa Fé railway has extensive repair and construction shops here. San Bernardino is popularly known as the "Gate City of Southern California." Five miles N. of the city, and connected with it by electric railway, at the base of a mountain on whose side is a great blaze shaped like an arrow-head, are the Arrowhead Hot Springs (106° F.), resembling the Carlsbad waters; the hotel at the Springs is heated by their waters. Other hot springs near San Bernardino are the Urbina, 13 m. S., and the Harlem, 4 m. N.E. About 1822 Spanish missionaries settled about 5 m. from the site of the present city and called their mission San Bernardino (from St Bernardino of Siena). In 1851 the Mormons established here a colony, which was abandoned in 1857. The county was organized in 1853 with the county-seat at San Bernardino, which was incorporated as a town in 1854. It was deprived of its charter in 1861, but received a new one in 1864. The Southern Pacific in 1876 gave the city connexion with the ocean, and the Santa Fé in 1885 connected it with the East. Under a state enactment in 1905 San Bernardino adopted a new charter which provides for the "recall" by petition, the initiative and the referendum.

SANCERRE, a town of central France, capital of an arrondissement in the department of Cher, 34 m. N.E. of Bourges by rail. Pop. (1906) 2232. Sancerre, which gives its name to the small district of Sancerrois, is situated on an isolated vine-clad hill.
(1000 ft.) about 1 m. from the left bank of the Loire. It has a modern château, in the grounds of which there is a cylindrical keep of the 15th century, the only relic of an ancient stronghold. From 1037 to 1152 the title of count of Sancerre was held by the counts of Champagne; from the latter year till 1640 it had its own counts, who were descended from Theobald IV. of Champagne, but in 1226 came under the suzerainty of the crown. In 1640 it became the property of Henri de Conde, whose descendants possessed it till the Revolution. During the religious wars it was a stronghold of Protestantism, and 1400 was besieged by the Catholics, who did not succeed in capturing it till August. August 1684, after eight months of siege. The town has a suburbure, a tribunal of first instance and a communal college. Good wine is grown in the vicinity.

SANCHEZ. Three persons of this name enjoyed considerable literary celebrity: (1) Francisco Sanchez (Sanctius) (1523-1601), successively professor of Greek and of rhetoric at Salamanca, whose Minera, first printed at that town in 1557, was long the standard work on Latin grammar. (2) Francisco Sanchez, a Portuguese physiognomist, born at Tuy (in the diocese of Braga) in 1550, took a degree in medicine at Montpellier in 1574, became professor of philosophy and physic at Toulouse, where he died in 1623; his ingenious treatise (Quod nihil scitur, 1581) marks the high-water of reaction against the dogmatism of his time; he is said to have been distantly related to Montaigne. (3) Tomás Sanchez of Cordova (1551-1610), Jesuit and casuist, whose treatise De matrimonio (Genoa, 1592) is more notorious than celebrated.

SANCHI, a small village in India, at which there is now a railway station, in the vicinity of the ancient Sanchi-Buddha line. It is famous as the site of what are almost certainly the oldest buildings in India now standing. They are Buddhist topes (Pali: thæpe; Sanskrit: stāpa), that is, memorial mounds, standing on the level top of a small sandstone hill about 300 ft. high on the left bank of the river Betwa. The number of topes on this and the adjoining hills is considerable. On the Sanchi hill itself are only ten, but one of these is by far the most important and imposing of all. All these topes were opened and examined by General Alexander Cunningham and Lieut.-Colonel Maisey in 1851; and the great tope has been described and illustrated by them and by James Fergusson. This is a solid dome of stone, about 103 ft. in diameter, and now about 42 ft. high. It must formerly have been much higher, the top of the tope having originally formed a terrace, 34 ft. in diameter, on which stood lofty columns. Cunningham estimates the original height of the building as about 100 ft. Round the base is a flagged pathway surrounded by a stone railing and entered at the four points of the compass by gateways some 18 ft. high. Both gateways and railing are elaborately covered with bas-reliefs and inscriptions. The latter are the names of the donors of particular portions of the architectural ornamentation, and most of them are written in the characters used before and after the time of Asoka, in the middle of the 3rd century B.C. The monuments are Buddhist, the bas-reliefs illustrate passages in the Buddhist writings, and the inscriptions make use of Buddhist technical terms. Some of the smaller topes give us names of men who lived in the Buddha's time, and others give names mentioned among the missionaries sent out in the time of Asoka. It is not possible from the available data to fix the exact date of any of these topes, but it may be stated that the smaller topes are probably of different dates both before and after Asoka, and that it is very possible that the largest was one of those which were not told was erected by Asoka himself. The monuments at Sanchi are now under the charge of the archaeological department; they are being well cared for, and valuable photographs have been taken of the bas-reliefs and inscriptions. The drawings in Fergusson's work entitled Tree and Serpent Worship are very unsatisfactory, and his suggestion that the carvings illustrate tree and serpent worship is quite erroneous.

SANCHEZ—SANCTION

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(T. W. R. D.)

SANCHUNIATHON (Gr. form of Phoenician Sakkùn-yatôn, "the god Sakkùn has given"), an ancient Phoenician sage, who belongs more to legend than to history. He is said to have flourished "even before the Trojan times," "even before Semiramis was queen of the Assyrians." Philo Herennius of Byblus claimed to have translated his mythological writings from the Phoenician originals. According to Philo, Sanchuniathon derived the sacred lore from the mystic inscriptions on the 'Ammôvîès (probably hammanûm, "sun pillars," cf. Is. xxvii. 9, &c.) which stood in the Phoenician temples. That any writings of Sanchuniathon ever existed it is impossible to say. Philo states that his teachings were transmitted from various sources, adapted them to suit his purpose, and conjured with a venerable name to gain credit for his narrative. Porphyry, says that Sanchuniathon (here called a native of Byblus) wrote a history of the Jews, based on information derived from Hieromâal (i.e. Jeruabal), a priest of the god Jevo (i.e. Yahveh, Jehovah), and dedicated it to Abibal or Abibal, king of Byrtys. The story is probably a pure invention; the reference to Byrtys shows that it is late. See Eusebius, Praëm. Ec. i. 9 (Müller, Fragment. hist. Graec. iii. pp. 563 foll.).

SAN CRISTÔBAL (formerly called San Cristôbal de los Llanos, Ciudad de las Casas, and Ciudad Real), a town of Mexico, in the state of Chiapas, on a level tableland about 6700 ft. above sea-level and 48 m. E.N.E. of Tuxtla Gutierrez. Pop. (1892 estimate) 16,000. The surrounding country is fertile and healthful and is populated chiefly with Indians. The town possesses a cathedral, hospital and other public institutions. San Cristôbal was founded in 1588 on the site of an Indian village, and afterwards was famous as the residence of M. de las Casas, Bishop of Chiapas. It was the capital of Chiapas until near the end of the 19th century. There are traces of an early Indian civilization in the vicinity.

SANCRÖFT, WILLIAM (1616-1693), archbishop of Canterbury, was born at Fressingfield in Suffolk, 30th January 1616, and entered Emmanuel College, Cambridge, in July 1634. He became M.A. in 1641 and fellow in 1642, but was ejected in 1649 for refusing to accept the "Engagement." He then remained abroad till the Restoration, after which he was chosen one of the university preachers, and in 1663 was nominated to the deaneary of York. In 1664 he was installed dean of St. Paul's. In this situation he set himself to repair the cathedral, till the fire of London in 1666 necessitated the rebuilding of it, towards which he gave £1400. He also rebuilt the deanery, and improved its revenue. In 1668 he was admitted archdeacon of Canterbury upon the king's presentation, but he resigned the post in 1670. In 1677, being now proctor of the Convocation, he was unexpectedly advanced to the archbishopric of Canterbury. He attended Charles II. upon his deathbed, and "made him a very weighty exhortation, in which he wished him a good degree of freedom." He wrote with his own hand the petition presented in 1687 against the reading of the Declaration of Indulgence, which was signed by himself and six of his suffragans. For this they were all committed to the Tower, but were acquitted. Upon the withdrawal of James II. he concurred with the Lords in a declaration to the prince of Orange for a free parliament, and due indulgence to the Protestant dissenters. But, when that prince and his consort were declared king and queen, he refused to take the oath to them, and was accordingly suspended and deprived. From 5th August 1661 till his death on the 24th of November 1693, he lived a very retired life in his native place. He was buried in the churchyard of Fressingfield, where there is a Latin epitaph to his memory. Sanctofo was a patron of Henry Wharton (1664-1693), the divine and church historian, to whom on his death he entrusted his manuscripts and the remains of Archbishop Laud (published in 1695).

He published Fur praedestinius (1651), Modern Politics (1652), and Three Sermons (1694). Nineteen Familiar Letters to Mr North (afterwards Sir Henry North) appeared in 1757.

SANCTION (Lat. sanctio, from sanctare, to decree or ordain), in jurisprudence, the means provided for the enforcement of a law. According to J. T. Holland (Elements of Jurisprudence,
96, p. 85), "the real meaning of all law is that, unless acts conform to the course prescribed by it, the state will not only ignore and render no aid to them, but will also, either of its own accord or if called upon, intervene to cancel their effects. This intervention of the state is what is called the 'sanction' of law," So Justinian (Inst. ii. 1, 10), "Legum eas partes quibus poenae constituimus adversus eos qui contra leges feecerint, sanctones vocamus." In general use, the word signifies approval or confirmation.

Sanctus, Francesco de (1817–1883), Italian publicist, was born at Morra Iprivino, and educated at the institute of the Marchese Basilio Puoti. Becoming a teacher in a private school of his own, he made a name as a profound student of literature; and after the troubles of the 46, when he held office under the revolutionary government and was imprisoned for three years at Naples, his reputation as a lecturer on Dogues at Turin brought him the appointment of professor at Zurich in 1856. He returned to Naples as minister of public instruction in 1860, and filled the same post under the Italian monarchy in 1861, 1878 and 1879, having in 1860 become a deputy in the Italian chamber. In 1871 he became professor at Naples University. As a literary critic, De Sanctis took a very high place, notably with his Storia della letteratura italiana (2nd ed., 1873) and with his critical studies, published in several volumes, some of them since his death at Naples in 1883.

Sanctus spiritus, an old Cubana, was called Clara province, situated on a sandy plain in an angle of the Yaya river, which winds through the city. Pop. (1907) 17,440. It is connected by railway with Zaza del Medio, on the main railway line of the island, and with its port, Tunas de Zaza, 30 m. (by rail) to the S. The hill called Pan de Aucará (Sugar-loaf) is S.W. of the city. One church is said to be as old as the city, and others date from 1699, 1716, 1717, &c. The surrounding country is devoted principally to grazing. Sancti Spiritus was one of the seven cities founded by Diego Valasquez. Its settlement was ordered in 1514 and accomplished in 1516, and it is the fifth town of the island in age. The present city is a port between two lines of the original site (Pueblo Viejo). In 1518, as a result of the war of the Comunidades of Castille, a mimic war broke out in Sancti Spiritus among its two score villagers. The place was sacked by French and English corsairs in 1719. Illicit trade with Jamaica was the basis of local prosperity in the 18th century.

Sanctuary (from the late Lat. sanctuarium, a sacred place), a sacred or consecrated place, particularly one affording refuge, protection or right of asylum; also applied to the privilege itself. The right of asylum in Greek or Roman temples it was applied to the cella in which stood the statue of the god, and the Latin word for altar, ara, was used for protection as well. In Roman Catholic usage sanctuary is sometimes applied to the whole church, as a consecrated building, but is generally limited to the choir. The idea that such places afforded refuge to criminals or refugees is founded upon the primitive and universal belief in the contagion of holiness. Hence it was sacriilege to remove the man who had gained the holy precincts; he was henceforth invested with a part of the sacredness of the place, and was inviolable so long as he remained there. Some temporal privileges were granted. Clausner and Matthew of Canterbury extended its inviolability for a perimeter of two stadia, until its right of sanctuary was refused by the Romans. Not all Greek and Roman temples, however, had the right in an equal degree. But where it existed, the action of the Roman civil law was suspended, and in imperial times the statues and pictures of the emperors were a protection against pursuit. Tacitus says that the ancient Germans held woods, even lakes and fountains, sacred; and the Anglo-Saxons seem to have regarded several woods as holy and to have made sanctuaries of them, one of these being at Leek in Staffordshire.

The use of Christian churches as sanctuaries was not based upon the Hebrew cities of refuge, as is sometimes stated. It is part of the general religious fact of the inviolability attaching to things sacred. The Roman law did not recognize the use of Christian sanctuaries until toward the end of the 4th century, but the growing recognition of the office of bishop as intercessor helped much to develop it. By 592 it had been abused to such an extent that Theodosius the Great was obliged to limit its application, refusing it to the public debtors. Further evidence of its progress is given by the provision in 397 forbidding the reception of refugee Jews pretending conversion in order to escape the payment of debts or just punishment. In 398, according to contemporary historians, the right of sanctuary was completely abolished, though the law as we have it is not so sweeping. But next year the right was finally and definitely recognized, and in 419 the privilege was extended in the western empire to fifty paces from the church door. In 431, by an edict of Theodosius and Valentinian it was extended to include the church court-yard and whatever stood therein, in order to provide some other place than the church for the fugitive to eat and sleep. They were to leave all arms outside, and if they refused to give them up they could be seized in the church. Capital punishment was to be meted out to all who violated the right of sanctuary. Justinian's code repeats the regulation of sanctuary by Leo I. in 466, but Justinian himself in a Novel of the year 535 limited the privilege to those not guilty of the grosser crimes. In the new Germanic kingdoms, while violent molestation of the right of sanctuary was forbidden, the fugitive was given up after an oath had been taken not to put him to death (Lex Rom. Burgund. tit. 2, § 5 Lex. Visigoth. tit. 5, c. 16). This legislation was copied by the church at the council of Orleans in 511; the penalty of pence was added, and the whole decree backed by the threat of excommunication. Thus it passed into Gratian's Decretum. It also formed the basis of legislation by the Frankish king Clotaire (511-538), who, however, assigned no penalty for its violation. Historians like Gregory of Tours have many tales to tell showing how frequently it was violated. The Carolingians denied the right of sanctuary to criminals already condemned to death.

The earliest extant mention of the right of sanctuary in England is contained in the minor laws issued by the Anglo-Saxon king Ethelbert in A.D. 600. By these he who infringed the church's privilege was to pay twice the fine attaching to an ordinary breach of the peace. At Beverley and Hexham in 1 m. in every direction was sacred territory. The boundaries of the church frith were marked in most cases by stone crosses erected on the highroads leading into the town. Four crosses, each 1 m. from the church, marked the mile limits in every direction of Hexham Sanctuary. Crosses, too, inscribed with the word sanctuarium, were common on the highways, serving probably as guides to the various parishes. One still is to be seen at Armthwaite, Cumberland; and another at St Buryan's, Cornwall, at the corner of a road leading down to some ruins known locally as "the Sanctuary." That such wayside crosses were themselves sanctuaries is in most cases improbable, but there still exist in Scotland the remains of a true sanctuary cross. This is known as MacDuí's Cross, near Lindores, Fife-shire. The legend is that, after the defeat of the usurper, Macbeth, in 1057, and the succession of Malcolm Canmore as Malcolm III. to the Scottish throne, MacDuí, as a reward for his assistance, was granted special sanctuary privileges for his kinman. Contained in the minor laws is a ninth-degree of relationship of the chief of the clan, guilt of unpunished homicide, could, on reaching the cross, claim remission of the capital sentence. Probably the privilege has been exaggerated, the fugitive kinsmen were exempt from outside jurisdiction and liable only to the court of the earl of Fife.

The canon law allowed the protection of sanctuary to those guilty of crimes of violence for a limited time only, in order that some compensation (werpild) should be made, or to check blood-vengeance. In several English churches there was a stone seat beside the altar which was known as the frith-stool (peace-stool), upon which the seeker of sanctuary sat. Examples of such sanctuary-seats still exist at Hexham and Beverley, and of the sanctuary knockers which hung on the church-doors one is still in position at Durham Cathedral. The procedure, upon seeking
sanctuary, was regulated in the minutest detail. The fugitive had to make confession of his crime to one of the clergy, to surrender his arms, swear to observe the rules and regulations of the religious houses, pay an admission fee, give, under oath, fullest details of his crime (the instrument used, the name of the victim, &c.), and at Durham he had to tell a special bell as a formal signal that he prayed sanctuary, and put on a gown of black cloth on the left shoulder of which was embroidered a St Cuthbert's cross.

The protection afforded by a sanctuary at common law was this: a person accused of felony might fly for safeguard of his life to sanctuary, and there, within 40 days, go, clothe himself in black cloth, burn on his breast the confession of the felony, and take an oath of abjuration of the realm, whereby he undertook to quit the kingdom, and not return without the king's leave. Upon confession he was, ipso facto, convict of the felony, suffered attendant of blood and forfeiture all his goods, but had time allowed him to fulfil his oath. The abjuror started forth on his journey, armed only with a wooden cross, bareheaded and clothed in a long white robe, which made him conspicuous among medieval wayfarers. He had to keep to the king's highway, was not allowed to remain more than two nights in any one place, and must make his way to the coast quickly. The time allowed for his journey was not long. In Edward III.'s reign only nine days were given an abjuror to travel on foot from Yorkshire to Dover.

Under the Norman kings there appear to have been two kinds of sanctuary; one general, which belonged to every church, and another peculiar, which had its force in a grant by charter from the king. This latter type could not be claimed by prescription, and had to be supported by usage within legal memory. General sanctuaries protected only those guilty of felonies, while those by special grant gave immunity even to those accused of high or petty treason, not for a time only but apparently for life. Of chartered sanctuaries there were at least 22: Abingdon, Armathwaite, Beaulieu, Battle Abbey, Beverley, Colchester, Derby, Durham, Dover, Haxton Lancaster, St Mary le Bow (London), St Martin's le Grand (London), Merton Priory, Northampton, Norwich, Ripon, Ramsey, Wells, Westminster, Winchester, York (Soc. of Antiq. of London, Archaeologia, vol. 1-44, London, 1797). Sketch of the History of the Asylum or Sanctuary, by Samuel Pegge). Sanctuary being the privilege of the church, it is not surprising to find that it did not extend to the crime of sacrilege; nor does it appear that it was allowed to those who had escaped from the sheriff after they had been delivered to him for execution.

Chartered sanctuaries had existed before the Norman invasion. About thirty churches, from a real or pretended antiquity of the privilege, acquired special reputation as sanctuaries, e.g. Westminster Abbey (by grant of Edward the Confessor); Ripon (by grant of Whithale, king of the Mercians); Stburyans, Cornwall (by grant of Ethelstan); St Martin's le Grand, London, and Beverley Minster. "The precincts of the Abbey," says Dean Stanley, "were a vast cave of Adullam for all the distressed and discontented in the metropolis, who desired, according to the phrase of the time, to 'take Westminster.'" Elizabeth Woodville, queen of Edward IV., took refuge in the Abbey with her younger children from the hostility of Richard III. In the next reign the most celebrated sanctuary-seeker was Perkin Warbeck, who thus twice saved his neck, at Beaulieu and Sheen. John Skelton, tutor and afterwards court poet to Henry VIII., fearing the consequences of his caustic wit as displayed in an attack on Wolsey, took sanctuary at Westminster and died there in 1529.

The law of abjuration and sanctuary was regulated by numerous and intricate statutes (see Coke, Institutes, iii. 113); but grave abuses arose, especially in the peculiar sanctuaries. The attack on these seems to have begun towards the close of the 14th century, in the reign of Richard II. During the 15th century violations of sanctuary were not uncommon; the Lollards were forced from churches; and Edward IV. after the battle of Tewkesbury had the duke of Somerset and twenty Lancastrian leaders dragged from sanctuary and beheaded. At the Reformation general and peculiar sanctuaries both suffered drastic curtailment of their privileges, but the great chartered ones suffered most. By the reforming act of 1540 Henry VIII. established seven cities as peculiar sanctuaries. These were Wells, Westminster, Northampton, Manchester, York, Derby and Lichfield. Manchester petitioned against being made a sanctuary town, and Chester was substituted. By an act of James I. (1623), sanctuary, as far as crime was concerned, was abolished throughout the kingdom. The privilege lingered on for civil processes in certain districts which had been the site of former religious buildings and which became the hang-outs of therippen, who were resisted arrest—a notable example being that known as Whitefriars between Fleet Street and the Thames, E. of the temple. This locality was nicknamed Alastia (the name first occurs in Shadwell's plays in Charles II.'s reign), and there criminals were able to a large extent to defy the law (see Sir Walter Scott's Fortunes of Nigel and Peveril of the Peak), arrests only being possible under writs of the Lord Chief Justice. So flagrant became the abuses here and in the other quasi-sancateurs that in 1697 an act of William III., known as "The Escape from Bankruptcy" (see Bell, Commentaries, ii. 450) such alleged acts. A further enabling act of 1723 (George I.) completed the work of destruction. The privileged places named in the two acts were the Minorities, Salisbury Court, Whitefriars, Fulwood's Rests, Mhire Court, Baldwin's Gardens, The Savoy, The Clink, Deadman's Place, Montague Close, The Mint and Stepney. (See Stephen, History of Crim. Law, i. 113.)

In Scotland excommunication was incurred by any who attempted to arrest thieves within sanctuary. The most famous sanctuaries were those attaching to the Church of Wcslc, now St. Mary's, near Selkirk, and that of St. Mary's, Lanark. All religious sanctuaries were abolished in the Northern Kingdom at the Reformation. But the debtor found sanctuary from "diligence" in Holyrood House and its precincts until late in the 17th century. This sanctuary did not protect criminals, or even all debtors, e.g. not crown debtors or fraudulent bankrupts; and it was possible to execute a meditatio fugae warrant within the sanctuary. After twenty-four hours' residence the debtor had to enter his name in the record of the Abbey Court in order to entitle him to further protection. Under the Act 1666 c. 5, insolvency concurring with retreat to the sanctuary constituted fraud; and the offence of imprisonment for debt in 1881 practically abolished this privilege of sanctuary.

A presumptuous right of sanctuary attached to the royal palaces, and arrests could not be made there. In Anglo-Saxon times the king's peace extended to the palace and 3000 paces around it: it extended to the king himself beyond the precincts. At the present day Members of Parliament cannot be served with writs or arrested within the precincts of the Houses of Parliament, which extend to the railings of Palace Yard. The Irish avocation of the 'eights Parnell and others of the Irish members avoided arrest for some little while by living in the House and never passing outside the gates of the yard.

The houses of ambassadors were in the past quasi-sanctuaries. This was a natural corollary of their diplomatic immunities (see Diplomacy). The privilege was never strictly defined. At one time it was insisted that the immunity accorded an ambassador included his house and those who fled to it. At an earlier date sanctuary had actually been claimed for the quarter of the town in which the house stood. At Rome this privilege was formally so claimed by Innocent XI. (Pope 1676-1689), and in 1682 the Spanish ambassador at the Papal Court renounced all right to claim immunity even for his house. His example was followed by the British ambassador in 1686. Portugal, Sweden, Denmark and Venice abolished by express ordinance in 1748 the asylum-rights of ambassadorial residences. In 1726 the Spanish government had forcibly taken the duke of Ripperda out of the hotel of the English ambassador at Madrid, although the Court of St James had sanctioned his reception there. At Venice, too, some Venetians who had betrayed state secrets to the French ambassador and had taken
refuge at his house were dragged out by troops sent by the senator.

In Europe, generally, the right of sanctuary survived under restrictions down to the end of the 18th century. In Germany the more serious crimes of violence were always excepted. Highwaymen, robbers, traitors and habitual criminals could not claim church protection. In 1418 sanctuary was further regulated by a bull of Martin V. and in 1504 by another of Julius II. In a modified form the German Asylrecht lasted to modern times, not being finally abolished till about 1780. In France le droit d’asile existed throughout the middle ages, but was much limited by an edict of Francis I. in 1539, Ordonnance sur le fait de l’exication de la France. At the Revolution the right of sanctuary was entirely abolished.


SANCY, NICOLAS DE HARLAY, SEIGNEUR DE (1546-1629), French soldier and diplomatist, belonged to the Protestant branch of the family of Harlay but adopted the Catholic religion in 1572 during the massacres of the Huguenots. In 1589 he obtained in Geneva and Berne sums sufficient to raise an army of mercenaries for Henry III., partly by the sale of jewels, among them the “Sancy” diamond which in 1835 found its way to the Russian imperial treasure, and partly by leading the Swiss to suppose that the troops were intended for serious war against Savoy. Henry IV. made him superintendent of his finances in 1594, and when at last he was displaced by Sully. Meanwhile he had cast a second converted to Catholicism, but his influence at court waned, and he retired from public life in 1605. He survived until the 13th of October 1629, leaving a Discours sur l’occurrence des affaires.

His son, Achille Harlay de Sancy, bishop of Saint Malo (1581-1646), was educated for the church but resigned his vocation for the career of arms on the death of his elder brother in 1601. For seven years, from 1611 to 1618, he was ambassador at the Turkish court, where he amassed a fortune of some £16,000 sterling by doubtful means, and was bastinadoed by order of the sultan. He was also wounded in the following fray. Harlay de Sancy was a learned man and a good linguist, who used his opportunities to acquire a valuable collection of oriental MSS., many of which are now in the Bibliothèque Nationale in Paris. On his return to France he joined the Oratorian Fathers, and when Marshal Bassompierre was sent to England in 1627 to regulate the differences between Henrietta Maria and her husband, Harlay de Sancy was attached to the queen’s ecclesiastical household, but Charles I. secured his dismissal. He became bishop of St Malo in 1632, and died on the 20th of November 1646.

SAND, GEORGE (1804-1876), the pseudonym of Madame Amandine Lucile Aurore Dudevant, née Dupin, the most prolific authoress in the history of literature, and unapproached among the women novelists of France. Her life was as strange and adventurous as any of her novels, which are for the most part idealized versions of the multifarious incidents of her life. In her self-revelations she followed Rousseau, her first master in style, but while Rousseau in his Confessions darkened all the shadows, George Sand is the heroine of her story, often frail and faulty, but always a woman more sincerity than sinning. Thanks, however, to her voluminous correspondence that has recently been published and to family documents that her French biographers have unearthed, there are now full materials for tracing the history of her public and private career, and for forming a clear and unbiased estimate of her character and genius.

Her father was Maurice Dupin, a retired lieutenant in the army of the republic; her mother, Sophie Delaborde, the daughter of a Paris bird-fancier. Their ill-assorted marriage took place only a few weeks before the birth of the child (July 1, 1804; at Paris). Her paternal grandfather was M. Dupin de Francueil, a farmer-general of the revenue, who married the natural daughter of Rousseau Horn, a natural son of Louis XV., she in turn being the natural daughter of Maurice de Saxe, the most famous of the many illegitimate children of Augustus the Strong, by the lovely countess of Königsmark. George Sand, who was a firm believer in the doctrine of heredity, devotes a whole volume of her autobiography (Histoire de ma vie, 1857 seq.) to the elaboration of this strange pedigree. She boasts of the royal blood which ran through her veins, and disregarding the bar sinister she clasped hands with Charles X. and Louis XVII., but she is no less frank in declaring that she is a protestant of the people, who shares by birth their instincts and sympathies. Her birth itself was romantic. Her father was playing a country dance at the house of a fellow officer, the future husband of Sophie’s sister, when he was told that his wife, who had not long left the room, had borne him a daughter. “She will be fortunate,” said the aunt, “she was born among the roses to the sound of music.”

Passing by her infantile recollections, which go back further than that of Dickens, we find her at the age of three crossing the Pyrenees to join her husband, who was a postmaster of Roussillon, attending with her parents a suite of rooms in the royal palace, adopted as the child of the regiment, nursed by rough old sergeants, and dressed in a complete suit of uniform to please the general.

For the next ten years she lived at Nohant, near La Châtre in Berry, the country house of her grandmother. Here her character was shaped; here she imbied that passionate love of country scenes and country life which neither absence, politics nor dissipation could uproot; here she learnt to understand the ways and thoughts of the peasants, and laid up that rich store of scenes and characters which a marvellously retentive memory enabled her to draw upon at will. Her education during these early years well deserves to be recorded. Education, in the strict sense of the word, she had none. A few months after her return from Spain her father was killed by a fall from his horse. He was a man of remarkable literary gifts as well as a good soldier. “Character,” says George Sand, “is in a great measure hereditary: if my readers wish to know me they must know my father.” On his death the mother resigned, though not without a struggle, the care of Aurore to her grandmother, Mme. Dupin de Francueil, a good representative of the ancien régime who, though she had been a postmaster’s wife, was not a failure to be endured. She herself had narrowly escaped the guillotine, and had only half imbied the ideas of the Revolution. In her son’s lifetime she had, for his sake, condoned the mésalliance, but it was impossible for the stately châtelaine and her low-born daughter-in-law to live in peace under the same roof. She was jealous as a lover of the child’s affection, and the struggle between the mother and grandmother was one of the bitterest of Aurore’s childish troubles.

Next to the grandmother, the most important person in the household at Nohant was Dumas. He was an ex-abbé who had shown his devotion to his mistress when her life was threatened, and henceforward was installed at Nohant as factotum. He was maire of the village, tutor to Aurore’s half-brother, and, in addition to his other duties, undertook the education of the girl. The tutor was no more eager to teach than the pupil to learn. He, too, was a disciple of Rousseau, believing in the education of nature, and allowed his Sophie to wander at her own sweet will. At odd hours of lessons she picked up a smattering of Latin, music and natural science, but most days were holidays and spent in country rambles and games with village children. Her favourite books were Tasso, Ariosto and Paul et Virginie. A simple refrain of a childish song or the monotonous chant of the ploughman touched a hidden chord and thrilled her to tears. She invented a deity of her own, a mysterious Corambé, half pagan and half Christian, and like Goethe erected to him a rustic altar of the greenest grass, the softest moss and the brightest pebbles.
From the free out-door life at Nohant she passed at thirteen to the convent of the English Augustinians at Paris, where for the first two years she never went outside the walls. Nothing better shows the plasticity of her character than the ease with which she adapted herself to this sudden change. The volume which describes her conventual life is as graphic as Miss Brontë's \textit{Villette}, but we can only dwell on one passage of it. "Tired of mad pranks and affairs of horse-thickness, she found herself once everything in the convent chapel."

"I had forgotten all; I knew not what was passing in me; with my soul rather than my senses, I breathed an air of ineffable sweetness. All at once a sudden shock passed through my whole being, my eyes swam, and I seemed wrapped in a dazzling white mist. I heard a voice murmur in my ear, 'Tolle, lege.' I was thinking that it was one of the sisters talking to me—I was alone. I indulged in no vain illusions; I believed in no miracle; I was quite sensible of the sort of hallucination into which I had fallen; I neither sought nor found solace, I really did feel that faith was laying hold of me—by the heart, as I had wished it. I was so filled with gratitude and joy that the tears rolled down my cheeks. I felt that my mind entirely accepted that ideal of justice, tenderness and holiness which I had never doubted, but with which I had never held direct communion, and now at last I felt that this communion was consummated, as though my father had been broken down before the source of infinite light and the smouldering fire of my heart. An endless vista stretched before me, and I panted to start upon my way. There was no more doubt or lukewarmness. That I should repent on the morrow and rally myself on my over-wrought ecstasy never once entered my thoughts. I was like one who never casts a look behind, who hesitates before some Rubicon to be crossed, but having touched the farther bank sees no more the shore he has just left."

Such is the story of her conversion as told by herself. It reads more like a chapter from the life of Ste Thérèse or Madame Guyon than of the author of \textit{Lélia}. Yet no one can doubt the sincerity of her narrative, or even the permanence of her religious feelings under all her many phases of faith and aberrations of conduct. A recent critic has sought in religion the clue to her character and the mainspring of her genius. Only in her case religion must be taken in an even more restricted sense than Matthew Arnold's "morality touched by emotion." For her there was no categorical imperative, no moral code save to follow the imperious "tingle" of her heart. "Justice" too she had in so far as she sincerely wished that all men should share alike her happiness; but of "holiness," that sense of awe and reverence that was felt in divers kinds and degrees by Isaiah, Sophocles, Virgil and St Paul, she had not a rudimentary conception.

Again in 1820 Aurore exchanged the restraint of a convent for freedom, being recalled to Nohant by Mme de Francueil, who had no intention of letting her granddaughter grow up a dévote. She rode across country with her brother, she went out shooting with Deschates, she sat by the cottage doors on the long summer evenings and heard the flax-dressers tell their tales of witches and warlocks. She was a considerable linguist and knew English, Italian and some Latin, though she never tackled Greek. She read widely though unsystematically, studying philosophy in Aristotle, Leibnitz, Locke and Condillac, and feeding her imagination with René and Childe Harold. Her confessor lent her the \textit{Gensis of Christianity}, and to this book she ascribes the first change in her religious views. She renounced once for all the asceticism and isolation of the \textit{De limitationes} for the more genial and sympathetic Christianity of Chateaubriand. Yet she still clung to old associations, and on her grandmother's death was about to return to her convent, but was dissuaded by her friends, who found her a husband.

Casimir Dudevant, whom she married on the 11th of December 1822, was the natural son of a Baron Dudevant. He had retired at an early age from the army and was living an idle life at home as a gentleman farmer. His husband, though he afterwards deteriorated, seems at that time to have been neither better nor worse than the Berrichon squires around him, and the first years of her married life, during which her son Maurice and her daughter Solange were born, except for lovers' quarrels, were passed in peace and quietness, though signs were not wanting of the coming storm. Among these must be mentioned her friendship with Aurélien de Sèze, advocate-general at Bourde. De Sèze was a middle-aged lawyer with a philosophic turn of mind, and Madame Dudevant for two years kept up with him an intimate correspondence. The friendship was purely platonic, but the husband felt or affected jealousy, and resolved henceforth to take advantage of which he from his total lack of culture was unable to share. The breach quickly widened. He on his part was more and more repelled by a superior woman determined to live her own intellectual life, and she on hers discovered that she was mated, if not to a clown, at least to a \textit{lobereau} whose whole heart was in his cattle and his turnips. So long as the conventionalities were preserved she endured it, but when her husband took to drinking and made love to the maids under her very eyes she resolved to break a yoke that had grown intolerable. The last straw that determined action was the discovery of a paper docketed "Not and attractive young lawyer." Articles written in common soon led to a complete literary partnership, and 1831 there appeared in the \textit{Revue de Paris} a joint novel entitled \textit{Prima Donna} and signed Jules Sand. Shortly after this was published in book form with the same signature a second novel, \textit{Rose et Blanche}. The sequel to this literary alliance is best recounted in George Sand's own words: "I resisted him for three months but then yielded; I lived in my own apartment in an unconventional style." Her first independent novel, \textit{Indiana} (1832), was written at the instigation of Delatouche, and the world-famous pseudonym George (originally Georges) Sand was adopted as a compromise between herself and her partner. The "George" connoted a Berrichon as "David" does a Welshman. The one wished to throw \textit{Indiana} into the common stock, the other refused to lend his name, or even part of his name, to a work in which he had had no share. The novel was received with instant acclamation, and Sainte-Beuve only confirmed the judgment of the public when he pronounced in the \textit{Globe} that this new author (then to him unknown) had struck a new and original vein and was destined to go far. Delatouche was the first to throw himself at her feet and bid her forget all the hard things he had said of her. \textit{Indiana} is a direct transcript of the author's personal experiences (the disagreeable husband is M. Dudevant to the life), and an exposition of her theory of sexual relations which is founded thereon. To many critics it seemed that she had said her whole say and that nothing but replicas could follow. \textit{Valentine}, which was published in the same year, indicated that it was but the first chapter in a life of endless adventures, and that the imagination which turned the crude facts into poetry, and the fancy which played about them like a rainbow, were inexhaustible.

At a novel \textit{Valentine} has little to commend it; the plot is feeble and the characters shadowy. Only in the descriptions of...
scenery, which here resemble too much purple patches, does
George Sand reveal her true inspiration, the artistic qualities
by which she will live. No one was more conscious than George
Sand herself of her strength and of her weakness. In a preface
to a later edition she tells us how the novel came to be written,
and, though it anticipates events, this revelation of herself may
best be given here.

"After the unexpected literary success of Indiana I returned to
Berri in 1832 and found a pleasure in painting the scenes with which
I had been familiar from my earliest days. Even at this early
time I knew what my characters would be. In some scenes I tried
to describe them, but as is the case with all profound emotions,
whether intellectual or moral, what we most desire to
realize to ourselves are the least inclined to reveal to the world
at large. And it is always the same with the unknown Valley Noire, this
quiet and unpretentious landscape, which must be sought to find it
and loved to be admired, was the sanctuary of my first and latest
reveries. For twenty-two years I have lived amongst these polluted
trees, these rusty roads, besides these tangled thickets and streams
along whose banks only children and sheep can pass. All this had
charms for me alone and did not deserve to be revealed to idle
curiosity. It is only the incognito of this modest country-side
without historical association or picturesque sites to commend it
to the antiquary or the tourist? The Valley Noire, so it seemed to
me, was part and parcel of myself, the framework in which my life
was set. I am not referring to the valley's Elle as a person. And
in this Elle, as a person, one who is without my own, I was
away from the silks and satins that are suited for the public stage.
If I could have foreseen what a stir my writings would make, I think
I should have jealously guarded the privacy of the sanctuary
that I drew from the lesson the artist's soul fed and fed the artist's visions
and the poet's dreams. But I had no such anticipation; I never
gave it a thought. I was compelled to write and I wrote. I let
myself be carried away by the secret charm of the air I breathed; my
native air, I might almost call it. The descriptive parts of my novel
found favour. The plot provoked some lively criticism on the antima
ratrimonial doctrines that I was alleged to have broached before in
Indiana. In both novels I pointed out the dangers and pains of an
ill-assorted marriage. I thought I had simply been writing a story,
and discovered that I had unwittingly been preaching Saint-Simion
ism. I was not then at an age for reflecting on social grievances,
I was young to do more than see and note facts, and thanks to
my natural indolence and that passion for the concrete, which is at
once the joy and the weakness of artists, I should perhaps always
have remained at that stage if my somewhat pedantic critics had not
driven me to reflect and painfully search after the ultimate causes
of which till then I had only grasped the effects. But I was so
shrewdly taxed with posing as a strong-minded woman and a
philosopher that one fine day I said to myself, 'What, I wonder, &
philosophy?'

Her liaison with Jules Sandeau, which lasted more than a year,
was abruptly terminated by the discovery in their apart
ment on an unexpected return from Nohalf of une blanchisseuse
quelconque. For a short while she was broken-hearted:—'My
heart is a cemetery!' she wrote to Sainte-Beuve, 'A necro
polis,' was the comment of her discarded lover when years
later the remark was repeated to him.

Her third novel, Lélia (1831), is in the same vein, a stronger
and more outspoken diatribe against society and the marriage
law. Lélia is a female Manfred, and Dumas had some reason
to complain that George Sand was giving them 'du Lord
Byron au kilo.'

But a new chapter in her life was now to open. In her despair
she turned for comfort and counsel to Sainte-Beuve, now con
stituted her regular father confessor. This ghostly Sir Pandarus
recommended new friendships, but she was hard to please. Dumas
was 'trop commis-voyageur,' Joffroy too sincerely virtuous and Musset 'trop dandy.' Mérimée was tried for a week,
but the cool cynic and the perfervid apostle of women's
rights proved mutually repulsive. Alfred de Musset was intro
duced, and the two natures leapt together as by elective affinity.

The moral aspect has been given by Mr Swinburne in an epigram:

'Ah! veritable flirt and George did not behave as a
perfect gentleman.'

Towards the end of 1833 George Sand, after winning theeluciant consent of Musset's mother, set out in the poet's
company for Italy, and in January 1834 the pair reached Venice,
staying first at the Hôtel Danieli and then in lodgings. At
first it was a veritable honeymoon; conversation never flagged
and either found in the other his soul's complement. But there
is a limit to love-making, and George Sand, always practical,
set to work to provide the means of living. Musset, though
he depended on her exertions, was first bored and then irritated
at the sight of this terrible vache à écrire, whose pen was
going for eight hours a day, and that sought diversion in the cafés
and other less reputable resorts of pleasure. The con
sequence was a nervous illness with some of the symptoms of
delirium tremens, through which George Sand nursed him with
tenderness and care. But with a strange want of delicacy,
to use the mildest term, she made love at the same time to
a young Venetian doctor whom she had called in, by name
Torin. This, of course, was too much for the music-loving
and the person who gave me this portrait sat with me every night at
a little table and lived by the same work. At daybreak we consulted
together on our work for the day, and at night we supped at the same
table, chatting the whole time on art or literature.
The future broke faith with us. Pray for me, O Marguerite
Lecomte!'

The Everard of the Lettres introduces us to a new and for the
time a dominant influence on the life and writings. Michel
de Bourges was the counsellor whose eloquent pleadings brought
the suit for a judicial separation to a successful issue in 1836.1 Unlike her former lovers, he was a man of masterful will, a budge philosopher who carried her intellect by storm before he laid siege to her heart. He preached republicanism to her by the hour, and even locked her up in her bedroom to reflect on his sermons. She was but half converted, and fled before long from a republic which art and poetry had no place. Other celebrities who figure in the Lettres under a transparent disguise are Liszt and Mme d'Agoult (known to literature as Daniel Stern), whom she met in Switzerland and entertained for some months at Nohant. Liszt, in after years when they had drifted apart, wrote of her: "George Sand catches her butterfly and tames it in her cage by feeding it on flowers and nectar—this is the love period. Then she sticks her pin into it when it struggles—that is the congé and it always comes from her. Afterwards she vivisects it, stuffs it, and adds it to her collection of heroes for novels. 2 There is some truth in the satire, but it wholly misrepresented her rupture with Chopin.

To explain this we must open a new chapter of the life in which George Sand appears as the devoted mother. The letters to her daughter Solange, which have recently been published, irresistibly recall the letters of Mme de Sévigné to Mme de Grignan. Solange, who inherited all her mother’s wild blood with none of her genius, on the eve of a marriage that had been arranged with a Berrichon gentleman, ran away with Clésinger, a sculptor to whom she had sat for her bust. George Sand not only forgave the elopement and hushed up the scandal by a private marriage, but she settled the young couple in Paris in a furnished apartment made over to them nearly one-half of her available purse. Clésinger turned out a thankless scapegrace and George Sand was at last compelled to refuse to admit him to Nohant. In the domestic quarrel that ensued Solange, who was a very Vivien, got the ear of Chopin. He upbraided the mother with her heartlessness, and when she resented his interference he departed in a huff and they never met again.

The mention of Liszt has led us to anticipate the end of the story, and we must revert to 1836, when the acquaintance began. She was then living in Paris, a few doors from her friend Mme d’Agoult, and the two set up a common salon in the Hôtel de France. Here she met two men, one of whom indoctrinated her with religious mysticism, the other with advanced socialism, Lamennais and Pierre Leroux. In the case of Lamennais the disciple outstripped the master. She flung herself into Lamennais’s cause and wrote many unpaid articles in his organ, Le Monde, but they finally split on the questions of labour and of women’s rights, and she complained that Lamennais first dragged her forwards and then abused her for going too fast. The Lettres à Marché (1837) are a testimony to his embibing and saprophytic manner. She settled the young couple in Paris in a furnished apartment made over to them nearly one-half of her available purse. Clésinger turned out a thankless scapegrace and George Sand was at last compelled to refuse to admit him to Nohant. In the domestic quarrel that ensued Solange, who was a very Vivien, got the ear of Chopin. He upbraided the mother with her heartlessness, and when she resented his interference he departed in a huff and they never met again.

It was doubtless a revulsion of feeling against the doctrinaires and in particular against the puritanic reign of Michel that made her turn to Chopin. She found the maestro towards the end of 1837 dispirited by a temporary eclipse of popularity and in the first stage of his fatal malady, and carried him off to winter with her in the south. How she roughed it on an island unknown to tourists is told in Un hiver à Majorque (1842), a book of travel that may take rank with Heine’s Reiseführer. In nearly all George Sand’s loves there was a strong strain of motherly feeling. Chopin was first petted by her like a spoilt darling and then nursed for years like a sick child.

During this, her second period, George Sand allowed herself to be the mouthpiece of others—"un écho qui embelliessait la voix," as Dela Touche expressed it. Spiridion (1838) and Les Sept cordes de la lyre (1840) are mystic echoes of Lamennais. Le Compagnon du tour de France (1841), Les Maîtres maîtres

1 The final settlement was concluded in 1836. Mme Dudevant was granted sole legal rights over the two children and her Paris home was restored to her. In return she made over to her husband 40,000 fr. vested in the funds.

and Le Meunier d’Angibault (1845), Le Pêché de M. Antoine (1847) are all socialistic novels, though they are much more, and good in spite of the socialism. Consuelo (1847–1848) and its sequel La Comtesse de Rudolstadt (1843–1845) are fantastias à la Chopin, though the stage on which they are played is the Venice of Musset. Chopin is the Prince Karol of Lucretia Floriani (1847), a self-portraiture univalent as the Tagebuch einer Verlorenen and innocent as Paul et Virginie.

An enumeration of George Sand’s novels would constitute a Homeric catalogue, and it must suffice to note only the most typical and characteristic. She contracted with Buloz to supply him with a stated amount of copy for the modest retaining fee of £100 a year, and her editor testifies that the tale of script was furnished with the punctuality of a notary. She wrote with the rapidity of Walter Scott and the regularity of Anthony Trollope. For years her custom was to retire to her desk at 10 p.m. and not to rise from it till 5 a.m. She wrote à la diable, starting with some central thesis it set forth or some problem to investigate, but with no predetermined plot or plan of action. Round this nucleus her characters (too often mere puppets) grouped themselves, and the story gradually crystallized. This unmethiodical method produces in her longer and more ambitious novels, in Consuelo for instance and its continuation, a tangled wilderness, the clue to which is lost or forgotten; but in her novelettes, when there is no change of scenery and the characters are few and simple, it results in the perfection of artistic writing, "an art that nature makes."

From novels of revolt and tendency novels George Sand turned to simple stories of rustic life, the genuine pastoral. It is here that she shows her true originality and by these she will chiefly live. George Sand by her birth and bringing-up was half a peasant herself, in M. Faguet’s phrase, "un paysan qui savait parler." She had got to know the heart of the peasant—his superstitions, his suspiciousness and low cunning, no less than his shrewdness, his sturdy independence and his strong domestic attachments.

Jeanne (1844) begins the series which has been happily called the Bouclles of France. To paint a Joan of Arc who lives and dies incongruous is the theme she sets herself, and through most of the novel it is perfectly executed. The last chapters when Jeanne appears as the Velida of Mont Barbot and the Grande Pastoure are a falling off and a survival of the romanticism of her second manner. La Mère au diable (1846) is a cut-and-gem perfect as a work of Greek art. François le champi and La Petite Fadette are of no less exquisiteworkmanship. Les Maîtres sonneurs (1853)—the favourite novel of Sir Leslie Stephen—brings the series of village novels to a close, but as closely akin to them must be mentioned the Contes d’une grande-mère, delightful fairy tales of the Talking Oak, Wings of Courage and Queen Coax, told to her grandchildren in the last years of her life.

The revolution of 1848 arrested for a while her novelistic activities. She threw herself heart and soul into the cause of the extreme republicans, composed manifestos for her friends, addressed letters to the people, and even started a newspaper. But her political ardour was short-lived; she cared little about forms of government, and, when the days of June dashed to the ground her hopes of social regeneration, she quitted once for all the field of politics and returned to her quiet country ways and her true vocation as an interpreter of nature, a spiritualizer of the commonest sights of earth and the most household affections. In 1849 she writes from Berri to a political friend: "You thought that I was drinking blood from the skulls of aristocrats. No, I am studying Virgil and learning Latin!"

In her latest works she went back to her earlier themes of romantic and unchartered love, but the scene is shifted from Berri, which she felt she had exhausted, to other provinces of France, and instead of passionate manifestos we have a gallery of genre pictures treated in the spirit of François le champi.

"Vous faites," she said to her friend Honoré de Balzac, "la conscience humaine; et moi, c’est l’oglogue humaine que j’ai voulu faire."

A word must be said of George Sand as a playwright. She

SAND, GEORGE

...
was as fond of acting as Goethe, and like him began with a puppet stage, succeeded by amateur theatricals, the chief entertainment provided for her guests at Nohant. Undaunted by many failures, she dramatized several of her novels with moderate success—

François le champi, played at the Odéon in 1849, and Les Beaux Messieurs de Beis-Doré (1862) were the best; Claudio, produced in 1851, is a charming pastoral play, and Le Marquis de Villeneuve (1864) (in which she was helped by Dumas fils) was a genuine triumph. Her statue by Clésinger was placed in the foyer of the Théâtre Français in 1877.

Of George Sand's style a foreigner can be but an imperfect judge, but French critics, from Sainte-Beuve, Nisard and Caro down to Jules Lemaître and Faguet, have agreed to praise her spontaneity, her correctness of diction, her easy opulence—the

laeta ubera that Quintilian attributes to Livy. The language of her country novels is the genuine 

patois of middle France rendered in a literary form. Thus in La Petite Fadette, by the happy device of making the hemp dresser the narrator, she speaks (to quote Sainte-Beuve) as though she had on her right the unlettered rustic and on her left a member of the Académie, and made him sift the interpreter between the two. She hits the happy mean between the studied archaisms of Courrier's 

Daphnis et Cloé and the realistic 

patois of the later kailyard novel which for Southerners requires a glossary. Of her style generally the characteristic quality is fluidity. She has all the abandonment of an Italian improvisatore, the simplicity of a Bernardin de St Pierre without his mawkishness, the sentimentality of a Rousseau without his egotism, the rhythmic eloquence of a Chateaubriand without his grandiloquence.

As a painter of nature she has much in common with Wordsworth, who keeps her eye on the object, but adds, like Wordsworth, the visionary gleam, and receives from nature but what she herself gives. Like Wordsworth she lays us on the lap of earth and sheds the freshness of the early world. She, too, had found love in huts where poor men dwell, and her miller, her bagpipers, her workers in mosaic are as faithful renderings in prose of peasant life and sentiment as Wordsworth's fleethgatherers and wagoners and gleaners are in verse. Her psychology is not subtle or profound, but her leading characters are clearly conceived and drawn in broad, bold outlines. No one has better understood or more skillfully portrayed the artistic temperament of the musician, the actor, the poet—and no French writer before her had so divined and laid bare the heart of a girl. She works from within outwards, touches first the mainspring and then sets it to play. As Mr Henry James puts it, she interviews herself. Rarely losing touch of earth, and sometimes of the earth earthy, she is still at heart a spiritualist. Her final word on herself rings true, "Toujours tourmentée des choses divines."

Unlike Victor Hugo and Balzac, she founded no school, though Fromentin, Thuret, Cherbuliez, Fabre and Bazin might be claimed as her collateral descendants. In Russia her influence has been greater. She directly inspired Dostoievski, and Turgeniev owes much to her. In England she has found her warmest admirers. Elizabeth Barrett Browning wrote sonnets to "the large-brained woman and large-hearted man, self-named George Sand." To Thackeray her diction recalled the sound of village bells falling sweetly and softly on the ear, and it sent a shiver through John Stuart Mill, like a symphony of Haydn or Mozart. Leslie Stephen advised Thomas Hardy, then an aspiring contributor to the Cornhill, to read George Sand, whose country stories to him had "the harmony and grace, every strictly inimitable, are good to aim at." He pronounced the

Histoire de ma vie about the best biography he had ever read. F. W. H. Myers claimed her as anima naturaliter Christiana and the inspired exponent of the religion of the future.

George Eliot by her very name invites and challenges comparison with George Sand. But it was as a humble follower, not as a rival, that she took George Sand as sponsor. Both women broke with social conventions, but while George Sand (if the expression may be allowed) kicked over the traces, George Eliot was impelled all the more emphatically, because of her exceptional circumstances, to put duty before inclination and to uphold the reign of law and order. Both passed through phases of faith, but while even Positivism did not cool George Eliot's innate religious fervour, with George Sand religion was a passing experience, no deeper than her republicanism and less lasting than her socialism, and she lived and died a gentle savage. Rousseau's Confessions was the favourite book of both (as it was of Emerson), but George Eliot was never converted by the high priest of sentimentalism into a belief in human perfectibility and a return to nature. As a thinker George Eliot was austere; and the object, however, is more profound and philosophical analysis subtler and more scientific. But as an artist, in unity of design, in harmony of treatment, in purity and simplicity of language, so felicitous and yet so unstudied, in those qualities which make the best of George Sand's novels masterpieces of art, she is as much her inferior.

Mr Francis Gribble has summed up her character in a scornful, insular way" as a flight woman. A truer estimate is that of Sainte-Beuve, her intimate friend for more than thirty years, but never her lover. In the great crises of action her intellect, her heart and her temperament are at one. She is a thorough woman, but with none of the pettinesses, subterfuges, and mental reservations of her sex; she loves wide vistas and boundless horizons and instinctively seeks them out; she is concerned for universal happiness and takes thought for the improvement of mankind—the last infirmity and most innocent mania of generous souls. Her works are in very deed the echo of our times. Wherever we were wounded and stricken her heart bled in sympathy, and all our maladies and miseries evoked from her a lyric wall." George Sand died at Nohant on the 8th of June 1876.

To a youth and womanhood of storm and stress had succeeded an old age of serene activity and then of calm decay. Her hours were spent in writing, which seemed in her case a relaxation from the real business of the day, playing with her grandchildren, gardening, conversing with her visitors—it might be Balzac or Dumas, or Octave Feuillet or Matthew Arnold—or writing long letters to Sainte-Beuve and Flaubert. "Calme, toujours plus de calme," was her last prayer, and her dying words, "Ne détruisez pas la verdure." 

BIBLIOGRAPHY. The collected edition of George Sand's works was published in Paris (1862-1883) in 66 volumes, with supplement 199 volumes; the Histoire de ma vie appeared in 20 volumes in 1854-1855. The Etude bibliographique sur les œuvres de George Sand (in the Bibliographie des livres de l'encyclopédie) and L'œuvre complète de George Sand (1868) gives the complete bibliography. Of Vladimir Karenin's (pseudonym of Mme Komarova) George Sand, the most complete life, the first two volumes (1899-1901) carry the life down to 1839. Her own new matter is contained in Correspondance de G. Sand et d'Alfred de Musset (Brussels, 1904), Correspondance entre George Sand et Gustave Flaubert (1904), and Lettres d'Alfred de Musset et d'Isaak Sarah (1907). George Sand (1887) is rather a critique than a life. Lives by Mirecourt (1855) and by Haussonville (1878) may also be consulted. Of the numerous shorter studies may be mentioned those of Sainte-Beuve in the Gastrures du lundi and in Portraits contemporains; Jules Lemaître in Les Contemporains, vol. iv.; E. Faget, XIX. Siècles; F. W. H. Myers, Essays Ancien et Modern (1883); Henry James in North American Review (April 1902); Matthew Arnold, Studies and Essays (1879). See also René Doumic's George Sand (1899), which has been translated into English by Alys Hallard as George Sand: Some Aspects of Her Life and Writings (1910). (F. S.)

SAND. When rocks or minerals are pulverized by any agencies, natural or artificial, the products may be classified as gravel, sands and muds or clays, according to the size of the individual particles. If the grains are so fine as to be impalpable (about 1 in. in diameter) the deposit may be regarded as a mud or clay; if many of them are as large as peas the rock is a gravel. Sands may be uniform when they have been sorted out by some agency such as a gentle current of water or the wind blowing steadily across smooth arid lands, but usually they vary much both in the coarseness of their grains and in their mineral composition. The great source of natural sands is the action of the atmosphere, frost, rain, plants and other agencies in breaking up the surfaces of rocks and reducing them to the condition of fine powder; in other words sands are ordinarily the product of the agencies of denudation operating on the rocks of the earth's...
crust. Not all, however, are of this kind, for a few are artifical, like the crushed tallings produced in the extractions of metals from their ores; there are also volcanic sands which have originated by explosions of steam in the craters of active volcanoes.

A great part of the surface of the globe is covered by sand. In fertile regions the soil is very often of a sandy nature; though most soils are mixtures of sand with clay or stones, and may be described as loams rather than as sands. Pure sandy soils are found principally where the sand has been blown from the shore, or on formations of soft and friable sandstone like the Greensand. The soil of deserts also is often arenaceous, but there the finer particles have been lifted and borne away by the wind. Accumulation of detritus has led to the foundering of the seabed to certain parts of our rivers, very often over wide stretches of the seashore, and more particularly on the sea bottom, where the water is not very deep, at no great distance from the land. They contain weathering minerals which are common on the earth's crust only a limited number occur at all frequently in sand deposits. For several reasons quartz is by far the commonest ingredient of sands. It is a very abundant mineral in rocks and sands. It is very hard, so that it is not readily worn down to a very fine muddy paste. It also possesses practically no cleavage, and does not split up naturally into thin fragments. If we add to this that it is nearly insoluble in water, that it does not decompose even in the presence of a moisture, and that it is unaltered after long ages of exposure to weathering, we can see that it has all the properties necessary for furnishing a large portion of the sandy material produced by the detritus of rock masses. With quartz there is a common amorphous or gelatinous (possibly chine, orthoclase and oligoclase), but this mineral, though almost as common as quartz in rocks, splits up readily on account of its cleavage into fine grains, and is often agglomerated in pebbles. ark and kaolin, which are removed by the sifting action of water and are deposited as muds or clays. Small plates of white mica, which, though soft and very fine, decompose very slowly, are often mingled with the sand. In many sands, such as the black sands of the Lizard district of Cornwall the sands at the base of cliffs of serpentine, are rich in olivine, augite, enstatite, tremolite and chlorite. These volcanic sands such minerals as garnet, tourmaline, zircon, rutile and antaarse, which are common rock-forming minerals, both hard and resistant to decomposition. Among the less common ingredients are topaz, staurolite, kyanite and diaspore, chlorite, iron oxides, biotite, hornblende, and augite, white small particles of felspath, felsite and other fine-grained rocks appear frequently in the coarser sand deposits.

In desert sands, which have been transported for any great distance from their parent rocks, often contain minerals that are too soft or too readily decomposed to persist. In the Lizard district of Cornwall the sands at the base of cliffs of serpentine are rich in olivine, augite, enstatite, tremolite and chlorite. In many sands consist almost entirely of such fragments (shell sands). Around coral islands there are often extensive deposits of comminuted coral, in the midst of which we may find very large broken skeletons of calcareous algae, sponge-spicules and other debris of organic origin. The Greensands which are widely distributed over the floor of the ocean in places where the continental shelf has been submerged, are oftener to their colour to small rounded lumps of glauconite.

Among the accessory ingredients of sands which are of great value and interest are the precious metals, especially gold and platinum. These are found usually in the lower parts of the sand deposits resting on the rock-bed, because of their high specific gravity, and have been derived from the destruction of the rocks in which they originally existed in quartzose veins or as disseminated particles. Tinstone occurs also in this way ("stream-tin"), and in Ceylon, Burma, Brazil, South Africa, &c., precious stones such as the diamond, ruby, spinel, chrysoberyl and tourmaline are found in beds of quartzose sands. In general the sand grains have a rounded or oviform shape due to mutual attrition during transport. Those which have been carried farthest are the most rounded; sands deposited at a distance from the parent rock often consist largely of desert grains. The smaller fragments may be carried along in suspension in water, and may travel for many miles without being sensibly worn; but coarse sands and fine gravels are swept along the bottom and are subjected to an intense grinding action. Something depends also on the hardness of the minerals present in the sands, yet even the diamonds and other gems found in sand deposits have often the facets along which they are cut etched in the sand brought by the wind, and owing to the low viscosity of the most of the smallest grains are not held in suspension but are rolled along the ground; hence very fine quartzite sands are sometimes met with in arid regions with every particle smooth and polished. These sands flow almost like a liquid and are used in hour-glasses. Similar "desert sands" occur among the sandstones of the Trias and were doublets formed in the manner described.

In addition to river sands, shore sands, marine sand deposits and desert sands, there are many other types of sand deposits. Blown sands in deserts usually form bands which occur also at the margin of some great lakes like those of N. America. These sand deposits belong in great part to this category. These sands have been blown into their present position by the wind, and unless fixed by vegetation, constantly shift about, and often consequent a menace to agricultural land on their leeward sides. They may be shell sands, quartz sands or mixed sands, and often show very marked oblique stratification or current bedding. The surface of blown sand deposits is generally marked by dunes. Glacial sands are common in districts like Britain and those parts of N. America which have been covered by an ice-sheet. They are really drifts, and have been found on the shores of great lakes in situations in which waters no longer flow. The waters produced by the melting of the ice-sheets flooded extensive tracts of country, laying down sand and mud deposits in temporary lakes. These sands are usually angular, because they have not been transported to any great distance. The old high-level terraces which border the lower courses of many rivers, though usually consisting of gravel, are often accompanied by considerable sand deposits.

Many of the Tertiary and some of the Secondary sandstone rocks are so incompletely consolidated that cementation that they are essentially sand rocks, and especially when weathered may be used in the same way as shells. Sand has been found in the Tertiary of N. America, Triassic sands and Triassic coal (Sec. 197, Cornwall, &c.); Eocene sands (Bagshot sands and Thanet sands); and the Lower and Upper Greensand (Cretaceous) are often dug in pits, though sometimes firmly coherent and more properly described as sandstone. Sandstone rocks are often used in building for many purposes, and frequently contain a small admixture of clay. Sands are also employed in brick-making, in filtering, and for etching glass and other substances by means of the sand blast. (J. S. F.)

Sandalwood (from the Latinized form of Gr. σανδαλος or σαντάλος: this probably represents the Persian sandal, slipper; it is not to be referred to Gr. σαντίς, board), the foot-covering which consists of a sole of leather or other material attached to the sole of the foot by a thong of leather passing between the great and second toe, crossed over the instep and fastened round the ankle (see Shoe and Costume, section Greek and Roman). Sandals are only worn regularly among the peoples of Western civilization by friars, though forms of them are found among the peasants of Spain and Portugal, and in the British isles. Shoes have been adopted by the recent advocates of hygienic dress, especially for young children. In the early part of the 19th century a form of low, light slipper fastened by a ribbon crossed over the ankle, and worn by women, was known as a sandal.

Sandalwood (from Fr. sandal, sandre, Gr. σάνταλος, σαντάλως, Pers. sandal, chandan, Skt. chandana, the sandal tree; the form "sanders" is probably an English corruption), a fragrant wood obtained from various trees of the natural order Santalaceae, and principally from Santalum album, a native of India. It is the use of sandalwood that has given its name to the 5th century B.C. It is still extensively used in India and China, wherever Buddhism prevails, being employed in funeral rites and religious ceremonies. Until the middle of the 18th century India was the only source of sandalwood. The discovery of a sandalwood in the islands of the Pacific led to difficulties with the natives, often ending in bloodshed, the celebrated missionary John Williams (1706-1839), amongst others, having fallen a victim to an indiscriminate retaliation by the natives on white men visiting the islands. The loss of life in this trade was at one time even greater than in that of the opium of the Chinese.
SANDARACH—SAND-EEL

The oil, obtained by distilling the wood in chips, is largely used as a perfume, few native Indian attars or essential oils being free from admixture with it. In the form of powder or paste the oil is employed in the Taoism used by the Brahmans for their distinguishing caste-marks.

Red sandalwood, known also as red sanders wood, is the product of a small leguminous tree, Pterocarpus santalinus, native of South India, Ceylon and the Philippine Islands. A fresh surface of the wood has a rich deep red colour, which on exposure, however, assumes a dark brownish tint. In medieval times red sandalwood possessed a high reputation in medicine, and it was valued as a colouring ingredient in many dishes. It is pharmacologically quite inert. Now it is little used as a medicine, and is principally employed in the dyeing trade, especially in wool-dyeing. Several other species of Pterocarpus, notably P. indicus, contain the same dyeing principle and can be used as substitutes for red sandalwood. The barbary and caumwood of the Guinea Coast of Africa, from Baphia nitida or an allied species, called santal rouge d’Afrique by the French, are also in all respects closely allied to the red sandalwood of Oriental countries. As a substitute for cola (q.v.), sandalwood oil, distilled from the wood of Santalum album, is more expensive and pleasanter to take, but it is less efficient, as it does not contain any analogues to the valuable resin in copaiba.

SANDARACH (Fr. sandarache, Lat. sandaraca, Gr. σανδάραχος, realgar or red sulphide of arsenic, cf. Pers. sandarukh, Skt. sindura, realgar, cinnabar), is the name of a mineral, generally (a use found in Dioscorides) a resiny substance obtained from the small coniferous tree Callistis quadrivalvis, native of the north-west regions of Africa, and especially characteristic of the Atlas mountains. The resin, which is procured as a natural exudation on the stems, and also obtained by making incisions in the bark of the trees, comes into commerce in the form of small round balls or elongated tears, transparent, and having a delicate yellow tinge. It is a little harder than mastic, for which it is sometimes substituted. It is also used as incense, and by the Arabs medicinally as a remedy for diarrhoea. It has numerical advantages over many of the resins employed in modern therapeutics. An analogous resin is procured in China from Callistis sinensis, and in S. Australia, under the name of pine gum, from C. Reissii.

SANDBACH, a market town in the Crewe parliamentary division of Cheshire, England, 5 m. N.E. of Crewe, on the London & North-Western and North Staffordshire railways. Pop. of urban district (1901) 5585. It lies on a headstream of the small river Wheelock, a tributary of the Weaver. The parish church of St Mary is Perpendicular, with a fine carved roof of the 15th century. It contains only the sanctuary and the vestry. In the market-place are two remarkable crosses covered with rude carvings, and assigned by some to the 7th century, being similar to those at Monasterboice and elsewhere in Ireland. There are boot and shoe factories, chemical works and a manufactory of fustians, with sail-works and iron-works in the adjacent township of Wheelock.

SANDBERGER, KARL LUDWIG FRIDOLIN VON (1826–1898), German palaeontologist and geologist, was born at Dillenburg, Nassau, on the 22nd of November 1826. He was educated at the universities of Bonn, Heidelberg and Giessen, at the close of which he graduated Ph.D. in 1846. He then studied at the university of Marburg, where he wrote his first essay, Übersicht der geologischen Verhältnisse des Herzogtums Nassau (1847). In 1849 he became curator of the Natural History Museum at Wiesbaden, and began to study the Tertiary strata of the Mayence Basin, and also the Devonian fossils of the Rhenish provinces, on which he published elaborate memoirs. In 1855 he was appointed professor of mineralogy and geology at the Polytechnic Institute at Karlsruhe, and took part in the geological survey of Baden. From 1865 to 1866 he was professor of mineralogy and geology at the University of Giessen. His greatest work is the Land- und Wasser-Conchylion der Vorwelt, which was published in 1875. In 1871 he was appointed Professor of Invertebrate Palaeontology at Würzburg. His Die Versteinerungen des rheinischen Schichtensystems in Nassau (1850–1856).

SANDBY, PAUL (1725–1809), English water-colour painter, was born at Nottingham in 1725. In 1746 he was appointed by the duke of Cumberland draughtsman to the survey of the Highlands. In 1752 he quitted this post and retired to Windsor, where he occupied himself with the production of water-colour drawings of scenery and architecture. Sir Joseph Banks commissioned him to bring out in aquatint (a method of engraving then peculiar to Sandby) forty-eight plates drawn during a tour in Wales. Sandby displayed considerable power as a caricaturist in his attempt to ridicule the opposition of Hogarth to the plan for creating a public academy for the arts. In 1768 he was chosen a foundation-member of the Royal Academy and appointed Chief drawing-master to the Royal Military Academy at Woolwich. He held his situation for forty-eight years. Sandby was remembered, however, by his water-colour paintings. They are topographical in character, and, while they are the richness and brilliancy of modern water-colour, he nevertheless impressed upon them the originality of his mind. His etchings, such as the Cries of London and the illustrations to Ramsay’s Gentle Shepherd, and his plates, such as to Tasso’s Jerusalem Delivered, are numerous and carefully executed. He died in London on the 9th of November 1809.

SAUDEAU, LÉONARD SYLVAIN JULIEN [Jules] (1811–1885), French novelist, was born at Aubusson (Creuse) on the 19th of February 1811. He was sent to Paris at an early age, and spent much of his time with unruly students. He met Madame Dudevant (George Sand) at Le Coudray in the house of a friend, and when she came to Paris in 1831 she joined Sandeau. The intimacy did not last long, but it produced Rose et Blanch (1831), a novel written in common under the pseudonym Jules Sand, from which George Sand took the idea of her famous nom de guerre.

Sandeau continued for nearly fifty years to produce novels and to collaborate in plays. His best works are Marianna (1839), in which he draws a portrait of George Sand; Le Docteur Herboi (1841); Catherine (1845); Mademoiselle de la Seignière (1848), a successful picture of society under Louis Philippe, dramatized in 1851; Madelette (1848); La Chasse au Roman (1849); Sacs et parfums (1851); La Maison de Penarmon (1858); La Roche aux mouettes (1871). The famous play of Le Gendre de M. Piotier is one of several which he wrote with Émile Augier—the novelist usually contributing the story and the dramatist the theatrical working up. Meanwhile Sandeau had been made conservateur of the Mazarin library in 1853, elected to the Academy in 1858, and next year appointed librarian of St Cloud. As a supporter of this latter office, after the fall of the empire, he was pensioned. He died on the 24th of April 1883. He was never a very popular novelist, and the quiet grace of his style, and his refusal to pande to the popular taste in the morals and incidents of his novels, discredited him with the public.


SAND-EEL, or SAND-LANCE. The fishes known under these names are small kinds of Ammodrtes (Ammodrtes) now included with the Scombridae in the sub-order Percocoiose. They were formerly placed in the Anacanthini and supposed to be allied to the Gadidae, but a fossil form Cobolopenis has recently been described in which the pelvic fins are present, and are abdominal in position as in Belone and Scombrus.

Their body is of an elongated-cylindrical shape, with the head terminating in a long conical snout, the projecting lower jaw forming the chief weapon. A long anal fin, in front of which there is a small one, is also present. The gill-opening between spines and rays can be observed, occupies nearly the whole length of the back, and a long anal, composed of similar short and delicate rays, commences immediately behind the vent, which is placed about midway between the head and caudal. The caudal is forked and the pectorals are short. The total absence of ventral fins indicates the burrowing habits of these fishes. The scales, when present, are very small; but generally the lower part of the body is covered with minute scales. The oblique folds of the integuments. The eyes are lateral and of moderate size; the dentition is quite rudimentary.

Sand-eels are the small littoral marine fishes, only one species attaining a length of 18 in. (Ammodrtes lanceolatus). They live in shoals at various depths on a sandy bottom, and bury themselves in the sand on the slightest alarm. Other shoals live in deeper water. When pursued by the dog or fowls, they frequently shoot out the sand in which they are driven to the surface in such dense masses that numbers of them can be scopped out of the water with a bucket or hand-net. Sand-
eels destroy a great quantity of fry and other small creatures, such as the lancelet (Amphioxus), which lives in similar localities. They are not, however, in this respect much overfished, for eels are captured by small meshed seines, as well as by digging in the sand. The eggs of sand-eels are smaller, however, than sea-water and slightly adhesive; they are scattered among the grains of sand in which the fish lives, and as the waters of growth may be taken with the row-net in sandy bays in summer.

Sand-eels are common in the N. Atlantic; a species scarcely distinct from the European common sand-eel occurs on the Pacific coast of N. America, another on the north coast of S. Africa. On the British coasts three species are found: the greater sand-eel (Ammodramus lanceolatus), distinguished by a tooth-like bicuspid projection on the head; the common sand-eel (A. gallarum), from 5 to 7 in. long, with unarmed verner, even dorsal fin, and with the integuments folded; and the southern sand-eel (A. siculus), with unarmed verner, smooth skin, and with the margins of the dorsal and anal fins divided. The last species is common in the Mediterranean, but local farther N. It has been found near the Shetlands at depths from 80 to 100 fathoms.

SANDEFJORD, the oldest and most famous spa in Norway, in Harlsberg-Laurvik amt (county), 86 m. S.S.W. of Christiania by the Slem stenalve. Pop. (1900) 4847. The springs are sulphurous, saline and chalybeate. Specimens of sea-water or gian's cauldrons may be seen at Gaardshusen and Vindalsbogen, some upwards of 23 ft. in depth.

SANDEMAN, SIR ROBERT GROVES (1835-1892), Indian officer and administrator, was the son of General Robert Turnbull Sandeman, and was born on the 25th of February 1835. He was educated at Perth and St Andrews University, and joined the 33rd Bengal Infantry in 1856. When that regiment was disarmed at Phulior by General Nicholson during the Mutiny in 1857, he took part in the final capture of Lucknow as adjutant of the 11th Bengal Lancers. After the suppression of the Mutiny he was appointed to the Punjab Commission by Sir John Lawrence. In 1866 he was appointed a district officer of Dera Ghazi Khan, and there first showed his capacity in dealing with the Baluch tribes. He was the first to break through the close-border system of Lord Lawrence, by extending British influence to the independent tribes beyond the border. In his hands this policy worked admirably, owing to his tact in managing the tribesmen and his genius for control. In 1876 he negotiated the treaty with the Khan of Kalat, which subsequently governed the relations between Kalat and the Indian government; and in 1877 he was made agent to the Andamanese in Baluchistan, an office which he held till his death. During the second Afghan War in 1878 his influence over the tribesmen was of the utmost importance, since it enabled him to keep intact the line of communications with Kandahar, and to control the tribes after the British disaster at Maiwand. For these services he was made K.C.S.I. in 1879. In 1889 he occupied the Zhob valley, a strategic advantage which opened the Gomal Pass through the Waziri country to caravans. Sandeman's system was not so well suited to the Pathan as to his Baluch neighbours. But in Baluchistan he was a pioneer, a pacificator and a successful administrator, who converted countrymen from a state of complete anarchy as a province as orderly as any in British India. He died at Bela, the capital of Los Bela state, on the 29th of January 1890, and there lies interred under a handsome tomb.

See T. H. Thornton, Sir Robert Sandeman (1895); and R. I. Bruce, Sir Robert Sandeman (1886).

SANDEMAN, GROSSE (1789-1866), German lexicographer, was born on the 12th of November 1819 at Alstrelitz in Mecklenburg, of Jewish parentage. He was educated at the "Gymnasium Carolinum" in the neighbouring capital Neustrelitz, and the universities of Berlin and Halle, where he took the degree of doctor philosophiae. From 1834 to 1852 he conducted with success the school at Alstrelitz.

In 1832 he submitted Grimm's Deutsches Wörterbuch for a rigorous examination for the prize, but it was not until 1841 that the dictionary of the German language, Wörterbuch der deutschen Sprache (3 vols., 1859-1865), was published. This was followed by his Ergänzungswörterbuch der deutschen Sprache (1878-1889). Among others of his works in the same field are Franck's Lexicon (1871, 2nd ed. 1891); Hauptschülerschreibungen in der deutschen Sprache (1872; 2nd ed. 1892) and Lehrbuch der deutschen Sprache für Schüler (6th ed., 1888). Sanders laid down his views in his Katechismus der deutschen Orthographie (1856; 4th ed., 1878), and was an active member of the orthographical conference in Berlin in 1876. He published a translation of Becher's Geschichte der politischen Völker für junge, Heitere Kinderspalten (1868). In 1889 he founded the Zeitschrift für die deutsche Sprache, which he conducted almost down to his death at Alstrelitz on the 11th of March 1897.

See Friedrich Düssel, Daniel Sanderson (1882; 2nd ed., 1890); A. Segert-Stein, Daniel Sanders, ein Gedenkbuch (1897).

SANDERS, NICHOLAS (c. 1530-1581), Roman Catholic agent and historian, born about 1530 at Charlwood, Surrey, was a son of William Sanders, once sheriff of Surrey, who was descended from the Sanders of Sanderson. Educated at Winchester and New College, Oxford, he was elected fellow in 1548 and graduated B.C.L. in 1551. The family had strong Catholic leanings, and two of Nicholas's sisters, who must have been much older than he was, became nuns. He commenced the Oxford convent before its dissolution. Nicholas was selected to deliver the oration at the reception of Cardinal Pole's visitors by the university in 1557, and soon after Elizabeth's accession he went to Rome where he was befriended by Pole's confidant, Cardinal Morone; he also owed much to the generosity of Sir Francis Englefield (q.v.). He was ordained priest at Rome, and was, even before the end of 1550, mentioned as a likely candidate for the cardinal's hat. For the next few years he was employed by Cardinal Hosius, the learned Polish prelate, in his efforts to check the spread of heresy in Poland, Lithuania and Prussia. In 1565, like many other English exiles, he returned to England, and after a visit to the Imperial Diet at Frankfurt in 1566, in attendance upon Commendone, who had been largely instrumental in the reconciliation of England with Rome in Mary's reign, he threw himself into the literary controversy between Bishop Jewel (q.v.) and Harding. His De visibili Monarchia Ecclesiae, published in 1571, contains the first narrative of the sufferings of the English Roman Catholics. Its extreme papalism and its strenuous defence of Pius V.'s bull excommunicating and deposing Elizabeth marked out Sanders for the enmity of the English government, and he retaliated with lifelong efforts to prevent the deposition of Elizabeth and restoration of Roman Catholicism.

His expectations of the cardinalate were disappointed by Pius V.'s death in 1572, and Sanders spent the next few years at Madrid trying to enthrall Philip II, who gave him a pension of 300 ducats, in open war with Elizabeth. The state of Christendon, he wrote, "is dependent upon France; I have no office to speak of, and the state was sorely tried by Philip's cautious temperment; and Sir Thomas Stukeley's projected Irish expedition, which Sanders was to have accompanied with the blessings and assistance of the Pope, was abandoned. Sanders was recalled to England, where he met Henry VIII's own daughter, who was simply borrowed by Sanders from earlier writers. It is not a more trustworthy account than a vehement controversialist engaged in a life and death struggle might be expected to write of theological antagonists.

See Lewis's Introduction (1777); Catholic History of Ireland, Foreign and Spanish State Papers, and of the Carew MSS.; Knox's Letters of Cardinal Allen; T. F. Kirby's Winchester Scholars; R. Bagwell's History of the Reformation in England, 2 vols. (1597); and T. E. Willoughby's The Construction of the Monarchia under Königin Elisabeth (1910); and T. G. Law in Diet. Nat. Biogr. i. 259-261 where a complete list of Sanders's writings is given.

SANDERSON, ROBERT (1587-1663), English divinity, was born probably at Sheffield, Yorkshire, in September 1587. He was educated at Rotherham grammar school and at Lincoln College, Oxford, took orders in 1611, and was promoted successively
to several benefits. On the recommendation of Laud he was appointed one of the royal chaplains in 1631, and was a favourite preacher with the king, who made him regius professor of divinity at Oxford in 1642. The Civil War kept him from entering the office till 1646; and in 1648 he was ejected by the Parliamentary visitors. He recovered his position at the Restoration, was moderator at the Savoy Conference, 1661, and was promoted to the bishopric of Lincoln. He died two years later on the 12th January 1665.

His most celebrated work is his Cases of Conscience, deliberate judgments upon points of morality submitted to them. They are distinguished by moral integrity, good sense and learning. His practice as a college lecturer in logic is better evidenced by these "cases" than by his Compendium of Logic, first published in 1618. A complete edition of Sanderson's works (6 vols.) was edited by William Jackson in 1834. It includes the Life by Izak Walton, revised and enlarged.

SANDFORD, JOHN DE (d. 1394), archbishop of Dublin, was probably an illegitimate son of the spiritual leader, Gilbert Basset (d. 1241), or of his brother Fulk Basset, bishop of London from 1241 until his death in 1259, a prelate who was prominent during the troubles of Henry III.'s reign. John was a nephew of Sir Philip Basset (d. 1271), the justiciar. He first appears as an official of Henry III. in Ireland and of Edward I. in both England and Ireland; he was appointed dean of St Patrick's, Dublin, in 1275. In 1284 he was chosen archbishop of Dublin in succession to John of Darlington; some, however, objected to this choice and Sandford resigned his claim; but was elected a second time while he was in Rome, and returning to Ireland was allowed to take up the see of Dublin. In 1288, during a time of great confusion, the archbishop acted as governor of Ireland. In 1290 he resigned and returned to England. Sandford served Edward I. in the great case over the succession to the Scottish throne in 1292 and also as envoy to the German king, Adolph of Nassau, and the princes of the Empire. On his return from Germany he died at Yarmouth on the 2nd of October 1294.

Sandford's elder brother, Fulk (d. 1271), was also archbishop of Dublin. He is called Fulke de Sandford and also Fulk Basset owing to his relationship to the Bassets. Having been arch-bishop of Dublin and joined a small district of the Diocese of Chatham

SANDGATE, a watering-place of Kent, England, on the S.E. coast, 15 m. W. of Folkestone, on the South-Eastern & Chatham railway. Pop. of urban district (1901) 2023. It is connected with Hythe, 3 m. W., by a tramway belonging to the railway company. It is included in the parliamentary borough of Hythe. Sandgate Castle was built by King Henry VIII, but on the formation of a camp here in 1806 it was considerably altered. The camp of Storncliffe lies N. of the town on a plateau.

SAND-GROUSE, the name1 by which are commonly known the members of a small group of birds frequenting sandy tracts, and having their feet more or less clothed with feathers after the fashion of grouse (q.v.), to which they were originally thought to be closely allied; the species first described were by the earlier systematists invariably referred to the genus Tetrao. Their separation therefrom is due to C. J. Temminck, who made for them a distinct genus which he called Heterogallinula.2 Further investigation of the osteology and petrology of the sand-grouse revealed still greater divergence from the normal Gallinaceae (to which the true grouse belong), as well as several curious analogies to the pigeons; and in the Zoological Society's Proceedings for 1868 (p. 303) T. H. Huxley proposed to regard them, under the name of Pterocloromorphae, as forming a group equivalent to the Alectoromorphae and Peristeromorphae. They are now generally regarded as forming a separate sub-order Pterocoleae of Charadriiformes, allied to pigeons (see BIRDS).

The Pterocoleae consist of two genera—Pterocolea, with about fifteen species, and Syrrhaptes, with two. Of the former, two species inhabit Europe: Pterocolea arenarius Temminck, the sand-grouse, which is usually called P. alchata, the pin-tailed sand-grouse. The European range of the first is practically limited to Portugal, Spain and Italy; while the range of the second is much more extensive, it is generally known by its Catalan name of Ganga, or locally as Grandaulo, or, strange to say, Perdrix d'Angletere. Both species are also abundant in Barbary, and have been believed to occur in other parts of the African desert, but which are now seen to be only winter-visitors; but in 1880 M. Bogdanow pointed out to the Academy of St Petersburg (Bulletin, xxvii. 164) a fossil coloration between eastern and western examples of what had hitherto been considered as Pterocolea arenarius. He suggested that a similar difference might be found in examples of P. arenarius. India, moreover, possesses five other species of Pterocolea, of which, however, only one, P. indicus, has been admitted to Africa, as well as to India, and inhabit Africa as well, and all the remaining species belong to the Ethiopian region—P. personatus, being peculiar to Madagascar, and four occurring in or on the borders of the Cape Colony.

The genus Syrrhaptes, though in general appearance resembling Pterocolea, has a conformation of foot quite unique among birds, the three anterior toes being encased in a common "podotheca," which is clothed to the claw and pointed feathers, so as to give much like a fingerless glove. The hind toe is wanting. The species of Syrrhaptes are S. tibetanus—the largest sand-grouse known—inhabiting the country whence its trivial name is derived, and S. indicus, ranging from Neapolitan Africa across Central Europe, and inhabiting the borders of Europe, which it occasionally invades. Though its attempts at colonization in the extreme W. have failed, it would seem to have established itself in the neighbourhood of Astrakhan (Ibis, 1882, p. 239). It is said to appear to the Cossacks' at this district, and I have seen a portrait of it. (Ibis, l. i. p. 239); and the "Lloung-Kiu" or "Dragon's Foot," so unspecifically described by the Abbé Suc (Souvenirs d'un Voyage dans la Tchita, 233-264), can probably be identified as Syrrhaptes indicus.

The sand-grouse assimilates in general colour to that of the ground, being above of a dull ochreous hue, more or less barred or mottled by darker shades, while beneath it is frequently varied by bands of deep brown intensifying into black. Lighter tints are, however, exhibited by some species and streaks or edgings of an almost pure white relieving the prevailing sandy or fawn-coloured hues that especially characterize the group. The sexes seem always to differ in plumage, that of the female showing the browner tints. The tail is extremely decided dove-like, and so is the form of the body, the long wings contributing also to that effect, so that among Anglo-Indians these birds are commonly known as "rock-pigeons." The long wings, the outermost primary of which in Syrrhapes has its shaft produced into an attenuated filament, are in all the species worked by exceedingly powerful muscles, and in several forms the middle rectrices are roughened and closely frayed, and the tips of the rectrices are frequently used by in the Miocene caves of the Allier by A. Milne-Edwards (Ois. foss. de la France, p. 294, pl. clx., figs. 1-9); and, in addition to the other authorities on this very interesting group of birds already adduced, reference may be made to D. G. Elliot's "Study" of the Family (P.Z.S., 1878, pp. 233-264) and H. F. Gadow, "On Certain Points in the Anatomy of Pterocolea" (op. cit., 1882, pp. 312-332). (A. N.)

SANDHURST, a town in the Wokingham parliamentary division of Berkshire, England, 9 m. N. of Aldershot. Pop. (1901) 2,383. Distances: of Cambridge Town and York Town, and the railway stations of Blackwater and Camberley on the South-Eastern and Chatham and South-Western lines, is the Sandhurst Royal Military College. It was settled here in 1812, having been already removed by its founder, the duke of York, from High Wycombe, where it was opened in 1799, to Great Marlow in 1802. It stands in beautiful grounds, which contain a large lake. Wellington College station on the South-Eastern branch line to Reading, near Sandhurst itself, serves Wellington College, one of the principal modern public schools of England, founded in memory of John Sandford, a lawyer who had formerly been a member of the House of Commons, and who was created a baronet in 1660.

1 It seems to have been first used by J. Latham in 1783 (Synopsis, iv. p. 751) as the direct translation of the name Tetrao arenarius given by Pallas.

2 He states that he published this name in 1809; but hitherto research has failed to find it used until 1815.

3 These were separated by Bonaparte (Comptes rend. xi. p. 888) as distinct genus, Pterodorus, which later authors have justly seen reason to adopt.
of the great duke of Wellington, and incorporated in 1853. Its primary object was the education of the sons of deceased army officers. In the vicinity is Broadmoor Prison for criminal lunatics.

SAN DIEGO, a city, port of entry and the county-seat of San Diego county, in S. California, U.S.A., on the Pacific Ocean, about 10 m. N. of the Mexican border, and about 126 m. (by rail) S.E. of Los Angeles. Pop. (1880) 2657; (1890) 16159; (1900) 51769; in 1890 the population of the town was 3786, and there were 7884 foreigners (chiefly Russians, 29578. It is served by numerous steamship lines and by the Atchison, Topeka & Santa Fé, the Los Angeles & San Diego Beach, the San Diego Southern, and the San Diego, Cuyamaca & Eastern railways. A railway between Yuma, Arizona, and San Diego was under construction in 1910. The harbour, next to that of San Francisco the best in California, has an area of some 22 sq. m. The Federal government has made various improvements in the harbour, building a jetty 7500 ft. long on Zuniga Shoal at the entrance and making a channel 225 ft. wide and 27-28 ft. deep at low tide. The city site, which is a strip of land 25 m. long and 2 to 4 m. wide, is nearly level near the bay. San Diego is the seat of a State Normal School and has a Carnegie library. There is a coal station of the United States Navy, and the United States government maintains a garrison in Fort Rosecrans. At Coronado (pop. 1900, 935) across the bay are Coronado Beach, and the Hotel del Coronado, with fine botanical and Japanese gardens; on the beach people live in tents except in the stormier season. Within the city, on the top of Point Loma, is the Theosophical Institution of the "Universal Brotherhood." San Diego has one of the most equitable climates in the world, and there are several sanatoriums here. The economic interests centre in fruit culture, especially the raising of citrus fruits and of raisin grapes. There are also warehouses, foundries, lumber yards, saw-mills and planing-mills—logs are rafted here from Washington and Oregon. National City (pop. 1900, 1086), adjoining San Diego on the S. and the S. terminus of the Atchison, Topeka & Santa Fé system, has large interests in lemon packing and the manufacture of oil, citric acid and other lemon by-products. In 1905 the total value of the factory products of the city was $1,974,430 (1904-5 more than in 1900).

San Diego is under the commission form of government; in 1905 the city secured as a charter right the power to "recall" by petition any unsatisfactory city official and to elect another in his place, and the initiative and referendum were incorporated in the charter, but were practically inoperative for several years. By a charter amendment of 1909, the city is governed by a commission of a mayor and five councilmen, elected at large.

About 4 m. N. of the business centre of San Diego is the site of the first Spanish settlement in Upper California. It was occupied in April 1782, a Franciscan mission (the earliest of twenty-one established in California) was founded on the 16th of July, and a military presidio somewhat later. San Diego began the first revolution against Governor M. Victoria and Mexican authority in 1831, but was intensely loyal in opposition to Governor J. B. Alvarado and the northern towns in 1836. It was made a port of entry in 1828. In 1840 it had a population of 140. It was occupied by the American forces in July 1846, and was reoccupied in November after temporary dispossessal by the Californians, no blood being shed in these disturbances. In 1850 it was incorporated as a city, but did not grow, and lost its charter in 1852. In 1867 it had only a dozen inhabitants. A land promoter, A. E. Horton (d. 1900), then laid out a new city about 3 m. S. of the old. Its population increased to 2300 in 1870, and this new San Diego, was incorporated in 1872, and was made a port of entry in 1873. The old town still has many ruined adobe houses, and the old "mission" is fairly well preserved. The prosperity of 1867-1873 was followed by a disastrous crash in 1873-1874, and little progress was made until 1884, when San Diego was reached by the Santa Fé railway system. After 1890 the growth of the city was again very rapid.

SAN DOMIN, or Sadowoëraz, a town of Russian Poland, in the government of Radom, 140 m. S.S.E. of Warsaw by river and on the left bank of the Vistula, opposite the confluence of the San. Pop. (1881) 6265, or, including suburbs, 14,710; (1879) 6634. It is one of the oldest towns of Poland, being mentioned as early as 1070; from 1139 to 1323 it was the chief town of the principality of the same name. In 1240, and again in 1259, it was burned by the Mongols. Under Casimir III, it reached a high degree of prosperity. In 1426 it was the seat of a congress for the establishment of peace with Lithuania, and in 1570 the Commonwealth Sandanians from 0 to 10 ft. draught under the Luthers, Calvinists and Moravian Brethren. Subsequent wars, and especially the Swedish (e.g. in 1655) ruined the town even more than did numerous conflagrations, and in the second part of the 18th century it had only about 2000 inhabitants.

Here in 1702 the Polish supporters of Augustus of Saxon banded together against Charles XII. of Sweden. The beautiful cathedral was built between 1120 and 1191; it was rebuilt in stone in 1360, and is one of the oldest monuments of Polish architecture. Two of the churches are fine relics of the 13th century. The city gives title to an episcopal see (Roman Catholic).

SANDOWAY, a town and district in the Arakan division of Lower Burma. The town (pop. 1901, 12,845) is very ancient, and is said to have been at one time the capital of Arakan. The district has an area of 3784 sq. m.; pop. (1901) 90,927, showing an increase of 16% in the decade. The country is mountainous, the Arakan range sending out spurs which reach the coast. Some of the peaks in the N. attain 4000 and more ft. The streams are only mountain torrents to within a few miles of the coast; the mouth of the Khwa forms a good anchorage for vessels of from 3 to 10 ft. draught. In the Arakan range and its spurs are metamorphic, and comprise clay, slates, ironstone and indurated sandstone; towards the S., ironstone, trap and rocks of basaltic character are common; veins of steatite and white fibrous quartz are also found. The rainfall in 1905 was 230-49 in. Except a few acres of tobacco, all the cultivation is rice. Sandoway was ceded to the British, with the rest of Arakan, by the treaty of Yandabo in 1826.

SANDOWN, a watering-place in the Isle of Wight, England, 63 m. S. of Ryde by rail. Pop. of urban district (1901) 5066. It is beautifully elevated on a rising ground overlooking Sandown Bay and the English Channel, on the S.E. coast of the island. There is a wide expanse of sandy shore, and bathing is excellent.

SANDPIPER (Ger. Sandpfeifer), the name applied to nearly all the smaller kinds of the group Limicolae which are not Plovers (q.v.) or Snipes (q.v.), but may be said to be intermediate between them. According to F. Willughby in 1676 it was the name given by Yorkshiremen to the bird popularly known in England as the "Summer-Snipe,"—the Tringa hypoleucos of Linnaeus and the Totanus hypoleucus of later writers,—but probably even in the "Consensus Sandandrii" this was of mid-water uniting the rocks in the Arakan range and its spars are metamorphic, and comprise clay, slates, ironstone and indurated sandstone; towards the S., ironstone, trap and rocks of basaltic character are common; veins of steatite and white fibrous quartz are also found. The rainfall in 1905 was 230-49 in. Except a few acres of tobacco, all the cultivation is rice. Sandoway was ceded to the British, with the rest of Arakan, by the treaty of Yandabo in 1826. Sandown is a watering-place in the Isle of Wight, England, 63 m. S. of Ryde by rail. Pop. of urban district (1901) 5066. It is beautifully elevated on a rising ground overlooking Sandown Bay and the English Channel, on the S.E. coast of the island. There is a wide expanse of sandy shore, and bathing is excellent.

These are Phalaropus fulicarius and P. (or Lobipes) hyperboreus, and were thought by some of the older writers to be allied to the Coots (q.v.). The third species is P. (or Steganopus) wilsoni. All are natives of the higher parts of the N. hemisphere, and the last is especially American, though perhaps a stranger to Europe.
SANDRART—SANDSTONE

is prevalent, while the Totaniiæ, with acute and stiffer bills, display no such lively colours. Furthermore, the Tringinae, except when breeding, frequent the sea-shore much more than do the Totaniiæ.1 To the latter belong the Greenshank (g.v.) and Redshank (g.v.), as well as the Common Sandpiper, the “Summer-Snipe” 2 above-mentioned, a bird hardly exceeding a Skylark in size, and of very general distribution throughout the British Islands, but chiefly frequenting clear streams, especially those with a gravelly or rocky bottom, and most generally breeding on the beds of sand or shingle on their banks. It usually makes its appearance in May. The nest, in which four eggs are laid with their pointed ends meeting in its centre (as is usual among Limicolæ birds), is seldom far from the water's edge, and the eggs, as well as the newly-hatched and down-covered young, closely resemble the surrounding pebbles. The Common Sandpiper is found over the greater part of the Old World. In summer it is the most abundant bird of its kind in the extreme N. of Europe, and it extends across Asia to Japan. In winter it makes its way to India, Australia, and the Cape of Good Hope. In America its place by a closely kindred species, which is said to have also occurred in England—T. macularius, the “Feet-weet,” or Spotted Sandpiper, so called from its usual cry, or from the almost circular marks which spot its lower plumage. In habits it is very similar to its congener of the Old World, and in winter it migrates to the Antilles and to Central and South America.

Of other Totaniiæ, one of the most remarkable is that to which the inoffensive Kentish Snipe, Scolopax rusticola, belongs. The Totaniiæ or Holarctæs ochroptús of ornithologists, which differs (so far as is known) from all others of the group both in its osteology 3 and mode of nidification, the hen laying her eggs in the deserted nests of small birds, or in those of a butterfly, in which she wallows at some height (from 3 to 30 ft.) from the ground (Proc. Zool. Society, 1856, pp. 529-552). This species occurs in England the whole year round, and is said to have bred there, though the fact has never been satisfactorily proved, and knowledge of its erratic habits comes from naturalists in Persia and Sweden. This sandpiper is characterized by its dark upper plumage, which contrasts strongly with the white under parts; the heart of the plumage gives off to the direct rays of the sun a peculiar glitter, and flies much the look of a very large house-martin. The so-called wood-sandpiper, T. glareola, which, though much less common, is known to have bred in England, has a considerable resemblance to the species just mentioned, but can be distinguished by the feathery of the auxiliary plume being white barred with greyish-black, while in the green sandpiper they are greyish-black barred with white. It is an abundant bird in most parts of northern Europe, migrating in winter very far to the southward.

Of the section Tringinae the best known are the Knot (g.v.) and the Dunlin, T. alpina. The latter, often also called Orx-bird, Plover’s Foot, is the smallest of the sandpipers with large black eyes, a species—not only breeds commonly on many of the elevated moors of Britain, but in autumn resorts in countless flocks to the shores. In winter of a nearly uniform ash-grey above and white beneath, in summer they have a brown back and crown, 4 greenish-black neck and edges, and a broad black belt occupies the breast. The Dunlin varies considerably in size, examples from N. America being almost always recognizable from their greater bulk, while in Europe there appears to be a smaller race which has received the name of T. schinzii in the breeding-season the male Dunlin utters a most peculiar and far-sounding whistling, somewhat resembling the continued ringing of a high-toned musical bell.

Next to the Dunlin and Knot the commonest British Tringinae are the Sanderling, Calidris arenaria (distinguished from every other bird of the group by wanting a hind toe), the Purple Sandpiper, T. polydactyla, the Ruff, or Curlew Sandpiper, T. stagnatilis, the Little and Temminck’s Stints, T. minula and T. Temmincki, T. minitilla, the American stint, is darker, with olive, and range from the Arctic New World to Brazil. T. fusca, Bonaparte’s sandpiper, is distinguished by tail-bars and a red spot on the wings Arctica Americana, but reaches the greater part of South America in winter, whilst T. bairdii, with brownish median tail-coverts, extends over nearly all North America, breeding towards the north.

1 There are no English words adequate to express these two sections. By some British writers the Tringinae have been indicated as “Stints,” a term cognate with Stunt and wholly inapplicable to many of them, while American writers have restricted them to the latter. We shall call the Totaniiæ, to which name is especially appropriate, “Willets.”

2 It possesses only a single pair of posterior “emarginations” on its sternum, in this respect resembling the Ruff (g.v.). Among the Plovers and Snipes other similarly exceptional cases may be found.

The broad-billed sandpiper, T. platyrhychna, of the Old World, seems to be more Nile-like than any that are usually assigned to this section. The spoon-billed sandpiper, Eurynomorhynchus pygmaeus, breeds in North-eastern Asia and N.W. America, and ranges to China and Burma in winter.

SANDRART, JOACHIM VON (1666-1688), German art historian and painter, was born at Frankfort, and after studying in Germany, Holland and England, went in 1627 to Italy, where he became famous as a portrait-painter. He subsequently revisited Holland and then settled in Nuremberg, where he died. His “Peace-Banquet, 1649” is in the town hall there. He is best known as the author of books on art, some of them in Latin, and especially for his historical work, the Deutsche Akademie (1675-1679), of which there is a modern edition by Sponsel (1860).

SANDRINGHAM, a village in the N.W. parliamentary division of Norfolk, England, 3 m. from the shore of the Wash, and 24 from Wallerton station on the Great Eastern railway. Sandringham House was a country seat of King Edward VII, acquired by him when Prince of Wales by purchase in 1861. Ten years later the mansion then existing was replaced by the present picturesquely building in brick and stone in Elizabethan style. The estate, of some 7000 acres, includes a park of 200 acres, entered by fine wrought iron gates constructed at Norwich. The church of St Mary Magdalene contains many memorials of the royal family.

SANDSTONE, in petrology, a consolidated sand rock built up of sand grains held together by a cementing substance. The size of the particles varies within wide limits and in the same mass may be uniform, but in large masses the coarser sandstones are called grits, and form a transition to conglomerates (g.v.), while the finer grained usually contain an admixture of mud or clay and pass over by all stages into arenaceous shales and clay rocks. Greywackes (g.v.) are sandstones belonging to the older geological systems, such as the Silurian or Cambrian, usually of brown or grey colour and very impure.

The minerals of sandstones are the same as those of sands. Quartz is the commonest; with it often occurs a considerable amount of felspar, and usually also some white mica. Chlorite, argillaceous matter, calcite and iron oxides, are exceedingly common in sandstones, and in some varieties are important constituents; garnet, tourmaline, zircon, epidote, rutile and anatase are often present though rarely in any quantity. According to their composition we may distinguish siliceous sandstones (some of these are so pure that they contain 99% of silica, e.g. Craigleith stone and some gneissites), felspathic sandstones or arkoses (less durable and softer than the siliceous sandstones); micaeous sandstones, with flakes of mica lying along the bedding planes; argillaceous sandstones; ferruginous sandstones, containing a large proportion of iron oxide; carbonate sandstones, coated with red haematite or brownish yellow limonite; impure sandstone, usually in the main consisting of quartz with a large addition of other minerals.

The cementing material is often fine chalcedonic silica, and exists in such small quantity that it is difficult to recognize even with the microscope. In some of the cherty sandstones of the Green-sands the chalcedonic cement is much more abundant; these rocks also contain rounded grains of glauconite, to which they owe their green colour. Crystalline silica (quartz) is deposited interstitially in some cases or at the surfaces of grains, giving rise to a delicately faceted quartz sand grains, and when there are cavities or fissures in the rock may show the development of regular crystalline facets. By this process the sand grains become quartz, and are then described as a quartzite (g.v.). A calcareous cement is almost equally common; it may be derived from particles of shells or other calcareous fossils originally mixed with the sand and subsequently dissolved and re-deposited in the spaces between the other grains. In Fontainebleau sandstone and some British Secondary rocks the calcite is in large crystalline masses, which when broken show plane cleavages motled with small rounded sand grains; in the French rock external faces are present and the crystals may be of considerable size. Many of the British Jurassic and Cretaceous sandstones (e.g. Kenilworth Rag, Spilsby Sandstone) are of this calcareous type. Carboniferous sandstones the iron oxides usually form only a thin pellicle coating each grain, but sometimes, in the green-sands, are more abundant, especially in concretionary masses or segregations. In argillaceous sandstones the fine clayey material, compacted by pressure, holds the sand grains together, and rocks of this kind are
SANDUR—SANDWICH, 4TH EARL OF

soft and break up easily when exposed to the weather or submitted to crushing tests. Among other cementing materials may be mentioned, dolomite, barytes, fluorite and phosphate of lime, but these are not the only locally found.

Many sandstones contain concretions which may be several feet in diameter, and are sometimes set free by weathering or when the rock is crushed. At Brady Lake, Ohio, near Sandusky, there is a large 18,471-ton barytes concretion, which is nearly perfect and is used to make grindstones. Pods of barytes may also occur as nodules at right angles to one another and perpendicularly to the bedding plane, indicating that the sandstones contain foraminifera. The rock is brown reddish in colour and is ground into fine flour.

Sandstones are mostly used for building purposes, but some of them make excellent grindstones, and the black sandstone of the Pennsylvania slatestone district is used in the making of grindstones. The black sandstone is also used in making the bases of grindstones. The black sandstone is also used in making the bases of grindstones.

Sandstones are commonly used in the making of grindstones, and the black sandstone of the Pennsylvania slatestone district is used in the making of grindstones. The black sandstone is also used in making the bases of grindstones. The black sandstone is also used in making the bases of grindstones.
SANDWICH—SANDYS, SIR E.

1748. After August m. England son the Wilkes Cooke; be the 1603 view manufacture situated woollen Chapel ing from Intrigues ancient bridge Chatham Walpole'slections flattering earl. married the (restored), Canterbury, master-general notorious was Sandwich extremely The Richborough grammar was a the sea, was John (1743-1814), probably one. He was a subversive one. He was a philan- thropist, and, for his home was in London, was curiosities of the 17th century. He was a member of the Navy Board, and, in 1745, he was appointed Secretary of State for the Southern Department. In 1746, he became first lord of the admiralty, retaining this post until he was dismissed by the king in June 1751. In August 1753 Sandwich became one of the principal secretaries of state, and while filling this office he took a leading part in the prosecution of John Wilkes. He had been associated with Wilkes in the notorious fraternity of Medmenham, and his attitude now in turning against the former companion of his pleasures made him very unpopular, and, from a line in the Beag's Opera, he was known henceforward as "Jenny Twitche." He was post-master-general in 1766, secretary of state in 1770, and again first lord of the admiralty from 1771 to 1782. For corruption and incapacity Sandwich's administration is unique in the history of the British navy. Offices were bought, stores were stolen and, worst of all, ships, unsavoury and inadequately equipped, were sent to fight the battles of their country. The first lord became very unpopular in this connexion also, and his retirement in March 1782 was hailed with joy. Sandwich married Dorothy, daughter of Charles, 1st viscount Fane, by whom he had a son John (1743-1814), who became the 5th earl. This edition, 1761, was the first of a series of reprints from the original edition of 1738. It was printed on vellum, with a large number of illustrations, and it was intended as a present for King George III. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812. The book was a great success, and it is said that the king himself wrote the dedication. The book contains a number of interesting tales, including the story of Butterfield and the dragon, and the story of King Arthur. The book was well received, and it was reprinted several times. The later editions were issued in 1792, 1801, and 1812.
tendencies were towards opposition, and he was suspected of hostility to the court; but he disarmed the anger of the king by professions of obedience. He was member for Penryn in the first parliament of Charles I. in 1625. He died in October 1629.


**SANDYS, FREDERICK** (1832-1904), English painter and draughtsman, was born at Norwich on the 1st of May 1832, and received his earliest lessons in art from his father, who was himself a painter. His early studies show that he had a natural gift for careful and beautiful drawing, and that he sought after absolute sincerity of presentment. Sandys worked along the same lines as his father, Henry Sandys Brown, Holman Hunt and Rossetti. He had, however, an impression of the painter-poet's features, which he reproduced so cleverly in "A Nightmare," a caricature of "Sir Isambra at the Ford," by Millais. Both the picture and the skit upon it by Sandys attracted much attention in 1857. The caricaturist turned the horse of Sir Isambra into a donkey labelled "J. R., Oxon." (John Ruskin). Upon it were seated Millais himself, in the character of the knight, with Rossetti and Holman-Hunt as the two children, one before and one behind. Rossetti and Sandys became intimate friends, and for about a year and a quarter, ending in the summer of 1857, Sandys lived with Rossetti at Tudor House (now called Queen's House) in Cheyne Walk, Chelsea. By this time Sandys was known as a painter of remarkable gifts. He had begun by drawing for *Once a Week*, the *Cornhill Magazine*, *Good Words* and other periodicals. He drew only in the magazines. No books illustrated by him can be traced. So his exquisite draughtsmanship has to be sought for in the old bound-up periodical volumes which are now hunted by collectors, or in publications such as Dalziel's Bible Gallery and the *Cornhill Gallery* and books of drawings, with verses attached to them, made to lie upon the drawing-room tables of those who had for the most part no idea of their merits. Every drawing Sandys made was a work of art, and many of them were so faithfully engraved that they are worthy of the collector's portfolio. Early in the sixties he began to exhibit the paintings which set the seal upon his fame. The best known of these are "Vivien" (1863), "Morgan le Fay" (1864), "Cassandra" and "Medea." Sandys never became a popular painter. He painted little, and the dominant influence upon his art was the influence exercised by lofty conceptions of tragic power. There was in it a sombre intensity and an almost stern beauty which lifted it far above the ideals of the crowd. The Scandinavian Sagas and the *Morte d'Arthur* gave him subjects after his own heart. "The Valkyrie" and "Morgan le Fay" represent his work at its very best. He made a number of chalk drawings of famous men of letters, including Tennyson, Browning, Matthew Arnold, and James Russell Lowell. Sandys died in Kensington on the 20th of June 1904.

See also Esther Wood, *The Artist* (Winter number, 1890).

**SANDYS, GEORGE** (1579-1644), English traveller, colonist and poet, the seventh and youngest son of Edwin Sandys, archbishop of York, was born on the 2nd of March 1578. He studied at St Mary Hall, Oxford, but took no degree. On his travels, which began in 1610, he first visited France; from North Italy he passed by way of Venice to Constantinople, and thence to Egypt, Mt Sinai, Palestine, Cyprus, Sicily, Naples and Rome. His narrative, dedicated, like all his other works, to Charles (either as prince or king), was published in 1615, and formed a substantial contribution to geography and ethnology. He also took great interest in the earliest English colonization in America. In April 1621 he became colonial treasurer of the Virginia Company and sailed to Virginia with his niece's husband, Sir Francis Wyatt, the new governor. When Virginia became a crown colony, Sandys was created a member of council in August 1624; he was reappointed to this post in 1626 and 1628. In 1631 he vainly applied for the secretariery to the new special commission for the better plantation of Virginia; soon after this he returned to England for good. In 1631 he had already published an English translation of part of Ovid's *Metamorphoses*; this he completed in 1626; on this mainly his poetic reputation rested in the 17th and 18th centuries. He also began a version of Virgil's *Aeneid*, but never produced more than the first book. In 1636 he issued his famous *Paraphrase upon the Psalms and Hymns dispersed throughout the Old and New Testaments*; in 1640 he translated Christ's *Passion* from the Latin of Grotois; and in 1641 he brought out his last work, a *Paraphrase of the Song of Songs*. He died, unburied, in a box of his books at Westerham, in 1644. His name was deservedly praised by Dryden and Pope; Milton was somewhat indebted to Sandys' *Hymn to my Redeemer* (inserted in his travels at the place of his visit to the Holy Sepulchre) in his *Ode on the Passion*.


**SAN FERNANDO**, a seaport of southern Spain, in the province of Cadiz, on the Isla de León, a rocky island among the salt marshes which line the southern shore of Cadiz Bay. Pop. (1900), 29,635. San Fernando is one of the three principal naval ports of Spain; together with Ferrol and Cartagena it is governed by an admiral who has the distinctive title of captain-general. The town is connected with Cadiz (43 m. N.W.) by a railway, and there is an electric tramway from the arsenal (in the suburb of La Caracea) to Cadiz. The principal buildings are government workshops for the navy, barracks, a naval academy, observatory, hospital, building and a handsome town hall. In the neighbourhood salt in largely produced and stone is quarried; the manufactures include spirits, beer, leather, esparto fabrics, soap, hats, sails and ropes; and there is a large iron-foundry.

San Fernando was probably a Carthaginian settlement. On a hill to the S. stood a temple dedicated to the Tyrian Hercules; to the E. is a Roman bridge, rebuilt in the 15th century after partial demolition by the Moors. The arsenal was founded in 1790. During the Peninsular War the cortes met at San Fernando (1810), but the present name of the town dates only from 1813; it was previously known as Isla de León.

**SAN FRANCISCO**, the chief seaport and the metropolis of California and the Pacific Coast, the tenth city in population (1910) of the United States, and the largest and most important city W. of the Missouri river, situated centrally on the coast of the state in 37° 47' 22"-35° N. and 122° 35' 40"-76° W., at the end of a peninsula, with the ocean on one side and the Bay of San Francisco on the other. Pop. (1850), 34,000; (1860), 296,997; (1900), 342,782, of whom 116,085 were foreign-born and 17,764 coloured (mainly Asians); (1920) 416,912.

*General Description.*—The peninsula is from 6 to 8 m. broad within the city limits. The magnificent bay is some 50 m. long in its medial line, and has a shore-line of more than 300 m.; its area is about 450 sq. m., of which 79 are within the three-fathom limit, including San Pablo Bay. This great inland water receives the two principal rivers of California, the Sacramento and the San Joaquin. The islands of the bay are part of the municipal district, as are also the Farallones, a group of rocky islets about 30 m. out in the Pacific. The bay islands are high and picturesque. Several are controlled by the national government and fortified. On Alcatraz Island is the United States Prison, and on Goat Island the United States Naval School of the Pacific. The old Spanish "presidio" is now a United States military reservation, and another smaller one, the Fort Mason Government Reservation, is in the vicinity. The naval station of the Pacific is on Mare Island in San Pablo Bay, opposite Vallejo (q.v.). Between 1890 and 1900 the harbour entrance from the Pacific was strongly fortified; it lies through what is called the Golden Gate, a strait about 5 m. long and 1 m. wide at its narrowest point. The lookout from Mt Tamalpais (1593 ft.), a few miles N., gives a magnificent
view of the city and bay. The site of the city is very hilly and is
dominated by a line of high rocky elevations that run
like a crescent-formed background from N.E. to S.W. across
the peninsula, culminating in the S.W. in the Twin Peaks
(Las Papas, "The Breasts"), 925 ft. high. Telegraph Hill in the
extreme N.E., the site in 1849 of the criminal settlement called
"Sydney Town" and later known as the "Latin Quarter," is
254 ft. high; Nob Hill, where the railway and mining "king's"
of the 'sixties and 'seventies of the 19th century built their
homes, which only in recent years has lost its exclusiveness,
is 300 ft. high; Pacific Heights, which became the site of a
fashionable quarter, is still higher; and in Golden Gate Park
there is Strawberry Hill, 426 ft. High as it remains to-day, the
site was once much more so, and has been greatly changed by
man. Great hills were razed and tumbled into the bay for
the gain of land; others were pierced with cuts, to conform
to street grades and to the checker-board city plan adopted
in the early days. An effort to induce the city to adopt,
in the rebuilding after the earthquake, of 1906, an artistic
plan failed, and reconstruction followed practically the old
plan of streets, although the buildings which had marked
them had been for the most part obliterated. Some minor
suggestions for improvement in arrangement only were observed.
Cable lines were first practically tested in San Francisco,
in 1873; since the earthquake they have given place, with
slight exceptions, to electric car lines. A drive of some 20 m.
may be taken along the ocean front, through the Presidio,
Golden Gate Park, and a series of handsome streets in the
west end. Market Street, the principal business street, is more than
3 m. wide; and for nearly its full extent, excepting on the
immediate water-front, and running westward to Van Ness
Avenue, a distance of 2 m., the buildings lining it on both sides
and covering the adjoining area, a total of some 2000 acres,
or 514 blocks, equivalent to $ of the city plan, were reduced
to ruins in the fire following the earthquake; only a few
large buildings of so-called "fire-proof" construction remained
standing on the street, and these had their interiors completely
gutted." Repairs on the buildings left standing on this street
alone involved an outlay of $5,000,000. Almost the whole of
this area was built up again by 1910. As a result of the
reconstruction of this section, thousands of wooden buildings,
which had been a striking architectural characteristic of
the city, were replaced by structures of steel, brick, and, especially,
reinforced concrete. Before the earthquake wood had been
employed to a large extent, partly because of the accessibility,
cheapness and general excellence of redwood, but also because
of the belief that it was better suited to withstand earthquake
shocks. While the wooden buildings were little damaged by
the shocks, the comparative non-inflammability of redwood
provided no safeguard and the fires of the Great Fire of
1906. In 1900 only one-third of the buildings in the city were of
other material than wood. Of the 28,000 buildings destroyed
in the disaster of 1906, valued approximately at $100,000,000,
only 5000 were such as had involved steel, stone or brick in
their construction. The new buildings, on which an estimated
amount of $150,000,000 had been expended up to April 1909,
and numbering 25,000 at that date, were built under stringent
building regulations making the methods of building employed,
to reduce the danger from fire to a minimum. The use of rein-
fforced concrete as a building material received a special impetus
in the reconstruction. In value the new buildings generally
exceed their predecessors, buildings eight to eighteen storeys in
height being characteristic in the Market Street section. Owing
to the complete reconstruction of its business section San Francisco
is equalled by few cities in the possession of office and
business buildings of the most modern type.

Buildings.—Among the buildings in the burned section restored
since 1906, the Union Trust, Mutual Savings, Merchants Exchange,
Crocker, Flood and the Call (newspaper) buildings are notable.
Among business buildings built since the fire are the Phelan building
(covering more than an acre), the two main structures of the Cali-
ifornia, the Alaska Commercial Company, the First National Bank
and the San Francisco Savings Union, and the Chronicle (newspaper)
building. The architecture of the city until the earthquake and fire
of 1906 was very homogeneous. Comparatively few buildings were
of striking merit. The Old City Hall, which was largely devoted to
the criminal and police courts and the police depart-
ment of the city, was a plain structure of brick and stucco, and
was demolished in 1909 to replace it by a new building. Since the fire of 1906 a new
Custom House has been built, costing $1,903,319. The other Federal
building, the Southern District Court House, not at a loss from the fire,
was entirely rebuilt, and is a very imposing structure. Provision was made
in 1909 to erect a new building at a cost of $5,000,000. The Hall of Justice,
which houses the criminal and police courts and the police depart-
ment of the city, was entirely destroyed, and a new building, huge
and architecturally imposing, is now under construction. There are several magnificent hotels.
The Palace, an enormous structure covering a city block (it had 1200
rooms and cost more than $5,000,000), known as the oldest and most
famous hostelry of the West, was destroyed, but a new hotel has been
completed by the fire, but has been replaced by a new building.
The St. Francis, completely reconstructed since the fire, and the
Fairmont are new. A revival of the old Spanish-Moorish "mission" (monastery) style has exercised an increasing
influence and is altogether the most pleasing development of Californian
design. Many buildings or localities, not in themselves re-
markable, have interesting associations with the history and life of
the city. Such are Pioneer Hall, the home of the Society of California
Pioneers (1850), endowed by James Lick; Portsmouth Square, where
the Alcalde of the Mexican government was placed on the 13th
of July 1846, and where the Committee of Vigilance executed criminals
in 1856; Union Square, a fashionable shopping centre, decorated with
a column raised in honour of the achievements of the United States
Navy and a Spanish galleon; and the Woolworth Building, and the Grace
Branch Mint, associated with memories of the early mining days
(the present mint dates only from 1874).—

Parks.—The parks of the city are extensive and fine. Golden
Gate Park (about 1000 acres) was a waste of barren land, acquired
by the municipality in 1870, but skilful planting and cul-
tivation have entirely transformed its character. It is now
beautiful with its lovely vegetable grounds, the Golden Gate
Branch of the U.S. Mint, and a military reservation (1542 acres) is
practically another city park, favourably situated and of better
land than Golden Gate Park, and better developed. A beautiful drive follows the shore, giving
views of the Lighthouse and Golden Gate Bridge over to.
The Park is the ocean beach, the Cliff House, repeatedly burned down
and rebuilt, the last time in 1907—a public resort on a rocky cliff
overlooking the sea—the seal rooks, frented the number all year round by
hundreds of sea- lions, Sutro Heights, the beautiful private grounds
of the late Adolph Sutro, long ago opened to the public, and the Sutro
Baths, one of the largest and finest enclosed baths and winter gardens
of the world. Nearly in the centre of the city is the old Francisco
mission (San Francisco de Asis, popularly known as Mission Dolores),
a landmark of San Francisco's history (1776).

Libraries, Museums, &c.—The Public Library has more than
1000,000 volumes, but suffered the fire of 1906, but then lost all but about 25,000. That to the city by
Adolph Sutro had more than 200,000 volumes, but suffered from
the fire and earthquake of 1906 and now has about 125,000. It included
remodeled buildings, including the library, since the destruction;
the architecture of the library is pleasing, and its collections include
some of the rarest books, and also American Indian, Egyptian,
and the ancient literature; and among its special collections are Lord Macaulay's
library of British Parliamentary papers, a great collection of English
Commonwealth literature, and many other rare and valuable
collections. The Mechanics-Mercantile Library (35,000 volumes)
was formed before the fire of 1906 (when the entire collection of 200,000
volumes was destroyed) by the merging of the Mechanics Institute
Lilth (116,000 volumes) and the Mercantile Library (founded
1852; 80,000 volumes). The Law Library, the libraries of the San
Francisco Medical Society, and the French Library of La Ligue
Nationale Francaise (1874), were destroyed in the fire of 1906 and re-
constructed. The California Historical Society (founded 1853, endowed by James Lick with about $600,000)
was destroyed in 1906. In Golden Gate Park is a museum owned by
the city with a exhibit of American and Indian ethnological,
archeological, historical, and other objects; and the fine arts, &c. Very fine mineral exhibits by
the State Mining Bureau, and California Agricultural and Pacific Coast
commercial displays by the California Development Board, are housed in
the California State Building. The Financial District of the city is
very fine. The California School of Mechanic Arts was endowed
by James Lick with $500,000. The San Francisco Institute of Art,
conducted by the San Francisco Art Association (organized 1872),
knows the one of the largest in the United States, and has
collections of art, which is housed in a handsome building
which was deeded (1833) to the Regents of the State University in trust for
art purposes by a later owner. The building was totally destroyed
and the institute was re-established under the auspices of the
State University. The school contains a fine and comprehensive col-
lection of arts and crafts, presented to the city by the government of France. It is
said to be the largest university art school of the country. The law,
medicine, and engineering schools of the University of California and
the State University are also in the city. Among other educational instit-
tutions are the Cogswell Polytechnic College, the Wilmerding School
of Industrial Arts, and the California School of Design. In sculpture and painting not much has yet been done to adorn the city.

The self-sufficingness of San Francisco, long forced upon it by the great distance from the older culture of the Eastern States, has thus far been a definite factor in the character of the city. There is only one city on the coast where few names belong by exclusive right to San Francisco's literary annals,—the most noteworthy being those of Bret Harte, Joaquin Miller, and Jack London. The very fact that San Francisco is not known of the more recent writers in the country have done enough of their work here to connect them enduringly with the city. The Bohemian Club is a famous center of literary and artistic life. Among the several newspapers in San Francisco, the Evening Bulletin (F. B. A., Democratic, 1865), the Chronicle (Republican, 1865), the Call (Republican, 1856) and the San Francisco Bulletin (Independent-Republican, 1856), are the largest.

The city suburbs are partly across the bay and partly to the north and south on the peninsula. Oakland, Berkeley, the home of the State University (damaged by the earthquake) and Alameda are connected across the bay by the Bay Bridge. There are many extensive parks in the surrounding districts. The development of the petroleum fields of the State has greatly stimulated manufactures, as coal has always been dear, whereas the demand for coal has always been very cheap. The Union Iron Works on the peninsula is one of the greatest shipbuilding plants of the country.

Government.—Charter's were granted to the city in 1850, 1851 and 1894. By the last city and county, which until then had maintained separate governments, were consolidated. Under this charter San Francisco thrives despite much corruption, and it was because of the charter that the city in 1895 elected a reform mayor. This was the most bloodless and peaceful revolution in the history of the city. There was no riot, no violence. The Vigilance Committee of 1886. It was followed by the adoption (1868) of a new charter, which came into effect on the 1st of January 1900. Elections are biennial. The inclusion in the charter of the time, place and manner of holding elections makes it impossible for the voters to compel the submission of measures to public approval.

The city's control is centralized, great power being given to the mayor and city council in the execution of the city's business. The election, park, civil service, health and public works commissions of the city; his veto may not be overcome by less than a five-sixths vote of the board of supervisors, and he may veto separate items of the budget. The chief tax on property is the property tax. The city's total revenue for 1909-1910 was $492,867,037.

1For the fiscal year 1906-1907, the assessed value was $375,924,447, indicating the drop in values immediately after the earthquake and fire, and, by comparison with the 1910 figures, the extent of recovery.
The Japanese numbered 1781 in 1900 and have very rapidly increased. The question of their admission to the public schools, rivalry in labour and trade, and other racial antagonisms attendant on their rapid increase in a number of millions in the last century have seriously involved the relations of the two countries. Two Chinese papers are published. More than half of the daily papers are foreign language.

**History.**—A Spanish presidio (military post), and the Franciscan mission of San Francisco de Asís, on the Laguna de los Dolores, were founded near the northern end of the peninsula in 1776. San Francisco was not one of the important settlements. Even the very important fact whether it was ever actually a pueblo—i.e. a legally recognized and organized town—was long a controverted question. Up to 1835 there were two settlements on the peninsula—one about the presidio, the other about the mission; the former lost importance after the practical abandonment of the presidio in 1836, the latter after the secularization of the mission, beginning in 1834. The year 1835-1836 marked the beginning of a third settlement destined to become the present San Francisco. This was Yerba Buena ("good herb," i.e. wild mint), founded on a little cove of the same name S.E. of Telegraph Hill, extending inland to the present line of Montgomery Street. (The cove was largely filled in as early as 1851.)

The site of the city is very different from that of most American towns, and seemed a most unpromising location. The hills were barren and precipitous, and the interlaces were largely shifting sand-dunes; but on the E. the land sloped gently to the bay. In 1835-1839 "San Francisco" had an ayuntamiento (town-council), and the different municipal officers seem to have been located in the same or different times at the mission, the presidio, or at Yerba Buena; the name San Francisco being applied indifferently to all three settlements. The ayuntamiento, apparently recognizing the future of Yerba Buena, granted lots there, and as the older settlements decayed Yerba Buena thrived. In 1840 there were only a handful of inhabitants; in 1846, when (on the 9th of July) the flag of the United States was raised over the town, its prosperity already marked it as the future commercial "metropolis" of the coast. In this year a Mormon colony joined the settlement, making it for a time a Mormon town. The population in the year before the gold discovery probably doubled, and amounted to perhaps 900 in May 1848.

The first news of the gold discoveries of January 1848 was received with incredulity at San Francisco (to give Yerba Buena the name it formally assumed in 1847), and there was little excitement until April. In May there was an exodus. By the middle of June the hitherto thriving town had been abandoned by a large majority of its inhabitants. Reality at first fell a half in value, labour rose many times in price. Newspapers ceased publication, the town council suspended sessions, churches and business buildings were alike empty. When the truth became known regarding the mines a wonderful "boom" began. The population is said to have been 2000 in February (in which month the first steamer arrived with immigrants from the East over the Isthmus), 6000 in August, and 20,000 by the end of the year. A city of tents and shanties rose on the sand-dunes. Reality values rose ten-fold in 1849. Early in 1850 more than 500 vessels were lying in the bay, most of them deserted by their crews. Many rotted; others were beached, and were converted into stores and lodging houses. Customs revenues rose from $20,000 in the first half of 1848 to $175,000 in the second half and to $4,420,000 in the year ending in June 1852. There was at first no idea of permanent settlement, and naturally no time whatever to improve the city. Great quantities of expensive merchandise glutted the market and were sunk in the liquid mud of the streets as fillage for the construction of sidewalks. Between December 1849 and June 1851 seven "great" fires, destroying in the aggregate property valued at twenty or twenty-five millions of dollars, swept the business district. Half of this was in the fire of the 4th of May 1851, which almost completely destroyed the city. These misfortunes led to a more general employment of brick and stone in the business quarter. It is characteristic of the vagaries of Californian commerce in the early years that dressed granite for some buildings was imported from China.

In these days the society of San Francisco was extraordinary. It was the most extreme of all democracies. Probably never before nor since in America there was a like test of self-development. Unusual courage and self-reliance were necessary for success. Amusements were coarse and unrestrained. Gambling was the fiercest passion. Property was at first, in San Francisco as in the main, exceptionally secure; then insecure. Crime became alarmingly common, and the city government was too corrupt and inefficient to repress it. It was estimated (Bancroft) that up to 1854 there were 4200 homicides and 1200 suicides; in 1855 the records show 83 deaths by violence. There were almost no legal convictions and executions. Juries would not punish homicide with severity. In 1851 the first Committee of Vigilance was formed and served from June to September, when it disbanded; it was the nucleus of the second and greater committee, active from May to August of 1856. By these committees, all sorts of ^2^6^2^ and criminals were summarily tried, convicted and punished; suspicious characters were deported or intimidated. These vigilantes were the good citizens (the committee of 1851 included some 800 and that of 1856 some 6000-8000 citizens of all classes), who organized outside of law, "not secretly, but in debate, in daylight, with sobriety and decorum," to defend and establish, through defying its rule. In this they were comparatively successful. Crime was never again so brazen and daring, and 1856 marks also the beginning of political reform. San Francisco's action was widely imitated over the state. In 1857 during the labour troubles a Committee of Safety was again formed, but had a very brief existence.

The United States military authorities in August 1847 authorized a municipal government. Under a municipal ordinance another was chosen in December 1848 to succeed it, but the parent government pronounced the election illegal; nevertheless the new organization continued to act, though another was chosen and recognized as legal. There were for a time at the end of 1848 three (and for a longer time two) civil governments and one military. Neither the military nor municipal organization was competent to give adequate law and peace to the city. The charters of 1850, 1853 and 1856 have already been referred to. In 1849 the citizens elected a "Legislative Assembly," which they empowered to make laws not in "conflict with the Constitution of the United States nor the common laws thereof." This was proclaimed revolutionary by the military authorities, but such illegalities continued to spread over the state, until in June 1849 the Convention was called that framed the State Constitution, California being admitted in September 1850 to the Union. Provisional civil officers were elected throughout the state, and the Legislative Assembly came to an end. The charters of 1850, 1853 and 1856 have already been referred to. The first public school was established in 1849. In 1855-1856 a disastrous commercial panic crippled the city; and in 1858, when at the height of the Fraser river gold-mine excitement it seemed as though Victoria, B.C., was to supplant San Francisco as the metropolis of the Pacific, reality values in the latter city dropped for a time fully a half in value. In 1859 foreign coin was first refused by the banks. Up to this time first gold dust, then private coins, and later money of various countries, had circulated in California. In 1860 mail communication was established with the East by a pony express, the charge being $5.00 for a half-ounce.

Some reference must be made to the Mexican land-grant litigation. The high value of land in and about the city caused the fabrication of two of the most famous claims examined and rejected as fraudulent by the United States courts (the Limantour and Santillan claims). They involved 7 sq. leagues of land and many millions of dollars. Another land question already referred to (that whether San Francisco was entitled as a pueblo to 4 sq. leagues of public land) was settled affirmatively in 1867, but the final land patents were not issued until 1884 by the national government.

When the Civil War came in 1861 the attitude of San Francisco
was at first uncertain, for the pro-slavery Democrats had controlled the state and city, although parties were remaking in the late 'fifties. About 75,000 arms are supposed to have been surreptitiously sent to California by the secessionist Secretary of War, J. B. Floyd; and the pro-slavery party seems to have planned to try for union with the Confederacy, or to organize a Pacific Coast republic. Thomas Starr King (1824-1864), a Unitarian minister, was the burned-at-the-tongue figure of the city. Her money contributions to the Sanitary Funds were, it is said, greater than those of any city in the country; and in every other way she abundantly evidenced her love for the Union. The curious Chapman (or Asbury Harpending) case of 1863 was a Confederate scheme involving piracy on Federal vessels in the Pacific and an effort to gain the succession of the state. It had no practical importance.

From 1859-1877 was the "silver era" of San Francisco (see CALIFORNIA). It paralleled the excitement and gambling of 1849, and despite losses was a great stimulus to the city's growth. In December 1869 the Central Pacific line was completed to Oakland, and in the next four years there was a crash in real estate values inflated during the railway speculation. In 1876 railway connexion was made with Los Angeles. The seventies were marked by the growth of the anti-Chinese movement, and labour troubles, culminating in 1877-1879 with the "sandlots" agitation and the formation of the Constitution of 1879 (see CALIFORNIA), in all of which San Francisco was the centre. The feeling against the Chinese found expression sometimes in unjust and mean legislation, such as the famous "queue ordinance" (to compel the cutting of the queue that of her hair), now iniquitously taxing laundries. The Chinese were protected against such legislation by the Federal courts. The startling and romantic changes of earlier years long ago gave way to normal municipal problems and ordinary municipal routine. In the winter of 1894 the California Midwinter International Exposition was held in Golden Gate Park. Since 1898 the governmental changes previously referred to, the location of a new trans-continental railway terminus on the bay, and the new outlook to the Orient, created by the control of the Philippines by the United States, and increased trade in the Pacific and with the Orient, have stimulated the growth and ambitions of the city.

Special mention must be made of the two citizens to whom San Francisco, as it is to-day, owes so much, viz. James Lick (1796-1876), a cold man with few friends, who gave a great fortune to noble ends; and Adolph Sutro (1830-1898), famous for executing the Sutro Tunnel of the Comstock mines of Virginia City, Nevada, and the donor of various gifts to the city.

The partial destruction of San Francisco by earthquake and fire in 1906 was one of the greatest catastrophes of history. Earthquakes had been common but of little importance in California until 1906. In more than a century there had been three shocks called "destructive" (1839, 1865, 1868) and four "exceptionally severe" at San Francisco, besides very many light shocks or tremors. The worst was that of 1868; it caused five deaths, and cracked a dozen old buildings. Heavy earthquake shocks on the morning of the 18th of April 1906, followed by a fire which lasted three days, and a few slighter shocks, practically destroyed the business section of the city and some adjoining districts. The heaviest shock began at 12 minutes 6 seconds past 5 o'clock a.m., Pacific standard time, and lasted 1 minute 5 seconds. Minor shocks occurred at intervals for several days. The earthquake did serious damage throughout the coast region of California from Humboldt county to the southern end of Fresno county, a belt about 50 m. wide. The damage by earthquake to buildings in San Francisco was, however, small in comparison to that wrought by the fire which began soon after the principal shock on the morning of the 18th. About half the population of the city, it was estimated, spent the nights while the fire was in progress out of doors, with practically no shelter. Some 200,000 camped in Golden Gate Park and 150,000 in the presidio military reservation. The difficulty of checking the fire was increased through the breaking of the water-mains by the earthquake, draining the principal reservoirs. Traffic by street cars was made impossible by the twisting of the tracks.

To stop the fire rows of buildings were dynamited. In this way many fine mansions on Van Ness Avenue were destroyed, and the westward advance of the conflagration was stopped at Franklin Street, one block west. General Funston with a few men and the presidio, with the regular and volunteer fire companies and the Federal troops under him, assumed the control, and the fire was put under military law, the soldiers assisting in the work of salvage and relief. On the 21st the fire was reported under control. A committee of safety was organized by the citizens and by the city authorities acting in conjunction with General Funston, and measures were adopted for the prevention of famine and disease, permanent camps being established for those who had been rendered homeless and not provided for by removal to other cities. Assistance with money and supplies was immediately given by the nation and by foreign countries, a committee of safety was established in charge of its administration. By the 23rd of April about $10,000,000 had been subscribed by the people of the United States; Congress voted $2,500,000 from the national treasury. The committee organized as the Red Cross Relief Corporation completed its work in 1908, having spent for the relief of the hungry, for the sick and injured, and for housing and rehabilitation of individuals and families, in round numbers $9,225,000. As the result of the earthquake and fire about 500 persons lost their lives; of those two were shot as looters. Buildings valued at $2,500,000,000 were razed in a few hours. The total loss in damage property has been variously estimated at from $350,000,000 to $500,000,000. To cover the loss there was about $235,000,000 of insurance in some 230 companies. Reconstruction in the burned section began at once, with the result that it was practically rebuilt in the three years following the earthquake. Wages for men employed in building, owing in part to scarcity of labour but chiefly to action of the labour unions, rose enormously, masons being paid $12 a day for a day of 8 hours. High prices of materials and of haulage and freight rates added difficulty to the task of rebuilding, which was accomplished with remarkable energy and speed. By May 1907 there was a street-car strike of large dimensions. Van Ness Avenue, which during the process of rebuilding had assumed the character of a business thoroughfare, did not maintain this status, the business centre returning to the reconstructed Market Street. A new retail business district developed in what is known as the mission district and in Fillmore Street. A new residence district known as Parkside was developed south of Golden Gate Park.

For description and general features, see Deetz's Guide to San Francisco, and the Picnure Resorts of California (San Francisco, 1897); and various guides and other publications of the California Development Board (formed by consolidation of the State Board of Trade and California Promotion Committee) in San Francisco. For economic interests and history see the bibliography of the article on CALIFORNIA. See also Frank Soule and others, Annals of San Francisco (San Francisco, 1858); John S. Hittell, A History of the City of San Francisco (San Francisco, 1878); B. E. Lloyd, Lights and Shades of San Francisco (San Francisco, 1876); C. W. Stoddard, In the Footsteps of the Padres (San Francisco, 1900); Bernard Moses, The Establishment of Municipal Government in San Francisco (Johns Hopkins University Studies, 1889). Many legal questions of interesting constitutional, treaty and common law import have been decided in the Federal (and state) courts in cases involving Chinese; see the collections of reports. For good accounts of the great earthquake and fire, see D. S. Jordan (ed.), The California Earthquake of 1906 (1906); F. W. Aitken and E. Hilton, History of the Earthquake and Fire in San Francisco (1907); R. K. Gilbert and others, San Francisco Earthquake and Fire (Washington, 1907).

SANGALLO, the surname of a Florentine family, several members of which became distinguished in the fine arts.

I. GIULIANO DI SANGALLO (1445-1516) was an architect, sculptor, tarsiator and military engineer. His father, Francesco di Paolo Giamberti, was also an able architect, much employed by Cosimo de' Medici. During the early part of his life Giuliano worked chiefly for Lorenzo the Magnificent, for whom he built
a fine palace at Poggio-a-Cajano, begun in 1485, between Florence and Pistoia, and strengthened the fortifications of Florence, Castellana and other places. Lorenzo also employed him to build a monastery of Austin Friars outside the Florentine gate of San Gallo, a nobly designed structure, which was destroyed during the siege of Florence in 1530, but from his designs they received the name of San Gallo, which was afterwards used by so many Italian architects. While still in the pay of Lorenzo, Giuliano visited Naples, and worked there for the king, who sent him back to Florence with many handsome presents of money, plate and antique sculpture, the last of which Giuliano presented to his patron Lorenzo. After Lorenzo’s death in 1492, Giuliano visited Loreto, and built the dome of the church of the Madonna, in spite of serious difficulties arising from its defective piers, which were already built. In order to gain strength by means of a strong cement, Giuliano built his dome with pozzolana brought from Rome. Soon after this, at the invitation of Pope Alexander VI., Giuliano went to Rome, and designed the fine panelled ceiling of S. Maria Maggiore. He was also largely employed by Julius II., both for fortification walls round the castle of S. Angelo, and also to build a palace adjoining the church of S. Pietro in Vincoli, of which Julius had been titular cardinal. Giuliano was much disappointed that Bramante was preferred to himself as architect for the new basilica of St Peter, and this led to his returning to Florence, where he did much service as a military engineer and builder of fortresses during the war between Florence and Pisa. Soon after this Giuliano was recalled to Rome by Julius II., who had much need for his military talents both in Rome itself and also during his attack upon Bologna. For about eighteen months in 1514–1515 Giuliano acted as joint-architect to St Peter’s together with Raphael, but owing to age and ill-health he resigned this office about two years before his death.

II. ANTONIO DI SANGALLO (1452–1534) was the younger brother of Giuliano, and took from him the name of Sangallo. To a great extent he worked in partnership with his brother, but he also executed a number of independent works. As a military engineer he is said to have designed and had built various small forts as Giuliano, and carried out important works of walling and building fortresses at Arezzo, Montefiascone, Florence and Rome. His finest existing work as an architect is the church of S. Biagio at Montepulciano, in plan a Greek cross with central dome and two towers, much resembling, on a small scale, Bramante’s design for St Peter’s. He also built a palace in the same city, various churches and palaces at Monte Sansavino, and at Florence a range of monastic buildings for the Servite monks. Antonio retired early from the practice of his profession, and spent his latter years in farming.

III. FRANCESCO DI SANGALLO (1493–1570), the son of Giuliano di Sangallo, was noted mainly as an engineer, and worked chiefly as a sculptor. His works have for the most part but little merit—the finest being his noble effigy of Bishop Leonardo Bonafede, which lies on the pavement of the church of the Certosa, near Florence. It is simply treated, with many traces of the better taste of the 15th century. His other chief existing work is the group of the “Virgin and Child and St Anne,” executed in 1526 for the altar of Or San Michele.

IV. BASTIANO DI SANGALLO (1481–1557), sculptor and painter, was a nephew of Giuliano and Antonio. He is usually known still as Bastiano, a nickname he received from his air of sententious gravity. He was at first a pupil of Perugino, but afterwards became a follower of Michelangelo.

V. ANTONIO DI SANGALLO, the younger (1485–1546), another nephew of Giuliano, went while very young to Rome, and became a pupil of Bramante, of whose style he was afterwards a close follower. He lived and worked in Rome during the greater part of his life, and was much employed by several of the popes. His most perfect existing work is the brick and travertine church of S. Maria di Loreto, close by Trajan’s column, a building remarkable for the great beauty of its proportions, and its noble effect produced with much simplicity. The lower order is square in plan, the next octagonal, and the whole is surmounted by a fine dome and lofty lantern. The lantern is, however, a later addition. The interior is very impressive, considering its very moderate size. Antonio also carried out the lofty and well-designed church of S. Giovanni del Fontelmini, which had been begun by Jacopo Sansovino. The east end of this church rises in a very stately way out of the bed of the Tiber, near the bridge of Sant’Angelo; the whole has been ruined by the addition of a later façade, but the interior is a noble example of a somewhat dull style. Great skill was shown in successfully building this large church, partly on the solid ground of the bank and partly on the shifting sand of the river bed. Antonio also built the Cappella Paolina and other parts of the Vatican, together with additions to the walls and forts of the Leonine City. His most ornate work is the lower part of the cortile of the Farnese palace, afterwards completed by Michelangelo, a very rich and well-proportioned specimen of the then favourite design, a series of arches between engaged columns supporting an entablature, an arrangement taken from the outside of the Colosseum. A palace in the Via Giulia built for himself still exists under the name of the Palazzo Sacchetti, much injured by alterations. Antonio also constructed the very deep and ingenious rock-cut well at Orvieto, formed with a double spiral staircase, like the well of Saladin in the citadel of Cairo.

See Raviolo, Notizia sui lavori... del noto Da San Gallo (Rome, 1860); G. Clause, Les Sangallo (Paris, 1900–1901). (J. H. M.)

SANGER, JOHN (1816–1889), English circus proprietor, was born at Chew Magna, Somerset, in 1816, the son of an old sailor of the name of Sanger; he was turned to showmanship in 1845, he started with his brother George a conjuring exhibition at Birmingham. The venture was successful, and the brothers, who had been interested spectators of the equestrian performances at Astley’s Amphitheatre, London, then started touring the country with a circus entertainment consisting of a horse and pony and three or four human performers. This enterprise was a success from the beginning, and in due course John and George Sanger became lessees of the Agricultural Hall, London, and there produced a large number of elaborate spectacles. In 1871 the Sangers leased Astley’s where they gave an equestrian pantomime every Christmas. The Sanger company, however, was not a success, and, with a large circus tent, the partnership was dissolved, each brother producing his own show. John Sanger died while touring, at Ipswich on the 22nd of August 1889, the business being continued by his son.

SANGERHAUSEN, a town of Germany, in the Prussian province of Saxony, situated on the Gonna, near the south base of the Harz mountains, 30 m. W. of Halle, on the main line of railway Berlin-Nordhausen-Cassel. Pop. (1905) 12,439. Among many medieval buildings, the church of St Ulrich, one of the finest specimens of Romanesque architecture in Germany, and the church of St James, with a magnificent altar screen and frescoes which are both religious and artistic, are particularly admirable. There is a gymnasium, two hospitals dating from the 14th century, and an old town-hall. The industries include the manufacture of sugar, furniture, machinery, boots and buttons. Brewing and brickmaking are also extensively carried on, and there is a considerable agricultural trade.

Sangerhausen is one of the oldest towns in Thuringia, being mentioned in a document of 991 as appertaining to the estates of the emperor. By marriage it passed to the landgrave of Thuringia, and after 1056 it formed for a while an independent country. Having been again part of Thuringia, it fell in 1849 to Meissen, and in 1850 to Brandenburg. In 1873 it passed to Saxony and formed a portion of that territory until 1875, when it was united with Prussia.

See K. Meyer, Chronik des landrathlichen Kreises Sangerhausen (Nordhausen, 1892); and F. Schmidt, Geschichte der Stadt Sangerhausen (Sangerhausen, 1906).

SAN GERMAN, a city of the department of Mayaguez, Porto Rico, in the south-western part of the island, about 10 m. S.S.E. of the city of Mayaguez. Pop. of the city (1890) 3954; of the municipal district 20,246, of whom 10,715 were of mixed races. The city is served by the American railway and Porto Rico. Interesting tombs on the Sibilo river, in a fertile agricultural region, which produces sugar, coffee, fruit, cacao and tobacco.
In one of the public squares is a Dominican church built in 1338.

San German was founded in 1517, was plundered by the French in 1528, was destroyed by corsairs in 1554, and was unsuccessfully attacked by the English in 1748. Until 1782 it was the seat of government of the western district of the island. It was made a city in 1877.

SAN GIMIGNANO, a town of Tuscany, Italy, in the province of Siena, 24 m. N.W. of Siena, at an elevation of 1089 ft. Pop. (1901) 4060 (town); 10,866 (commune). Being surrounded by its ancient walls, and retaining thirteen out of its original fifty towers, it is, with its predominantly Gothic architecture, a thoroughly medieval town in appearance. In the council chamber of the town-hall (1288-1323) is a fresco by Lippo Memmi of the Madonna enthroned of 1317, copied closely from the similar fresco (the "Majestas") by his master Simone di Martino in the Palazzo Pubblico at Siena; there is also a curious frescoed frieze of 1291, with knights in armour. The museum in the same building contains pictures and other objects of art. The tower is the highest in the town (174 ft.), while the Torre dell'Orologio (167 ft.) close by marks the height beyond which private individuals might not build. In the same piazza is the Collegiata (the former cathedral) of the 12th century, enlarged after 1466 by Giuliano da Maiano, whose brother Benedetto erected the church of S. Fina from his plans in 1468, and carved the fine marble altar, the original painting and gilding of which are still preserved. The marble choir, a small reproduction of the splendid one in S. Domenico at Siena, is also by Benedetto. The beautiful frescoes with scenes from the life of the saint (a looped and well-traced set of fifteen) are the earliest work of Domenico Ghirlandaio, completed before 1475. There are also some frescoes of his cousin Bastiano Mainardi (d. 1513). The cathedral contains other 14th-century and early Renaissance paintings, the former including some Passion scenes, the only certain work of Barna da Siena, and some fine choir stalls. S. Agostino (1280-1290) contains a famous series of seventeen frescoes by Benozzo Gozzoli, with scenes from the life of St Augustine (1463-1467). They have been to some extent restored. The altar of S. Bartoldus, by Benedetto da Maiano, is not unlike that in the Collegiata (1404). The town was independent in the 13th century, but in 1353 owing to the dissensions of the Salvucci (Ghibellines) and Ardighelli (Guelphs), it fell into the hands of Florence.

See R. Pantini, San Gimignano e Certaldo (Bergamo, 1905).

SANGLI, a native state of India, in Bombay, ranking as one of the Southern Mahratta Jagirs. The territory is widely scattered among other native states and British districts. Area, 1112 sq. m. Pop. (1901) 226,128; estimated revenue, £10,000. The river Kistna waters part of the country, which is exceedingly fertile. Millet, rice, wheat and cotton are the chief crops, and cotton cloth is manufactured. The chief, whose title is Tatya, Saheb Patwardhan, is a Brahman by caste. The town of Sangli, on the river Kistna, has a station on the Southern Mahratta railway, 11 m. from Miraj Junction. Pop. (1901) 16,820.

SANJO, SANETOMI, Prince (1837-1891), Japanese statesman, was one of the old court nobles (kuge) of Japan, and figured prominently among the little band of reformers who accomplished the overthrow of feudalism and the restoration of the administration to the Mikado. He served as the first prime minister (daiei daijin) in the newly organized Meiji government.

SAN JOSE, or San José de Costa Rica, the capital of the republic of Costa Rica, in the central plateau of the country, 3868 ft. above sea-level, and on the transcontinental railway from the Pacific port of Puntarenas to the Atlantic port of Limón. Pop. (1908) about 26,500. San José is an episcopal see, the most populous city in Costa Rica, and the centre of a rich agricultural region; its climate is temperate, its water-supply pure and abundant. The city was founded in 1738, and became the capital in 1823 (see COSTA RICA: History). It is thoroughly modern in appearance, with macadamized streets lighted by electricity; its houses are of brick or cement, and the trade is largely a branch of the export trade. The suburbs consist chiefly of cane huts, tenanted by Indians and half-castes. The larger of two public gardens, the Morazán Park, contains a representative collection of the Costa Rican flora. The principal buildings are the cathedral, founded in the 18th century but restored after 1870, the hospital, government offices, institutes of law and medicine, and of physical geography, training school for teachers, national bank, museum, library and barracks. The staple trade of San José is in coffee.

SANTO DOMINGO, an Andine province of Argentina, bounded N. by the La Rioja, S. by the San Luis, W. by the Cordilleras of Yungas, and E. by Chile, from which it is separated by the Andean Cordilleras. Area, 33,715 sq. m.; pop. (1904, estimate) 90,555. It is roughly mountainous, and belongs to the closed drainage basin of western Argentina, centre of the province of Mendoza. It is traversed by several rivers, fed by the melting snows of the Andes and discharging into the swamps and lagoons in the S.E. part of the province, the largest of which are the Huamacache lagoons. The largest of these rivers are the Vermejo, Zanjón or Jachal and San Juan. They are all used for irrigation. The climate is extremely hot and dry in summer, but the winter temperature is mild and pleasant. Agriculture is the principal occupation of its inhabitants, though the soil is generally sterile.
and the rainfall uncertain and very light. Cereals are grown in some localities, and there are large vineyards where irrigation is possible, from which excellent wine is made. The province contains gold, silver, copper, iron, lead, coal and salt, but mining has never been developed to any extent. Pastoral interests are largely in feeding cattle for the Chilean markets, for which large areas of alfalfa is grown in the irrigated valleys of the Andes. The Argentine Great Western railway connects Mendoza with the capital of the province, and with the principal cities of the continent.

The capital of the province is SAN JUAN, once called SAN JUAN DE LA FRONTERA (pop. 1904, estimate, 11,500), in a great bend of the San Juan river, 95 m. N. of Mendoza and 730 m. from Buenos Aires by rail. The great bend of the river affords easy irrigation, and the surrounding country is covered by a network of irrigating canals, even the paved streets of the town having streams of cool water running through them. The public buildings include a cathedral, three churches, and several schools, including the 'Escuela Sarmiento,' a fine edifice with a Greek façade, named after President Domingo Faustino Sarmiento (1811-1880), who was a native of this city. There is also a botanical garden.

San Juan was founded in 1561 by Juan Yturri, a companion of Captain Castillo, the founder of Mendoza. Both came from Chile, to which these outlying colonies were at first subject. From 1776 to 1820 it was governed from Mendoza, and then a popular uprising made the province independent and the town its capital. It has suffered severely from political disorders, and in 1894 was nearly destroyed by an earthquake. The original settlement, now called Pueblo Viejo, 4 m. N., was abandoned on account of frequent inundations. The present town is situated about 2165 ft. above sea-level and is defended from inundations by an embankment above the town, called the Murallon. San Juan exports wine, and has a profitable trade with Chile over the Patos and Uspallata passes.

SAN JUAN (SAN JUAN BAPTISTA DE PUERTO RICO), the capital and largest city of Porto Rico, is on a small and narrow island which lies near the north coast, about 35 m. from the east end of Porto Rico, and is united to the mainland by the bridge of San Antonio, Pop. (1890) 32,648, including 5296 negroes and 11,520 of mixed races; (1901) 48,716. San Juan is served by the American railroad of Porto Rico and by steamboats from New York and other ports. The harbour lies between the city and the mainland. It is capacious and landlocked, except on the north. A portion of it is 30 ft. in depth, and in 1907 Congress passed an Act for enlarging this area by dredging and especially for widening the entrance for large vessels; the work was virtually completed in 1909. San Juan is noteworthy for its fortifications and public buildings, and is the only fortified city of Porto Rico.

On a bluff about 100 ft. high at the west end of the island and commanding the entrance to the harbour rise the battlements of Morro Castle, which was completed about 1584 and in which there is a lighthouse. The Castle of San Cristóbal (begun early in the 17th century, completed in 1771) extends across the island in the rear portion of the city. A wall on each side of the island connects the two castles. The Cañuelo is an abandoned fort on an islet opposite the Morro and less than 1000 yds. from it, the main channel lying between them. Forts San Juan and San Carlos, opposite the tomb of Ponce de León, in theJávea of San José is a bronze statue (said to have been cast from cannon taken from the English in 1779) to his memory. In the Plaza Colón is a marble and granite monument to Columbus. In the church of San Francisco are two good paintings by José Campeche (1752-1800), a local artist. Other churches are the severely beautiful Santo Domingo, the Santa Ana, the Cathedral, with a rich shrine of Nuestra Señora de la Providencia, and the church of San José, which was formerly the Dominican convent. Among the prominent buildings and institutions are the custom-house, the executive mansion (formerly the palace of the Governor-General), the University, the theatre, the provincial capitol, the Central Bank, the Señor Church, the high court, the municipal hospital, the Protestant Hospital, the Presbyterian Hospital, two municipal hospitals (one surgical, one medical), a municipal bath-house and a small public library (the "Cervantes"). At Rio Piedras, not far from San Juan, is the Normal School and Agricultural School of Porto Rico. Other institutions are the Normal School of Mariana, with wharves and piers, Puerto de Yaque, on the mainland, Santurce, with a country club, the Union Club, a beautiful market-place, two charity schools and some attractive villas. In the vicinity are the United States and Army and Navy Hospitals, and the public buildings consist of the excellent New Customs House, the warehouses, the dock, the Fresh Produce commission house, and the New railway station.

SAN JUAN (or HARO) ISLANDS, an archipelago (San Juan, Orcas, Shaw, Lopez, Blakely, Cypress, &c.) lying between Vancouver Island and the mainland of North America. These islands were for many years the subject of dispute between the British and the United States governments, and were finally assigned to the latter country by the arbitration of the emperor of Germany (on the 21st of October 1872). Geographically the cluster certainly belongs to the mainland, from which it is separated by Rosario Strait, generally much under 50 fathoms. In 1873 the islands, formerly considered part of Whatcom county, Washington, were made the separate county of San Juan. Of the total area of 200 sq. m., about 60 are in San Juan, 60 in Orcas and 30 in Lopez.


SANKARA ACHARYA (c. 789-820), Hindu theologian, was born about the year 80, probably in Kanchi, the capital of the Kaladi Saar. He was of the Nambudri class of Brahmins. He wandered far and wide, and engaged in much philosophical and theological debate. He taught the existence of the Supreme God and founded the sect of the Smarta Brahmins. His great achievement was the perfecting of the Mimansa or Vedanta philosophy. So great were his learning and piety that he was regarded as an incarnation of Siva, and his works (commentaries on the Vedanta Sutras, the Bhagavad Gita and the Upanishads) exercised a permanent influence on Hindu thought. He died at Kedarnata in the Himalayas when only 32 years of age.


SANKT JOHANN, a town of Germany, in the Prussian Rhine province, on the right bank of the Saar, opposite Saarbrücken, with which it is connected by three bridges. It is 40 m. N.E. from Metz and at the junction of lines from Trier, Bingerbrück and Zwillbrücken. Pop. (1905) 24,140. Sankt Johann is the seat of extensive industries, the chief being the manufacture of railway plant and machinery, iron-founding, wire-drawing and brewing; its rapid industrial development is due mainly to the extensive railway system of which it is the centre. Sankt Johann obtains its name from a chapel erected here. From 1521 to 1850 it formed a single town with Saarbrücken,
and then was united to form one municipality with Saarbrücken and Malstatt-Burbach (combined population, 90,000).

**SANKT PÖLTEN**, an old town and episcopal see of Austria, in Lower Austria, 38 m. W. of Vienna by rail. Pop. (1900) 14,530. It is situated on the Traisen, a tributary of the Danube, and contains an interesting old abbey church, founded in 1050 and restored in 1266 and again at the beginning of the 18th century. There are several religious educational institutions in the town, and a military academy for engineers. The industries include cotton spinning and milling, as well as the manufacture of iron and hardware, and small arms. Sankt Pölten was an inhabited place in the Roman period. An abbey dedicated to St Hippolytus was founded here in the 9th century, around which the town developed. It was called Panum Sancti Hippolyti, from which, by corruption, the actual name is derived. It was surrounded with walls and fortifications in the time of Rudolf of Habsburg, but these were demolished in modern times.

See Lampel, *Urkundenbuch des Chorherrenstifts Sankt Pölten (Virgen de la Bonanza)*.

**SAN LUCAR** (or Sanlúcar de Barrameda), a fortified seaport of southern Spain, in the province of Cadiz; 27 m. by sea from Cadiz, on the left bank of the Guadalquivir estuary, and on the Puerto de Santa Maria-San Lucar and Jerez de la Frontera-Bonanza railways. Pop. (1900) 23,883. The town is divided into two parts, Alta ("upper") and Baja ("lower"); for it is built partly on the flat foreshore, partly on the rising ground to the south. The upper part is the older; it culminates in the ruins of a Moorish citadel. On the outskirts are many villas surrounded by pine; palm and orange groves, and often irrigated by water from springs near Seville, who come to San Lucar for the excellent sea-bathing. The 14th-century church and the palace of the dukes of Medina Sidonia contain many valuable pictures. The hospital of St George was established by Henry VIII. of England in 1517 for English sailors. The Guadalquivir estuary is deep and sheltered, and lighted by four lighthouses. Bonanza, 2 m. by rail up the river, and on the same bank, is the headquarters of the shipping and fishing trades. It is named after a chapel dedicated here by the South American Company of Seville to the Virgin of Fair Weather (Virgen de Buena Suerte). The fisheries and agricultural trade of San Lucar are considerable; there are flour mills in the town and a dynamite factory among the surrounding sandhills. Coal is imported from Great Britain, sulphur from France. The imports include sherry, manzanilla and other wines, salt, oats and fruit.

Inscriptions and ruins prove that San Lucar and Bonanza were Roman settlements, though the original names are unknown. San Lucar was captured from the Moors in 1264, after an occupation lasting more than five and a half centuries. After 1492 it became an important centre of trade with America. From this port Columbus sailed in the Atlantic in 1498, and Magellan started in 1519 to circumnavigate the world.

**SAN LUIS**, a province of Argentina, bounded N. by Rioja, E. by Cordoba, S. by the La Pampa territory and W. by Mendoza. Area, 28,535 sq. m. Pop. (1904, estimated) 97,458. San Luis belongs partly to the semi-arid pampa region, and partly to the mountainous region of the eastern Andes and Cordoba whose ranges terminate between the 33rd and 34th parallels. It is one of the least important of the Argentine provinces because of its aridity and lack of available resources. The rough northern districts, where an occasional stream affords irrigation for a fertile soil, are noted for a remarkably uniform, dry, mild and healthful climate. The Rio Quinto has its sources in these ranges; the Desaguadero, or Salado, forms its western boundary; and the Conlara flows northward among its broken ranges to the great salinas of western Cordoba. Only in the mountains are these streams available, as they soon become impregnated with saline matter on the plains. The southern part of the province is a great, arid, saline plain, practically uninhabitable. Agriculture and grazing occupy some attention in the north, but are handicapped by lack of water. The mountains are rich in minerals, however, and a number of gold mines have been opened. The exports include cattle, hides, skins, wool and ostrich feathers. The capital is San Luis (pop. 1904, about 10,500) on the Arroyo Chorillos, a little S. of the cerro called Punta de los Venados, 374 m. by rail (the Argentine Great Western) W. of Rosario, and magnificently situated on a plateau 2390 ft. above sea-level. Next in importance is the town of Mercedes or Villa Mercedes (pop. 1904, about 6000) on the Rio Quinto, an important railway junction where the railways from Buenos Aires, Rosario, Mendoza and San José unite. San Luis was founded in 1607 by Martin de Loyola and was for nearly 200 years only a frontier outpost. It suffered much in the civil wars of 1831-1836.

**SAN LUIS POTOSÍ**, a central state of Mexico, bounded N. by Coahuila, E. by Nuevo Leon, Tamaulipas and Vera Cruz, S. by Hidalgo, Querétaro and Guanajuato, and W. by Zacatecas. Area, 25,316 sq. m. Pop. (1900) 575,432. The state belongs wholly to the high plateau region, with the exception of a small area in the S.E. angle, where the tableland breaks down into the tropical valley of the Panuco. The surface is comparatively level, with some low mountain ranges. The eastern part borders on the Sierra Madre Oriental, where there are extensive forests. The mean elevation is about 6000 ft., insuring a temperate climate. The state lies partly within the arid zone of the north, the southern half receiving a more liberal rainfall through the influence of the "nothres" on the Gulf coast. The rainfall, however, is uncertain and the state is poorly provided with rivers. The soil is fertile and in favourable seasons large crops of wheat, Indian corn, beans and cotton are grown on the uplands. In the low tropical valleys, sugar, coffee, tobacco, fruits and fresh are staple products. Wine raisin is an important industry and hides, tallow and wool are exported. Fine cabinet and construction woods are also exported to a limited extent. At one time San Luis Potosí ranked among the leading mining provinces of Mexico, but the disorders following independence resulted in a great decline in that industry. The Catorce district has some of the richest silver mines in the country. Other well-known silver mining districts are Peñón Blanco, Ramos and Guadalcazar. The development of Guadalcazar dates from 1630 and its ores yield gold, copper, zinc and bismuth, as well as silver. In the Ramos district, the Cocina lode is said to have a total yield of over 160,000. Railway facilities are provided by the Mexican Central and Mexican National lines, the former crossing a corner of the state and having a branch from the capital to Tampico, and the latter passing through the state from N. to S. The capital is San Luis Potosí, and other towns, with their populations, are: Matehuala (13,101 in 1895), a mining town 20 m. E. by W. of Catorce, with which it is connected by a branch railway; Catorce (5947 in 1895), an important mining town 110 m. N. (direct) of San Luis Potosí (capital); and 8 m. from its railway station on the Mexican National; at an elevation of 5850 ft., Santa Maria del Rio (8440 in 1900), 37 m. S.E. of the capital; Venado (5750 in 1895), 45 m. N. of the capital; Rio Verde (5750 in 1900), an agricultural centre with a national agriculture experiment station in its vicinity; Soledad Diaz Gutierrez (5730 in 1895), near the capital.

**SAN LUIS POTOSÍ**, a city of Mexico and capital of a state of the same name, near the head of the valley of the Rio Verde (a tributary of the Panuco), 215 m. by rail N.W. of the city of Mexico. Pop. (1900) 61,025. The city is served by the Mexican National and the Mexican Southern railways. It is built on a broad level space, laid out regularly with straight well-paved streets and shady plazas. The altitude of the city, 6168 ft. above sea-level, gives it a cool temperate climate, though the sun temperatures are high. The water-supply was formerly very deficient, but two artesian wells have been drilled to a depth of 450 ft. and furnish 30,000 gallons a day each, in addition to which a large dam 3 m. above the city has been built, having a storage capacity of 7,500,000 cubic meters (1,650,000,000 gallons), or 18 months' supply, which is used for irrigation and domestic purposes. The better class of residences are usually
two storeys high, and include many fine specimens of Spanish colonial architecture; but the suburbs consist chiefly of wretched hovels and stretch out over a large area. Among the more notable public buildings are the cathedral and government palace fronting on the Plaza Mayor, the latter conspicuous for its façade of rose-coloured stone; the churches of El Carmen, San Francisco and Guadalupe; the La Paz theatre, mini-penitentiary and the Instituto Cívico, in which law, medicine and science are taught. San Luis Potro is an important railway and distributing centre, with a considerable trade in cattle, tallow, wool, hides and minerals. Its proximity to the port of Tampico, with which it was connected by a branch of the Mexican Central railway in 1885, has greatly increased its commercial importance, though in earlier days it was also one of the principal centres of the diligence and pack-train traffic of this part of Mexico. The city has cotton and woolen factories using modern machinery, and the smelting works of the Metalurgica Mexicana company, an American enterprise.

San Luis Potro was founded in 1586. It was an important centre of colonial administration and played an important part in the civil wars and political disorders following Mexican independence. It was the seat of the Mexican government of Benito Juárez in 1863, but was soon afterwards captured by the French under Bazaine. It was recovered by Juárez in 1867, after the French had retired.

SAN MARINO, a republic in northern Italy, 14 m. S.W. of Rimini by road. Pop. (1901) about 1600 (town); 6500 (whole territory). It is the smallest republic in the world (32 m.² in area). According to tradition the republic was founded by St. Marinus in the 7th century, and the persecutions under Dioscletian, while his companion, St. Leo, founded the village of that name 7 m. to the S.W., with La Rocca its old castle, now a prison, in which the impostor Cagliostro died in 1795. The history of S. Marino begins with the 9th century, the monastery of S. Marino having existed demonstrably since 885. In the 10th century a communal constitution was established. The republic as a rule avoided the faction fights of the middle ages, but joined the Ghilibelines and was interdicted by the pope in 1247–1249. After this it was protected by the Montefeltro family, later dukes of Urbino, and the papacy, and successfully resisted the attempts of Sigismondo Malatesta against its liberty. In 1503 it fell into the hands of Caesar Borgia, but soon regained its freedom. Other attacks failed, but civil discord was the meantime increased. Its independence was recognized in 1631 by the papacy. In 1739 Cardinal Alberoni attempted to deprive it of its independence, but this was restored in 1740 and was respected by Napoleon. Garibaldi entered it in 1849, on his retreat from Rome, and there disbanded his army. The town stands on the north end of a precipitous rock (2437 ft.) which bears the name of Monte Titano; each of the three surrounding valleys is crowned by fortifications that on the north by a castle, the other two by towers. The arms of the republic are three peaks, each crowned with a tower. There are traces of three different encampments, of the 14th, 15th and 16th centuries. The chief square, the Pianello, contains the new Palazzo del Governo in the Gothic style (1894) and a statue of Liberty (1876). The principal church (Pieve), in classical style, dates from 1826–1838, and contains the body of St. Marinus. The old church, then demolished, is first mentioned in 1115, but was several times restored. S. Francesco has some paintings by Niccolò Alunno of Foligno and other later artists, and a pretty loggia. The museum contains a few pictures of various schools and some Umbrian antiquities. Bartolommeo Borghesi, the epigraphist and numismatist, resided here from 1821 until his death in 1860. The Borgo at the base of the rock is a chiefly commercial village.

The supreme power of the republic resides in the general assembly (Arringo) which meets twice a year. It is governed by two Capitani Reggenti, selected twice a year from the 60 life-members of the Great Council, which is composed of 20 representatives of the nobility, 20 of the landowners and 20 of the citizens. They are assisted by a small committee of 12 of the

Great Council. The available armed forces of the republic form a total of about 1200 men, all citizens able to bear arms being technically obliged to do so from the age of 16 to 60 years. San Marino issues its own postage-stamps, and makes thereby a considerable income. It also issues its own copper coinage, which circulates in Italy also; but Italian money is current for the higher values. Most of the republic falls within the diocese of Montefeltro, a small portion within that of Rimini.

See C. Ricci, La Repubblica di San Marino (Bergamo, 1903).

SAN MARTIN, José de (1778–1850), South American soldier and statesman, was born at Yapeyú on the Uruguay river on the 25th of February 1778. His father was a captain in the Spanish army, and young San Martin was taken to Madrid and educated for a military career. He served in the Moorish wars and in the great struggle against Napoleon, and his distinguished conduct at the battle of Bayalen brought him the rank of lieutenant-colonel. In 1812 he offered his services to the government of Buenos Aires in the struggle for the independence (Act of 1813). He was appointed early in 1814 to the command of the revolutionary army operating against the royalists on the borders of Upper Peru. But he soon resigned his command, realizing that for the permanent success of the revolutionary cause it was necessary first to oust the Spaniards from Chile and then to organize an expedition thence against the stronghold of Spanish power on Peru. With this end in view he secured his appointment to the governorship of the province of Cuyo, bordering on the Chilean Andes, and established himself at Mendoza, where he prepared for the invasion of Chile. Assisted by Bernardo O'Higgins, he rallied the Chilean patriots who had fled across the mountains after their defeat at Rancagua; he enlisted the sympathies of the Argentine government, and after two years succeeded in raising a well-trained army of Chilenos and Argentines and in collecting the material resources necessary for a crossing of the Andes. In January 1817 he set out on his enterprise. By the swiftness of his movements and by a clever feint he evaded opposition, and he led his army, of about 3000 infantry and 1000 cavalry, together with artillery and large baggage trains, through a barren and difficult region, and over passes 13,000 ft. above sea-level. The victory of 1817 the re-establishment of a nationalista government at Santiago under Bernardo O'Higgins, as San Martin himself wished to prepare for the invasion of Peru; but in 1818 he took command of the Chilean forces against a fresh royalist army, and by his victory at the river Maipo in April finally secured the independence of Chile. This left him free to organize the expedition against Peru, and assisted by O'Higgins and the Argentine government, he procured the necessary fleet and the army. He set out in August 1820, landed his forces for a short time at Pisco, where he tried to enter into negotiations with the viceroy of Lima, and then transported his army with the help of the fleet to a point on the coast a little way north of Lima. Here he spent several months of inaction, hoping that the demonstration of force and the influence of popular feeling would lead to a peaceful withdrawal of the Spaniards. In July 1821 the Spaniards evacuated Lima, San Martin entered the city, proclaimed the independence of Peru and assumed the reins of government with the title of Protector. His position, however, was far from secure. The royalist party, never having been decisively crushed, organized risings in the interior, and San Martin was embarrassed by the jealousy which his authority roused among the patriots and by the rivalry of Bolivar, who had arrived with an army on the northern frontier of Peru. San Martin resigned his authority on the 20th of September 1822 and left the country. He spent a short time in Chile and in Argentina, but his many enemies had embezzled popular feeling against him, and constant attempts were made to involve him in political intrigues. Unable to live a peaceful private life, he was compelled to exile himself in Europe, where he lived, often in great poverty, till his death at Boulogne on the 17th of August 1850.

San Martin did more than any man for the cause of independence in the Argentine, Chile and Peru. He was not only an able soldier; in
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the clearness with which he realized that the independence of each state could only be secured by the co-operation of all, and in the performance with which he carried his views into execution he showed himself a far-seeing and honest statesman.

See W. Pilling, Emancipation of South America (London, 1893), a translation of B. Mitre’s life of San Martín; P. R. Figueroa, Diccionario biográfico de Chile (Santiago, 1888) and J. B. Suarez, Rasgos biográficos de hombres notables de Chile (Valparaíso, 1886), both giving sketches of prominent characters in Chilean history. See also works of cronistas and biographers.

SANMICHELE, MICHELE (1484–1559), Italian architect, was in San Michele near Verona. He learned the elements of his profession from his father Giovanni and his uncle Bartolomeo, who both practised as architects at Verona with much success. He went at an early age to Rome to study classic sculpture and architecture. Among his earliest works are the duomo of Montefiascone (an octagonal building surmounted with a cupola), the church of San Domenico at Orvieto, and several palaces at both places. He also executed a fine tomb in S. Domenico. He was no less distinguished as a military architect, and was much employed by the signorina of Venice, not only at home, but also in strengthening the fortifications of Corfu, Cyprus, and Candia. One of Sanmichele’s most graceful designs is the Cappella de’ Peregini in the church of S. Bernardino at Verona—square outside and circular within, of the Corinthian order. He built a great number of fine palaces at Verona, including those of Canossa, Bevilacqua and Pompel, as well as the graceful Ponte Nuovo. In 1527 Sanmichele began to transform the fortifications of Verona according to the newer system of constructing a bastion system for the advancement of which he was much valued service. His last work, begun in 1559, was the round church of the Madonna di Campagna, 1½ m. from Verona on the road to Venice. Like most other distinguished architects of his time he wrote a work on classic architecture, I Cinque Ordini dell’architettura, printed at Verona in 1735.

See Ronzani and Luculli, Fabbriche...di M. Sanmichele (Venice, 1812); and Selva, Elogio di Sanmichele (Rome, 1814).

SAN MIGUEL, the capital of the department of San Miguel, Salvador; 80 m. E. by S. of San Salvador, near the right bank of the Rio Grande, and at the foot of the volcano of San Miguel or Jucuapa (7120 ft.). Pop. (1905) about 25,000. San Miguel is an important and attractive city, although the extensive swamps in the Rio Grande Valley render malaria common. It possesses several handsome churches, municipal buildings, law courts and two well-equipped hospitals. Near it are the ruins of an ancient Indian city. It was founded in 1527 by Fray Miguel. It had a large Indian town, San Miguel, a town of Indians, a tobacco plantation, a brickyard, a sawmill, a copper-smelter, a distillery, a tannery, a sawmill, and a blacksmith’s shop.

San Miguel was founded in 1550 by Spanish settlers, and became a city in 1586. Its fairs formerly attracted merchants from all parts of Salvador, Guatemala and Honduras, and it is now third in size among the cities of the republic.

SAN MIGUEL DE MAYUMO, a town of the province of Bulacan, Luzon, Philippine Islands, about 40 m. N. of Manila. Pop. (1902) 14,919. In 1903, after the census had been taken, San Ildefonso (pop. 5320) was annexed to San Miguel. It has a cool and very healthy climate, and commands a beautiful view of the surrounding country. The soil is very fertile, and many of the inhabitants have acquired much wealth from the cultivation of rice. Sugar-cane, Indian corn and cotton are also produced in abundance, and cattle are raised. Near the town are iron mines and quarries of limestone, and on the neighbouring mountains are forests containing valuable hardwood timber. About 8 m. N.E. are the medicinal springs of Sibul, to which large numbers of patients from the neighbouring provinces come.

The San Miguel river, which flows near, affords a means of transportation, and the town has considerable commerce. Some beautiful furniture is made of the hardwood from the monte pinal, and notably tallow, even in considerable quantities by the women. The principal language is Tagalog. The chief buildings were destroyed in 1901 in a fire started by a band of thieves.

SAN MINIATO, a town and episcopal see of Tuscany, Italy, in the province of Florence, 26 m. W. by S. of Florence by the railway to Pisa, 512 ft. above sea-level, on a hill 2 m. S. of the railway. Pop. (1901) 4227 (town); 20,242 (commune). Its cathedral dates from the 10th century. It was remodelled in 1488, and has a façade decorated with disks of majolica. It manufactures glass, olive oil, leather and hats. It has a castle of the emperor Frederick I., the residence of the imperial grand masters of Tuscany, 1228–1286, and from them bears the name of San Miniato al Tedesco.

SANNAZARO, JACOPO (1458–1530), Italian poet of the Renaissance, was born in 1458 at Naples of a noble family, said to have been of Spanish origin, which had its seat at San Nazaro near Pavia. His father died during the boyhood of Jacopo, who was brought up at Nocera Inferiore. He afterwards studied at Naples under Giovanni Pontanus, when, according to the fashion of the time, he assumed the name Actius Syncerus, by which he is occasionally referred to. After the death of his mother he went abroad—driven, as we are told, by the parsimony of despised love for a certain Carmosina, whom he has celebrated in his verse under various names; but of the details of his travels nothing is recorded. On his return he speedily achieved fame as a poet and place as a courtier, receiving from Frederick III. as a country residence the Villa Mergiullina near Naples. When his patron was compelled to take refuge in France in 1501 he was accompanied by Sannazaro, who did not return to Italy till after his death (1504). The later years of the poet seem to have been spent at Naples. He died on the 27th of April 1530.

The Arcadia of Sannazaro, begun in early life and published in 1504, is a somewhat affected and insipid Italian pastoral, in which in alternate prose and verse the scenes and occupations of pastoral life are described. See Scherillo’s edition (Turin, 1888). His now seldom read Latin poem De portu Virginitis, which gained for him the name of the “Christian Virgil,” appeared in 1526, and his collected Sonetti e canzoni in 1530.

SAN NICOLÁS DE LOS ALFAYOS, a town and river port of Argentina, in the province of Buenos Aires, on the W. bank of the Parana, 150 m. E. by N. of the city of Buenos Aires. Pop. (1904, estimate) 18,000. It is a flourishing commercial town, and a port of call both for river and ocean-going steamers of medium tonnage. It is a station on the Buenos Aires & Rosario, and the terminus of a branch from Pergamino of the Central Argentine railway, and exports wheat, flour, wool and frozen mutton. The town is the judicial centre for the northern district of Buenos Aires. San Nicolás was founded in 1749 by José de Aguilar on lands given for that purpose by his wife (nºe Ugarte). Its growth was very slow until near the end of the century.

SAN PABLO, a town of the province of Laguna, Luzon, Philippine Islands, 9½ m. S. of Laguna de Bay and about 35 m. S.S.E. of Manila. Pop. (1903) 22,612. It is an important road centre, and in the vicinity are five small mountain lakes. Coconut palms grow in great abundance in the town and vicinity, and copra is the principal product; hemp and, to a less degree, rice, are grown here. The language is Tagalog.

SANQUHAR, a royal and police burgh of Dumfriesshire, Scotland. Pop. (1901) 1370. It is situated on the Nith, 26 m. N.W. of Dumfries by the Glasgow & South-Western railway. It became a burgh of barony in 1424 and a royal burgh in 1506, and was the scene of the exhibition of the Covenanters’ Declaration, attached to the market cross in 1680 by Richard Cameron and in 1685 by James Rcnwick. The industries include coal-mining and the making of bricks and tiles, spades and shovels. The coal-field, measuring 7 m. long by 2½ m. broad, is the most extensive in the shire and is the main source of supply for Dumfries and other towns. The cattle and sheep fairs are important, and an agricultural show is held every May. Sanquhar Castle, on a hill overlooking the Nith, once belonged to the Butes, ancestors of the marquess of Bute, but is now a ruin. Eliock House, in the parish, was the birthplace of James (“the Admirable”) Crichton in 1560.

SAN REMO, a seaport of Liguria, Italy, in the province of Porto Maurizio, on the Riviera di Ponente, 9½ m. E. of Ventimiglia by rail, and 84 m. S.W. of Genoa. Pop. (1901) 17,114 (town); 20,027 (commune). Climbing the slope of a steep hill
SAN SALVADOR—SAN SEVERINO

it looks south over a small bay, and, protected towards the north by hills rising gradually from 500 to 8000 ft., it is in climate one of the most favoured places on the whole coast, a fact which accounts for the great reputation it has enjoyed since 1861. The older town, with its narrow steep streets and lofty sombre houses protected against earth-waves by massive gables, contrasts with the new visitors' town, containing all the public buildings, which has grown up at the foot of the hill. The fort of S. Tecla protects the small harbour, sheltered by its sickle-shaped mole, 1300 ft. long. The promenade of San Remo is the Corso dell' Imperatrice, running from the main street, the Via Vittorio Emanuele, along the coast to the Giardino dell' Imperatrice; it is a broad road shaded by palm-trees, and was, like the garden, constructed at the expense of the empress Maria Alexandrovna of Russia (d. 1880). The Villa Thiem has a valuable picture-gallery, containing for the most part examples of the great 17th-century masters of the Netherlands. Besides the Gothic ex-cathedral of San Siro, the white-domed church of the Madonna della Costa, at the top of the old town, may be mentioned. In front of it is a large hospital. On the east of the harbour, the promenade along the coast is called the Passeggiata Imperatore Federico in memory of the German emperor Frederick, whose visit to the town in 1877-1888 greatly increased its repute as a winter resort. Flowers, especially roses and carnations, are extensively grown for export, and olives, lemons and palms are also cultivated.

San Remo appears to have been dependent on Genoa in its early days, but became independent in 1361. In 1544 the town was attacked by Barbarossa, and in 1625 by the French and Savoyards. The Genoese, against whom the Spanish had long defended its independence, sacked it in 1553; in 1707 it was incorporated in the Ligurian republic, and in 1814 passed to Piedmont.

SAN SALVADOR, the capital of the republic of Salvador; situated in the valley of Las Hamacas, on the river Asalguate, at an altitude of 2115 ft., and 30 m. inland from the Pacific. Pop. (1905) about 60,000. San Salvador is connected by rail with Santa Ana on the north-west and with the Pacific ports of La Libertad and Acapulco. In addition to the government offices, most of the public buildings include a cathedral, a national theatre, an academy of science and literature, a chamber of commerce, and astronomical observatory and a number of hospitals and charitable institutions. There are two large parks and an excellent botanical garden. In the Plaza Morazan, the largest of many shady squares, is a handsome bronze and marble monument to the last president of united Central America, from whom the plaza takes its name. San Salvador is the only city in the republic which has important manufactures; these include the production of soap, candles, ice, shawls and scarves of silk, cotton cloth, cigars, flour and spirits. The city is admirably situated, has an abundant water supply, and can in many respects compare favourably with the smaller provincial capitals of Europe and America. It was founded by Don Jorge de Alvarado in 1528, at a spot near the present site, to which it was transferred in 1539. Except for the year 1839-1849 it has been the capital of the republic since 1834. It was temporarily ruined by earthquakes in 1854 and 1873.

SANS-CULOTTES (French for "without knee-breaches"), the term originally given during the early years of the French Revolution to the ill-clad and ill-equipped cavalry of the Revolutionnary Army, and later applied generally to the ultra-democrats of the Revolution. They were for the most part men of the lower classes, or leaders of the populace, but during the Terror public functionaries and persons of good education styled themselves citoyens sans-culottes. The distinctive costume of the typical sans-culotte was the pantalon (long trousers)—in place of the culottes worn by the upper classes—the carmagnole (short-skirted coat), the red cap of liberty and sabot (wooden shoes). The influence of the Sans-culottes ceased with the reaction that followed the fall of Robespierre (July 1794), and the name itself was proscribed. In the Republican Calendar, at the end of the year X, were the first called Sans-culottes; this name, however, suppressed by the Convention when the constitution of the year III. (1795) was adopted, that of jours complémentaires being substituted.

SAN SEBASTIAN (Basque Iruchulo), a seaport and the capital of the Spanish province of Guipúzcoa, on the Bay of Biscay, and on the Northern railway from Madrid to France. Pop. (1900) 37,812. In 1886 San Sebastian became the summer residence of the court. The influence of Haro, attracted by the presence of the royal family, and the prolonged local festivities, the bull-fights and the bathing, increases the number of the inhabitants in summer to about 50,000. The city occupies a narrow sandy peninsula, which terminates on the northern or seaward side in a lofty mass of sandstone, Monte Urgull; it is flanked on the east by the estuary of the river Uruméa, on the west by the broad bay of La Concha. The old town, rebuilt after the fire of 1813, lies partly at the foot of Monte Urgull, partly on its lower slopes. Until 1865 it was enclosed by walls and ramparts, and a strong fort, the Castillo de la Mola, still crowns the heights of Urgull. There are also batteries and redoubts facing landward and seaward below this fort; but the other defences have been either razed or dismantled. The Alameda, one of many fine avenues, was laid out on the site of the chief landward wall, and separates the old town from the new—in which the houses are uniformly modern, and built in straight streets or regular series of squares. The bay of La Concha has a broad sandy shore, the Playa de Baños, admirable for bathing and sheltered from sea-winds by the rocky islet of Santa Clara. Its centre is faced by the casino, a handsome building erected by order of the empress Eugenie in 1875, and occupied by the rising ground towards its western extremity. The other noteworthy buildings are the bull-ring, capable of seating 10,000 spectators, the theatre, the fine provincial and municipal halls, barracks, a hospital, a Jesuit college, the American International School for girls, and many other schools. There are numerous breweries, saw and flour mills, and manufactures of preserves, soap, candles, glass and paper, especially in the busy suburb that has sprung up on the right bank of the Uruméa. The fisheries are important. The harbour consists of three artificial bays, opened into La Concha (1450), and situated in the midst of the old town; it is chiefly frequented by coasting and fishing vessels, and cannot accommodate large ships. From its position near the frontier San Sebastian was long a first-class fortress, and has sustained many sieges. The last and most memorable was in August 1813, when the allied British, Portuguese and Spanish armies under Lord Wellington captured the city from the French, and then sacked and burned it.

SAN SEPOLCRO, or BORGIO S. SEPOLCRO, a town and episcopal see of Tuscany, Italy, in the province of Arezzo, from which it is 28 m. N.E. by rail. Pop. (1901) 4537 (town); 9077 (commune). The town is situated on the river Tiber. It was the birthplace of Piero della Francesca (1420-1492) and of Raffaello del Colle (1490-1540), a pupil of Raphael. The Romanesque cathedral and the picture-gallery contain works by both these artists.

SAN SEVERINO (anc. Septempeda), a town and episcopal see of the Marches, Italy, in the province of Macerata, from which it is 18 m. W. by rail. Pop. (1905) 3267 (town); 14,932 (commune). The lower town is situated 781 ft. above sea-level, and contains the new cathedral of S. Agostino, with a fine altar-piece by Ghirlandajo (1486); the Palazzo Comunale has some interesting pictures by artists of the Marches. Lorenzo and Giacomo Salimbeni da San Severino, who painted an important series of frescoes in the oratory of S. Giovanni Battista at Urbino in 1416, were natives of the town. So was also the later master Lorenzo di Maestro Alessandro, of the end of the 15th century, whose pictures are mainly to be found in the Marches. The old cathedral of S. Severino is in the upper town (1192 ft. above sea-level); it contains frescoes by the two Salimbeni, while an altar-piece by Niccolo Alunno of Foligno (1468) has been removed hence to the picture gallery. The ancient Septempeda lay 1 m. below the modern town, on the branch road which ran from Nuceria Camellaria through the Via Flaminia; and here the road divided—one branch going to
Ancona and the other through Teltowinent to Urbs Sylvia and Firmum. No ruins of the old town exist, but a considerable number of inscriptions have been found, from which it may be gathered that it was a colonia.

SAN SEVERO, a city in Apulia, Italy, in the province of Foggia, from which it is 17 m. N.N.W. by rail. Pop. (1901) 28,550. San Severo lies at the foot of the spurs of Monte Gargano, 292 ft. above sea-level. It is the see of a bishop (since 1580), and has some remains of its old fortifications. San Severo dates from the middle ages. It was in ruins by Frederick II., and 1503 was the scene of a victory by Robert Guiscard over the papal troops under Leo IX. In 1799 the town was taken by the French and again almost entirely destroyed. The overlordship was held in succession by the Benedictines of the abbey of Torre Maggiore, the Knights Templars, the crown of Naples and the Sangro family (commendataries of Torre Maggiore). In 1627, 1828 and 1851 the town suffered from earth-quakes.

SAN-SHUI, a treaty port in the province of Kwang-tung, China, on the left bank of the West river, 99 m. from Canton, opened to foreign trade in 1877. Pop. about 5000. Its position is on the north side of the estuary of the river and it is usually situated as a distributing centre for foreign goods. Two lines of steamers converge at San-shui, from Canton and Hong-Kong respectively. The town is surrounded by a handsome wall built in the 16th century, but within this rampart the houses are mean. The foreign trade shows small signs of expansion. In 1902 the net foreign imports amounted in value to £474,175, and in 1904 to only £360,000, while the exports during the same two years amounted to £251,300 and £371,100 respectively. The direct foreign trade in 1908 was £509,827. There is a large junk traffic, and the local ilkam station is one of the richest in the province.

SANSKRIT, the name applied by Hindu scholars to the ancient literary language of India. The word sanskrit is the past participle of the verb kar(kt), "to make" (cognate with Latin cren), with the preposition sam, "together" (cogn. sama, Eng. "same"), and has probably to be taken here in the sense of "completely formed" or "accurately made, polished, refined"—"some noun meaning "speech" (esp. bhāṣā) being either expressed or understood with it. The term was, doubtless, originally adopted by native grammarians to distinguish the literary language from the uncultivated popular dialects—the forerunners of the modern vernaculars of northern and north-eastern India—which had developed side by side with it, and which were called (from the same root kar, but with a different preposition) Prakrit, i.e. either "derived" or "natural, common" forms of speech. This designation of the literary idiom, being intended to imply a language regulated by conventional rules, also involves a distinction between the grammatically fixed language of Brahmical India and an earlier, less settled, phase of the same language exhibited in the Vedic writings. For convenience the Vedic language is, however, usually included in the term, and scholars generally distinguish between the Vedic and the classical Sanskrit.

I. Sanskrit Language

The Sanskrit language, with its old and modern descendants, represents the easternmost branch of the great Indo-Germanic, or Aryan, stock of speech. Philological research has clearly established the fact that the Indo-Aryans must originally have immigrated into India from the north-west. In the oldest literary documents handed down by them their gradual advance can indeed be traced from the slopes of eastern Kabulistan down to the land of the five rivers (Punjab) and thence to the plains of the Yamunā (Jumna) and Ganges (Ganges). Numerous special coincidences, both of language and mythology, between the Vedic Aryans and the peoples of Iran also show that these two members of the Indo-Germanic family must have remained in close connexion for some considerable period after the others had separated from them.

The origin of comparative philology dates from the time when European scholars became accurately acquainted with the ancient language of India. Before that time classical scholars had been unable to determine the true relations between the then known languages of our stock. This fact alone shows the importance of Sanskrit for comparative research. Though its value in this respect has perhaps at times been overrated, it may still be considered the oldest daughter of the old mother-tongue. Indeed, so far as direct documentary evidence goes, it may be said to be the only surviving daughter; for none of the other six principal members of the family have left any literary monuments, and their original features have to be reproduced, as best they can, from the materials supplied by their own daughter-languages: the case is the same both with the Thracian, Hellenic, Italic, Celtic, Teutonic and Slavo-Slavic languages. To the Sanskrit the antiquity and extent of its literary documents, the transparency of its grammatical structure, the comparatively primitive state of its accent system, and the thorough grammatical treatment it has early received at the hand of native scholars must ever secure the foremost place in the comparative study of Indo-Germanic speech.

The Sanskrit alphabet consists of the following sounds:—

(a) Fourteen vowels, viz.:—

Ten simple vowels: a, ā, i, ī, u, ū, r, ē, o, ō;

Four diphthongs: e, ē, i, ĕ; d; and

(b) Thirty-three consonants:

Five series of mutes and nasals:

guttural: k, ḥ, g, ṣ, ā;

palatal: ṭ, ṭh, ḫ, dh, ḷ;

lingual: j, ḷ, ḱ, ḷh, ḷn;

dental: Ṱ, ḷd, ḷh, ḷn;

A soft aspirate: ḻ;

Three uniuoiug sounds, viz.:

vrsa (b), a hard aspirate, standing mostly for original s or r; and two nasal sounds of less close contact than the mute-nasals, viz. annāra (m) and anumāsaka (n).

As regards the vowels, a prominent feature of the language is the prevalence of a-sounds, these being about twice as frequent as all the others, including diphthongs taken together (Whitney). The absence of the short vowels ə and û from the Sanskrit alphabet, and the fact that Sanskrit shows the a-vowel where other vowels appear in other languages—e.g. bhārantam = φάντας, fereonem; janas = γένος, genun—were formerly considered as strong evidence in favour of the more primitive state of the Sanskrit vowel system as compared with that of the sister languages. Recent research has, however, shown pretty conclusively from certain indications in the Sanskrit language itself that the latter must at one time have possessed the same, or very nearly the same, three vowel-sounds, and that the differentiation of the original a-sound must, therefore, have taken place before the separation of the languages. Thus, Sanskrit jana, for which there would seem to require an original kēri (Gr. ιανέ = γελείτα, Lat. callit), as otherwise the guttural k could not have changed to the palatal c (see below); and similarly Sanskrit jāna, kṣāṣat (Lat. genu) and jāna (Gr. γένος). Not impossibly, however, this prevalence of pure a-sounds in Sanskrit may from the very beginning have been a mere theoretical or graphic feature of the language, the difference of pronunciation having not yet been pronounced enough for the early grammarians to have felt it necessary to clearly distinguish between the different shades of a-sounds.

The vowels ə and û, though apparently simple sounds, are classed as diphthongs, being contracted from original ꞻ and ꞻ respectively, and liable to be treated as such in the phonetic modifications they have to undergo before any vowel except d. As regards the consonants, two of the five series of mutes, the palatal and lingual series, are of secondary (the one of Indo-Iranian, the other of purely Indian) growth. The palatalis are, as a rule, derived from original gutturals, the modification being generally due to the influence of a neighbouring palatal sound i or y, or ꞻ (d). The surd aspirate ch, in words of Indo-Germanic origin, almost invariably goes back to original sk, e.g. cindra = cindro, cimento, ēkha = oēkh (O.E. sein, shin); Sans. gacchati = hākṣai.

The palatalis ʃ (pronounced sh) likewise originated from a guttural k, but is in reality a different phonetic value from that represented by Sanskrit k or c. The latter, usually designated by k (or q), is frequently liable to labialization (or dentalization) in Greek, probably owing to an original pronunciation kvw (qv); kātakārana = hēmē, while the former (kh) invariably k in Greek, and a palatal in the Letto-Slavic and the Indo-Iranian languages: e.g. kvan (šun) = šoaw (šuv), canis, Ger. Hunf; dalan = dao, deca, Goth. slahun.
The non-original nature of the palatalas betrays itself even in Sanskrit by their inability to occur at the end of a word—e.g. anat-- but anat-- is --anata-- and by otherwise frequently reverting to the guttural state.

The linguists differ in pronunciation from the teeth in their but pronounced through the palate, not against the upper gums as is done in the English teeth, which to Hindus sound more like their own linguistics. The language of the Vedas is curiously attuned up to the phonetic modifications of original dialects, usually accompanied by the loss of an e or another adhering consonant; but more commonly they occur in words of foreign, preferably non-Aryan, origin. Of regular occurrence in Sanskrit, however, is the phenomenon of dental of dental p, and of dental s into lingual s, when preceded in the same word by certain other letters. The combination kṣ sometimes to m, dks to m, kṣi to ci, and kṣini to ci, is characteristic of the Greek, Gr. kṣi (but Latin dexter), and for kṣi, Sans. kṣati, Gr. κατέστης.

The sonant aspirate h is likewise non-original, being usually derived from original sonant aspirated mutes, especially gh, e.g. hamsa = हमसा (for hamsā) anser, Gr. Gans, απάγ = ἀπαγό, ego, Goth. āh.

The contact of final and initial letters of words in the same sentence is often attended in Sanskrit with considerable euphonic modifications; and we have no means of knowing how far the practice of the vernacular language may have corresponded to these phonetic theories. There can be no doubt, however, that the Sanskrit language is subject to a much wider field of grammatical reflection; and the very facilities which the primitive structure of the language offered for grammatical analysis and an insight into the principles of internal modification may have given the language a refined and subtle inflectional system.

None of the cognate languages exhibits so transparent a manner as the Sanskrit, the cardinal principle of Indo-Germanic word-formation by the addition of inflectional endings—other modifications of word-meaning have been at the disposal of other languages, whereas the latter has preserved its allography to stems obtained, mainly by means of suffixes, from monosyllabic roots, with or without internal modifications.

Phonetic change.

Declen.sion.

The declension of a-stems and a to seven cases, not counting the vocative, viz. nominative, accusative, instrumental (or sociative), dative, ablative, genitive and locative. As a matter of fact, all seven these cases are not regularly recognized by the grammarians, and the second in particular is not applied to the plural, and the third on the principle of the accusative.

None of the cognate languages exhibit so transparent a manner as the Sanskrit, the cardinal principle of Indo-Germanic word-formation by the addition of inflectional endings—other modifications of word-meaning have been at the disposal of other languages, whereas the latter has preserved its inflections to stems obtained, mainly by means of suffixes, from monosyllabic roots, with or without internal modifications.

The declension of a-stems corresponding to the first and second Latin declensions is of especial interest, not so much on account of its being predominant from the earliest time, and becoming more and more recognized by the students of Sanskrit, but because of the presences greater number of alternative forms, which supply a kind of test for determining the age of literary productions, a test which indeed has already been applied to some extent by Professor Veljanov and others.
different phonological elements, or otherwise. The treatment of the personal endings in the modifying, and presumably older, conjugation may thus be said somewhat to resemble that of enclitics in Greek.

In the imperfect the present-stem is increased by the augment, consisting of a prefixed ǝ. Here, as in the other tenses in which it occurs, the augmentative is derived from the imperative of the 1st sing. of verbs in ǝ, it also has irregularly the primary ending, ǝsvorrVe = ǝsvorV (S. 4-v-y-ǝm); while in the a-conjugation and throughout the perfect, the mood-sign is i, probably a contraction of ǝ: e.g. bdhès = bdhopos.

Besides the ordinary perfect, made from a reduplicated stem, with distinction between strong (active singular) and weak forms, and the imperative, there is also a special form of the perfect, with the large use of a periphrastic perfect, consisting of the accusative of a feminine abstract noun in ǝ (d-ǝm) with the reduplicated perfect forms of the auxiliary, to be or do, or (and occasionally bē, broad vowel-raising.

The grounds on which this theory is recommended are those of logical consistency. In the analogous cases of interchange between r and s, as well as f and m, most scholars have indeed been wont to regard the syllables r and f as weakened from old ər and ən, while the native gymnastics represent the latter as produced from the former by increment. Similarly the verb as (đā), to be, loses its vowel wherever the radical syllable is unaccented, e.g. āci, Lat. šam = sas, etc, among other examples. In the language of the roots vid, to know, we have iva, knowledge, and therefore viddika. But, we were very generally accepted, we have rather to look upon the heavier vowels as the original, and upon the lighter vowels as the latter, secondary modifications. The grounds on which this theory is recommended are those of logical consistency. In the analogous cases of interchange between r and s, as well as f and m, most scholars have indeed been wont to regard the syllables r and f as weakened from old ər and ən, while the native gymnastics represent the latter as produced from the former by increment. Similarly the verb as (đā), to be, loses its vowel wherever the radical syllable is unaccented, e.g. āci, Lat. šam = sas, etc, among other examples. In the language of the roots vid, to know, we have iva, knowledge, and therefore viddika. But, we were very generally accepted, we have rather to look upon the heavier vowels as the original, and upon the lighter vowels as the latter, secondary modifications.

The aorist form is somewhat complicated, as it does augment and periphrastic of various formations, viz. a radical aorist, with reduplicated stem — e.g. ādahd = ādahd, with the suffix of the aorist, ǝvV, or ǝdahd; an a-orist (or thematic aorist) with or without reduplication— e.g. ǝrivas = ǝrivas, ǝrivas, cr. ǝrivas, and some augmentation formations of the aorist. In the older Vedic language the radical aorist is far more common than the a-orist, which becomes more frequently used later on. Of the different kinds of aorists, the most significant is the one which makes it possible to form the perfect with a connecting vowel ǝ in different roots — e.g. root ji— 1 sing. ādahd, 1 pl. ādahd; ādahd, ādahd, ādahd. A limited number of roots take a double aorist-sign with inserted connecting vowel ǝ for the a-orist. Thus ādahd and ādahd are the genuine cases, as in the older and more numerously in the later language make their aorist—stem by the addition of sa—e.g. ādahd = ādahd.  

The word-formation, the system of the aorist, the addition of ǝ to any of the tenses and the indefinite numbers— the imperfect, perfect and aorist—the classical writers make virtually no distinction between them, but use them quite indiscriminately. In the older language, on the other hand, the imperfect is chiefly used to mark a present action which is now complete—the aorist, however, more frequently to that which is only just done or completed. The perfect, owing doubtless partly to its reduplicative form, has also in difficulties retained much of the force of an iterative tense.

The Sanskrit, like the Greek, shows at all times a considerable power and facility of noun-composition. But, while in the older language, it is still as far as is known, the perfect, and aorist—the classical writers make virtually no distinction between them, but use them quite indiscriminately. In the older language, on the other hand, the imperfect is chiefly used to mark a present action which is now complete—the aorist, however, more frequently to that which is only just done or completed. The perfect, owing doubtless partly to its reduplicative form, has also in difficulties retained much of the force of an iterative tense.

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fully adapted it to their peculiar scientific ends. The question as to the probable time and channel of its introduction can scarcely be expected ever to be placed beyond all doubt. The late Professor Bühler has, however, made it very probable that this alphabet was introduced into India by the Greek adventurer Xenophon c. 328 B.C. or shortly before. At all events, considering the high state of perfection it exhibits in the Muarya and Andhra inscriptions, as well as the wide area over which these are scattered, it can hardly be doubted that the present writer, must have some knowledge of it and its use for various purposes long before the time of Asoka. The object of this brief review is to indicate the probable connection of the Brāhmans to their sacred works with the proper literature.

As regards the numeral signs used in India, the Kharoshthi inscriptions of the early centuries of our era show a numerical system in which the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 are represented by a vertical stroke, whilst 4 is marked by a slanting cross, and 5-9 by +1, &c., to 4+(+)+; and then special signs for 10, 20, and 100, the intervening multiples of 10 being marked in the vigesimal fashion, 30=30, 40=40, &c. This system has been proved to be of Semitic, probably Aramaic, origin. In the Brāhmi inscriptions up to the end of the 6th century of our era, another system is used in which 1-9 are denoted by as many horizontal strokes, and thereafter by special syllabic signs for 4-9, the decades 10-90, and for 100 and 1000. This system was most likely derived from hieratic sources of Egypt. The decimal system of cipher notation, on the other hand, which is first found used on a Gujarati inscription of A.D. 595, seems to be an invention of Indian astronomers or mathematicians, based on the existing syllabic (or word) signs or the phonetic alphabet.

The first two Sanskrit grammars published by Europeans were those of the Austrian Jesuit Wesselin, called Paulinus a Sancto Bartholomaeo (Rome, 1790-1804). These were followed by those of H. C. Colebrooke, who translated parts of Pāṇini's system (1817); Carey (1806), Wilkins (1808), Forster (1810), F. Bopp (1827), H. H. Wilson, Th. Bentley, &c. These, as well as those of Max Müller, Monier Williams, and F. Kielhorn, now most widely used, deal almost exclusively with classical Sanskrit; whilst that of W. D. Whitney has been devoted to the whole language historically; as does also J. Wackernagel's yet unpublished Altwendische Grammatik.

The first Sanskrit dictionary was that of H. H. Wilson (1819; 2nd ed., 1832), which was followed by the great Sanskrit-German Wörterbuch, published at St. Petersburg in 7 vols. by Professors Böhtlingk and Roth. Largely based on this great thesaurus are the Sanskrit-English dictionary of the Oxford University Press, which appeared in 1857, by Th. Bentley, A. A. Macdonell, &c. On the history of the Indian alphabets, cf. G. Bühler, Indische Paläographie (1896); A. C. Burnett, Elements of South Indian Palæography (2nd ed., 1878); R. Cuen's résumé in Jour. Roy. As. Soc., N.S., vol. xvi.

II. Sanskrit Literature

The history of Sanskrit literature labours under the same disadvantage as the political history of ancient India from the total want of anything like a fixed chronology. In that vast range of literature extending over more than three thousand years, no antecedent dates are known which can be regarded as the date of which scholars have fixed with absolute certainty. The original composition of most Sanskrit works can indeed be confidently assigned to certain general periods of literature, but as to many of them, and these among the most important, scholars have but too much reason to doubt whether they have come down to us in their original shape, or whether they have not undergone alterations and additions so serious as to make it impossible to regard them as genuine witnesses of any one phase of the development of the Indian mind. Nor can we expect many important chronological data from new materials brought to light, taken from the modern Indian alphabets, is of more uncertain origin. The similarity, however, which appears to exist between the characters present to those of the old Phoenician alphabet (itself probably derived from the Egyptian hieroglyphics) suggests for this alphabet also the probability of a Semitic origin, though, already at Asoka's time, the Indians had worked it into a high degree of perfection and wonder.
1. THE VEDIC PERIOD

The term *veda*—i.e. "knowledge," (sacred) "lore"—embraces a body of writings the origin of which is ascribed to divine revelation (*bruti*, literally "hearing"), and which forms the foundation of the Brahmical system of religious belief. This sacred canon is divided into three or (according to a later scheme) four co-ordinate collections, likewise called Veda: (1) the *Rig-veda*, or *loke of praise* (or hymns); (2) the *Saúma-veda*, or *lore of tunes* (or chants); (3) the *Yajur-veda*, or *lore of prayer* (or sacrificial formulas); and (4) the *Atharva-veda*, or *lore of the Atharvans*. Each of these four Vedas consists primarily of a collection (sāṁhitā) of sacred, mostly poetical, texts of a devotional nature, called *mantra*. This contains a variety of texts (and particularly the first three collections) is also freely interspersed with *dyád*, or threefold wisdom, of hymn (rítik), or tune or chant (sámuna), and prayer (yajus)—the fourth Veda, if at all included, being in that case classed together with the Rik.

The Brahmical religion finds its practical expression chiefly in sacrificial performances. The Vedic sacrifice requires for its proper performance the attendance of four officiating priests, each of whom is assisted by one or more (usually three) subordinate priests, viz.: (1) the *Hotar* (or *koti*, i.e. either sacrificer, or "invoker"), whose chief business is to engage the gods, either in short prayers pronounced over the several oblations, or in liturgical recitations (stotra), made up of various hymns and detached verses; (2) the *Udgátar* (udgátri), or chorister, who has to perform chants (stotra) in connexion with the hotar's recitations; (3) the *Adharyuta*, or offering priest par excellence, who performs all the material duties of the sacrifice, such as the kindling of the fires, the preparation of the sacrificial ground and the offerings, the making of oblations, &c.; (4) the *Brahman*, or chief "priest," who has to superintend the performance and to rectify any mistakes that may be committed. Now, the first three of these priests stand in special relation to the *brahmans* or Vedic sages in this way: that the Samhítas of the Smáveda and Yasóveda form special song and prayer books, arranged for the practical use of the udgátar and adharyuta respectively; whilst the Rik-sálmít, though not arranged for any such practical purpose, contains the entire body of sacred lyrics whence the hotar draws the material for his recitations. The brahmans, however, had no special text-book assigned to him, but was expected to be familiar with all the Samhítas as well as with the practical details of the sacrificial performance (see Brahmans and Brahmana).

It sometimes happens that verse not found in our version of the Rik-sálmít, but in the Atharváveda samhít, are used by the hotar; but such texts, if they did not actually form part of some other version of the Rik—as Sáyápa in the introduction to his commentary on the Rik-sálmít assures us that they did—were probably inserted in the liturgy subsequent to the recognition of the fourth Veda.

The several Samhítas have attached to them certain theological prose works, called Bráhmána, which, though subordinate in authority to the Mantras or Samhítas, are like them held to be divinely revealed and to form part of the sacred canon. The chief works of this class are of an exegetic nature,—their purport being to supply a dogmatic exposition of the sacrificial ceremonial and to explain the mystic import of the different rites and utterances included therein (see Brahmana).

More or less closely connected with the Bráhmánas (and in a few exceptional cases with Samhítas) are two classes of treatises, called Aranyaka and Upanishad. The Aranyakas, i.e. works "writing to the forest," being intended to be read by those who have retired from the world and lead the life of anchories, do not greatly differ in character and style from the Bráhmánas, but like them are chiefly ritualistic, treating of special ceremonies not dealt with, or dealt with only imperfectly, in the later revelations, to which they thus stand in the relation of supplements. The Upanishads, however, are of a purely speculative nature, and must be regarded as the first attempts at a systematic treatment of metaphysical and physical questions. The number of Upanishads hitherto known is very considerable (about 170); but, though they nearly all profess to belong to the Atharvaveda, they have to be assigned to very different periods of Sanskrit literature—some of them being evidently quite modern productions. The oldest treatises of this kind are doubtless those which form part of the Samhítas, the Bráhmánas and Aranyakas of the three older Vedas, though not all. Others which are ascribed to such special connexion have to be classed with the later productions of the Vedic period.

As the sacred texts were not committed to writing till a much later period, but were handed downward orally in the Brahmical schools, it was inevitable that local differences of reading should spring up, which in course of time gave rise to a number of independent versions. Such different text-recensions, called sákka (i.e. branch), were at one time very numerous, but only a limited number have survived. As regards the Samhítas, the poetical form of the recitations is doubtless the precise style of the sacrificial formulas, which render these texts less liable to change, and the discrepancies of different versions would chiefly consist in the several readings of single words or in the different arrangement of the textual matter. But the diffuse ritualistic discussions and loosely connected legendary illustrations of the Bráhmánas offered scope for very considerable modifications in the traditional matter, either through the ordinary processes of oral transmission or through the special influence of individual teachers.

Besides the purely ceremonial matter, the Brahmánas also contained a considerable amount of matter bearing on the correct interpretation of the Vedic texts. For instance, Vedánás, the sacred obligation incumbent on the Brahmans of handing down correctly the letter and sense of those texts necessarily involved a good deal of serious grammatical and etymological study in the Brahmical schools. These literary pursuits could not but result in the accumulation of much learned material, which it would become more and more desirable to throw into a systematic form, serving at the same time as a guide or future research. These practical requirements were met by the production of a number of works, grouped under six different heads or subjects, called Vedánás, i.e. members of the Veda (or body of the Veda). None of the works, however, which have come down to us under this designation can lay any just claim to being considered the original treatises on their several subjects; they evidently represent a more or less advanced stage of scientific development. Though a few of them are composed in metrical form—especially in the ordinary epic couplet, the *anuvásanabha sloka*, consisting of two lines of sixteen syllables (or of octosyllabic pādas) each—the majority belong to a class of writings called śástra, i.e. "string," consisting of strings of rules in the shape of tersely expressed aphorisms, intended to be committed to memory. The Śatrás form a connecting link between the Vedic and the classical periods of literature. But, although these treatises, so far as they deal with Vedic subjects, are included by the native authorities among the Vedic writings, and in point of language may, generally speaking, be considered as the latest products of the Vedic age, they have no share in the sacred title of *bruti* or revelation. They are of human, not of divine, origin. Yet, as part of the production of the highest standing, profoundly versed in Vedic lore, the Śatrás are regarded as works of great authority, second only to that of the revealed Scriptures; and their relation to the latter is expressed in the generic title of *Smúti*, or Tradition, usually applied to them.

1. J. Muir's *Original Sanskrit Texts* (5 vols., 2nd ed.) forms the most complete general survey of the results of Vedic research.

2. The combination *ch*, used (in conformity with the usual English practice) in this sketch of the literature, corresponds to the simple *c*—as *ti* does to *r*—in the scheme of the alphabet.

The six branches of Vedic science, included under the term Vedānga, are as follows:

1. Sāńskṛta, or Phonetics. — The privileged position of representing this subject is assigned to a small treatise ascribed to the great grammarians Pāṇini, viz., the Pāṇiniyā śiśya, except in the case of the different Rik śiśyas, which are also not the same as the Rik śiśyas of other 14 versions, and, therefore, they do not differ from the Sāńskṛta school. Mention is made of several other
versions; and regarding one of them, that of the Bāṣkalas, we have further information. It is clear, however, that the work is still
Rigveda
sāṁhitā.

The latter consists of 1028 hymns, including eleven so-called Vājapāyī hymns, which were probably introduced into the text at a later period, in the course of time and in a greater variety of metres, and consists, on an average, of rather more than 10 verses each, or about 10,500 verses altogether. This body of sacred lyrics has been subdivided by ancient authorities into several periods, as the Rik-rātrī śhākha, and 15 other branches of speech, as the eight aśākṣaras of about equal length, or, on a more natural principle, based on the origin of the hymns, and invariably adopted by Euro-

2. Chhandas, or Metre. — Tradition makes the Chhandās Śūtrā of Pīngala the starting-point of prosody. The Vedānt metre, however, occupy but a small part of this treatise, and the description of the prosody in the
Nidāna Śūtra of the Sāmaṇḍula, and in a chapter of the Rik-rātrī Śūtra.[139] For prose prosody, on the other hand, Pīngala’s treatise is really visionary, as no less than 155 questions are asked and answered.

3. Vyākaraṇa, or Grammar. — Pāṇini’s famous grammar is said to be the Vedānta; but it marks the culminating point of grammatical research rather than the beginning, and besides treating of the Sanskrit language, it contains.

4. Nirukta, or Etymology. — Yāsā’s Nirukta is the traditional representative of this subject, and this important work certainly deals entirely with Vedānta and even with the later circles of words in three chapters: (1) synonyms words; (2) such as are purely or chiefly Vedic; and (3) names of deities. These lists are followed by the dictionary. Later, however, Yāsā, again, quotes several predecessors in the same branch of scientifi,

5. Jyotih, or Astronomy. — Although astronomical calculations are frequently referred to in older works in connection with the performance of sacrifices, the subject of astronomy is really treated in the Kalpa-Śruti, an explanation of the ceremonial, which are of two kinds: (1) the Srauta sūtras, which are based on the śrutis, and teach the performance of the great sacrifices, requiring three sacrificial fires; and (2) the Śruti sūtras, or rules bounding the working of the Śruti śāstras, instead of the Kaṭhaka sūtras, verses of one of the recensions, it betrays no sign of the Greek influence which shows itself in Hindu astronomical works from about the 3rd century B.C.; and its date may therefore be set down as probably not before the early centuries after Christ.

6. Kalpa, or Ceremonial. — Tradition does not single out any special work as the Vedānta in this branch of Vedic science: but the sacrificial practice gave rise to a large number of systematic sīra manuals for the several classes of priests. The most important of these works have come down to us, and they occupy by far the most prominent place among the literary productions of the Vedānta period. An indication of the numbers of the sāṁhitās, and the construction, of different kinds of altars required for sacrifices. These treatises are of special interest as supplying important information regarding the earliest geometrical operations in India. Along with the Śrutas may be classed a large number of supplementary treatises, usually called Parāśikā (पाराशिक), on various subjects connected with the sacred texts and Vedic religion generally.

After this brief characterization of the various branches of Vedic literature, we proceed to take a rapid survey of the several Vedānta collections.

A. Rigveda — The Rigveda-sāṁhitā has come down to us in the

1 The Rigveda has been divided, as commonly, into the commentary of Sāyaṇa (of the 14th century), by Max Müller (6 vols., London, 1849–
1856); and Come to the earlier (from the 6th century onwards) and the later (from the 14th century onwards) and the later

2 Commentaries on the Rigveda, containing the sāṁhitās, have been published in various editions. The H. H. Wilson edition (1857–1877) was

3 The English translation (chiefly based on Sāyaṇa’s interpretation) was brought out by the late Professor H. H. Wilson (vols. 1–iii., 1850–1857) and completed by Professor E. B. Cowell (vols. iv.–viii., 1866–1888).

We have also the first volume of a translation, with a running

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1856); and Come to the earlier (from the 6th century onwards) and the later (from the 14th century onwards) and the later
any or even one, of the latter hymns were actually later productions, as they might previously have formed part of the family collections, or might have been overlooked when the hymns were first collected. Other mañjas (viz. i. viii. and x.) still contain four entire hymns addressed to Kari, and the collection containing a single one (x. 25, 1) is found in the Sâmadeva-samhitâ, as also some 28 isolated verses to Soma, and four hymns addressed to Soma in conjunction with some other deity, which are entirely unrepresentative.

Mañjâ x. contains the same number of hymns (191) as this, which it nearly equals in actual length. The hymns are ascribed to many rishis, of various families, some of whom appear almost mythical. The Mañjâ of the Bhûr-Brâmâsanâ is, however, less to be depended upon as regards this book, many names of gods and fictitious personages appearing in the list of its rishis. The Mañjâ of the Bharata-samhitâ, however, is according to the number of verses, in decreasing order—occasional exceptions to this rule being easily adjusted by the removal of a few apparently added verses. A similar arrangement seems also to exist in the Bharata-samhitâ, as there are stations of abstraction and conception of the deity on the one hand, and to superstitious practices on the other. But, although in its general appearance the tenth mañjâ is decidedly more modern than the other hymns, it is not a few verses of which, both in respect of age and poetic quality, to the generality of Vedic hymns, being perhaps such as had escaped the attention of the scribes.

It has become the custom, after Roth's example, to call the Rûk-samhitâ (as well as the Atharvan) an historical collection, as compared with the Samhitâs put together for purely ritualistic purposes. And indeed, though the several family collections which make up the earlier mañjâs may originally have served ritual ends, as the hymns of certain clans or tribal confederacies, and although the Samhitâ itself, in its oldest form, may have been intended as a sort of prayer-book to be used by the Brahmans in the Brâhmaical community, it is certain that in the stage in which it has been finally handed down it includes a certain portion of hymns and prose sutras which were or have been used for purposes of religious service. It may, therefore, be assumed that the Rûk-samhitâ contains all of the nature of popular lyrics that was accessible to the collectors, or seemed to them worthy of being preserved. The question as to the exact period when the hymns were collected cannot be answered with any approach to accuracy. For many reasons, however, which cannot be detailed here, scholars have come to fix on the year 1000 b.c. as and near as to within the limits of the centuries, as the time at which that time every means that human ingenuity could suggest was adopted to secure the sacred texts against the risks connected with oral traditions. As there were perhaps hundreds of different recitals of which formed part of the inauguration of kings. While the Ayarey deals almost exclusively with the Soma sacrifice, the Kaushitaki is, on the whole, far more concisely in its style and more accurate in its details. There is, however, one point to which one is bound to call attention; viz., that it is probably more the modern work of the two. This consists of thirty chapters (adhyâyas); while the Ayarey has only twenty-four. The Soma sacrifice is referred to in each. The last ten adhyâyas of the latter work are, however, clearly a later addition—though they must have already formed part of it at the time of Pâñini (c. 400 B.C. ?), if, as seems probable, one of the hymns, of this nature, is a composite work, it is not at all improbable that the Ayarey and the Kaushitaki were actually compiled, in part, considerably farther back, and may very likely have extended over the earlier half of the second millennium, or from about 2000 to 1500.

As regards the people which raised for itself this imposing monument, the hymns exhibit it as settled in the regions watered by the mighty Sindhu (Indus), with its eastern and western tributaries, the land of the five rivers thus forming the central home of the Vedâc people. But, while its advanced guard has already debouched upon the plains of the upper Gangâ and Yamunâ, those who bring up the rear are still far away in the hilly region of the medium and upper Ganges. The earliest literature consists of the Vedas, a collection consisting of books race of darker hue; just as in these latter days their Aryan kinsmen in the Far West are ever on their guard against the fierce attacks of the dispossessed red-skinned. Not unfrequently, too, the light-coloured Aryan wage interminable war with one another—as when the Bharatas, with allied tribes of the Panjâb, gladdened on the royal sage Viśvâmitra, invade the country of the Tritsê king Sudás, to be defeated in battle by the Aryan king Yudhishthira, 1 through which the shadowy Vaisñâ Vîshhâ. The priestly office has already become one of high social importance by the side of the political rulers, and to a great extent an independent power; so that though it does not represent the baneful features of an exclusive caste, the Aryan housewife shares with her husband the daily toil and joy, the privilege of worshipping the national gods and even the triumphs of song clear over life. But, as Lindner 2 has said, "the religious belief of the people consists in a system of natural

symbolian, a worship of the elementary forces of nature, regarded as being endowed with reason and power superior to those of man. In giving utterance to this simple belief, the priestly spokesman has, however, frequently worked into it his own speculative and mythical conceptions, until the end result is that the Vedic song receives by far the largest share of the devout attentions of the Vedic singer. His ever-renewed battle with the malicious demons of darkness and drought, for the recovery of the heavenly light and the happy life, was sung in the form of a series of spirited song. Next to him, in the affections of the people, stands Agni (ignis), the god of fire, invoked as the genial inmate of the Aryan household, and as the bearer of oblations, and mediator between the rishis and indwelling saviour, the divine representatives of the king (or chief) and the priest of the Aryan community; and if, in the arrangement of the Samhitâ, the Brâhmaical craft, the ceremonial, and the Sûtra, are the three chief objects, so the Brâhmaical verse and hymn may be regarded as the divine impersonations of the Aryan freemen, the viś or clan. But, while Indra and Agni are undoubtedly the favourite figures of Vedic mantras, there is reason to believe that these gods had but lately supplanted another group of deities who played a less prominent part in the hymns, viz. Father Heaven (Dyaus Pitâ, Zeuς πατέρα, Jupiter); Varuṇa (probably ophane, the all-embracing god); and, to a much less extent, Sûrya, the sun-god, Sūrya (the dió), the vishvânum, the vishnavin"

1 Edited, with an English translation, by M. Haug (2 vols. Bombay, 1865). An edition in Roman transliteration, with extracts from the commentary, has been published by Th. Aufrecht (Bonn, 1887).

2 Edited by B. Lindner (Jena, 1887).

3 Edited, with Sâvâya’s commentary, by Râjendralâla Mitra, in the Bibliotheca Indica (1875-1876). The first three books have been translated by F. Max Müller in S.R.E. vol. i. A new edition of the work was published, with translation, by A. B. Keith (Oxford, 1909).
out as the Atiaryepaṇīsāhā,1 ascribed, like its Brāhmaṇa (and the first book), to Mahādīsa Aitareya; and the third book is also referred to as the Saṃśātra-ṇisāhā. As regards the Kaṇṭha-kāraṇa,2 this work consists of fifteen adhyāyas, the first two (treating of the subjects even in the Brāhmaṇa and the Āryaṇa, viz. of the two books which correspond to the first, fifth, and third books of the Aitareya-āryaṇa respectively, while the fourth adhyāya usually inserted between them constitute the highly interesting Kaṇṭha-kāraṇa (of which the fifth is not mentioned). The two last of the three books are dedicated to the Ayāraṇa (of the two books which correspond to the first, fifth, and third books of the Aitareya and Kaṇṭha-kāraṇa respectively. Both consist of a Saṃśātra- and an Anuṭātra-sūtra. The Aśvālāyana seems to have lived about the same time as Pāṇini (c. 400 B.C.)—his own teacher, Saṅkhaṇa, who compiled the Rīk-śāstra-sūtra, being probably intermediate between the great grammarians and Yāska, the author of the Nīrtaka. Saṅkhaṇa himself is said to have been the author of a Saṃśātra-sūtra (Khan. L.B.1 S.109), p. 56 seq., where the date of the first he had destroyed it on seeing his pupil’s work. A Grihya-sūtra is still quoted under his name by later writers. The Aśvālāyana Saṃśātra-sūtra3 consists of twelve, the Grihya of four, adhyāyas.

Besides the main work, which, however, was doubtless a comparatively modern writer, who, like Aśvālāyana, founded a new school of ritualists. Hence the Kaṇṭha-kāraṇa Brāhmaṇa, adopted (and perhaps improved) by him, also goes under his name, just as the earlier and more accepted of the two texts of the Sāmkhya were the Saṃśātra-sūtra and not the Grihya-sūtra. The Saṃśātra-sūtra consists of fifteen adhyāyas. The last two chapters of the work are, however, a later addition, while the Grihya-sūtra consists of three, the first two of which are likewise later additions.

The Sāmbhāsya Grihya-sūtra, of which a single MS. is at present known, seems to be closely connected with the preceding work. Professor Bühler also refers to the Rīgveda the Yāsīṣṭha-dharmāsūtra4 composed of mixed sūtras and couplets.

The works remain to be noticed, hearing chiefly on the textual form and traditional records of the Rīk-sūtra. In our remarks on the Vedāṅgas, the Prātiṣṭhākhyas have already been referred to as the chief repositories of śākhi or Vedic phonetics. Among these texts there are both different work, one being the composition of this important work is ascribed to the same Sākalya from whom the vague record of the (Sākalya) śaṅkhīti takes its name. He is also said to be the author of the existing Padāṣṭā (i.e. the form in which each word is given under the title with those that precede and follow it), which report may well be credited, since the padāṣṭā-text was doubtless prepared for a text, such as is presented in the Prātiṣṭhākhyas, of the phonetic significances which is to be known in their respective combination. In the Prātiṣṭhākhyas itself, Sākalya’s father (or Sākalya the elder) is also times referred to as an authority on the subject, by both Brāhmaṇa Saṅkhaṇa and Pāṇini, having improved on his father’s theories. Thus both father and son probably had a share in the formulation of the rules of pronunciation and modification of Vedic sounds. The completion or final arrangement of the Rīk-śāstra-sūtra, in its present form, is ascribed to Saṅkhaṇa, the reputed teacher of Aśvālāyana. Saṅkhaṇa, however, is merely a family name ("descendant of Saṅkhaṇa"), and the work ascribed to "Saṅkhaṇa" cannot be regarded as a whole of the second maṇḍala of the Rīk is attributed. How long after Śākalya this particular Saṅkhaṇa lived we do not know; but some generations at all events would seem to lie between them, confirming the statement in the Brihadāraṇyaka and some minor differences on phonetic points in the Śaṅkhīti text, had split into several branches, to one of which, the Sūṣṭra (or Sūṣṭra-yāti) was contributed. While Saṅkhaṇa is referred to both by Yāska and Pāṇini, neither of these writers mentions Saṅkhaṇa. It seems, nevertheless, likely, for several reasons, that Pāṇini was acquainted with Saṅkhaṇa’s work, though the point has by no means been proved. The Prātiṣṭhākhyas are either in mixed sūtras, or couplets of various metres, a form of composition for which Saṅkhaṇa seems to have had a special predilection. Besides the Prātiṣṭhākhyas, and the Grihya-sūtra mentioned above, eight other works are ascribed to Saṅkhaṇa, viz. the Brihadāraṇyaka,5 an account, in epic sūtras, of the deities of the hymns, which supplies much valuable mythological information; the Rīg-śāstra-sūtra,6 a treatise, orledge in epic metre, on the magic effects of Vedic hymns and verses; the Pāda-śāstra, a similar treatise, apparently no longer in existence; and five different indexes or catalogues (anukramaṇīs) of the rishis, metres, deities, sections (anuvāka) and hymns of the Rīg- śāstra-sūtra.7 Besides the two last named, the Grihya-sūtra, the Brāhiḍdevatā is the original one; and the Sārvāṇkrama8 or complete index, of Kālīyāyana.9 Both these indexes are ascribed to Saṅkhaṇa, and it is supposed that the Grihya-sūtra was performed in triplets, either actually consisting of three different verses, or of two verses which, by the repetition of certain parts, are made, as it were, to form three. The first sūtras are usually ascribed to Saṅkhaṇa: but in certain cases two verses sung to the same tune had a different sāṁhātra enclosed between them. One and the same sāṁhātra may thus be sung twice, or with different tunes, or the same tune, the same sāṁhātra, and the same words, sung with different tunes the same verse was invariably used for a certain tune, the term "sāṁhātra," as well as the special technical names of sāṁhātras, are not infrequently applied to the verses themselves with which they were sung as connected, just as one would quote the beginning of the text of an English hymn, when the tune usually sung to that hymn is meant. For a specimen of the way in which sāṁhātras are sung, see Burrell, Aṣṭā安阳-samhātra, p. xiv. seq. A sāṁhātra comprises the Gregorian or Plain Chant.10 Each sāṁhātra is divided into five parts or phrases (prastātra, or prelude, &c.), the first four of which are distributed between the three chanters, while the fifth (nīdhana) is sung in unison by all of them.

In accordance with the distinction between śākhi or text and sāṁhātra or tune, the sāṁhātra-hymn consists of two parts, viz. the sāṁhātra-sūtra, or the sāṁhātra or sāṁhātrāsūtra, and the sāṁhātra-hymns, and the Gōna, or tune-books, song-books. The textual matter of the śaṁkhīti consists of somewhat under 1600 different verses, selected from the Rīk-sāṁhātra, with the exception of some seventy-five verses, some of which have been taken from Khīla hymns, whilst others which also occur in the Aitarnān or Yajurveda, as well as such not otherwise found, may perhaps have formed part of some other recension of the Rīk. The Śāmaveda- śaṁkhīti11 is divided into two chief parts, the pārāna- (first) and the utara- (second) adhikāra. The first part contains the texts of the sāṁhātra-hymns, arranged in the order in which they are actually recited, in the stotras or sāṁhātras of the Śāmaveda. The first part, on the other hand, contains the body of tune-verses, or verses used for practising the several sāṁhātras or tunes upon—the tunes themselves being given in the Grāma-yāṇa-pātra (i.e. songs to the village tunes) and the village tunes-books, viz. the Parvārchiya. Hence the latter includes all the first verses of those triplets of the second part which had special tunes peculiar to them, whereas the texts of detached sāṁhātras occasionally lie outside the regular ceremonial, as well as such as were perhaps

1 Ed. by R. Meyer (Berlin, 1878).
2 Ed. by A. Macdonell (Oxford, 1886).
3 See Macdonell’s translation, published at Benares, also critically edited by A. A. Führer (Bombay, 1883); translation by G. Bühler in S.B.E. vol. xiv.
4 Cf. A. Weber’s analysis, Ind. Studien, ii. 268 seq. The work was edited by Bühler, in Ind. Stud.
6 Both works have been published with the commentary of Gārgya Nārāyaṇa, by native scholars, in the Ind. Stud. Also the text of the Grihya, with a German translation, by A. Stenzler.
7 Cf. A. Weber’s analysis, Ind. Studien, ii. 268 seq. The work was edited by Hillebrandt, in Ind. Stud.
8 Ed. with a German translation, by H. Oldenberg (Ind. Stud. vol. xv.), who also gives an account of the Sāṃkhīya Brāhmaṇa and Pāṇini. Brāhmaṇa Saṅkhaṇa was a learned scholar, who would assign the two sūtras works to Sarva-jna Śaṅkhīyaṇa, while the Brāhmaṇa (and Arāyaka) seem to him to have been compiled by Kāhola Kaṇṭha-kāraṇa to Guṇakāra Śaṅkhīyaṇa.
9 Cf. J. C. Pfeiffer’s translation, published at Benares; also critically edited by A. A. Führer (Bombay, 1883); translation by G. Bühler in S.B.E. vol. xiv.
10 Ed. with a German translation, by A. Regnier, in the Journal Asiatique (1856-1858); also, with a German translation, by M. Müller (1869).

11 Ed. with a German translation, by A. Macdonell (2 vols.), in the Harvard Or. series (1904).
12 Ed. by R. Meyer (Berlin, 1878).
13 Ed. with a German translation, by A. Macdonell (Oxford, 1886).
14 Ed. by A. Macdonell; cf. R. Meyer, “Krītyaḥūrdra,” in Bühler’s Grundriss des Sanskritwissens, also critically edited by A. A. Führer (Bombay, 1883); translation by G. Bühler in S.B.E. vol. xiv.
no longer required but had been so used at one time or other. The verses of the Pûrvâchāra are arranged on the same plan as the family-books of the Rik-samhita, viz. in three sections containing the verses addressed to Agni, Indra and Soma (pavunima) respectively. The first section (consisting of one, two and adhyāyas respectively) being again arranged according to the metres. Hence this part is also called Chhandas- (metre) archiKate. Over and above this natural arrangement of the two archiKats, there is a purely formal division into many small chapters, and there is an artificial (or artificial) division of which, in the first part, consists of ten decades (daśa) of verses.

We have two recensions of the Sāmhitā, belonging to the Rāṣṭryān classes, and to the Kauthuma school, the latter of which is but imperfectly known, but from the present state of our knowledge we cannot say that either is the true one. Besides the six prâpâyahkas (or five adhyāyas) of the Pûrvâchāra, some schools have an additional "forest" chapter, called the Aranyaka-samhitā, the tunes of which—along with others apparently intended for being chanted to special bhajans—belong to a separate recension. Besides the two tune-books belonging to the Pûrvâchāra, there are two others, the Ukhya-sāna ("modication-songs") and Ukhya-sānas, which follow the order of the samhita-sūtras. Several hymns chanted at the Soma sacrifice, with the modifications of the tunes undergone when applied to texts other than those for which they were originally composed. The Sāman anumal, as it has come down to us, has evidently passed through long centuries. The practice of chanting probably goes back to very early times; but the question whether any of the tunes, as given in the Gānas, and which of them, can lay claim to an exceptionally high antiquity is not yet resolved.

The title of Brâhmaṇa is bestowed by the Chhandogas, or followers of the Sāmaṇa, on a considerable number of treatises. In accordance with the statement of Rūpâ-chandra, the name is often fixed at eight; and within the last few years one new Brâhmaṇa has been recovered, while at least two others which are found quoted may yet be discovered. The Brâhmaṇa is the term employed by the Brâhmaṇas present, however, none of the characteristic features of other works of that class; but they are rather of the nature of stāras and kindred treatises, with which they probably belong to the same period of literature. Moreover, the contents of these works—what might indeed be expected from the nature of the duties of the priests for whom they were intended—are of an extremely arid and technical character, and have been little used except for the textual criticism of the Sāmhitā or on account of the legendary and other information they supply. These works are as follows: (1) the Tûṣyā-mahâ, (or Praṣana- brâhmaṇa, a Brâhmaṇa usu-ally found with the Brâhmaṇa, which contains a list of twenty-five adhyāyas—which treat of the duties of the udgâtās generally, and especially of the various kinds of chants; (2) the Saṇkṣetra, or twenty-sixth, being a supplement to the preceding work; (3) the last chapter, also which bears the title of Aranyaka-brâhmaṇa, or "book of marvels," is rather interesting, as it treats of all manner of portents and evil influences, which it teaches how to avert by means of prayers and incantations. These Brâhmaṇas are also to be found with the Chhandogyas, Rigvihâsana, descripting on them the magical effects of the various sānas; (4) the Arsheya-brâhmaṇa, a mere catalogue of the technical names of the sānas in the order of the Pûrvâchāra, known in two different recensions, the former belonging to the Brahmā and Vaiśnavas; (6) the Chhândogya-brâhmaṇa, the last eight adhyāyas (3-10 of which constitute the important Chhândogopanishad; 7) Mâyuravâhana-brâhmaṇa, a Brâhmaṇa to which are appended chants; (8) the Vâsisi-brâhmaṇa, a mere list of the Sâmaṇa teachers. To these works has been added the Jaiminiya- or Talavakâra-brâhmaṇa, which, though as yet only known by extracts, seems to stand much on a level with the Brâhmaṇas of the Rik and Yaduvendra.

A portion of it is the well-known Kena- (or Talavâkâra-) upanishad, on nature of Brahma, as the supreme of deities.

If the Sâmaṇa has thus its ample share of Brâhmaṇa-literature, though in part of a somewhat questionable character, it is not less richly supplied with sūtra-treatises, some of which probably belong to the oldest works of that class. There are two treatises of which we have the best account, both having been originally written in a separate recension closely to the Panchavâhana-brâhmaṇa: Maarkoṣa's Arshyeya-

kalpa, which gives the beginnings of the sānas in their sacrificial

order, thus supplementing the Arshyeya-brâhmaṇa, which enumerates them only, the Brâhmaṇya-brâhmaṇa, which is devoted to the Brâhmans of the Vedanta, or Śrīmad-Brâhmâyana, of the Kauthuma and Râṣṭryâna schools respectively, which differ but little from each other, and form complete manuals of the duties of the udgâtâs. Another sūtra, of an exegetical character, and belonging to a recension that differs but little from that of the Brâhmaṇya-brâhmaṇa, treats of the different parts of the sānas; and the Sâmaṇatâra, a treatise on chants of a very technical nature. Further, two Grihya-sūtras, belonging to the Sâmaṇa, are hitherto known, viz. the Dhrâvyâya-grîhya, ascribed to Khrâdîrâ, and the Kasthâ-grîhya, a treatise on the Kasthâ-sūtra), with a supplement, entitled Karma-prâkâśa, by Kâtyâyana. To the Sâmaṇa Vedas seem to belong the Gauâyana-dharma-brâhmaṇa, and apparently the oldest existing compendium of Hindu law.

C. Yajur-veda.—This, the sacrificial Veda of the Adhvaryu priests, divided itself into an older and a younger branch, of which they are called, the Black (Brâhman) and the White (Yajurveda). Tradition ascribes the foundation of the Yajurveda to the sage Vaiśampāyana. Of his disciples, three are specially named, viz. Kâsha, Kâlapi and Yâśaka. The first of whom is stated to have communicated the sacrificial science to Tittiri. How far this genealogy of teachers may be authenticated cannot now be determined; but certain it is that the internal evidence of the Brâhmanas and other Vedic works, viz. the Kâlapi, the Kâlâpaka or Malâyâyana Samhitâ, and the Taittirîya-samhitâ, are mentioned. The Kâthaka and Kâlâpaka are frequently mentioned together; and the author of the great commentary on the Brâhmanas, which is called the Yajur-vendra, is said to have been a disciple of Kâthaka and Kâlâpaka, and to have written his work in every village. The Kâthaka and Kâlâpaka are often referred to under the collective name of Charakas, which apparently means "sacrifice-maker." or "sacrificial scholars; but according to a later writer (Hemachanda) Charakâ is no other than Vaiśampāyana himself, after whom his followers would have been thus called. From the Kâthaka proper two or three schools seem early to have been divided, of which the Kâthaka and Kâlâpaka are the two. Of the Kâthaka, the text-recension of the latter of whom has recently been discovered in the Kâthâ-kâtha-samhitâ, and probably also the Châryâyana-Kâthaka. The Kâlâpaka also soon became subdivided into numerous different schools. Thus from one of Kâlâpaka's immediate disciples, Hari, the Hari-râvîkaya took their origin, whose text-recension, the Hari-râvîkaya, is quoted together with the Kâthaka as early as Rûpâ-chandra's Brâhmaṇa,

1 Edited with Sâya's commentary by Aândandachâr Vâdantâvâ, in the Bibl. Ind. (1896-1874).
2 Extracts from it, by J. Vidyâsâgara (1881); also, with German translation, K. Klebs, Ind. Stud., ii. 19.
4 A. Burnell, "Vâmana under (3), (4), (5), (7), (8) have been edited by A. Burnell; (8) also previously by A. Weber, Ind. Stud. vol. iv.; whilst 7 was translated by Sten Konow (Halle, 1893).
5 Edited and translated by Dr Röör, Bibl. Ind.; also translated by A. L. Schrder, Bibl. Ind., vol. l., text, with German translation, by O. v. Bhöthisch (1886).
6 Given by Burnell (1878), and (with translation) by H. Oertel, J. Am. Or. S. vol. xvi. See also Whitney's account of the work, of which A. L. Schrder had charge, the Chhandogya-vâhana-brâhmaṇa, May (1888).
7 Tranf. by M. M. Mûller, S.B. S. vol. i.

* Arshyekapala, ed. W. Caland (1908); Lâtyâya-sûtra, with Aggissarmin's commentary and the ms. ll. of the Drâhyâya-sûtra, by Aândandachâr Vâdantâvâ, Bibl. Ind. (1872).
* Edited, with a commentary, by Chandrâkânta Târalâkânta, Bibl. Ind. (1880). R. Kaurer, "Bihler's Brâhmanas" (1884-1887); Eng. trans. by H. Oldenberg, S.B.E. vol. xxx.
* Edited by A. Sczerner; translated by G. Bühler, S.B.E. vol. ii.
VEDIC PERIOD

SANSKRIT

this work is manifest of a supplementary nature, a portion of it may be called adhyāyas, and hence have formed part of the Samhitās, considering that the latter consists of seven asthākata, instead of eight, as this term requires, and that certain essential parts of the ceremonial handbooks, the Brāhmaṇas, are entirely missing. The text referred to in this work is the Taittirīya-āraṇyaka,1 in ten books, the first six of which are of a ritualistic nature, while of the remaining books the first three (5-3) form the Taittirīya-upaṇiṣad2 (comprising the Brāhmaṇa of the Taittirīya-Samhitā); the last three books (5-9) are the Anāndavali and Bhṛgavali, also called together the Vārūṇi-upaṇiṣad; and the last book forms the Nārâyāṇya- (or Yājñik-) upaṇiṣad.

Sanskrit

Samhitā of White Yajurveda

The ancient arrangement of the texts was at last remedied by a different school of Adhyāvāyus, the Vājāsaneīyas. The reputed originator of this school and its text-recension is Yajvalīya (or Yajvalīya, in the older recension), who was the first to give a rearrangement of the texts that was a collection of sacrificial mantras, the Vājāsaneī-yājñapitāma, and a Brāhmaṇa, the Satapatha. On account of the greater lucidity of this arrangement, this recension is known as the Vājāsaneīya or Vājāsaneīya-Vajurveda—the name of Black (or obscure) Yajus being for opposite reasons applied to the Charaka texts. Both the Sanskrit and Brāhmaṇa of the Vājāsaneīyas have come down to us in two different recensions. Taking the first of these, the Satapatha-brāhmaṇa is particularly rich in material; and besides a considerable number of quotations from a Vājāsaneika, or newly discovered, seats of which we cannot doubt that there must have been at least one other recension of the Satapatha-brāhmaṇa. The difference between the two extant recensions is on the whole, slight, although the subject-matter; but in point of diction it is quite sufficient to make a comparison especially interesting from a philological point of view. Which of the two recensions was the earliest, of course, cannot be determined; but the phonetic and grammatical differences will probably have to be accounted for by a geographical separation of the two schools rather than by a difference of age. In several points of difference, the Satapatha-brāhmaṇa is in support of the Rik-samhitā, and there probably was some connexion between the Yajus school of Īśvānas and the famous family of rishis of that name to which the eight Ādīgala of the Rik is attributed.

The Vājāsaneīya arrangement of the texts consists of eighteen of which contain the formulas of the original sacrifices. The last fifteen adhyāyas are doubtless a later addition—alas! also, the case regards the preceding seven chapters. The last adhyāya is common to the Vājāsaneīya- (or Yājñik-) upaṇiṣad.8 Its object seems to be to point out the fruitlessness of mere words, and to insist on the necessity of man's action. It is this very recension that supplies the groundwork of the Adhyāvāyus, in about equal parts, of verses (rich) and prose formulas (yajus). The majority of the former occur likewise in the Rik-samhitā, from which they were doubtless extracted. Not infrequently, they are in support of the Satapatha-brāhmaṇa, and for reading, which may be explained partly from a difference of recension and partly as the result of the adaptation of these verses to their special sacrificial purpose. As regards the prose formulas, though only a few of them are actually referred to in the Rik, it is quite possible that many of them may be of high antiquity.

The Satapatha-brāhmaṇa,9 or Brāhmaṇa of a hundred paths, derives its name from the fact of its consisting of 100 lectures (adhyāyas), which are divided by the Mādhyanda into forty, and by the Kāyās into seventeen books (kāyās). The first nine books of the former, corresponding to the first eleven of the later arrangement, contain a kind of running commentary on the first eighteen books of the Vaiṣṇava-samhitā; and it has been plausibly suggested by Professor Weber that this portion of the Brāhmaṇa may be referred to as the Mahābhārata of the Satapatha-brahmana, where a Satapatha and a Brāhmaṇa of this nature have remained through all ages.

Brāhmaṇa of White Yajurveda

The Mānava-srauta-sūtra10 seems to consist of eleven books, the first nine of which treat of the sacrificial ritual, while the tenth contains the Śulva-sūtra; and the eleventh is made up of a Veda-pitāma. The text of the Mānava-srauta-sūtra is also likewise in existence; but so far nothing is known, save one or two quotations, of a Mānava-dharma-sūtra, the discovery of which might be expected to solve some important questions regarding the development of Indian law. Of sūtras belonging to the Kāthā, a single treatise, the (Chāṇakya-) Kāthā-sūtra, is known; but while Jolly considers the Vīkhūṃ-sūtra,11 a compendium of law, composed in mixed sūtras and ślokas, to be nothing but a Vaiṣṇava recast of the Kāthā-dharma-sūtra, which, in its original form, seems no longer to exist. As regards the Taittirīya, the Kalpa-sūtra most widely accepted among them was that of Apatambha, to whose school, as we have seen, was also due our existing recension of the Taittirīya-samhitā. The Apatambaka-kalpa-sūtra consists of thirty prāṇa (questions); the first twenty-five of these constitute the Srauta-sūtra,26 and 27 the Gṛhya-sūtra,28 and 29 the Dharma-sūtra,30 and 31 the Āpāta-sūtra.12 The Vīkhūṃ-sūtra has tried to fix the date of this work somewhere between the 3rd and 4th centuries n.c.; but it can hardly yet be considered as definitely settled. Considerably more ancient than this work are the

2 Trans. by F. M. Müller, S.B.E., vol. xvi.
4 Text and translation published by F. M. Müller, S.B.E., vol. xvi., and others.
5 Edited in the Mādhyanda recension, with the commentary of Mādhyanda by Kātākhya, in the Kātākhya text, by A. Weber (1841); trans. by R. H. T. Griffith (Benares, 1899). 6 Translation by E. Röer, Bibl. Ind.; by F. M. Müller, S.B.E., vol. xvi.
7 Edited by A. Weber, who also translated the first chapter into German. English translation (5 vols.) by J. Eggeling, in S.B.E. a Shashi-patha (i.e. _consisting of 60 paths_ ) are mentioned together as objects of study, and that consequently it must have formed an independent work. This view is also supported by the circumstance that of the remaining five books (10-14) of the Mānava-srauta-sūtra, the first three are the most largely worked upon, while the Kāyās apply the same epithet to the middlemost of the five books (12-16) preceding their last one. This last book would thus seem to be treated by them as a second supplement, and not without some distinction, as it is called the Vājrayāna-srauta-sūtra, or the Title of Bṛhadha-[great] āraṇyaka;4 the last six chapters of which are the Bṛhadāraṇyaka-upaṇiṣad,3 the most important of all the Upaṇiṣads. Except in books 6-10 (M.), which treat of the construction of Śrautas, and recognize the sage Śankindya as their chief authority, the Yājvalika's opinion is frequently referred to in the Satapatha as authoritative. This is especially the case in the later books, part perhaps, as a safeguard. The Yājvalika's opinion is all the more important at present, for from the time of the old Buddhist monks, who were the first to fix the Date of the Satapatha, the probability is that the main body of the work is considerably older than the time of Pāṇini, but that some of its latter parts were considered by Pāṇini's critic by Yājvalika to be of the same age as the, or not much older than, Pāṇini. Even those portions which had probably been long in existence before they were known to the general public and to consider the best of the names for the cause of the White Yajus. The contemptuous manner in which the doctrines of the Charaka-adhyāyas are repeatedly animadverted upon, is, on the betrays not a little of the _ōdīum theologicum_ on the part of the divines of the Vājāsaneīyas towards the brethren of the older schools, to whom they held the Vedas, to be worthless, but they seem to have striven by every means to gain ascendency over the rivals. The consolidation of the Brāhmaṇical hierarchy and the institution of a common system of ritual worship, which the Śrauta-Sūtras and the liturgical books the Vājvalikas, are confined. The Satapatha, however, as, and of the Vājvalikas, or the **Vedantikas**, and of the Yajvalikas, has been worked by the Kalpa-brāhmaṇa of Yajvalika. This last samhitā is known as the Kalpa-brāhmaṇa, both of the Satapatha, and the Yajvalika, to which Professor Weber has referred the portion of the Brāhmaṇa which may be referred to as the Kalpa-brāhmaṇa of the Satapatha and the Yajvalika, where a Satapatha and a Brāhmaṇa of this nature have remained through all ages.
The Atharva-veda.—The Atharva-veda was the latest of the Vedas. It was compiled to be a sacrificial text, meant for the performance of the sacred fire; but whilst the Atharvans seem to have devoted themselves to the auspicious aspects of the fire-cult and the performance of propitiatory rites, the Angiras, on the other hand, are several times rebuked by the Atharvan. In the sacrificial texts of the Atharvans the mystic phrases and magical incantations are more prominent than in the other Vedas. The Atharvans, connected with the Brahma or sacred (magic) word, and the supreme deity is supposed to embody. The current text of the Atharva-saṁhitā is the oldest text of the Saunaka school; it consists of many portions in verse and prose. It has been compiled by Katyāyanas, a learned critic, inscriptions, and we have to consider it as older than Pāṇini, or whether (with Gold-sticker and M. Müller) we are to identify its author with Pāṇini's own. The only existing Pratisakhya of this Black Vyākaraṇa belongs to the Taittiriya school. Its author is unknown, and it confines itself entirely to the Taittiriya-saṁhitā, to the exclusion of the Brahmana and Āraṇyaka.

A. The Atharvaveda is a large number of secondary treatises, likewise attributed to Katyāyana, among which may be mentioned the Rāṣṭrapaṭa-saṁhitā, which is the oldest Veda of its kind by its language, which is a mixture of a lexicon and a grammatical point of view, and which has been compiled as the basis of the Rīk and the Brahmana period. In regard also to the nature of its contents, and the spirit which pervades them, this Veda is perhaps the most interesting of all the Vedas, as it has been burried in the mists of a thousand years. The older Vedas seem clearly to reflect the recognized religious notions and practices of the upper, and some, respectable classes of the Aryan tribes, as really watched over by a priesthood deeply interested, but in most cases, only indirectly, in the observances performed by the people. The fourth Veda, on the other hand, deals mainly with all manner of superstitious practices such as have at all times found a place in the religious and secular life of the people, and are even apt, below the surface, to maintain their tenacious hold on the popular mind in comparatively civilized communities. Though the constant intermingling with the aboriginal tribes may well be believed to have exerted a deterring influence on the Vedic people in this respect, it can scarcely be doubted that superstitious practices of the kind revealed by the Atharva-veda and the tenth book of the Rīk must at all times have obtained approval among the Aryans. The practices of the latter period, when they received the stamp of recognized forms of popular belief by the admission of these collections of spells and incantations into the sacrificial canon. If in this phase of superstitious belief the old gods still find a place, their character has visibly changed so as to be more in accordance with those mystic rites and magic performances and the part they are called upon to play in them, as the promotors of the new religious and ceremonial practices and the averter of the omens and designs of mortal enemies and the demonic influences to which he would ascribe his fears and failures as well as his bodily ailments. The fourth Veda may thus be said to supplement in a remarkable manner the Rīk, Kārtikeya, and the Atharva-saṁhitā. It is also presented in the Grihya-sūtras or house-rules; for whilst these deal only with the orderly aspects of the daily duties and periodic observances in the family, the religious rites and the hallowed ceremonies, that rules which allow us a deep insight into "the obscrer relations and emotions of human life": and, as a matter of fact, the mental and spiritual development of the Vedas is a mirror of the inner development of the Vedic people. This is worthy of note, that the Atharvaveda is practically unknown in Kashmir.

This body of spells and hymns is traditioned with two old mystic priestly families, the Atharvans and Angiras, their names, in the plural, serving either singly or combined (Atharvans and Angiras). The name of the Lord, Dharmaṣṭūrī, given by T. Bloch (Vienna, 1866). A. Weber, Stud. Ind. iii. 1858. Edited by A. Weber, 1859. Edited by A. Weber, 1858, with a German translation by A. Stenzler. Edited, with Uvâna's commentary, and a German translation, by A. Weber, Ind. Stud. iv.; another ed. in Benares Saks. Ser. (1888), and with a French translation by L. F. Hultzsch (Leipzig, 1884), and translated by G. Hübner, S.B.E. xiv.


1The Śūlva-sūtra has been published with the commentary of Kapardisvān, and a translation by G. Thibaut, in the Benares Pandit (1887). The Dharmaṣṭūrī has been edited by H. Oldenberg, and translated by G. Bühler, S.B.E. xiv.


4A. Burnell, Classif. Index of Tanjore Sansk. MSS. p. 37.
The Kalpa-sūtras belonging to this Veda comprise both a manual of śrauta rites, the Vaiśānava-sūtra, and a manual of domestic rites, the Kauśika-sūtra. The latter treatise is not only the more interesting of the two, but also the more ancient, being the earlier of the two manuals. The former treatise, which is repeatedly referred to in the work on points of ceremonial doctrine. Connected with this Sūtra are upwards of seventy Parithāsas, or supplementary manuals, each of the form of a Sūtra, compiled in many cases by the performance of grhyta rites. The later Sūtras are to be noticed in connexion with this Veda is the Saunakīya Chaturādhyāyikā, being a Prātiṣṭhikāya of the Atharva-sāṃhitā, so called because the Śarasvatī River is the scene of the prātiṣṭhikāya (the site of the Śarasvatī). Saunaka can hardly be credited with being the actual author of the work, considering that his opinion is rejected in the only rule where his name appears, there is no reason to doubt that it chiefly embodies the views of the sect, which were afterwards perfected by members of his school. Whether this Saunaka is identical with the writer of that name to whom the final redaction of the Śrīkalpaśākhā of the Rik is ascribed is not known; but it is of note that on at least two points where Śrīkalpa is quoted by Pāṇini, the Chaturādhyāyikā seems to be referred to rather than the Rik-prātiṣṭhikāya. Saunaka is quoted once in the Vaiśāsneyati-prātiṣṭhikāya; and it is possible that Kātyāyana had the Chaturādhyāyikā in view, though his reference does not quite tally with the respective rule of that work.

One class of writings already alluded to as traditionally connected with the Atharvaveda are the numerous Upanishads which do not specially attach themselves to one or other of the Śrīnātikas or Brāhmaṇas of the other Vedas. The manuscripts of the five principal Upanishads are not, however, they can be roughly divided into two classes, viz. those of a purely speculative or general pantheistic character, treating chiefly of the essence of the supreme spirit, and the means of attaining to union therewith, and those of a more concrete character, treating chiefly of the historical number—such as the Prāṇa, Mṇḍaka, and Māṇḍūkya-Upanishads—have probably been assigned to the later period of Vedic literature; whilst the others presuppose more or less distinctly the existence of some fully developed system of philosophy, especially after the Vedas, or the Yoga. The sectarian Upanishads, on the other hand—identifying the supreme spirit either with one of the forms of Vīṣṇu (such as Bhūmi-tāṇḍaya, Kama-tāṇḍaya, Gopīśe-tāṇḍaya Upanishads), or with Śiva (i.e. the Rudroprishish), or with some other deity—belong to post-Vedic times.

2. THE CLASSICAL PERIOD

The Classical Literature of India is almost entirely a product of artificial growth, in the sense that its vehicle was not the language of the general body of the people, but of a small and educated class. It would scarcely be possible, even approximately, to fix the time when the literary idiom ceased to be understood by the common people. We only know that in the 3rd century B.C. there existed several dialects in different parts of northern India which differed considerably from the Sanskrit; and Buddhist tradition states that Gautama Sākyamuni himself, in the 6th century B.C., used the local dialect of Magadha (Belur) for preaching his new doctrine. Not unlikely, indeed, popular dialects, differing perhaps but slightly from one another, may have existed as early as the time of the Vedic hymns, when the Indo-Aryan, divided into clans and tribes, occupied the land of the Seven Rivers; but such dialects must have sprung up after the extension of the Aryan sway and language over the whole breadth of northern India. But there is no reason why, even with the existence of local dialects, the literary language should not have kept in touch with the people in India, as elsewhere, save for the fact that from a certain time that language remained altogether stationary, allowing the vernacular dialects more and more to diverge from it. Although linguistic research had been successfully carried on in India for centuries, the actual grammatical fixation of Sanskrit seems to have taken place contemporaneously with the first spread of Buddhism; and

The national epics. The Bhāratas, i.e. "the great (poem) or tale of the Bhāratas" is not a national epic, but a miscellaneous collection of poetry, consisting of a heterogeneous mass of legendary and didactic matter, worked into and round a central heroic narrative. The authorship of this work is aptly attributed to Vyāsa, "the arranger," the personification of Indian diaspora. Only the bare outline of the leading story can here be given.

In the royal line of Hastinapura (the ancient Delhi)—claiming descent from the life of the sages and the national race (so-called "the Bhāratas")—one family, the Kauravas; the elder, the Pāṇḍavas. A R. Garbe, in his "Handbuch der vergleichenden Sprachwissenschaft," p. 293, claims that the language of the Kauravas is more usually applied to the sons of Dhrītarāṣṭra, while their cousins, as the younger line, are named, after their father, Pāṇḍavas. The rivalry and varying fortunes of these two houses form the main plot of the great epic. The Pāṇḍus, princes soon found themselves greatly superior to their cousins; and Yudhishṭhīra, the eldest of them all, was to be appointed heir-apparent. But, in the course of time, having divided his kingdom among his five nephews for a time to retire from court and reside at a house where the unscrupulous Duryodhana meant to destroy them. They escaped, however, and passed some time in the forest with their mother, Kanada. The Kauravas, with Draupadi, (the wife of the Draupadi, without being recognized by any one. During their forest-life they met with many adventures, among which may be mentioned their encounter with King Jayadratha of Chedi, who had carried off Draupadi while she was nursing twins, and who, on their leaving the forest, and, assuming various disguises, take service at the court of King Virāt of Matsya. Here all goes well for a time till the queen's brother Kīchaka, a great warrior and commander of the royal forces, falls in love with Draupadi, and is slain by Bhima. The Kauravas, profiting by Kīchaka's death, now invade the Matsyan kingdom, where the Pāṇḍavas side with King Virāt, and there ensues, on the field of Kurukṣetra, during eighteen days, a series of fierce battles, ending in the annihilation of the Kauravas. Yudhishṭhīra now at last becomes yuvā-rīja, and eventually king—Dhrītarāṣṭra having resigned and retired with his wife and Kūtī to the Indra's paradise—when they learn of the death of the dying also the death of Kīchaka, Yudhishṭhīra himself at last becomes tired of life and resigns his crown; and the five princes, with their faithful wife, and a dart that joins them, set out for Mount Meru, to seek admission to Indra's heaven. On the way one by one falls off, till Yudhishṭhīra alone, with the dog, reaches the gate of heaven; but, the dog being refused admittance, the king declines entering

Indeed that popular religious movement undoubtedly exercised a powerful influence on the linguistic development of India.

A. Poetical Literature.

1. Epic Poems.—The Hindus, like the Greeks, possess two great national epics, the Mahābhārata and the Rāmāyana. The Mahābhārata, i.e. "the great (poem) or tale of the Bhāratas," is not a national epic, but a miscellaneous collection of poetry, consisting of a heterogeneous mass of legendary and didactic matter, worked into and round a central heroic narrative. The authorship of this work is aptly attributed to Vyāsa, "the arranger," the personification of Indian diaspora. Only the bare outline of the leading story can here be given.

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3. Three complete Indian editions, the handlist in 4 vols., including the Harivamsa (Calcutta, 1834-1839); a Bombay edition, with critical comments and a parallel translation, containing the Southern recension (Madras, 1855-1860). Another Southern edition, in Nāgari, is now appearing at Bombay, edited by GA. R. Garbe. For a full view of the translation of this epic, an English translation has been brought out at Calcutta by Pratap Chandrap Rdy (1883-1894); and another by M. N. Dut (5 vols., Calcutta, 1896); whilst numerous episodes have been printed and translated by various hands, e.g. by A. C. D. Caland, "The Mahābhārata" (vol. Kiel, 1892-1893); W. Hopkin, "The Great Epic of India" (New York, 1912).
without it, when the dog turns out to be no other than the god of Justice himself, having assumed that form to test Yudhishthira's constancy. But, finding neither his wife nor his brothers in heaven, and being told that they are in the nether world to expiate their sins, the king insists on sharing their fate, when this, too, proves a trial, and they are all reunited to enjoy perpetual bliss.

The complete work consists of upwards of 100,000 couplets—its contents thus being nearly eight times the bulk of the Iliad and Odyssey combined, is evidently a late development. It is divided into eighteen parts, called in a supplement entitled Harivamsa, or genealogy of the god Hari (Krishna-Vishnu). In the introduction, Vyasa, being about to dictate the poem, is made to say (i. 81) that so far he and some of his disciples knew 800 couplets; and farther on (i. 101) he is said to have composed the collection relating to the Bhāratas (bhārata-samhitā), and called the Bhārataṃ, which, not including the episodes, consisted of 24,000 slokas. Now, as a matter of fact, the portion relating to the feud of the rival houses constitutes somewhere between a fourth and a fifth of the work; and it is by no means improbable that this portion formed a separate poem, called the Bhārata. But, whether the former statement is to be understood as implying the existence, at a still earlier time, of a yet shorter version of about one-third of the present extent of the leading narrative, cannot now be determined. While some of the episodes are so loosely connected with the story as to be readily severed from it, others are so closely interwoven with it that their removal would seriously injure the very texture of the work. This, however, only shows that the original poem must have undergone some kind of revision, or perhaps repeated revisions. That such has indeed taken place, at the hands of Brahmins, for sectarian and caste purposes, cannot be doubted. According to Lassen's opinion,1 which has been very generally accepted by scholars, the main story of the poem would be based on historical events, viz. on a destructive war waged between the two neighbouring peoples of the Kurus and Pancalas, who occupied the western and eastern parts of the Madhyadeśa (or "middle land") between the Ganges and Jumna respectively, and ending in the overthrow of the Kuru dynasty. On the original accounts of these events—perhaps handed down in the form of lays or sagas—the Pāṇḍava element would subsequently have been grafted as calculated to promote the class interests of the Brāhmanical revisers. It is certainly a strange coincidence that the five Pāṇḍava princes should have taken to wife the daughter of the king of the Pancalas, and thus have linked their fortunes to a people which is represented, in accordance with its name, to have consisted of five (pancha) tribes.

The earliest direct information regarding the existence of epic poetry in India is contained in a passage of Dionysostom (c. A.D. 80), according to which "even among the Indians, they say, there are bards, who, taking delight in the songs of old men, are not translated by them into their own dialect and tongue;2 and of the Indians are well acquainted with the sufferings of Priam, the lamentations and wails of Andromache and Hecuba, and the prowess of Achilles and Hector." Now, although these allusions would suit either poem, they seem to correspond best to certain incidents in the Mahābhārata, especially as no direct mention is made of a warlike expedition to a remote island for the rescue of an abducted woman, the resemblance of which to the Trojan expedition would naturally have struck a Greek becoming acquainted with the general outline of the Rāmaṇya. Whence Dion could have formed his information is not known; but as many leading names of the Mahābhārata and even the name of the poem itself are mentioned in Pāṇini's grammatical rules, not only must the Brāhara legend have been current in his time (c. 400 B.C.), but most probably it existed already in poetical form, as undoubtedly it did at the time of Patanjali, the author of the "great commentary" on Pāṇini (c. 150 B.C.). The great epic is also mentioned, both as Bhārata and Mahābhārata, in the Grihya-sūtra of Áśvalayana, whom Lassen supposes to have lived about 350 B.C. Nevertheless it must remain uncertain whether the poem was then already in the form in which we now have it, at least as far as the leading story and perhaps some of the episodes are concerned, a large portion of the epicoidal matter being clearly of later origin. It cannot, however, be doubted that long before that time heroic song had been diligently cultivated in India at the courts of princes and among Kshatriyas, the knightly order, generally. In the Mahābhārata itself the transmission of epic legend is in some way connected with that of the Kautilya, and with the supplementary system, is defined as resulting from the union of Kshatriya men with Brāhmaṇa women, and which supplied the office of charioteers and heralds, as well as (along with the Māgadhas) that of professional minstrels. Be this as it may, there is reason to believe that, as Hellas had her ἀριστεύς, who sang the ἀκλα ἀδυνή, and Iceland her skalds who recited favourite sagas, so India had from olden times her professional bards, who delighted to sing the praises of kings and inspire the knights with warlike feelings. If in this way a stock of heroic poetry had gradually accumulated which was then called "the older stories," or, as under conditions of society and manners, we can well understand why, after the Brāhmanical order of things had been definitely established, the priests should have deemed it desirable to subject these traditional memorials of Kshatriya chivalry and prestige to their own censorship, and adapt them to their own canons of religious and civil law. Such a revision would doubtless require considerable skill and tact; and if in the present version of the work much remains that seems contrary to the Brāhmanical code and pretensions—e.g. the polyandrous union of Draupad and the Pāṇḍu princes—the reason probably is that such features were too firmly rooted in the popular tradition to be readily eliminated, and as the revision in the process of explaining them away as best they could. Thus Draupadi's abnormal position is actually accounted for in five different ways, one of these representing it as an act of duty and filial obedience on the part of Arjuna who, on bringing home his fair prize and announcing it to his mother, is told by her, before seeing what it is, to share it with his brothers. Nay, it has even been seriously argued that the Brāhmanical editors have completely changed the traditional relations of the leading characters of the story. For, although the Pāṇḍavas and their cousin Kṛṣṇa are constantly extolled as models of virtue and goodness, while the Kaurava and their friend Karna—a son of the sun-god, borne by Kunti before her marriage with Pāṇḍu, and brought up secretly as the son of a Sūta—are deemed as monsters of depravity, these estimates of the heroes' characters are not unfrequently belied by their actions—especially Kṛṣṇa and the brave Duryodhana (i.e. "the bad fighter," but formerly called Suyodhana, "the good fighter") contrasting not unfavourably with the wily Kṛṣṇa and the cautious and somewhat effeminate Yudhishthira. These considerations, coupled with certain peculiarities of the legends and the latter's obvious intention of an original connexion of the latter with Buddhist institutions, have led Dr Holtzmann to devise an ingenious theory, viz. that the traditional stock of legends was first worked up into a connected narrative by some Buddhist poet—most likely at the time of the emperor Asoka (c. 250 B.C.), whom the Kaurava hero Suyodhana might even seem to have been intended to represent—and that this poem, showing a decided predilection for the Kuru party as the representatives of Buddhist principles, was afterwards revised in a contrary sense, and the time and the Brāhmanical reaction, by votaries of Vishnu, when the Buddhist features were generally modified into Śaivite tendencies, and promience was given to the divine nature of Kṛṣṇa, as an incarnation of Vishnu. As this theory would, however, seem to involve the Brāhmanical revision of the poem having taken place subsequent to the decline of Buddhist predominance, it would shift the completion of the work to a considerably later date than would be consistent with other evidence. From inscriptions we know that by the end of the 5th century A.D. the Mahābhārata was appealed to as an authority on matters of law, and that its extent was practically what it now is, including its supplement, the Harivamsa. Indeed, everything seems to point to the probability of the work having been complete by about A.D. 200. But, whilst Brāhara and Kuru heroic lays may, and probably

1 Lassen, Indische Altertumskunde, i. 733, sqq.
2 Viz. as an adj., apparently with "wa..." or "poem" understood.
do, go back to a much earlier age, it seems hardly possible to assume that the Pāndava epic in its present form can have been composed before the Greek invasion of India, or about 300 B.C. Moreover, it is by no means impossible that the epic narrative was originally composed—as some other portions of the works are—in prose, either continuous or mixed with snatches of verse. New portions (as of the character of Rāma) may even have been originally composed in some popular dialect, which would certainly best account for the irregular and apparently prāktik or dialectic forms in which these works abound. The leading position occupied in the exist-
ing epic by Krishṇa (whence it is actually called kārṇa-veda, or the veda of Krishṇa), and the Vaishākha spirit pervading it, make it very probable that it assumed its final form under the influence of the Bhāgavata sect with whom Vāsudeva (Krishṇa), originally apparently a venerated local hero, came to be regarded as a veritable god, and incarnation of Vishu its culminating point this sectarian feature attains in the Bhāgavad-gītā (i.e. the up
shanah), “sung by the holy one”—the famous theosophe episode, in which Krishṇa, in lofty and highly poetic language, expounds the doctrine of faith (bhakti) and claims adoration as the incarnation of the supreme spirit. Of the purely legendary matter incorporated with the leading story of the poem, not a little, doubtless, is at least as old as the latter itself. Some of these episodes—especially the well-known story of Nala and Damayanti, and the touching legend of Śāivi—form themselves little by little, as it were, into the body of the epic poem.

The Rāmāyana, i.e. poem “relating to Rāma,” is ascribed to the poet Vālmīki; and, allowance being made for some later additions, the poem indeed presents the appearance of being the work of an individual genius. In its present form it consists of some 24,000 ślokas, or 48,000 lines of sixteen syllables, divided into seven books.

(I) King Daśaratha of Kosāla, reigning at Ayodhyā (Oudh), has four sons borne him by three wives, viz. Rāma, Bhārata and the so-called Āśaya. Daśaratha himself is a hero, a warrior, a king. Rāma, born on the same day and night with Āśaya, but in a different hour of the same day, was born with an enormous bow, formerly the dreadful weapon of the god Rudra, wins for a wife Śītā, daughter of Janaka, king of Videha (Tārāpur). (II) On his marriage with Śītā at the insistence of his brother, Lāṅka (Bundelkhand), which, apparently the king of Lāṅka cannot have formed part of the original epic, and was probably based on some general acquaintance with the Troy legend of Greek poetry.

A remarkable feature of this poem is the great variation of its textual condition in different parts of the country, amounting in fact to at least three different recensions. The text most widely prevalent both in the north and south has been printed repeatedly, with commentary, at Bombay, and was taken by Mr R. T. H. Griffith as the basis for his beautiful poetical translation of the Rāmāyana. The second recension, which has been edited, with an Italian prose translation, by G. Gorresio; whilst the third, recognized chiefly in Kashmir and western India, is so far known only from manuscripts. The mutual relation of these versions will appear from the fact that about one-third of the matter of each recension is not found in the other two; whilst in the common portions, too, there are great variations both in regard to the order of verses and to textual readings. To account for this extraordinary textual diversity, it has been suggested that the poem was most likely originally composed in a popular form, which has since been turned into Sanskrit by different hands trying to improve on one another; whilst Professor Jacoby would rather ascribe the difference to the fact that the poem was for a long time handed down orally in Sanskrit by rhapsodists, or professional minstrels, when such variations might naturally arise in different parts of the country. Yet another version of the same story, with, however, many important variations of details, forms an episode of the Mahabharata, the Rāmopakkhyāna, the relation of which to Vālmīki’s work is a matter of uncertainty. In respect of both versification and the Rāmāyana is of a distinctly more refined character than the larger poem; and, indeed, Vālmīki is seen already to cultivate some of that artistic style of poetry which was carried to excess in the later artificial Kavyas, whence the title of adi-kavi, or first poet, is commonly applied to him. Though the political conditions reflected in the older parts of the Rāmāyana seem to correspond most to those of pre-Buddhistic times, this might after all only apply to the poetic material handed down orally and eventually cast into its present form. To characterize the Indian epics in the language of modern prose the words, though often digressed by grotesque fancies and wild exaggerations, they are yet noble works, abounding in passages of remarkable descriptive power.

"Das Rāmāyana (Bonn, 1893)."

"London, 1870-1874; there is also an English prose translation by N. M. Dutt (Calcutta, 1894); and a condensed version in English with notes by R. M. Dutt (London, 1899)._"
intense pathos, and high poetic grace and beauty; and while, as works of art, they are far inferior to the Greek epics, in some respects they appeal far more strongly to the romantic mind of Europe. Never has there been so striking an evocation of the imaginative spirit and so vivid a delineation of womanly love and devotion, and their tender sentiment of mercy and forgiveness.

2. Purāṇas and Tantras.—The Purāṇas are largely the Purāṇas and Tantras. They are sometimes styled a fifth Veda, and may indeed in a certain sense be looked upon as the scriptures of Brāhmanical India. The term purāṇa, signifying "old," is applied to a poem or preface, especially connected with legends, and then to collections of earlier traditions like the Sanskrit.

The existing works of this class, though recognizing the Brāhmanical doctrine of the Trimūrti, or triple manifestation of the deity (in its creative, preservative and destructive activity), are all of a sectarian tendency, being intended to establish, on quasi-historic grounds, the claims of some special god, or holy place, on the devotion of the people. For this purpose the compilers have pressed into their service a mass of extraneous didactic matter on all manner of subjects, whereby these works have become a kind of popular encyclopaedia of useful knowledge. It is therefore less proper to regard them as preserved in the definition given of the typical Purāṇa, as well as from numerous coincidences of the existing works, that they are based on, or enlarged from, older works of this kind, more limited in their scope and probably of a more definitely tritheistic tendency of belief. Thus none of the Purāṇas, as now extant, is probably much above a thousand years old, though a considerable proportion of their materials is doubtless much older, and may perhaps in part go back to several centuries before the Christian era.

In legendary matter the Purāṇas have a good deal in common with the Sūtras. The last of the three, the Purāṇas, are, so to speak, the last of the last. The compilers of the Purāṇas are the revisers of both classes of works having evidently drawn their materials from the same fluctuating mass of popular traditions. They are almost entirely composed in the epic couplet, and indeed in much the same easy flowing style as the epic poems, to which they are, however, as a rule greatly inferior in poetic value.

According to the traditional classification of these works, there are said to be eighteen (Mahā-, or great) Purāṇas, and as many Upa-purāṇas, or subordinate Purāṇas. The former are by some authorities divided into three groups of six, according as one or other of the three primary qualities of external existence—goodness, darkness, and passion—prevails in pre-eminence in them. Thus, in the Vīṇa, the Vāyu-purāṇa, as the first group, or one of the six members of the class of the last of the Purāṇas, is the Vāyu-purāṇa, which contains the Vāyu-purāṇa, probably the oldest of the group. The other two are the Bhāgavata and the Bhārata-Purāṇa. In accordance with the nature of the several forms of the Trimūrti, the first two groups chiefly devote themselves to the commendation of Vīnu and Śiva respectively, while the third group, which is said properly to belong to Brahma, has been largely appropriated for the promotion of the claims of other deities, viz. Vīnu in his sensual form of Śrīna, Devī, Ganeṣa, and Śrīya. As Professor Banerjea has shown in his preface to the Markandeya, this seems to have been chiefly effected by later additions and interpolations. The insufficiency of the above classification, however, appears even from the fact that it omits the Śrīna-purāṇa, probably one of the older purāṇas, and none of the oratories of the second group. The eighteen principal Purāṇas are said to consist of together 400,000 couplets. In northern India the Vaishnava Purāṇas, especially the Bhāgavata and Vīnu, are by far the most popular. The Bhāgavata was formerly supposed to have been composed by Vopadeva, the grammarian, who lived in the 13th century. It has, however, been shown that what he wrote was a synthesis of Purāṇa, and that the latter is already a work by Ballāla Sena of Benares, in the 11th century. It is certainly held in the highest estimation, and, especially through the vernacular


2 There are several Indian editions of these two works. The Bhāgavata has been partly printed, in an édition de luxe, with a French translation at Paris, in 3 vols., by E. Burnouf, and a fourth by M. Hauvette-Besnault. Of the Vīnu, there is a translation by H. H. Wilson, 2 vols., with several valuable notes by F. Hall. This latter has never been printed in India, especially in the Bibl. Ind. and the Anand. series.

3 Rājendrāla Mītra, Notices of Sansk. MSS. ii. 47.

Ouejin in A.D. 544 and ante-dated by 600 years, falls to the ground; and with it Max Müller’s theory of an Indian Renaissance inaugurated during the reign of that king. Though Kālidāsa’s date thus arrives, it may be remembered that this is but a conclusion at Ujjayini about 440-448 A.D. Of the principal poets of this class, whose works have come down to us, he appears to be one of the earliest; but there can be little doubt that he was preceded in this as well as in many other literary spheres by the bards, who were eclipsed by the sun of his fame, and forgotten. Thus the recently discovered Buddhacharita, is a Sanskrit poem on the life of the religion’s founder, who is supposed to have been the author of which, Aśvaghoṣa, is placed by Buddhist tradition as early as the time of Kanishka (who began to reign in A.D. 78), calls itself, not without reason, a "mahākāvya"; and the panegyrics composed in the beginning of the Christian era, in honor of the two śāstras, display, both in verse and ornate prose, many of the characteristic features of the kāvya style of composition. Indeed, a number of quotations in the Mahābhārata, the commentary on Pāṇini, go far to show the extent to which ornamentation, and the style of the war-god) Kūmāra (or Scanda), the son of Śiva and Pārvatī, consists of seventeen cantos, the last ten of which were, however, not commented upon by Mallānātha, and are usually omitted in the MSS.; whereas it was by Kālidāsa, as is supposed, that it was composed by many scholars, though they may only have been set aside on account of their amorous character rendering them unsuitable for educational purposes, for which the works of Kālidāsa are extensively used in India; the 8th cantos, at any rate, being quoted by Vāmanā (A.D. 700). Another poem of this class, the Nala-dvāra, or "rise of Nala"—describing the restoration of that king, after having lost his kingdom—though bearing the former title, was composed for the practical purpose of illustrating the less common grammatical forms and the figures of rhetoric and poetry. In the 15th century, the English of the Kālidāsa's Mahābhārata, and more commonly called Bhāṭṭikāvya, to distinguish it from other poems (especially one by Pravravasena), likewise bearing the former title, was composed for the practical purpose of illustrating the less common grammatical forms and the figures of rhetoric and poetry. In the 15th century, the English of the Kālidāsa's Mahābhārata, and more commonly called Bhāṭṭikāvya, to distinguish it from other poems (especially one by Pravravasena), likewise bearing the former title, was composed for the practical purpose of illustrating the less common grammatical forms and the figures of rhetoric and poetry. In the 15th century, the English of the Kālidāsa's Mahābhārata, and more commonly called Bhāṭṭikāvya, to distinguish it from other poems (especially one by Pravravasena), likewise bearing the former title, was composed for the practical purpose of illustrating the less common grammatical forms and the figures of rhetoric and poetry. In the 15th century, the English of the Kālidāsa's Mahābhārata, and more commonly called Bhāṭṭikāvya, to distinguish it from other poems (especially one by Pravravasena), likewise bearing the former title, was composed for the practical purpose of illustrating the less common grammatical forms and the figures of rhetoric and poetry.
the appellative use of the word, or the notion of an old teacher of the dramatic art bearing that name. There still exists an extensive work, in epic verse, on rhetoric and dramaturgy, entitled Nā ya-sāstra,1 and ascribed to Bharata. Though this is probably the oldest theoretical work on the subject that has come down to us, it can hardly be referred to an earlier period than several centuries after the Christian era. Not improbably, however, this work, which presupposes a fully developed scenic art, had an origin similar to that of some of the metrical law-books, which are generally supposed to be popular and improved editions of older sūtra-works. We know that such treatises existed at the time of Pāṇini, as he mentions two authors of Nāyu-sāstras, or “rules for actors,” viz. Śīlāṇin and Kriṣṇāśva. Now, the words nāya and nātya—as well as nātaka, the common term for “drama”—being derived (like the modern vernacular “Nautch” = mṛtyya) from the root nāj (net) “to dance,” “seem to point to a pantomimic or choral origin of the dramatic art. It might appear doubtful, therefore, in the absence of any clearer definition in Pāṇini’s grammar, whether the actors’ rules did not refer to more pantomimic performances. Fortunately, however, Patanjali, in his “great commentary,” speaks of the actor as singing, and of people going “to hear the actor.” Nay, he even mentions two subjects, taken from the cycle of Vishnu legends—viz. the slaying of Kanṣa (by Kṛṣṇa) and the binding of Bali (by Vishnu)—which were represented on the stage both by mimic action and declamation. Judging from these allusions, theatrical entertainments in those days seem to have been very much on a level with the old religious spectacles or mysteries of Europe, though there may have already been some elements of the dramatic art which we at once wish had no occasion to mention. It is not, however, till some five or six centuries later that we meet with the first real dramas, which mark at the same time the very culminating point of Indian dramatic composition. In this, as in other departments of literature, the earlier works have had to make way for later and more perfect productions; and no trace now remains of the intermediate phases of development. Thus we know of at least five predecessors of Kālidāsa from whom nothing but a few quotations have been preserved.

Here, however, the problem presents itself as to whether the existing “dramatic literature has naturally grown out of such popular religious performances as are alluded to by Patanjali, or whether some foreign influence has intervened at some time or other and given a different direction to dramatic composition. The question has been argued both for and against the probability of Greek influence; but it must still be considered as sub judicis; the latest investigator, M. Sylvain Lévi, having given a decided opinion against outside influence. There are doubtful some curious points of resemblance between the Indian drama and the Modern Attic (and Roman) comedy, viz. the prologue, the occasional occurrence of a token of recognition, and a certain correspondence of characteristic stage-figures—especially the Viḍūshaka, or jocose companion of the hero, presenting a certain analogy to the servus of the Roman stage, as does the Vītā, the hero’s disciple, though accomplished, boon-companion, of some plays, to the Roman parasite—for which the assumption of some acquaintance with the Greek comedy on the part of the earlier Hindu writers would afford a ready explanation. On the other hand, the differences between the Indian and Greek plays are perhaps even greater than their coincidences, which, moreover, are scarcely close enough to warrant our calling in question the originality of the Hindus in this respect. Certain, however, it is that, if the Indian poets were indebted to Greek playwrights for the first impulse in dramatic composition, in the higher sense, they have known admirably how to adapt the Hellenic muse to the national genius, and have produced a dramatic literature worthy to be ranked side by side with both the classical and our own romantic drama. It is to the latter especially that the general character of the Indian play presents a striking resemblance, much more so than to the classical drama. The Hindu dramatist has little regard for the “unities” of the classical stage, though he is hardly ever guilty of extravagance in his disregard of them. Unlike the Greek dramatic theory, it is an invariable rule of Indian dramaturgy, that every play, however much of the dramatic element it may contain, must have a happy ending. The dialogue is invariably carried on in prose, plentifully interspersed with those neatly turned lyrical stanzas in which the Indian poet delights to depict some natural scene, or some temporary physical or mental condition. The most striking feature of the Hindu play, however, is the mixed nature of its language: while the hero and less important characters speak Sanskrit, women and inferior male characters speak various Prākrit dialects. As regards these dialectic varieties, it can hardly be doubted that at the time when they were first employed in this way they were local vernacular dialects; but in the course of the development of the scenic art they became permanently fixed for special dramatic purposes, just as the Sanskrit had, long before that time, become fixed for general literary purposes. Thus it would happen that these Prākrit dialects, having once become stationary, soon diverged from the spoken vernaculars, and the difference between them was as great as between the Sanskrit and the Prākrits. As regards the general character of the dramatic Prākrits, they are somewhat more removed from the Sanskrit type than the Pāli, the language of the Buddhist canon, which again is in a rather more advanced state than the language of the Aṣoka inscriptions (c. 250 B.C.). And, as the Buddhist sacred books were committed to writing about 80 B.C., the state of their language is attested for that period at latest; while the grammatical fixation of the scenic Prākrits has probably to be referred to the early centuries of the Christian era.

The existing dramatic literature is not very extensive. The number of plays of all kinds of literary value will scarcely amount to fifty. But, on this account alone, the question of originality is raised, that is to say, Is the whole of the dramatic composition of the Hindu drama merely a frank copy of that of Greece? The answer is doubtless that they appealed to the tastes of only a limited class of highly cultivated persons, and were in consequence but seldom acted. As regards the theatrical entertainments of the common people, it seems that they were done above the level of the religious spectacles mentioned by Patanjali. Such at least is evidently the case as regards the modern Bengali little-dramas—described by Wilson as exhibitions of some incidents in the youthful life of Kṛṣṇa, maintained in extemporaneous dialogue, interspersed with popular songs—as well as the similar rātas of the western provinces, and the rough and ready performances of the street, or professional buffoons. Of the religious drama Sanskrit literature offers but one example, viz. the famous Citra-gvinda,2 composed by Jayadeva in the 12th century. It is rather a mytho-lyrical poem, which, however, in the opinion of Lassen, contains a professed attempt to reproduce the ancient forms of dramatic composition. The subject of the poem is as follows: Kṛṣṇa, while leading a cowherd’s life in Vīṇā-divana, makes his way through Rādhā’s nuptial chamber, and she is forests. For a while. Presently, however, he returns to her “whose image has all the while lingered in his breast,” and after much earnest entreaty obtains her forgiveness. The emotions appropriate to their characters are expressed with directness; and their song, “It is a friend of Rādhā in melodious and passionate, if voluptuous, stanzas of great poetic beauty. Like the Song of Solomon, the Cātavagnita, moreover, is supposed by the Hindu commentators to admit of a mystic interpretation; for, “as Kṛṣṇa, faithless for a time, discovers the vanity of all other loves, and returns with sorrow and longing to his own darling Rādhā, so the human soul, after a brief and frantic attachment to objects of sense, burns to return to the God from whence it came ” (Griffith).

The Mṛcchhkaṇḍa or “little clay cart,” has been usually placed at the head of the existing dramas; but, though a certain amount of historical construction might seem to justify this distinction, the question of its relative antiquity remains far from being definitively settled. Indeed, the fact that neither Kālidāsa, who mentions three predecessors of his, nor Lālā, for viewing his literary predecessor makes any allusion to the author of this play, as well as other points, seem rather to tell against the latter’s priority. But seeing that Vāmanas quotes from the Mṛcchhkaṇḍa, this play must at any rate precede his; in which case it is curious to note that it bears a striking resemblance to the last stage of the Abhinavagupta’s play. According to several stanzas in the prologue, the play was composed by a king Śūḍraka, who is stated there to have, through Siva’s

1. Edited, with a Latin translation, by C. Lassen; English translation by E. Arnold.
2. Edited by F. Stenzler; with commentary, by K. P. Parab (Bombay, and several times at Calcutta); translated by H. H. Wilson; also into English prose and verse by A. W. Ryder (Harvard Or. Ser., 1905); German by O. v. Böhtlingk and L. Fritze; French by P. Regnault.
favour, recovered his eyesight, and, after seeing his son as king, to have died at the ripe age of a hundred and ten days. According to a recent edition, the name of the king’s death; but it is probable that they were added for a subsequent performance. In Bāja’s novel Kādambara (c. A.D. 630), a king Śādraka is represented as having resided at Bījāpa (Bhisa) some years with the title of Urjain, where his son's play is laid. Chārudatta, a Brāhmaṇ merchant, reduced to poverty, and Vasantaśena, an accomplished courtier, meet and fall in love with each other. On a visit to Bījāpa, Bāja, with political underplot, resulting in a change of dynasty. The connexion between the two plots is effected by means of the king’s rascally brother-in-law, who pursues Vasantaśena with his addresses, as he has the heart’s desire of the young Brāhmaṇ woman being drawn to prison, finds shelter in the hero’s house. The wicked prince, on being rejected, strangles Vasantaśena, and accuses Chārudatta of having been the author of the affair, but, just as the latter is being led away, his lady love appears again on the scene. Meanwhile Aryanā has succeeded in deposing the king, and, having himself mounted the throne of Ujjain, he raises Vasantaśena to the position of a Brāhmaṇ woman, to enable him to be united with the Chārudatta. The play is one of the longest, consisting of not less than ten acts, some of which, however, are very short. The interest of the action is, on the whole, well sustained; and, altogether, the piece presents a vivid picture of the social manners of the time, whilst the author himself imbues with a keen sense of humour, and a master in the delineation of character.

Kālīḍāsa’s plays are among the highest point of perfection. From this accomplished poet we have three well-constructed Kālīḍāsa. plays, abounding in stanzas of exquisite tenderness and fine descriptive passages, viz. the two well-known mytho- dramatic works Malavikagnimitra and Vivadravana, and a piece of court intrigue, distinctly inferior to the other two, entitled Malavikagnimitra in five acts. King Agnimitra, who has two wives, falls in love with Malavikā, maid to the first queen. He is cast out of the court, but even in exile he does not get over his passion. In the end Malavikā turns out to be a princess by birth, and is accepted by the queen as their sister.

Śrī-Harshadeva. The last of this group is the poet (Śrī) Harshadāna of Kānya-būja (Kanauj) mentioned above, who ruled in the first half of the 7th century—has three plays attributed to him; though possibly only dedicated to him by poets patronized by his court. Śrī-Harshadeva, attempts to model his case as regards the Rāvaṇa-avatāra, the author of which they assign to Bāja. Indeed, had they been the king’s own productions, one might have expected the Chinese pilgrims (especially Li-ching, who drew one of the poems) performed to match them. The Rāvaṇa-avatāra, “the pearl necklace,” is a graceful comedy of gentle domestic manners, in four acts, of no great originality of invention; the author having been largely indebted to Kālīḍāsa’s plays. A decided merit of the poet’s art is the simplicity and clearness of his style. Rāvaṇa-avatāra, a Ceylon princess, is sent by her father to the court of King Udayana of Vatsa to become his second wife. She suffers shipwreck, but is rescued by the hero. Udayana’s men are defeated, and the defeated general is taken to the court of the king, as is the case with the Rāma-avatāra. The justice and fairness of the king in ancient or modern times, would afford materials for as favourable a delineation.” Very similar in construction, but distinctly inferior, is the Priyadarśini, in four acts, having for its plot another amorous tale of the same king. The scene of the third play, the Māyāvadāna, or “joy of the serpents” (in five acts), on the other hand, is laid in semi-divine regions. Jīmūtavāhana, a prince of the Vidyādharas, imbued with Buddhist principles, weds Māyāvati, daughter of the king of the Vidyādharas (the Yakṣés). But, learning that Garuda, the mythic bird, is in the habit of consuming one snake daily, he resolves to offer himself to the bird as a victim, and finally succeeds. The Garuda is converted, and the interlude affords a warning against doing injury to living beings; but he himself is about to succumb from the wounds he has received, when, through the timely intervention of the goddess Gauri, he is restored to life. This circumstance is explained as a compromise between Brāhmaṇical (Saiva) and Buddhist concepts, being thus in keeping with the religious views of king Harsha, who, as we know from Huen Thang, favoured Buddhism, but was also tolerant of the Saiva faith. The whole play is based on the legend of Rāma and the Serpent, and concludes with one to Gauri. The author is generally believed to have been a Buddhist, but it is more likely that he was a follower of the Saiva faith. Born in Bāja’s house. Nay, one might almost feel inclined to take the hero’s sacrifice as a favour of a Nāraka as a travesty of Buddhist principles. In spite of its shortcomings construction the Nāgānandā is a play of considerable merit, the charmingly simple and graceful style, and the use of humorous elements introduced into it of a very respectable order.

Bhavabhūti, surnamed Śrī-kāthā, “in whose throat there is beauty (eloquence),” was a native of Padnapura in the Vidarbha country. He was the Berar king Lālādīta’s brother-in-law, and the husband of Nīlakṣaṇa and his wife Jāttikṣaṇa. He passed his literary life chiefly at the court of Yasovarman of Kanauj, who must have reigned in the latter part of the 7th century, seeing that, after a successful reign, he suffered defeat at the hands of Lālādīta of Kashmir, who had mounted his throne in A.D. 605. Bhavabhūti was the author of three plays, two of which, the Māhābharatarakārī (“life of the great hero”) and the Ulūrtararāmacarī (“later life of Rāma”), in seven acts each, form together a dramatized version of the story of the Rāma-yāna. The third, the Mālā-vikagnimitra, is a romantic drama in ten acts, representing the fortunes of Mālāvika and Mālātikā, the two rival and dangerous neighbouring kings, who from childhood have been destined for each other, but, by the resolution of the maiden’s royal master to marry her to the son of a king who is her rival, she is condemned to lifelong misery and permanent separation. The action of the play is full of life, and abounds in stirring, though sometimes improbable, incidents. The poet is considered by native critics to be not only inferior to Pandit, but hitherto, having jointed, as a dramatic artist. Whilst the latter delights in depicting the gentle feelings and tender emotions of the human heart and the peaceful scenes of rural life, the younger poet finds a peculiar attraction in the sterner and more sturdy aspects of life. The decoration of the Bhavabhūti’s language, though polished and felicitous, is elaborate and artificial compared with that of Kālīḍāsa, and his genius is sorely shackled by a slavish adherence to the arbitrary rules of classicist theorists.

Bhāṣṭā Nārāyaṇa, surnamed Mīrīgārī or Sinha, “the lion”, the author of the Vivāṣakāra (“the binding up of the braid of hair”), is a poet of uncertain date. Tradition has it that he was one of the five Kanauj Brāhmaṇs whom king Adiya of Bengal, desirous of establishing the pure Viṣṇuva śaivism doctrine, invited to his court, and from whom the modern mādaṇ households are supposed to have descended. But be this as it may, a copperplate grant was issued to our poet in A.D. 840; and besides, he is quoted in Anandavardhāna’s Dhanyāyaka, written in the latter part of the 9th century. The play, consisting of six acts, is a romance of the 5th century. In the story, the Bhavabhūti’s language, though polished and felicitous, is elaborate and artificial compared with that of Kālīḍāsa, and his genius is sorely shackled by a slavish adherence to the arbitrary rules of classicist theorists.

The Hanuman-nāṭaka is a dramatized version of the story of Rāma, interspersed with numerous purely descriptive poetic passages. It consists of fourteen acts, and on account of its length is also called the Māhā-nāṭaka, or great drama. Contrary to the general practice, the Hanuman-nāṭaka is in the Sanskrit language, and is avowedly written in imitation of the Mahābhārata, which it relates that it was composed by Hanumān, the monkey general, and inscribed on rocks; but, Vālmiki, the author of the Rāma-yāna, this is the commentator’s explanation of the name, whilst M. Lévi would render it by “the divine throat.”

Edited by P. H. Trithen (1848); with commentary, A. Baroach (Calcutta, 1897); and B.认证 (Bombay, 1892); translated by J. Pickford (1871).

With commentary and translation (Nagpur, 1895); with commentary, A. Parab and Parab (1899); translation by H. H. Wilson and C. H. Tawney.

Edited by R. G. Bhandarkar (1876); translated by H. H. Wilson. Whether, as M. S. Lévi suggests, the fact of the play commentaries on the original as it was composed in imitation of the Mahābhārata must remain uncertain.

Edited by J. Grill (1871); twice with commentary (Bombay); English translation by S. M. Tagore (Calcutta).

Printed with Mohandasā’s commentary (Bombay, 1861).
SANSKRIT

[POETRY]

being afraid lest it might throw his own poem into the shade, Hanumān allowed him to cast his verses into the sea. Thence fragments were ultimately picked up by a merchant, and brought to King Kairātā, who directed the poet Dāmodara Mitra to put them together and fill up the lacunae; whence the present composition originated. Whatever particle of truth there may be in this story, the great poet's utilization of different hands, "The language," as Wilson remarks, "is in general harmonious, but the work is after all a most disjointed and nondescript composition, and the patchwork is very glaringly and clumsily put together." It is nevertheless a work of some interest, as compositions of mixed dramatic and declamatory passages of this kind may very commonly be found in the early stages of the dramatic art.

The connexion of the work with King Bhoja, also confirmed by the name Rāmakṛṣṇa, would bring the composition, or final redaction, down to about the 10th or 11th century. A Mahābhārata, however, is later, referred to by Anandavardhana (9th century); and if some of the characters are known to the work, it is possible that one composed upon by Mohanadaksa, and a longer one arranged by Madhusūdana. A Dāmodara Gupta is mentioned as being lived under Jayāpatra of Kashmir (755-786); but this cannot be safely the same as the writer connected with this work.

The Mūdrārākshasā,1 or "Rākhsha (the minister) with the signet," is a drama of political intrigue, in seven acts, partly based on historical events, the plot turning on the reconciliation of Rākhsha, the minister of the murdered king Nanda, with the hostile party, consisting of Prince Chandragupta (the Greek Sandrocottus, 815-291 B.C.), who succeeded Nanda, and his minister Chāryaka. The style of composition is clearly unserious, if not particularly elegant, language. The play was composed by Viśakhadatta, prior, at any rate, to the 11th century, whilst Professor Jacobi infers from astronomical indications that it was written in A.D. 760.

The Prabodha-chandradoya,2 or "the moon-rise of intelligence," composed by Krishnaśīla about the 12th century, is an allegorical play of 4664 lines in three parts, which consist entirely of abstract ideas, divided into two conflicting hosts. Of numerous inferior dramatic compositions we may mention as the best—the Aranyakya-rāhva, by Murāri; the Bāla-rāmāyana, one of six plays (four of which are known) by Rājaśekhara; and the Prasanna-rāhva,4 by Jayadeva, the author of the rhetorical treatise Chandraloka. Abstracts of a number of other pieces are given in H. H. Wilson's Hindo Theatre, the standard work on this subject. The so-called "lost" works of the 11th and 12th centuries may be said to have exhausted itself about the 14th century.

5. Lyric, Descriptive and Didactic Poetry.—Allusion has already been made to the marked predilection of the medieval Indian poet for depicting in a single stanza some peculiar physical or mental situation. The profane lyric poetry consists chiefly of such little poetical pictures, which form a prominent feature of dramatic compositions. Numerous poets and poetesses are only known to us through such detached stanzas, preserved in native anthologies or manuscripts of rhetoric, and enshrining a vast amount of descriptive and comic, or sententious, features.

or "car-ambrosia of good sayings," an anthology compiled by Śrīdhara Dāsa in 1205, contains verses by 446 different writers; while the Śrṅgadāra-puddhati,5 of the 14th century, contains some 6000 verses culled from 264 different writers and works; and Vallabhadeva's Subhāshītyāvat,6 another such anthology, contains some 3500 verses ascribed to some 350 poets. These verses are either of a purely descriptive or of an erotic character; or they have a didactic tendency, being intended to be used, in an attractive and easily remembered form, some moral truth or useful maxim. To the last class of verses, but especially to partly descriptive, partly erotic character, is Kālidāsa's Meghābāha 7 or "cloud messenger," in which a banished Yaksha

1 Edited (Bombay, 1884, 1893) by K. T. Telang, who discusses the date of the work in his preface; trans. H. H. Wilson; German, L. Fritz; French, Victor Hehn.
2 Translated by J. Taylor (1818), by T. Goldstücker into German (1842). Edited by H. Brockelmann (1853); also Bombay (1868).
3 Another play, composed entirely in Prākrit, by Rājaśekhara (c. A.D. 900), the Karparāmoṇjīri, has been critically edited by E. S. Law in English translation by Ch. R. Lanman, Harvard Or. Ser. (1901).
4 Ed. Shiwaśīla Raoji Khopākar (Bombay, 1894).
5 Rājendralal Mitra, Notits, iii. p. 134.
6 Ed. P. Peterson and Durgāpurāskara (Bombay, 1886).
7 Text and translation by H. H. Wilson, with vocabulary by S. Johnson; with German vocabulary by Stenzler (1874); often, with commentary, in India.

(demi-god) sends a love-message across India to his wife in the Himalaya, and describes, in verse-pictures of the stately mandākranta metre the various places and objects over which the messenger, a cloud, will have to sail in his airy voyage. This little masterpiece has called forth a number of more or less successful imitations, such as Lakṣmībhūṣaṇa's Śuka-sandesa, or "parrot-message," lately edited by the mahārāja of Travancore. Another much-admired descriptive poem by Kālidāsa is the Riśu-sāhāra, or "collection of the seasons," in which the attractive features of the six seasons are successively set forth. There are also religious lyrics, the fruit of ascetic fervour, a large collection of hymns and detached stanzas, extolling some special deity, might be made from Purāṇas and other works. Of independent productions of this kind only a few of the more important can be mentioned here. Śankara Āchārya, the great Vedāntist, who seems to have flourished about A.D. 800, is credited with several devotional poems, especially the Ānanda-lakāra, or "wave of joy," a hymn of 103 stanzas, in praise of the goddess Pārvatī. The Śānya-sākta, or century of stanzas in praise of Śūrya, the sun, is ascribed to Mayūrī, the contemporary (and, according to Nanda, father-in-law) of Bāṇa (in the early part of the 7th century). The last of the four bhārata, the Chandikāstotra, a hymn of 102 stanzas, extolling Śiva's consort. The Khyānaprastā, a poem celebrating the ten avatāras of Viṣṇu, is ascribed to no other than Hanumān, the monkey general, himself. Jayadeva's beautiful poem Gīgā-vindu, which, like most productions concerning Kṛṣṇa, is of a very sensuous character, has already been referred to.

The particular branch of didactic poetry in which India is especially rich is that of moral maxims, expressed in single stanzas or couplets, and forming the chief vehicle of the Niti-sastra or ethic science. Excellent collections of such aphorisms have been published—in Sanskrit and German by O. v. Böhtlingk, and in English by John Muir. Probably the oldest original collection of this kind is ascribed to Chāṇakya,—and entitled Rājaṅitiśāmuchchaya,9 or "collection on the conduct of kings"—traditionally connected with the Machaivellian minister of Chandragupta, but (in its present form) doubtless much later—of which there are several recensions, especially a shorter one of one hundred couplets, and a longer one of some three hundred. Another old collection is the Kāman- niyādāra, or "Fruitful of fame," by Kannadi, who is said to have been the disciple of Chāṇakya. Under this title the work has been handed down three centuries of sentimented couplets.10 one of which, the nīta-sātaka, relates to ethics, whilst the other two, the śringāra- and vairāgya-sātakas, consist of amatory and devotional verses respectively. The Nīti-prātā, or "lamp of conduct," consisting of sixteen stanzas, is ascribed to Vaiṭālātha or 11, who is mentioned as one of nine gems." The Amara-sātaka,12 consisting of a hundred stanzas, ascribed to a King Amaru (sometimes wrongly to Śankara); the Bhāminti-sāl,13 or "dalliance of a fair woman," by Jaganāthā; and the Charura- mānivātikā14 by Bihāra (11th century), are of an entirely erotic character.

6. Fables and Narratives.—For purposes of popular instruction stanzas of an ethical import were early worked up with existing prose fables and popular stories, probably in imitation of the Buddhist jātakas, or birth-stories. A collection of the kind, intended as a manual for the guidance of princes (in usum delphin), was translated into Pahlavi in the reign of the Persian king Chosro Nushāryan, A.D. 531-579;15

The first Sanskrit book published (by Sir W. Jones), 1792-1793, by R. Simon translation by E. P. Bohlen, edited, with notes and translation, by S. Ayar (Bombay, 1897); partly translated, in verse, by R. T. H. Griffin, Specimens of Old Indian Poetry. 1873.

F. M. Klett (1873); German translation by Kressler (1900). 1869.

Ed. by R. T. H. Griffin, Specimens of Old Indian Poetry.

Mitra, Bibl. Ind., with translation and notes (Madras, 1895).

Transl. in English, verse by C. H. Tawney.

K. Stenzler (1874); German translation by W. Soll (1886); English translation by Edwin Arnold (1896).

16 Edited, with French translation, by A. Bergaigne (1872); with English translation, by Sheshādri Iyár (Bombay, 1894).

17 Edited by P. v. Bohlen (1833); with German translation, W. Soll (1886); English translation by Edwin Arnold (1896).
but neither this translation nor the original is any longer extant. A Syriac translation, however, made from the Pahlavi in the same century, under the title of "Qua'llag and Dimnag"—from the Sanskrit "Karataka and Damanka," two jackals who play an important part as the lion's counsellors—has been discovered and published. The Sanskrit original, which probably consisted of facts handed down by the priests of Vedic times in their first recension, the Purushotamakosa,4 or "five books" (or headings), of which several recensions exist. A popular summary of this work, in four books, the Hītā-pāda,5 or "Salutary Counsel," has been shown by Peterson to have been composed by one Nārāyana. Other highly popular collections of stories and fairy tales, interspersed with sententious verses, are the Vatēla-panchavimsati,6 or "twenty-five (stories of the Vatēla)" (the original of the Batal Pachist), ascribed either to Jambhala Datta, or to Śivādasa (while Professor Weber suggests that Vatēla-bhātta may have been the author), and at all events older than the 11th century, since both Kshemendra and Somadeva have used it; the Śuka-saptati,7 or "seven stories (related by the parrot)," the author and age of which are unknown; and the Simhasana-dvārātīkâ, or "thirty-two (tales) of the throne," being laudatory stories regarding Vikramāditya of Avanti, related by thirty-two statues, standing round the old throne of that famous monarch, to King Bhaja of Dhārā to discourage him from sitting down on it. This work is ascribed to Kshemendra, and was probably composed in the time of Bhaja (who died in 1053) from older stories in the Mahāhrātra dīkṣā, or technical recreation of the ancient oral usage (samaya-āchāra).7 This is doubtfu that such stories were at any time as numerous as the Gṛhyaśūtras, or rules of domestic or family rites, to which they are closely allied, and of indeed they may originally have been an outgrowth. That the number of those actually extant is comparatively small is, however, chiefly due to the fact that this class of works was supplemented by another of a more popular kind, which covered the same ground. The Dharmasūtras consist chiefly of strings of terse rules, containing the essentials of the science, and intended to be committed to memory, and to be expounded orally by the teacher—thus forming, as it were, epitomes of class lectures. These rules are interspersed

2 Editted and transl. Ferson, ed. P. Peterson and others in India.
4 Editted, with German translation, R. Schmidt (Leipzig, 1893), and translation of some stories of a larger recession (1896).
5 Editted, with translation and notes, by L. v. Manowski (Leipzig, 1892); chapters 1-8 edited and translated by Sylavon Lavi, Journ. As. (1866); cf. F. Lacoste, Essai sur Gṛhyaśikā and le Brahmaikadātā (1896), which is a part of a chapter which was afterwards translated under the title of Gṛhyaśikā (samaya-āchāra).
6 Editted by Brockhaus (1839-1862); by Durgāpratapa (Bomby, 1889); translated by C. H. Tawney, Bibl. Ind. (1880-1886).
7 CF. J. Jolly's exhaustive treatise, Recht und Sīte, in Bühler's Grundriss (1896).

with stanzas or "gāthās," in various metres, either composed by the author himself or quoted from elsewhere, which generally give a fuller interpretation of the rules, or perhaps a more popular exposition. To understand why such coupled should gradually have become more popular than the original, we should ultimately have led to the appearance of works entirely composed in verse. Such metrical law-books did spring up in India, not only in Sanskrit, but in many other languages, extending probably from about the beginning of our era, or even earlier, down to well-nigh the Mahomedan conquest; and, as at all events, the number, or rather the number of distinct metres, particularly other metres were entirely discarded for the epic meter. These works are the metrical Dharmāṇa-sūtras, or, as they are usually called, the Smārti, "recollectation, tradition,"—a term which, as we have seen, belonged to various strata of the ancient literature, and, that figure, though some of these, it is true, are short and insignificant tracts, while others are only different recensions of one and the same work.

With the exception of a few of these works—such as the Agni, Yama- and Visnus-Smāriti—which are ascribed to the respective gods, the authorship of the Smārti is attributed to old rishis, such as Atri, Kapi, Vāsak, Śantāli, Bhārḍāvājī.

It is, however, extremely doubtful whether in most cases this attribution is not altogether fanciful, or whether, as a rule, there really existed any such revelation. One can see, however, that several alleged authors or schools named after them. The idea, which early suggested itself to Sanskrit scholars, that Smārti might have been passed on by the names of old Vedic teachers and their schools might simply be the outcome of this fanciful notion. However, however, that idea was a very natural one, and, indeed, is still a very probable one, though the loss of the original Śūtras, and the modifications and additions which the Smārti doubtless underwent in course of time, make it very certain possible that any school or any one of them.

However, scarcely account for the disappearance of the Dharmasūtras of some of the most important schools except on the ground that they were given up in favour of the Smārti, or that some of the schools might have been lost. It is certainly that this should have been done, unless there was some guarantee that the other works, upon the whole, embodied the doctrines of the old authorities of the respective schools. Thus, as regards the most influential school of the Śvuśikā, which is to say both a Śrauta- and a Gṛhyaśūtra of the Mānava school of the Black Yāju, but no such Dharmasūtras has hitherto been discovered, though several works exist on a wide range, which Professor Bühler has recently found in the Mānava, consisting partly of prose rules, and partly of couplets, some of which occur literally in the Manusmriti, whilst others have been slightly altered there to suit late doctrines, or have been changed from the original trishūlbhī into the epic metre. The idea of an old law-giver Manus Śvayambhūva "sprung from the self-existent (svayam-bhu)" god Brahmā (m.—reaches far back into Vedic ages. It is mentioned as early as in the earlier texts of the Nīruka a śūkha occurs giving his opinion on a point of inheritance. But whether or not the Mānava-Dharmasūtra embodied what were the ancient laws, it is no mention of sacred law we do not know; nor can it as yet be shown that the Manusmriti, which seems itself to have undergone considerable modifications, is the line descendant of that Dharmasūtra. It is certain, however, that the Manusmriti and the Visnuśuṭras; and, as the latter is most likely a modern, only partially remodelled, edition of the Śūtras of the Black Yāju school of the Kāthas, the close relation between the two works would be easily understood, if it could be shown that the Manusmriti is a modern development of a line of the Śūtras of another school of the Āraka division of the Black Yajurveda.

The Mānava Dharmasūtra consists of twelve books, the first and last of which, treating of creation, transmigration and final beatitude, are, however, generally regarded as later additions. In them the legendary sage Bṛihī, here called a Mānava, is introduced as the compiler of the entire code of sacred law. Why this intermediate agent should have been considered necessary is by no means clear. Except in these two books the work shows no special relation to any of the other Smārti texts. The question as to the probable date of the final redaction of the work cannot as yet be answered. Dr Burnell has tried to show that it was probably composed under the Āchārya king Daksāsi, about A.D. 500, but his argumentation is anything but convincing. From several śūkas quoted from Manus by Varāhamihira, in the 6th century, it would appear that the text which the great astronomer had re-edited was the same as that which is now in use, and is therefore, possible that he referred either to the Bhārat-Manu (Great
M.) or the *Vididha-Manu* (Old M.), who are often found quoted, and apparently represent one, if not two, large recensions of this Smrti. The oldest existing commentary on the *Mahanava-Dharmasatra* is by Bhartṛhari, a work which was supposed to have lived in the 9th or 10th century. He had, however, several predecessors to whom he refers as pādre, "the former ones." The most estimable of these is Chakravarti, a commentator of that of Kullikā Bhāṣṭa, completed at Benares in the 15th century.

Next in importance among Smritis ranks the *Yajñavalkya Dharmasāstra.* Its origin and date are not less uncertain—except that, in some respects, it appears to have been more highly esteemed, than any other Smrita. It was the work of the celebrated Yajñavalkya himself, a sage of the Sākta school of law, which recognizes as its chief authority the digest of its founder, Jīmatavāhāna, especially the chapter on succession, entitled *Dvārayāṣa.* Based on the Mitakshara are the *Smriti-Sadāsastra* and the *Paniniya-Kalpa, translated* by Max Muller, in the 13th century, and highly esteemed in Southern India; and the *Vrīmritodakaya,* a compilation consisting of two books, translated by Chāṇakya, is the work of the 11th century, or the half of the 12th century. A commentary on the first half of the 12th century.

The *Nārāyana-Dharmasāstra,* or *Nārāyana-sūtra,* is a work of a more humble kind; indeed, it is probably the most systematic and business-like of all the Smritis. It does not concern itself with the religious principles of the Hindu religion, but it gives a comprehensive account of the Vedic, or Śramana, law, and it contains the most extensive commentaries on the three great divisions of the Indian theory of law: dhāraṇa, rule of conduct (social and caste duties); sauhāsra, civil and criminal law; prakāsa, civil and criminal law. The first division of the commentaries on the work: the famous *MāRKĀBHAŞA,* by Vijñāneśvara, who lived under the Chākula king Vikramaditya of Kālaya (1076–1127); and another by Aparārka or Aparārdhāya, was written in the 11th century.

The *Parāsāra-sūtra* contains no chapter on jurisprudence, but it contains much information on the religious law, usually called *Parāsāra-śāstra,* to which, he added a third chapter on vyavahāra, or proper law. Besides the ordinary text of the Parāsāra-sūtra, consisting of rather less than 600,000 words, there are several intermediate products, which are all copies, in various states of editing, of an amplification of the former, containing not less than 2980 (according to others even 3300) ślokas.

Whether any of the Dharmasūtras were ever used in India as a code of law, for the practical administration of justice is very doubtful; indeed, so far as the most prominent works of this class are concerned, it is highly improbable. No doubt these works were held to be of the highest authority by all the Sākta schools of India. The deficiency was, however, supplied by the famous exegete Padāśaka. Mahādeva (in the latter half of the 14th century), who made use of the Smritis and other works of a larger and less systematic religious law, usually called *Parāsāra-śāstra,* to which, he added a third chapter on vyavahāra, or proper law. Besides the ordinary text of the Parāśāra-sūtra, consisting of rather less than 600,000 words, there are several intermediate products, which are all copies, in various states of editing, of an amplification of the former, containing not less than 2980 (according to others even 3300) ślokas.

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and to this only, that the Indian metaphysician takes up the great problems of life—the origin of man and the universe, and the relation between mind and matter.

It is worthy of note that the speculations were viewed with much favor by the great body of Brähmans engaged in ritualistic practices. Not that the metaphysicians actually discounterenanced the ceremonial worship of the old mythological gods as vain and superstitious, or that they ever ceased to be the custodians of the manifold and intricate systems of sacrifices, and commended them as the most meritorious of human acts, by which man could raise himself to the highest degrees of mundane existence, to the worlds of the Fathers and Devas. But their effort was, rather, to demonstrate that it had gradually succeeded in profoundly modifying the original character of the sacrificial ritual: an allegorical meaning had come to be attached to it. What had been the religious element was where sacrifice a monotheistic-pantheistic theory of the Brâhmâs which makes the performance of the sacrifice represent the building up of Prajâpati, the Purusha or “world man,” and thus the creation of reproduction, life. The doctrine of “Karma” is thus to be the whole Brahman (n.), and (vii. 1, 2, 7; xi. 1, 6, 17) he is represented as the breath or vital air (prâna), and the air being his self (âtman). It needed not the identification of the Atman, or individual self, with the Brahman or Paramâtman (supreme self), to show that the final goal lay far beyond the worlds hitherto striven after through sacrifice, a goal unattainable through aught but a perennial self-contemplation. “Know ye that one Self,” exhorts one of those old idealists, “and have done with other words; for that (knowledge) is the bridge to immortality!” Intense self-contemplation being, moreover, inseparable from concentration of the mind, this doctrine left little or no room for those meditational offices of the priest, so indispensable in ceremonial worship; and indeed we actually read of Brâhmans’ “shut up” (vii. 8) for the true doctrine of salvation. But, in spite of their anti-hierarchical tendencies, these speculations continued to gain ground; and in the end the body of treatises propounding the pantheistic system that the speculators had conceived as the Diviné Spirit. “The Vedânta; but their adherents claim this title for their doctrines in a metaphysical rather than in a material sense, as “the ultimate aim and consummation of the Veda.”

In later times the radical distinction between these speculative appendages and the bulk of the Vedic writings was strongly accentuated in a new and more radical system of interpretation, the Upanishad system, by which they were supposed to consist of two great divisions—the Karma-kâya, i.e., “the work section,” or practical ceremonial (exoteric) part, consisting of the Sâphitks and Brâhmâs (including the ritual portions of the Aranyakas), and the Mâyâkâya, “the knowledge-section,” or speculative (esoteric) part. These two divisions are also called respectively the Pûrâna- (“former”) and Uûrâta- (“latter,” or “higher”) Kâya; and when the speculations of the Upanishadists came to be formulated into a regular system it was deemed desirable that there should also be a special system corresponding to the older or legendary ceremonial principle, the one and only existing from eternity—the Atman, the Self, or, as his Telegu and Mâdhâvâcharya’s Brâhmâical name. In 1331 he became the jagadguru, or spiritual head, of the Smârâs (a Vedântist sect founded by Sanât-Kumâra himself) and, having become the disciple of Śrî Süssi, under the patronage of Bukka, king of Vidyâranya, he composed his principal works. He sometimes passes under a third name, Vidhârînâ, svâmin, adopted by him on becoming a swâmin, or religious mendicant.

1. The Vedânta philosophy, in the comparatively primitive form in which it presents itself in most of the older Upanishads, constitutes the earliest phase of sustained metaphysical speculation. In its essential features it remains to this day the prevalent belief of Indian thought, and enters largely into the religious life and convictions of the people. It is an idealistic monism, which derives the universe from an ultimate conscious Being and self-consciousness in action, the Atman, the Self, or, as his Telegu and Mâdhâvâcharya’s Brâhmâical name. It is this imordial essence or Self that pervades all things, and gives life and light to them, “without being suffused by the visible outward im

2. In these treatises only the leading features of the pantheistic theory find utterance, generally in vague and mystical, though often in singularly powerful and poetical language, from which it is not always possible to extract the author’s real idea on fundamentals. More pointed statements must be taken from the commentaries of Kâtyâ, Kapâla, and Bhatâ, K. M. Banerjea. The best general view of the systems is to be obtained from H. C. Colebrooke’s account, Misc. Essays, i. (2nd ed.), with Professor Cowell’s notes. Compare also the brief abstract

as given in Goldstücker’s Literary Remains, vol. i. A very useful classified index of philosophical works was published by F. Hall (1859).

1. Mungdkâ-upanishad, ii. 2, 5.

2. From these statements, in the Upanishads, some scholars have actually gone the length of claiming the origin of this cardinal doctrine of Vedânta philosophy for the Kashyatriyas. It seems to have been more the opinion that the doctrines that were introduced by the Brâhmânical sages of set purpose to win over their worldly patrons from their materialistic tendencies to their own idealistic views. Kapâla, the author of the materialistic Sâvatarkas, supposed to have been a Kashyatriya, and so, we know, was Śûrya Muni.


4. “Beyond the senses [there are the objects; beyond the objects] there is the mind (manas); beyond the mind there is the intellect (buddhi); beyond the intellect there is the Great Self beyond the Great One there is the Highest Undeveloped (avayasaktam); beyond


6. Text and Commentary, Bibl. Ind.

7. Edited by Th. Goldstücker, completed by E. B. Cowell; also ed. by V. S. Bhallalayya and B. S. Tadvi.


10. Katha-up., i. 3, 10; ii. 6, 7.
the (Sānkhya-sūtra, or) Sānkhya-pravacanā,1 as well as the Tattva-
samāsa, a mere catalogue of the principles. But, though the founder
would seem to have promulgated his system, in some form or other,
at a very early period, these, in their present form, have been
rather back than the 14th century of our era. Probably the oldest
existing work is Jīvāraṇa-kiṣṇa's excellent Sānkhya-kārikā,2 which
also contains, in its prophecies, a system of astrological and other
prophetic branches of the subject. Though nothing certain is known
regarding its author,3 this work must be of tolerable antiquity,
considering that it was commented upon by Gaudāpāda,4 the
preceptor of Čāndogya-Upaniṣad, and also by the disciple of his
teacher of Sankarāchārya. Of the commentaries on the Sūtras, the
most approved are those of Aniruddha5 and Viṣṇuāna Bhāsku,6 a
writer probably of the latter part of the Buddhist era. The
Sānkhya-sūtra,2 consisting of a prose and a verse part, which is probably the most useful
compendium of Sānkhya doctrines.

Yoga.
In the latter part of the Vedic period a a schismatic branch of the preceding
school, holding the same opinions on most points in common
with the Sūtras, with the exception of one important point, the
existence of God. To the twenty-five principles (tattvas) of the
Vedic Sānkhya, the Yoga adds, as the twenty-sixth, the Nirguṇa Purusā, or Self
independent of qualities, the Supreme God of the system. Hence the
Yoga is called theatistic (cti-theistic). But over and above
the speculative part of its doctrine, which it has adopted from the sister school, the theistic Sānkhya has developed a complete
system of mortification of the senses—by means of prolonged
suspended attention, and the renunciation of all the processes of
mental activity common to the Vedas and the Vedānta. Both works have again been commented upon
by Vācchasaṇī-māra, Viṣṇuāna-bhāsku, and other writers.

nyāya
and
Vaiśe-
shika.

6. The Nyāya7 and Vaiśeshika are but separate branches of
philosophy, which, other and greater as the doctrines of which
have virtually become amalgamated into a single system of philosophy. The special part
which the Nyāya7 and Vaiśeshika7 have always taken
by each of the two branches in the elaboration of
the system may be briefly stated in Dr Rör's words:

"To the Nyāya belong the logical doctrines of the forms
of syllogisms, terms and propositions; to the Vaiśešikas the
systenmatical explication (ctic, logical) of the physical
ideas of the metaphysical, physical and psychical
notions—which notions are hardly touched upon in the Nyāya-sūtras. They
diff er in their statement of the general laws, in their classification
of the mental processes (from conception, inference, analogy
and verbal communication), the Vaiśešikas admitting only the two
first ones. The term Nyāya (ni-aya, 'in-going,' entering), though
properly meaning 'not upholding,' the mode applied to philosophy
and so-called inquiry generally, has come to be taken more
commonly in the narrower sense of "logie," because this
school has entered more thoroughly than any other into the laws
and processes of thought, and has worked out a formal system of
reasoning which forms the Hindu standard of logic.

The followers of these schools generally recognize seven categories
(padārtha): substance (dravya), quality (guna), action (karma),
ghatī, general (vatsa), particularity (samanātya) and non-existence or negation (abhāva). Substances,
forming the substrata of qualities and actions, are of two kinds:
elements, which are the building-stones of all matter, and non-elements,
atoms of mind, earth, water, fire and air; and non-external,
comprising all compounds, or the things we perceive, and which must
have a cause of their existence. Causality is of three kinds: that of
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1 Translated by J. R. Ballantyne; 2nd ed. by F. Hall.
2 Edited by C. Lassen (1832). Translations by H. T. Colebrooke and
J. Davies.
3 Formally makes him the pupil of Panchṣākā, whilst another
even identifies him with Kālidāsa; cf. F. Hall, Sānkhya-sūtra, p. 29.
4 Translated by H. H. Wilson. A Chinese translation of a comment-
ary resembling that of Gaudāpāda is said (M. Müller, India, p. 60) to have
been preserved in China up to the 5th dynasty (A.D. 257-585).
5 Translated by R. Garbe, Bibl. Ind.
6 Edited by Garbe (Harvard, 1895); translated (Leipzig, 1889).
7 Besides Colebrooke's Essay, with Cowell's notes, see Ballantyne's
translation of the Tārāja-sangraha and the introduction to Rör's translation
of the Bhāṣṭāpariccheda, and his article, Z.D.M.G. xxi.

Edited and translated by J. R. Ballantyne.
8 Edited and translated, with commentary, by B. E. Rör.
9 Edited and translated, with commentary, by E. B. Cowell.
10 Edited and translated, with commentary, by K. M. Berjeek, Bibl. Ind.
11 Edited and translated, with commentary, by E. B. Cowell.
12 H. Hodgson, The Languages, Literature and Religion of
Nepal and Tibet.
13 Lalita-vistara, ed. and partly transl. Rājendrāla Mitr; ed. S.
Leffman (1908); Mahāvīra, edited E. Senart; Vaiṣṇa-pariccheda,
edited, with critique, by R. Millar; their Society, The Sacred Books
of the East.
14 "Lotus de la bonne loi"); and H. Korn, Sacred Books of the East.
15 It consists of six Samhitās, one of which has been edited by
K. M. Berjeek, Bibl. Ind.

Heretical Systems.
of which was deemed necessary for a correct interpretation of the sacred Mantras, and the proper performance of Vedic rites.

Linguistic inquiry, phonetic as well as grammatical, was naturally connected with the large collection of texts that comprised the meaning of the Veda and with the view of setting its textual form. The particular work which came ultimately to be looked upon as the "vedânga" representative of grammatical science, and has ever since been the subject of special study, is the Pāṇini.

The grammar in India, is Pāṇini's Ashaṭhaśāhityâ,¹ so called from its "consisting of eight lectures (aḍhyâyas)," of four pādas each. For a comprehensive grasp of linguistic facts, and a penetrating insight into the hidden forces that come into play in the construction of language, Pāṇini's grammar is probably unrivalled in the literature of any nation—though few other languages, it is true, afford such facilities as the Sanskrit for the study of the grammar of a language. His work differs entirely from that usually adopted in our grammars, viz. according to the so-called parts of speech. As the work is composed in aphorisms intended to be learned by heart, economy of memory-matter was an important consideration. He has thus designed, in this day and age, to be attained by the grouping together of all cases exhibiting the same phonetic or formative feature, no matter whether or not they belonged to the same part of speech. For this purpose he also makes use of a highly artificial and ingenious system of algebraic symbols, consisting of technical letters (anuvandhi), used chiefly with affixes, and indicative of the changes which the roots or stems have to undergo.

It is self-evident that so complicated and complete a system of linguistic analysis and nomenclature could not have sprung up all at once and in the infancy of grammatical science, but that many generations of scholars have been known to have contributed to the perfection of the work which it exhibits in Pāṇini's work. Accordingly we find Pāṇini himself making reference in various places to ten different grammarians, whom he is supposed to have been indebted to. His object was chiefly attained by the grouping together of all cases exhibiting the same phonetic or formative feature, no matter whether or not they belonged to the same part of speech. For this purpose he also makes use of a highly artificial and ingenious system of algebraic symbols, consisting of technical letters (anuvandhi), used chiefly with affixes, and indicative of the changes which the roots or stems have to undergo.

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one of a more practical system of arrangement—the principal heads under which the grammatical matter was distributed usually being: rules of euphony (sandhi); inflection of nouns and pronouns, with rules of arrangement—viz. the number of meanings assignable to a word—seems to be the more primitive. The work probably next in time is the famous Amara-kosa13 ("immortal treasury") by Amara-

18th-century, a sort of eclectic grammar. Among the works quoted by commentators as Amara's sources arc: the Tripadamritam, a treatise on the technical part of Sanskrit grammar, and the Harivali, a collection of uncomman words, and two short glossaries. Of numerous other works of this class the most important is the Medhat, a dictionary of homonyms, arranged in the first place according to the finals and the syllabic length, and then alphabetically. Two important dictionaries, compiled by native scholars of the last century, are the Sahajalpadarama by Radhakanta Deva, and the Koshapaddam by Rama Krishna Chandra, an account of Sanskrit dictionaries is contained in the preface to the first edition of H. H. Wilson's Dictionary, reprinted in his Essays on Sanskrit Literature.

VI. MUSIC (Sangita).—The musical art has been practised in India from early times. The theoretic treatises on profane music are, however, quite modern. The most highly esteemed works are the Sangita-
ratnakara ("jewel-mine of music"), by Sringaddeva, and the Sangita-
darpa}a ("mirror of music"), by Dânodara. Each of these works treats the most important matters of the Hindu theory distinguishes twenty-two intervals, and the Indian music consists almost entirely in melody, instrumental accompaniment being performed in unison, and any attempt at harmony being confined to the continuation of the key-note. A

13 Edited by H. T. Colebrooke (1808), and by L. Deslongchamps (1839).
14 A grammarian of this name is mentioned as the tutor of King Jayapida of Kashmir (A.D. 755-796); but Kahira, the commentator on Amara, is placed by Col. Irwin. According to the Atherium, the letter, without regard to the number of syllables. This Kosa has found many commentators, the lowest of those known being Kahira-

15 Edited by Th. Aufrechte (1861).
16 Edited by O. Böhlins and C. Rieu (1847).
number of papers, by various writers, have been reprinted with additional remarks on the subject, in Sourindro Mohun Tagore's *Hindu Music* (Calcutta, 1873). Compare also Bh. A. Pingle, *Indian Music*, 2nd ed. (Bombay 1868).

**Rhetoric.**—Treatises on the theory of literary composition are very numerous. Indeed, a subject of this description—involving such nice distinctions as regards the various kinds of language, the particular subjects and the manner for them, and the different sentiments or mental conditions capable of being both depicted and called forth by them—could not but be congenial to the Indian mind. H. T. Hume, in his *Historical Sketches of the Hindu Poets* (Calcutta, 1857), has devoted himself to a study of these theoretic distinctions with special reference to the drama, which, as the most perfect and varied kind of poetic production, usually takes an important place in the theory of literary composition. His work is remarkable for a perfection of style, rigorous and detailed. The Indian drama is, however, curiously confounded in the middle ages with Hippocrates was probably not Arab, but Indian, and derived his knowledge of medicine from the Arabs (as they themselves declare) having derived some of their knowledge of medical science from Indian authorities, the Muhammadans, and theirAuthors, none of these treatises was translated into Latin, though a very large number of Arabic and Persian medical books was translated into Greek. It is probable that the treatises of Hafez, by the Kashmirian Rudrakshya, and of the anonymous Rasikanta, entitled *Sri-Harsha*, which has been attributed to the author, is replete with material which the concluding stanza he is stated to have composed his work at the court of King Muñja, who is probably identical with the well-known Mālaṇa prince, the uncle and predecessor of King Bhoja of Dārā. The Dālāpitra was early commented upon by Dhaniaka, possibly the author's own brother, their father's name being the same (Vishṇu). Dhaniaka quotes Rājaekhara, who is supposed to have composed in the 12th century the celebrated *Vedānta-kāśi-bindu*," the neck-ornament of Sarasvati (the goddess of eloquence)," a treatise, in five chapters, on poetry; and he is frequently referred to in the works of his successors, and indeed by himself, as an estimable compliment by some writer patronized by him. The *Kāvya-prakāśa*, "the lustre of poetry," another esteemed work of the same class, in ten sections, was probably composed in the 11th century by the author, Mamane, a Kashmirian, having been the maternal uncle of Sri Harsha, the author of the Naṣadhiya. The *Sāhitya-darpana*, or "mirror of composition," the standard work on literary criticism, was composed in the 1st century, on the banks of the Brahmaputra, by Viśvanātha Kavirāja. The work consists of ten chapters, treating of the following subjects: (1) the nature of poetry; (2) the sentence; (3) poetic flavour (rasa); (4) the divisions of poetry; (5) the functions of character (prakāśa); (6) the role of the performer on dramatic art; (7) faults of style; (8) merits of style; (9) distinction of style; (10) ornaments of style.

**Medicine.**—Though the early cultivation of the healing art is amply attested by frequent allusions in the Vedic writings, it was doubtless not till a much later period that the medical practice advanced beyond a certain dogmatic empirical skill and pharmacutic routine. From the simultaneous mention of the three humours (wind, bile, phlegm) in a vārāntikā to Pāṇini (v. 1, 38), some kind of humoral pathology would, however, seem to have been prevalent among Indian physicians several centuries before our era. The oldest existing work is supposed to be the *Charaka-samhitā*, a bulky cyclopaedia in ślokas, mixed with prose sections, which consists of eight chapters, and was probably composed in the 1st or 2nd century of the Christian era. Whether the Chinese tradition which makes Charaka the court physician of King Kanishka (c. A.D. 100) rests on fact is very doubtful. Of equal authority, but doubtless somehow more modern, is the *Susrutā (samhitā)*, which, according to some, was to have received from Dhanvantari, the Indian Asclepius, whose name, however, appears also among the "nine gems." It consists of six chapters, and is likewise composed in mixed verse and prose—the greater simplicity of arrangement, as well as some slight attention paid in it to surgery, betokening an advance upon Charaka. Both works are, however, characterized by great prolixity, and contain a great mass of material which has been dismissed by late Professor E. Haas, in two very suggestive papers, tried to show that the work of Susruta (identified by him with Socrates, so often confounded in the middle ages with Hippocrates) was probably not Arab, but Indian, and derived his knowledge of medicine from the Arabs (as they themselves declare) having derived some of their knowledge of medical science from Indian authorities, the Muhammadans, and their Authors, none of these treatises was translated into Latin, though a very large number of Arabic and Persian medical books was translated into Greek. It is probable that the treatises of Hafez, by the Kashmirian Rudrakshya, and of the anonymous Rasikanta, entitled *Sri-Harsha*, which has been attributed to the author, is replete with material which the concluding stanza he is stated to have composed his work at the court of King Muñja, who is probably identical with the well-known Mālaṇa prince, the uncle and predecessor of King Bhoja of Dārā. The Dālāpitra was early commented upon by Dhaniaka, possibly the author's own brother, their father's name being the same (Vishṇu). Dhaniaka quotes Rājaekhara, who is supposed to have composed in the 12th century the celebrated *Vedānta-kāśi-bindu*," the neck-ornament of Sarasvati (the goddess of eloquence)," a treatise, in five chapters, on poetry; and he is frequently referred to in the works of his successors, and indeed by himself, as an estimable compliment by some writer patronized by him. The *Kāvya-prakāśa*, "the lustre of poetry," another esteemed work of the same class, in ten sections, was probably composed in the 11th century by the author, Mamane, a Kashmirian, having been the maternal uncle of Sri Harsha, the author of the Naṣadhiya. The *Sāhitya-darpana*, or "mirror of composition," the standard work on literary criticism, was composed in the 1st century, on the banks of the Brahmaputra, by Viśvanātha Kavirāja. The work consists of ten chapters, treating of the following subjects: (1) the nature of poetry; (2) the sentence; (3) poetic flavour (rasa); (4) the divisions of poetry; (5) the functions of character (prakāśa); (6) the role of the performer on dramatic art; (7) faults of style; (8) merits of style; (9) distinction of style; (10) ornaments of style.

**Astronomy and Mathematics.**—Hindu astronomy may be broadly divided into a pre-scientific and a scientific period. While the latter clearly presupposes the extensive diffusion of the set of Hipparchus, which the Greek astronomers, it is still doubtful whether the earlier astronomical and astrological theories of Indian writers were entirely of Persian or Indian origin. From very ancient (probably Indo-European) times astronomical chronological calculations were based on the synodical revolutions of the moon—the difference between twelve such revolutions (making 27.3 days) and one solar revolution (365 days) being the time of the winter solstice, of twelve additional days. Besides this primitive mode the Rigveda also alludes to the method prevalent in post-Vedic times, according to which the moon was divided into the 30 days of the lunar month, with a thirteenth month intercalated every fifth year. This quinquennal cycle (yuga), is explained in the Jyotisha, regarded as the oldest astronomical work. As an example of the astronomical and astrological science in India, the estimates of the length of the solar and lunar years, the various cycles of the moon, of the sun, of the planets, and of the stars, the construction of the zodiac, and the determination of the time of the day, are given by Bhāskara, of the 12th century, in his *Lilavati* and *Bijaganita*. The *Sūrya-siddhānta*, translated by (W. D. Whitney) and E. Burgess (1860).
on these are the works of the most distinguished Indian astronomers, viz. Aryabhata I, probably born in 476; Varāha-mihira, probably 505–587; Brahma-gupta, who completed his Brāhma-siddhānta in 628; Mahā-vindu (1644), distinguished early as computer of Varāha-mihira; and Bhāskara Achārya, who, born in 1114, finished his great course of astronomy, the Siddhānta-siromani, in 1150. In the works of several of these writers, from Aryabhata onward, one may see the paid tribute (especially in metrical and algebraic computations; and the respective chapters of Bhāskara's compendium, viz. the Lilāvati and Vījyapala, still form favourite text-books of the students. The question whether Aryabhata was familiar with the writings of the Greek algebraist Diophantus (c. A.D. 360) remains still unsettled, but, even if this was the case, algebraic science seems to have been carried by him beyond the point attained by Bhāskara. The exact date of the writing of Bhāskara's treatises is a matter of dispute among the historians.

On Sanskrit literature generally may be consulted Max Müller, History of Ancient Sanskrit Literature; A. Weber, History of Indian Literature; A. A. Macdonell, History of Sanskrit Literature. (J. E.)

SANSON, CHARLES HENRI (1739), public functionary of Paris from 1778 to 1795, was the son of Charles Sanson or Longyal, who received in 1688 the office of exécuteur des hautes œuvres de Paris, which became hereditary in his family. Sanson's brothers exercised the same trade in other towns. In the last days of 1789 Goraus in the Courrier de Paris accused Sanson of harbouring a Royalist press in his house. Sanson was brought to trial, but acquitted, and Goraus withdrew the accusation. After the execution of Louis XVI, a statement by Sanson was inserted in the Thermomètre politique (13th February 1793) in contradiction of the false statements made in connection with Bakery. He surrendered his office in 1795 to his son Henri, who had been his deputy for some time, and held his father's office till his death in 1840. There is no record of the elder Sanson's death. Henri's son Clément Henri was the last of the family to hold the office.

The romantic tales told of C. H. Sanson have their origin in the apocryphal Mémoires pour servir à l'histoire de la Révolution française (2 vols., 1829); another in the Mémoires, of introduction emanate from Balzac, and some other matter from Lhéritier de l'Ain. Other Mémoires of Sanson, edited by A. Grégoire (ps. for V. Lombarde) in 1850, and by M. D'Obreux (6 vols., 1860–1861), are of much less value than the others. The few facts definitely ascertainable are collected by G. Lenôtre in La Guillotine pendant la Révolution (1803). Cf. M. Tourneux, Bibliographie de l'histoire de Paris . . . (1896, &c.), vol. I. Nos. 3963–3965, and vol. IV., sa. "Sanson.

SANSON, NICOLAS (1600–1667), French cartographer, wrongly termed by some the creator of French geography, was born of an old Picardy family of Scottish descent, at Abbeville, on the 20th (or 31st) of December 1600, and was educated by the Jesuits at Amiens. In 1627 he attracted the attention of Richelieu by a map of Gaul which he had constructed (or at least begun) while only eighteen. He gave lessons in geography both to Louis XIII. and to Louis XIV.; and when Louis XIII., it is said, came to Abbeville, he preferred to be the guest of Sanson (then employed on the fortifications), instead of occupying the lodgings provided by the town. At the conclusion of this visit the king made Sanson a councillor of state. In 1647 Sanson accused the Jesuit Labbé of plagiarizing him in his Pharus Galliae Antiquae; in 1648 he lost his eldest son Nicolas, killed during the Franco-Italian war. Among the friends of his later years was the great Condé. He died at Paris on the 7th of July 1667. Two younger sons, Adrien (d. 1708) and Guillaume (d. 1703), succeeded him as cartographers to the king.

Sanson's principal works are: Galliae antiquae descripiorum geographicae (1627); Graeciae antiquae descriptio (1636); L'Empire romain (1637); Brabantiae, ou terrae antiquitatis ab d'Aubert, in which he seeks to identify Strabo's Britannia with Abbeville; La France (1644); Tables méthodiques pour les divisions des Gaules . . . (1644); L'Angleterre, l'Espagne, l'Italie, the three published in 1650; Le Cours du Rhin (1650); La Pharam Galliae antiquae Philippi Labbe disquisitiones (1647–1648); Remarques sur la carte de l'ancienne Gaule de César (1651); L'Asie (1652); Index geographicus (1653); Geography compendiumes, two vols., 1654; Atlas (1652); 1650 Hulck, failed collected Sanson's maps in an Atlas nouveau. See also Niceron, 1

1 The Aryabhata, edited by H. Kern (1874).
2 The Bhakti-samhita and Yoga-yatrî, edited and translated by H. Kern; the Laghu-jataka, edited by A. Weber and H. Jacobi.
3 A translation of both treatises, and the first English translation of the Geographia, was published (1871) by H. T. Colebrooke, with an important " Dissertatio in the Algebra of the Hindus," reprinted in the Misc. Essays, ii. pp. 375 seq. Memóires, vols. xii., and xx.; the 18th-century editions of some of Sanson's works on Delmarce under the titles of Atlas de géographie ancienne and Atlas britannique; and the Catalogue des cartes et libres de géographie de Sanson (1702).

SANSINO, ANDREA CONTUCCI DEL MONTE (1460–1529), Florentine sculptor, was the son of a shepherd called Niccolò di Domenico Contucci, and was born at Monte Sanxovino near Arezzo, whence he took his name, which is usually softened to Sansovino. He was a pupil of Antolpio Pallavicino, and at first worked in the purer style of 15th-century Florence. Hence his best works are by far the best, such as the terra-cotta altarpiece in Santa Chiara. After his return to Venice, he carried on the "Annunciation," the "Coronation of the Virgin," a " Pietà," the "Last Supper," and various statuettes in the Corbinelli chapel of S. Spirito at Florence, all executed between the years 1488 and 1492. From 1501 to 1500 Andrea worked in Portugal for the king, and some pieces of sculpture by him still exist in the monastic church of Coimbra. (See Raczinski, Les Arts en Portugal, Paris, 1846, p. 344.) These early reliefs show strongly the influence of Donatello. The beginning of a more pagan style marks the statues of " St John baptizing Christ " over the east door of the Florence duomo, and were severely finished by the weaker hand of Vincenzo Danti. In 1502 he executed the marble font at Volterra, with good reliefs of the " Four Virtues " and the "Baptism of Christ." In 1505 Sansovino was invited to Rome by Julius II. to make the monuments of Cardinal Ascanio Maria Sforza and Cardinal Girolamo della Rovere for the retro-choir of S. Maria del Popolo. The architectural parts of these monuments and their sculptured foliage are extremely graceful and executed with the most minute delicacy, but the recumbent effigies show the beginning of a serious decline in taste. These tombs became models for which many years were copied by most later sculptors with increasing exaggerations of their defects. In 1512, while still in Rome, Sansovino executed a very beautiful group of the " Madonna and Child with St Anne," now on one of the side altars in the church of S. Agostino. From 1513 to 1528 he was at Loredo, where he cased the outside of the Santa Casa in white marble, covered with reliefs and statuettes in niches between engaged columns; a small part of this sculpture was the work of Andrea, but the greater part was executed by Montelupo, Tribolo and others of his assistants and pupils. Though the general effect is rich and magnificent, the individual pieces of sculpture are both dull and feeble. The earlier reliefs, those by Sansovino himself, are the best. SANSON, JACOPO (1477–1570), Italian sculptor, was called Sansovino after his master Andrea, his family name being Tatti. He became a pupil of Andrea in 1500, and in 1510 accompanied him to Rome, devoting himself there to the study of antique sculpture. Julius II. employed him to restore damaged statues, and he made a full-sized copy of the Laocoön group, which was afterwards cast in bronze, and is now in the Uffizi at Florence. In 1511 he returned to Florence, and began the statue of St Januarius the Elder, which is now in a niche in one of the great piers of the Duomo. He carved a nude figure of " Bacchus and Pan," now in the Bargello, near the "Bacchus" of Michelangelo, from the contrast with which it suffers much. Soon afterwards Jacopo returned to Rome, and designed for his fellow-citizens the grand church of S. Giovanni dei Fiorentini, which was carried out by Antonio Sangallo the younger. A marble group of the "Madonna and Child," heavy in style, now at the west of S. Agostino, was his next important work. In 1527 Jacopo fled from the sack of Rome to Venice, where he was welcomed by Titian and the doge, and till his death he was occupied in adornning Venice with magnificent buildings and many second-rate pieces of sculpture. Among the latter Jacopo's poorest works are the colossal statues of "Neptune" and " Mars" on the grand staircase of the ducal palace. His best are the bronze doors of the sacristy of St Mark, cast in 1562; inferior to these are the series of six bronze reliefs round the choir of the same church. In 1563 he completed a small bronze gate with a graceful relief of "Christ surrounded by Angels"; this gate shuts off the altar of the Reserved Host in the choir of St Mark's.
SANTA ANA—SANTA BARBARA

Jacopo's chief claim to distinction rests upon the numerous fine Venetian buildings which he designed, such as the public library, the mint, the Scuola della Misericordia, the Palazzo de' Cornari and the Palazzo Delfino, with its magnificent staircases—
the last two both on the grand canal. Among his ecclesiastical works the chief were the church of S. Fantino, that of S. Martino, near the arsenal, the Scuola di S. Giovanni degli Schiavoni and, 
finest of all, the church, now destroyed (see VENICE), of S. Geminiano, a very good specimen of the Tuscan and Composite orders used with the graceful freedom of the Renaissance.

In 1545 the roof of the public library, which he was then constructing, fell in; on this account he was imprisonment and dismissed from office. It was not until the death of the cathedral, to which he had been appointed by a decree of the signoria on the 7th of April 1539. Owing to the intervention of Titian, Pietro Aretino and others, he was soon set at liberty, and in 1549 he was restored to his post. He did good service for St Mark's by encircling its failing domes with bands of iron. Sansovino's architectural works have much beauty of proportion and grace of ornament, a little marred in some cases by an excess of sculptured decoration, though the carving itself is always beautiful, both in design and execution. He used the classic orders with great elegance and good taste. His pupils were mostly men of but little talent.

SANTA ANA, a city and the county-seat of Orange county, southern California, U.S.A., 34 m. S.E. of Los Angeles. Pop. (1900) 4933 (506 foreign-born); (1910) 8249. It is served by the Atchison, Topeka & Santa Fé, the Southern Pacific and the Pacific Electric railways. The city is situated about 10 m. from the ocean, in the lower western foothills of the Santa Ana mountains. There are numerous artistic wells in the surrounding region, and there is a good irrigation system. (For a description of the irrigation canal see AGUADULCE.) Santa Ana is in the orange, lemon and walnut region of southern California, and in the only important celery-growing district of the state; the celery is grown in great quantities in the large district known as the "Peatlands" (about 9 m. from the city), which is underlaid by a deposit of peat from 7 to 100 ft. deep. Other important products of the county are petroleum, barley, sugar beets, apricots and lima beans. Santa Ana was first platted in 1859 and was incorporated in 1888. Its growth since 1900 has been rapid.

SANTA ANA, the capital of the department of Santa Ana, Salvador, 50 m. by rail N.W. of San Salvador. Pop. (1905) about 48,000. It is situated about 2100 ft. above sea-level, in a valley surrounded by high mountains, which are covered by coffee and sugar plantations and woods. It is the second city of the republic in size, and has broad shady streets and fine open squares. The municipal offices, hospital, literary institute and barracks are noteworthy buildings, and the parish church, Doric in style, is generally regarded as one of the finest in Central America. Cigars, pottery, starch, spirits, sugar and various textiles are manufactured, and the export trade in coffee and sugar has developed rapidly since the opening in 1900 of a railway to San Salvador and the Pacific port of Acajutla.

SANTA-ANNA, ANTONIO LOPEZ DE (1795-1876), Mexican soldier and politician, was born at Jalapa in the province of Vera Cruz on the 21st of February 1795. He was neither a general nor a statesman, nor even an honest man, but he was the most conspicuous and continuously active of the military adventurers who filled Spanish America with violence during the first two generations of its independence. He entered the colonial army of Spain as a cadet in 1810, and served as one of the Creole supporters of the Spanish government till 1821. In that year Mexico fell away from the mother country. Iturbide, who was master of the country for the time, made Santa-Anna brigadier and governor of La Vera Cruz. Till about 1835 he pursued the policy of keeping his hold on his native province of Vera Cruz, and influencing the rest of the country by alternately supporting and upsetting the central government. He first helped to ruin Iturbide, who wished to make himself emperor. He proclaimed the Republic, and was then a supporter of the successful federal party. Federalism suited him very well since it left him in command of Vera Cruz. In 1839 he defeated a foolish attempt of the Spaniards to reassert their authority in Mexico. He kept himself in reserve till events gave him a chance to upset the president of the day. Bustamente, whom he defeated at Casas Blancas on the 12th of November 1832. He could now have become president himself, but preferred to rule through dummies. Now that he saw an opportunity to become master he became reactionary and abolished the federal constitution. This led to the revolt of Texas, which was full of settlers from the United States. Santa-Anna invaded Texas and gained some successes, but was decisively defeated at San Jacinto on the 21st of April 1836. The Texans had a good excuse for shooting him, as he conducted war in a ferocious way. They preferred to let him save his life by ordering his troops to evacuate the country. He was released in February 1837, and had for a time "retire to his estates" in Vera Cruz. In 1838 the French government made an attack on the town, and Santa-Anna, by a display of his redeeming virtue of personal courage, lost a leg but regained his influence. He became military dictator in 1841, and governed by violence till he was driven into exile by mutiny in 1845. He returned to Mexico in 1853, where he was tried and condemned to death, but spared on the ground that he was in his dotage. At last, worn out by age, he accepted an amnesty and returned to the city of Mexico, where he died in obscurity on the 20th of June 1876.


SANTA BARBARA, a city and the county-seat of Santa Barbara county, in southern California, U.S.A., on the coast-plain on the southern slope of the Santa Ynez Mountains. Pop. (1900) 3714 (1143 foreign-born); (1910) 11,654. It is served by the Coast Line of the Southern Pacific railway system. With picturesque surroundings, excellent bathing beach and ideal climate, Santa Barbara is one of the most popular of the health and pleasure resorts of California. The monthly average of the mean temperatures for 23 years (1881-1903 inclusive) varied from 53° in January to 67° in August. Nowhere in California is plant life more varied and beautiful; in the vicinity are walnut, olive, lemon and orange groves. North-west of the city are the valuable oil fields of Santa Barbara county, notably the Santa Maria field, 6 m. S. of Santa Maria, and the region between Lompoc and Santa Maria, first developed in 1903. A presidio (Spanish military post) was established here in 1782, and a Franciscan mission, by Junipero Serra, about four years later. The mission building is well preserved, and is probably the greatest single attraction of Santa Barbara. It is now the Franciscan headquarters of the Pacific coast, and near it is a Franciscan college. Immediately behind it is the picturesque Mission Canyon. Santa Barbara took part in the revolution of 1829, and in the sectional struggles following leaned to the side of Monterey and the North. It was occupied by the Americans in August 1846, then (without bloodshed) by the Californians in October, and again definitively by the American forces on the 27th of November 1846. In 1850 it was incorporated as a city, though already long a Mexican "ciudad." It remained off the railway route until 1887.

SANTA BARBARA, a town of Iloilo province, island of Panay, Philippine Islands, on the S.E. coast, on the Jalaru river, a few miles N. of Iloilo, the capital of the province. Pop. (1903), after the annexation of Zârraga, Lucena, Pavía and Leganés,
SANTA CATHARINA—SANTA CRUZ

37,631; subsequently Pavia (pop. in 1903, 5700) was annexed to Jaro. There are 87 barrios or villages in the town, only three of these had a population in 1903 exceeding 1000. The language is Visayan. The principal industries are the cultivation of sugar cane, Indian corn, rice, cacao, coco-nut palm and tobacco, and the raising of cattle.

SANTA CATHARINA, a southern maritime state of Brazil, bounded N. by Pararán, E. by the Atlantic, S. by Rio Grande do Sul, and W. by Rio Grande do Sul and the Misiones territory of Argentina. Pop. (1900) 320,289; area 28,633 sq. m. The Serra do Mar rises not far from the coast and leaves only a narrow coast zone, and the plateau above is much broken with irregular ranges of mountains. The coast region, though in the temperate zone, is hot and humid. It is densely forested, is broken by swamps and lagoons, and is crossed by numerous short streams from the wooded slopes of the serras. The plateau is less densely wooded, but has some highly fertile plains, the open campos being partly devoted to stock raising. Except in the malarious coast zone, the climate is temperate, bracing and exceptionally healthy. The drainage is westward to the Paraná, the rivers being tributaries of the Iguaçu, which forms its northern boundary, other rivers to Uruguay, which forms its southern boundary. A number of prosperous German colonies—the largest and best known of which are Blumenau, Dona Francisca, Joinville, Itajaí, Brusque, Dom Pedro and São Bento—are devoted chiefly to agriculture. There is no cultivation on a large scale, as in São Paulo and the northern provinces. Coffee is produced to a limited extent. Indian corn, beans, onions, fruit and mandioca are the principal products. A prominent industry is the gathering and preparation of malé or Paraguayan tea (Ilex paraguayensis), which is an article of export. The mineral resources include coal, iron, silver and gold, and petroleum, the first alone is mined. The Rio Uruguai and its southern tributary, the Santa Christina, runs from Laguna, at the mouth of a lagoon of that name on the southern coast, northward to the port of Imbituba (about 4 m.) and thence westward up the valley of the Rio Tubarão to the coal fields of that name (60 m.). The coal is of inferior quality and the development of the mines, which were discovered in 1841, has not been a success. A later investigation shows that there are beds of better coal at a greater depth extending from Rio Grande do Sul to São Paulo. The capital of the state is Florianópolis (86,000) also called Santa Catharina and Desterro, and its other towns are Blumenau, its southern capital; Laguna (7282), Joinville (13,990), Itajaí (8875), Brusque (8094). São José (17,820), opposite Florianópolis, Tubarão (5405) and São Francisco (5583), a good port in the northern part of the state in direct communication with a majority of the German colonies.

SANTA CLARA (or VILLA-CLARA), the capital of Santa Clara province, Cuba, about 185 m. (by rail) E.S.E. of Havana. Pop. (1907) 16,702. It is situated near the centre of the island, on a plateau, between two small streams, and is served by the United Railways of Havana and by the Cuba and the Cuba Central railways, the last connecting the east and west lines with the north and south coasts. The streets are straight and wide, and there are many fine buildings. The oldest church is of the last third of the 18th century. The city is surrounded by fertile plains, which are cultivated in cane or devoted to grazing. Santa Clara was founded in 1689 by a band of schismatics from Remedios.

SANTA CRUZ, ÁLVARO DE BAZAN, 1st Marquis of (1526–1588), Spanish admiral, was born at Granada on the 12th of December 1526, of an ancient family originally settled in the valley of Baztan in Navarre, from which they are said to have taken their name. His grandfather, Álvar de Bazan, took part in the conquest of Granada from the Moors in 1492, and his father, who had the same Christian name, was distinguished in the service of Charles V., by whom he was made general of the galleys—or commander-in-chief of the naval forces of the crown of Spain in the Mediterranean. The future admiral followed his father in his youth, and was early employed in high commands. He was a member of the military order of St. Iago. In 1563 he aided in the capture of Velez de Gomera, commanded the division of galleys employed to blockade Tetuan, and to suppress the piracy carried on from that port. The service is said to have been successfully performed. Bazan certainly earned the confidence of Philip II., by whom he was appointed to command the galleys of Naples in 1568. This post brought him into close relations with Don John of Austria, when the Holy League was formed against the Turks in 1570. During the operations which preceded and followed the battle of Lepanto (7th of October 1571), Bazan was always in favour of the more energetic course. In the battle he commanded the reserve division, and his prompt energy operation in the direction of the left wing of the Turks, outmanoeuvred the commander-in-chief right, Giovanni Andrea Doria, and broke the allied line. He accompanied Don John of Austria at the taking of Tunis in the following year. When Philip II. enforced his claim as heir to the crown of Portugal in 1580–1581, Santa Cruz held a naval command. The prior of Crato, an illegitimate representative of the Portuguese royal family, who conducted the popular resistance to the annexation of the country by Philip, continued however, to hold the island possessions of Portugal in the Atlantic. This was successfully opposed by the French admiral under Philip Strozzi, a Florentine exile in the service of France. Santa Cruz was sent as admiral of the Ocean to drive the pretender and his friends away in 1583. His victory off Terceira over the Portuguese, and a loose confederation of adventurers and pirates, French and English, decided the struggle in favour of Spain. Santa Cruz, who recognized that England was the most formidable opponent of Spain, became the zealous advocate of war. A letter written by him to King Philip from Anglia in Terceira, on the 9th of August 1583, contains the first definite suggestion of the Armada. Santa Cruz himself was to have commanded. His plans, schemes and estimates occupy a conspicuous place in the documents concerning the Armada collected by Don Cesáreo Duro. The hesitating character of the king, and his many embarrassments, political and financial, caused many delays, and left Santa Cruz unable to act with effect. He was at Lisbon without the means of fitting out his fleet, when Drake burnt the Spanish ships at Cadiz in 1587. The independence of judgment shown by Santa Cruz ended by offending the king, and he was held responsible for the failures and delays which were the result of the bad management of his state. In January 1588, when the Armada was formed at Lisbon, was said to have been hastened by the unjustified reproaches of the king. The marquis of Santa Cruz was the designer of the great galleons which were employed to carry the trade between Cadiz and Vera Cruz in Mexico.

The documents relating to the Armada have been collected by Don Cesáreo Duro in his voluminous work entitled Anales de los archivos of the marquis in his Conquista de las islas Azor. A separate life has been published by Don Angel de Alfolaguirre. There are various notices of Santa Cruz in Sir W. Stirling Maxwell's Don John of Austria.

SANTA CRUZ, an eastern department of Bolivia, bounded N. by El Ben, E. by Brazil, S. by Chuquisaca and W. by Chuquisaca and Cochabamba. Area 141,368 sq. m. Pop. (1900) 209,592; (1906 estimated) 234,743. It is partly explored. It consists of a great plain extending eastward from the base of the Andes to the frontiers of Brazil, broken by occasional isolated hills, and in the N.E. by a detached group of low sierras known collectively under the name Chiquitos, which belong to the Brazilian highlands rather than to the Andes. On the western side of the department is an upland zone belonging to the eastern slope of the Andes, and here the Bolivian settlements are chiefly concentrated. The Chiquitos of old missions, now occupied almost exclusively by Indians. The great plains, whose general elevation is about 900 ft. above the sea, are so level that the drainage does not carry off the water in the rainy season, and immense areas are flooded for months at a time. Extensive areas are permanently swampy. There are forests in the N. and W., but the larger part of the department consists of open grassy plains, suitable for grazing. The Llanos

A priory of the Maltese knights of St John of Jerusalem.
de Chiquitos, adjacent to the sierras of that name, have long been used for this purpose. There are two river systems, one belonging to the Amazon and the other to the La Plata basins. The first includes the Guapay or Rio Grande, Piray or Sara, Yapacani and Maracó, upper tributaries of the Mamoré, and the San Miguel, Blanco, Baures and Paragua, tributaries of the Guaporé—both draining the western and northern parts of the department. In the extreme east a number of streams flow eastward into the Paraguay, the largest of which is the Otuquis; their channels are partly hidden in swamps and lagoons. The climate of the plains is hot and malarial, and the rainfall heavy. On the Andes the climate is distinctly modified by the elevation. Stock-raising is followed to some extent on the plains. Other products of the western districts are sugar, rum, cacao, rice, cotton, coffee and indigo. Rubber and medicinal products are also exported. The Guapay is navigable for small boats in high water, and also the lower courses of the other rivers named, but they are of little service except in the transport of rubber. The principal markets for Santa Cruz products are in the Bolivian cities of the Andes where sugar, rum, cacao and coffee find a ready sale. There is a trade route across the plains from Santa Cruz de la Sierra to the Bolivian capital, La Paz, and the government contracted in 1908 for a railway between these two points (about 497 m.) but the traffic is inconceivable.

The capital and only large town of the department is SANTA CRUZ DE LA SIERRA (pop., in 1900, 15,874; in 1906, estimated, 20,535), on the Piray, a tributary of the Mamoré, 1450 ft. above sea-level, about 160 m. in a straight line N. of Sucre. It is situated on a terrace over the Andean slope in a highly fertile district, devoted to sugar-cane and stock-raising. It is a dusty, straggling, frontier town with rough habitations and a half-civilized population, chiefly Indians and mestizos. It is the seat of a bishop and has a partly finished cathedral, an episcopal seminary and mission station for the Indians. It has also a national college. There are flour mills, sugar mills, distilleries, tanneries and leather manufactories. The original site of Santa Cruz de la Sierra was in the uplands, but it was removed to its present site about 1500, the phrase “de la Sierra” being kept. It has been used as a centre for missionary work among the Indians and as a centre of trade. Expeditions to the Brazilian frontier or to the Chiquitos missions are fitted out here, and it is the objective point for expeditions entering Bolivia from Matto Grosso, Brazil, and Paraguay.

SANTA CRUZ, a city and on the Paraguay, Santa Cruz, the county, in California, U.S.A., on the northern headland of the Bay of Monterey, about 75 m. S. of San Francisco. Pop. (1900) 5629 (1123 foreign-born); (1910) 11,146. It is served by the Southern Pacific railway. Santa Cruz is a popular seaside resort. The site of the city, which spreads back over bluffs and terraces to the foothills of the mountains (2000-3800 ft. in altitude), is very picturesque, and the scenery in the environs beautiful. Hills nearly enclose the city, protecting it from the ocean fogs. Monterey Bay has a remarkable variety of fish; and there is a large fish hatchery near the city. Fruits in great variety are grown in the valley and foothills. The mountains are covered with one of the noblest redwood forests of the state—the only one south of San Francisco; two groves, the Sempervirens Park (2400 acres) and the Fremont Grove of Big Trees, 5 m. from Santa Cruz, have been permanently preserved by the state. A Franciscan mission was established at Santa Cruz in 1701 and secularized in 1834, but was later destroyed. A pueblo or villa called Branciforte, one of the least important of the Spanish settlements (now a suburb of Santa Cruz), was founded in the vicinity in 1797, and before the American conquest was merged with the settlement that had grown up about the mission. The flag of the United States was raised over Santa Cruz in July 1846. The city was chartered in 1876.

SANTA CRUZ, an archipelago of the Pacific Ocean, in the division of Melanesia, belonging to Great Britain. It is a scattered group of small volcanic islands, irregularly disposed from N.W. to S.E. between 8° 34' and 11° 46' S., 165° 38' and 168° E. The total land area is 380 sq. m., and the population is estimated at 5000.

At the north-western extremity, separated by a deep channel from the Solomon Islands, the following islands are clustered: the Duff and Matema or Swallow groups, Analogo, Tinakula or Volcano Island and others; from these a singular current sweeps north E., consisting of Nintendi or Santa Cruz, the largest island, Tupau or Edgecombe, Vanikoro (Recherche), Tucopia, Anuda (Cherry) and Fataka (Mitie). In Vanikoro there are volcanic mountains up to 3000 ft. high, and a depression at the southern end of which lies a lagoon 2200 ft. Nintendi is of less elevation (1215 ft. at the highest). Coral reefs are not extensive, excepting those surrounding Vanikoro. The islands are densely peopled, and have a flora akin to that of New Guinea. The land fauna is very scanty: that of the sea extremely rich and valuable to the natives, who are skilled fishermen and navigators. The climate is hot and humid, and storms are frequent. They are free from the natives of Hawaii, with an intermixture of other blood; but an exception is found in the Duff group, Tucopia and Anuda, which are inhabited by pure Polynesians. The natives live in villages (sometimes fortified). In the past they have proved treacherous and cannibalistic, but have been civilized and domesticated, and since 1871, have borne good fruit. The islands are included in the British protectorate of the Southern Solomons. Some trade in copra is carried on.

The islands were discovered by the Spaniard Alvaro Mendaña in 1555, in which year he attempted to found a colony on Nintendi, but died there on the 8th of October. In 1767 Philip Carteret visited these islands on his voyage of discovery, and called it the Solomon Islands. The name is still sometimes used. During the next century, owing to the practice of kidnapping them as labourers, the natives became so much embittered against foreigners that in 1871 they murdered Bishop John Coleridge Patteson on Nukapu, one of the Swallow group. In 1875 James Graham Goodenough, commodore of the Australian station, was shot with a poisoned arrow on Nintendi during a cruise, and died of his wound. Patteson's murder, however, had roused public feeling in England; steps were taken to regulate the labour traffic, and subsequently Bishop John Schwenck Foley of Hull, who visited these islands in 1877, impressed the cross which commemorates his predecessor on Nukapu. The British protectorate was declared in 1880.

SANTA CRUZ, chief town and capital of the province of La Laguna, Luzon, Philippine Islands, on the S.E. shore of Laguna de Bay, about 35 m. S.E. of Manila. Pop. of the municipality (1903) 12,747. Santa Cruz has numerous fine buildings and a large trade with Manila by way of the lake and Pasig river. Agriculture and manufacturing are important pursuits, the town being noted for its manufacture of palm wine. The landing is of small capacity.

SANTA CRUZ DE TENERIFE, or De Santiago, a seaport and the capital of Tenerife and of the Canary Islands; in 28° 28' N. and 16° 15' W., on the east coast. Pop. (1900) 38,410. Santa Cruz is the residence of the governor-general of the Canaries, the civil lieutenant-governor of the Tenerife district, and the military governor of the island. It occupies a small plain bounded by rugged volcanic rocks, and seamed by watercourses which are dry almost throughout the year. Scarcely any vegetation, except cactuses and euphorbias, is to be seen in the neighbourhood. Almost the entire town was rebuilt in the 19th century, when its population more than trebled. The houses are generally low, with flat roofs; those of the better class are large, with a courtyard in the middle, planted with shrubs in the Spanish fashion. There are many good public buildings, including a school of navigation, technical institute, library, natural history museum and hospital. An aqueduct 5 m. long brings pure water from the mountains of the interior. Dromedaries from the adjacent islands of Lanzarote and Fuerteventura are used to convey merchandise and in agricultural operations. The town is defended by modern forts, but its ancient fortress, its advantages and its resources have also been furnished as a prison. It was attacked and captured by the British fleet under Blake in 1657, and by Nelson, who lost his arm during the attack, in 1797. Some British flags lost on that occasion hang in one of the churches. The anchorage is good, and a mole facilitates landing. Santa Cruz is an important coaling station and commercial centre. (See CANARY ISLANDS.)

SANTA Fé, the capital of New Mexico, U.S.A., and the county-seat of Santa Fé county, about 20 m. E. of the Rio Grande, and 339 m. N. of El Paso, Texas. Pop. (1900) 5693, (256 foreign-
SANTA FÉ

(1814-1888), the founder of the city, came with the United States to the region in 1846, and the city was founded on May 15, 1847. The site was chosen because of its strategic location on the Rio Grande, which serves as a natural boundary between the United States and Mexico.

The first settlement was established by the Spanish in 1598, and the city became an important trading center for the region. In the 19th century, Santa FÉ was a center for the毛皮 trade and became a major hub for the transportation of goods.

In the 20th century, Santa FÉ saw significant growth and development, becoming a major city and a center for the arts and culture. Today, it is a vibrant and diverse city, offering a rich blend of history and modernity.

1 The exact date of the founding of Santa FÉ is not known, but the best opinion has fixed the date between 1604 and 1608, and favors the year 1605.

The City is about 7000 ft. above the sea, at the foot of the southern extremity of the Rocky Mountains, in the Sangre de Cristo range. Its climate is dry, equable and healthy; the mean annual temperature is 49° F., and the mean annual rainfall 14.2 in. The city is surrounded by the plate for shelter it from the sandstorms which affect some parts of New Mexico, and its pleasant climate, attractive mountain scenery and historical interest make it a favorite resort.

Santa FÉ is built round a plaza or square. Crooked streets, broken by the houses, are characteristic of the older part of the city and give an impression of antiquity. Around the plaza and elsewhere in the city, however, the modern style of architecture has given way to ornamental Spanish mission, self-supporting from lawns, sandy square into a well-shaded park, through the efforts of the Woman's Board of Trade, an unique institution, which also controls the public library, housed in a brick and stone building (1907) in the Mission style of architecture. Within the plaza are a monument to the soldiers who fell in New Mexico during the Civil War and the Indian wars, a stone marking the spot where the first American flag was raised by General Kerny in 1846, and a bronze drinking fountain erected as a memorial to John Baptist Lamy (1814-1888), the first Roman Catholic bishop (1853) and archbishop (1875) of Santa FÉ. Facing the plaza is the old Governor's Palace, remodeled in the Spanish style in 1895, the seat of the Territorial government until the city was incorporated in 1850, the School of American Archaeology and the New Mexico Museum of Archaeology. In this building General Lew Wallace (governor 1878-1883) wrote the concluding chapters to Ben Hur. San Miguel chapel was built probably in the middle of the 17th century, was destroyed in 1680, and was rebuilt in 1710, but has been greatly altered in recent times. The church of Nuestra Señora de Guadalupe (modernized with a single roof and a wooden steep) contains interesting paintings and antique wood-carvings. The cathedral of San Francisco, though not completed, has been used as a place of worship since about 1630. The Presidio is incorporated in 1850, is still a church, as is it thought, in 1627. Also of interest are the Rosario chapel; the ruined earthworks of Fort Marcy, north of the city, constructed by General Kerny in 1846; the ruins of the Garita, an old Spanish fortification used as a custom-house under the Mexican government; the so-called "oldest house," a dilapidated adobe structure claimed to be the oldest building, continuously inhabited, in the United States; the state library; and the national cemetery, in which 102 American soldiers are buried.

Among the public buildings and institutions are the state capitol, the executive mansion (1909), the federal building (in front of the new capitol), the Natural Science Museum, the United States National Guard armory, a Federal industrial board school for Indians (with 300 pupils in 1908) and Saint Catherine's Industrial School for Indians (Roman Catholic). About 7 m. east of the city, on the eastern side of the Rio Grande, is an old fort, of a Presidio, still in a state of complete ruin. The building, with convict labour, of a "scenic highway" from Santa FÉ to Las Vegas. In Pajarito Park, 20 m. west of Santa FÉ, are numerous salt and brackish salt flats and brackish pools, and near the city are several prehistoric mounds.

The chief manufactures of Santa FÉ are brick, pottery (made by Pueblo Indians), and filigree jewelry (made by Mexican artisans). The surrounding country is devoted to agriculture and mining, chiefly for coal.

Santa FÉ is considered the oldest city save one (St Augustine, Florida) in the United States. A settlement, known as San Gabriel, was planted at the junction of the Rio Chama and the Rio Grande by Juan de Oñate in 1598, and about 1605, some 30 m. S.E., Santa FÉ, officially the Villa Real de Santa FÉ de San Francisco, was founded on the site of a deserted Indian pueblo and became the seat of the government of New Mexico. In 1650 it contained a population of 250 Spaniards, 700 Indians and about 50 half-breeds. In August 1680 the Pueblo Indians, under Pedro de Peralta, and other Indian leaders and authorities, revolted (see New Mexico; History). Four hundred Spaniards were massacred, and the remainder took refuge in Santa FÉ, where they were closely besieged. On the 21st of August, while the Indians were demoralized by a sortie from the garrison, the town was evacuated, and the inhabitants made a six weeks' journey down the Rio Grande to the mission of Guadalupe, near the modern El Paso, Texas. The Indians then took possession, destroyed the crops, churches and archives, and revived their pagan ceremonies. Several unsuccessful attempts were made to regain the town, but finally, in September 1692, Diego de Vargas quietly secured the fresh submission of the Indians. In December 1693 a new Spanish colony of about 800 persons arrived. There were two other Indian revolts, in 1694 and in 1696. During the 18th century a considerable trade in sheep, wool, wine and pelts developed, chiefly with Chihuahua and other Indian districts of the plains. After the independence of Mexico Santa FÉ became the centre of growing commerce with the United States, conducted at first by pack animals, and later by wagon trains over the old Santa FÉ Trail leading south-west from Independence, Kansas City, and, in earlier years, other places in Missouri, to Santa FÉ. On the 18th of August 1846, soon after the outbreak of the war between the United States and Mexico, Santa FÉ was occupied by an American force under General S. W. Kearny. The Mexicans revolted a few weeks later, and the newly appointed governor, Charles Bent, and a small force, were relieved by a Baptist company of Missouri Volunteers. In 1852 a newspaper for New Mexico was established at Santa FÉ, and an English school was founded in 1848. Santa FÉ remained the capital when a Territorial government was inaugurated in 1851. The arrival of the first railway train, on the 9th of February 1886, marked a new epoch in the history of Santa FÉ, which then had remained essentially a Mexican town; but with the discontinuance of the wagon caravans over the old trail, it lost its importance as the entrepôt for the commerce of the South-west.

See the sketch by F. W. Hodge in the New Mexico; History.

SANTA FÉ, a central province of Argentina, bounded N. by the Chaco territory, E. by Entre Ríos and Corrientes, S. by Buenos Aires, and W. by Cordoba and Santiago del Estero. Area, 50,000 sq. m. Pop. (1895) 97,188, (1904) estimated 160,755. Santa FÉ belongs to the great pampa region of Argentina, and has no wooded districts in the south except the river courses. In the N. which is borderland to the Gran Chaco, there are extensive forests, intermingled with grassy savannas. The surface is a level alluvial plain, with a saline substratum at no great depth. Salt is found on the surface over large areas, and throughout the province the water is brackish 15 to 20 ft. below the surface. The soil, however, produces wheat, corn, alfalfa, linseed and other crops in abundance. Stock-raising (cattle, horses, sheep and swine) is also an important industry, with the related industries of butter and cheese-making, meat-curing and tallow-refining. Many colonies have been made, especially near the provincial capital. It is one of the most productive provinces in the republic, in spite of notorious miss-government. The Paraná forms its eastern boundary for about 435 m., and provides unfailling transport facilities. The great river is broken into many channels, forming islands and sand bars which are constantly changing their outlines. It receives two large tributaries flowing across the province—the Salado, the upper course of which is called the Pasaje and Juramento (the last given to commemorate the circumstance that the oath to their independence from Spain was sworn on its banks in 1816), and which enters the Santa FÉ channel of the Paraná near the capital; and the Carcaraz, or Carcarazal. The northern districts are well watered by numerous tributaries of the Salado. The railway communications of the province are good, comprising the trunk lines of the Buenos Aires and Rosario railway with its extension to Tucuman, which crosses the province from S.E. to N.W.; the Central Argentine from Rosario to Cordoba, and to Buenos Aires; the Cordoba Central; Santa FÉ to Tucuman; and the Provincia de Santa FÉ; a network of small lines connects all the important towns; and the Buenos Aires and Pacific which crosses near its southern boundary. The river
SANTA FÉ—SANTA MARIA

ports having railway connexions are Reconquista, Santa Fé, Colastín, Coronda, Puerto Gomez, San Lorenzo, Rosario and Villa Constitución. The capital is San Fé, and other important towns are Rosario, Esperanza (pop. 1904 estimated 10,000), San Lorenzo (1900), Rafaela, Ocampo, Galvez, Cañada de González and San Cristóbal de las Casas.

SANTA FÉ, a city of Argentina and capital of the province of that name, on the Saint Fé channel of the Paraná near the mouth of the Salado, about 200 m. N.W. of Buenos Ares. Pop. (1895) 79,247, (1900 estimated) 33,200. It is built on a sandy plain a little above the river level. It is regularly laid out, and contains a cathedral, bishop’s palace, Jesuits’ college and church dating from 1654, the cabildo or town hall facing on the principal square and provincial government buildings. The town is less modern in appearance than Rosario, and has a number of old residences and educational and charitable institutions. It is a port of call for small river steamers and is in frequent communication with Paraná on the opposite bank of the Paraná. Its shipping port for larger steamers is Colastín, on a deeper channel, with which it is connected by rail. Santa Fé also has railway communication with Rosario, Cordoba, Tucuman and the frontier of the Chaco.

Santa Fé was founded by Juan de Garay in 1573, and was designed to secure Spanish communications between Asunción and the mouth of the La Plata. It has been the centre of much political intrigue, but its growth has been very slow. In 1852 a convention of the provinces met in Santa Fé and in 1860 a national convention for the revision of the constitution.

SANTAL (or SANTHAL) PARGANAS, THE, a district of British India, in the Bhogulpur division of Bengal. Area 5470 sq. m. In the east a sharply defined belt of hills stretches for about 100 m. from the Ganges to the river Naubul; west of this a rolling tract of long ridges with intervening depressions covers about 2500 sq. m.; while there is a narrow strip of alluvial country about 170 m. long, lying for the most part along the loop line of the East Indian railway. The Santal hills occupy an area of 120 sq. m.; there are 25 native villages nowhere exceeding 2000 ft. There are several other hill ranges, which with few exceptions are covered almost to their summits with dense jungle; they are all difficult of access. There are, however, numerous passes through all the ranges. Coal and iron are found in abundance in all parts, but of inferior quality. The alluvial tract has the damp heat and moist soil characteristic of Bengal, while the undulating and hilly portions are swept by the hot westerly winds of Behar, and are very cool in the winter months. The annual rainfall averages 52 in. In 1901 the population was 1,809,737, showing an increase of 3.6% in the decade.

The Santals, who give their name to the district, are the most numerous aboriginal tribe in Bengal; they work the coal-mines of Raniganj and Karharbarhi and migrate to the tea-gardens of Assam. In 1838 officials were sent to demarcate with solid marble the “carst of the hills” in which the Santals believed to be the “sacred centre” of the hills.” The permission to Santals to settle in the valleys and on the lower slopes stimulated Santal immigration to an enormous extent. The Hindu money-lender soon made his appearance among them, and caused the rebellion of 1855–56. The rebellion led to the establishment of a form of administration congenial to the immigrants; and a land settlement has since been carried out on conditions favourable to the occupants of the soil. The Church Missionary Society and the Scandinavian Home Mission have been very successful, especially in promoting education. The clothing of the Santals is made of songe and is of the chod and loop lines of the East Indian railway. It contains the old Mahal, the medan city of Rajmahal and the modern commercial mart of Sahibganj, both on the Ganges; and also the Hindu place of pilgrimage of Deogarh, which is important enough to have a branch railway. The administrative headquarters are at Dumka, or Naya Dumka; pop. (1901) 3326.


SANTALS, an aboriginal tribe of Bengal, who have given their name to the Santal Parganas (q.v.). Their early history is unknown; but it is certain that they have not occupied their present territory always, and it is supposed that they were driven out (by their own and others’ curiosity, or by the cupidity of the watchman. Physically the Santals are not possessing. The face is round and blubberly; the cheekbones moderately prominent; the forehead straight, and depressed, mouth large and lips full, hair straight, black and coarse, the nose approximates to the negroid type. They are somewhat below the average height of the Hindus. They are divided into twelve tribes. They are divided into two classes: the Joy and the Joria, the Santals seizing every chance of a feast. They have neither the sullen disposition nor the unconquerable laziness of the very old hill tribes of central India,” writes Sir W. H. Hunter in Annals of Rural Bengal (1868). “They have carried with them from the plains a love of order, a genial humanity, with a certain degree of civilization and agricultural habits. Their very vices are the vices of an orderly people unaccustomed to shedding.”

The Santals as a race care little for permanent homes. They are not true nomads, but they like to be “on the move.” In the lowlands they are agriculturalists, and they are skilful hunters, bows and arrows being their chief weapons; on the highlands they are cattle breeders. But if food change or they find no comfort, their women instruct the children to build, usually in an isolated position. Their social arrangements are patriarchal. In every village is a headman supposed to be a descendent of the founder of the village. A deputy looks after details; a chief has charge of the children’s mutual interests. Physically the Santals are not possessing. The face is round and blubberly; the cheekbones moderately prominent; the forehead straight, and depressed, mouth large and lips full, hair straight, black and coarse, the nose approximates to the negroid type. They are somewhat below the average height of the Hindus. They are divided into twelve tribes. They are divided into two classes: the Joy and the Joria, the Santals seizing every chance of a feast. They have neither the sullen disposition nor the unconquerable laziness of the very old hill tribes of central India,” writes Sir W. H. Hunter in Annals of Rural Bengal (1868). “They have carried with them from the plains a love of order, a genial humanity, with a certain degree of civilization and agricultural habits. Their very vices are the vices of an orderly people unaccustomed to shedding.”

They speak a language of the Munda or Kolarian family.
SANTA MARIA DI LICODIA—SANTANDER

SANTA MARIA DI LICODIA, a village of Sicily, in the province of Catania, 18 m. N.W. of Catania by rail, on the S.W. slopes of Mount Etna. Pop. (1901) 2,135. It is believed to occupy the site of the ancient Astoria, a settlement founded by the colonists whom Micro I. had placed at Catania after their expulsion by the original inhabitants in 461 B.C., which absorbed or incorporated an already existing Sicel town named Inessa. Its subsequent history is uneventful, though it suffered from the excursions of Verres; and its inscriptions are unimportant. A large hoard of coins was found here in 1851. Near it, in a district called Civita, is a large elliptical area of about 1300 by 380 yds., enclosed by a wall of masses of lava, which is about 28 ft. wide at the base, and 11 ft. high. The ground surface of this structure is of silt, and it is probably a hastily built encampment of historic times rather than a primitive fortification, as there are no prehistoric traces (Orsi in Notizie degli scavi, 1903, 442).


SANTA MARTA, a city and port of Colombia and the capital of a department of the same name, on a small bay 40 m. E.N.E. of the mouth of the Magdalena river. Pop. (1908) about 6500. It is built partly on the beach and partly on the slopes of the Sierra Nevada de Santa Marta, and on the S.E. Though not a port, the harbour is one of the best and safest on the coast, as no river flows into it to fill its anchorage with silt. The depth ranges from 18 to 19 fathoms at the entrance to 43 fathoms along the inner shore line. The city is an episcopal see and has a cathedral. A railway (23 m.) runs southward a little beyond Cienaga (on a large lagoon of the same name), connects with steamers running to Barranquilla (50 m. farther) by way of the lagoon and inland channels, and is to be extended to San Carlos, farther S., as the fruit-growing industry of this region is developed.

Santa Marta was founded by Rodrigo de Bastidas in 1525, and became an important port and centre of trade during the Spanish colonial era. It was also a base of operations in the exploration and conquest of the interior.

SANTA MAURO, or LEUCADIA (Ἀευκάδα, ancient Λευκάδα), one of the Ionian Islands, with an area of 110 sq. m. and a population of about 30,000. It lies off the coast of Acarnania (Greece), immediately south of the entrance to the Gulf of Arta. The shallow strait separating it from the mainland is liable to be blocked by sand-banks; a canal was cut through these in the 7th century B.C. and widened again after a long period of disuse opened up by the Romans.

During the British occupation a canal for boats of 4 to 5 ft. draught was formed from Fort Santa Maura to the town, but the 17 ft. deep ship canal which it was proposed (1842) to carry right across the rugged and largely isletted island to Fort Alexander was only partially excavated. In 1903, however, a canal was completed rendering navigable the channel between the island and the mainland. Its breadth is 50 ft. and its depth 17 ft. Santa Maura, measuring about 20 m. from north to south and 8 to 8 m. in breadth, is a rugged mass of limestone and bituminous shales (partly Tertiary), rising in its principal ridges to heights of 2000 and 3000 ft. and presenting very limited areas of level ground. The grain crop suffices only for a few months' local consumption; but considerable quantities of olive oil of good quality are produced. The vineyards (in the west especially) yield much red wine (bought mainly by Rome, Genoa, Bologna and Venice). The output to Fort Alexander was only partially excavated. In 1859, however, it has gradually come to be the principal source of wealth (the crop averaging 2,500,000 lb); and small quantities of cotton, flax, tobacco, valonia, &c., are also grown. The salt trade, formerly of importance, has suffered from Greek customs regulations. The chief town (5000 inhabitants), properly called Amaxikhi or Hamaxichi but more usually Santa Maura, after the neighbouring fort, is situated at the N.E. end of the island opposite the S.W. coast. The chief occupation is the export of silt.

Remains of Cyclopean and polygonal walls exist at Kaligoni (south of Amaxikhi), probably the site of the ancient acropolis of Neritos (or Nericus), and of the later and lower Corinthian settlement of Leucas. From this point a Roman bridge seems to have crossed to the mainland. Between the town and Fort Santa Maura extends a remarkably fine Turkish aqueduct partly destroyed along with the town by the earthquake of 1825. Forts Alexander and Constantine commanding the bridge are relics of the Russian occupation; the other forts are of Turkic-Venetian origin. The magnificent cliff, some 2000 ft. high, which forms the southern boundary of the island, from the top of which commands a magnificent view of the mainland and the island itself, bears the substructions of the temple of Apollo Leucatus (hence the modern name Cape Ducato). At the annual festival of Apollo a criminal was obliged to plunge from the summit into the sea, where, however, an effort was made to pick him up; and it was by the same heroic leap that Sappho and Artemisia, daughter of Lygodamis, are said to have ended their lives.

A theory has been proposed by Professor Dörpfeld that Leucas is the island described in the *Odyssey* under the name of Ithaca; for Homeric Ithaca is 320 m. 320 m. west of Ithaca. Among the examples which he quotes is the fact that the Homeric description of the island in its present position does not correspond with the subsequent history of such sites as the palace of Odysseus, the harbour of Phorcys, the grotto of the nymphs and the island Asteris, where the suitors lay in wait for Telemaechus, suit Leucas far better than the island called Ithaca in classical and modern times. See under CORFU; also P. Goessler, *Leukas-Ithaka* (Stuttgart, 1904).

SANTANDER, a maritime province of northern Spain, bounded N. by the Bay of Biscay, E. by the province of Biscay, S. by Burgos and Palencia, and W. by Leon and Oviedo. Pop. (1900) 254,579. It is divided into the provinces of Biscay, Santander, and the Cantabrian Mountains (q.v.), which in the Peñas de Europa reach a height of over 8000 ft., and send off numerous branches to the sea. On the north side of the range the streams are all short, the principal being the Asón, the Miera, the Pas, the Besaya, the Saja and the Nansa, which flow into the Bay of Biscay; part of the province lies south of the watershed, and is drained by the upper Ebro (q.v.). The province is traversed from north to south by the railway and high road from Santander to Palencia or Madrid; the highest point on the railway (Venta de Pason) is 3270 ft. above the sea. Other railways connect Santander with Bilbao on the east and with Cabezona de la Sal on the west; there are also many good state, provincial and municipal roads, besides several narrow-gauge mining railways.

Santander was part of the Roman province of Cantabria, which, after passing under the empire of the Goths, became the principality of Asturias (q.v.). The portion called Asturia de Santa Juliana, or Santillana, was included in the kingdom of Old Castile, and, on the subdivision of the old provinces of Spain in 1833, became the province of Santander.

BILBAO (enormously) or Pamplona (enormously) or Pamplona (enormously), the capital of the Spanish province of Santander, the seat of a bishop and one of the chief seaports of Spain; 316 m. by rail N. of Madrid, in 43° 27′ N. and 3° 47′ W., on the Bay of Santander, an inlet of the Bay of Biscay. Pop. (1900) 54,564. It is situated on the side of a rocky peninsula, Cabo Mayor, which shelters a magnificent harbour from 2 to 3 m. wide and 4 m. long. The entrance is at the eastern extremity of the promontory, and is deep, broad, and illuminated by lighthouses on Cabo Mayor and the rocky islet of Mouro. Santander is the terminus of railways from Valladolid and Bilbao, of a branch line from Cabezona de la Sal, and of several mining railways. It is divided into an upper and a lower town. The cathedral, originally Gothic of the 13th century, has been so altered that little of the old work remains. In the crypt, or Capilla del Cristo de Abajo, is an interesting font of Moorish workmanship. The castle of San Felice contains a prison, which was one of the first examples of the radiating system of construction. The city is essentially modern; its principal buildings are the markets, barrack, theatre, bull-ring, clubs, civil and military governors' residences, custom house, hospitals, nautical school, ecclesiastical seminary, and training school for seamen. Most of the houses on the bay front and public buildings were restored after the catastrophe of the 3rd of November 1893, when the steamer "Cabo Machichaco," laden with 1700 cases of dynamite, blew up near the quay. The harbour was greatly improved during the second half of the 19th century. In the population the period nearly trebled, and there was a corresponding development of commerce and manufactures.
a city of N.W. Spain, in the province of Coruna; at the northern terminus of a railway from Tuy, near the confluence of the Sar and Sarera rivers, and 32 m. S. by W. of the city of Coruna. Pop. (1900) 24,120.

Santiago is built on the eastern slope of Monte Pedroso, surrounded by the mountains which draw down the incessant rain that gives the granite buildings of its deserted streets an extra tint of melancholy and decay. Its annual rainfall is 66 in., a total rarely exceeded on the mainland of Europe. The city was formerly the capital of Galicia; it gives its name to one of the four military orders of Spain, which rank next to a papal creation. It is the second city in Galicia and the third in Spain. It is the seat of a university and of an archbishopric, which long disputed the claim of Toledo to the primacy of all Spain. In the middle ages its shrine, which contained the body of St James the Great, was one of the most famous in Europe; so numerous were the pilgrims that the popular Spanish name for the Milky Way is El Camino de Santiago, or "The Santiago Road." The city became, in fact, the focus of all the art and chivalry of neighbouring Christendom, and a spot where conflicting interests could meet on neutral ground. The Congregations of 1179, 1211, and 1248, when the cathedral was restored to its ancient form, were celebrated in the principal churches of the city. The sees of the episcopate have been occupied by bishops of some note ever since the 5th century, and its metropolitan has exercised a powerful influence over the clergy of all Spain.

Santiago is situated in the province of La Coruña, 230 m. N. of the sea, on a basin of the same name, which is bounded by the mountains of the Barbanza, on the north, and the Sierra de la Mestiza, on the south, the only access being by the coast road. Santiago is the capital of Galicia; it is the second city in Galicia and the third in Spain. It is the seat of a university and of an archbishopric, which long disputed the claim of Toledo to the primacy of all Spain. In the middle ages its shrine, which contained the body of St James the Great, was one of the most famous in Europe; so numerous were the pilgrims that the popular Spanish name for the Milky Way is El Camino de Santiago, or "The Santiago Road." The city became, in fact, the focus of all the art and chivalry of neighbouring Christendom, and a spot where conflicting interests could meet on neutral ground. The Congregations of 1179, 1211, and 1248, when the cathedral was restored to its ancient form, were celebrated in the principal churches of the city. The sees of the episcopate have been occupied by bishops of some note ever since the 5th century, and its metropolitan has exercised a powerful influence over the clergy of all Spain.

The belief that St James had preached in Spain was certainly current before A.D. 400. The relics of the saint were said, though without the sanction of a written authority, to have reached the cathedral before the 5th century. The actual foundation of the cathedral cannot be traced farther back than the 10th century, when it was the seat of a bishop and the centre of a district. The cathedral was destroyed by the Moriscos in the 16th century, and restored in 1544, under the direction of the architect Nuno Fonseca. It was finished in 1573, under the direction of the architect Nuno Fonseca. It was finished in 1573, and was then completed in 1573, under the direction of the architect Nuno Fonseca. It was finished in 1573, and was then completed in 1573, under the direction of the architect Nuno Fonseca. It was finished in 1573, and was then completed in 1573, under the direction of the architect Nuno Fonseca.
about 82° F., in summer about 88°), owing mainly to the mountains that shut off the breezes from the E. There is superb mountain scenery in the Cordillera de Orocovis and San Luis (pop. 1907, 3441), in the thinly populated valley of the Caíza. The vast barren country surrounding the city are valuable mines of iron, copper and manganese. On these the prosperity of the province largely depends. Copper ores and coppers are the main article of export. Copper ore was once exported in as great quantities as 25,000 tons annually, but the best days of the mines were in the middle of the 19th century. The mines of Cerro and of San Juan, about two miles W. of Santiago, have an interesting history. They were first worked for the province by slaves, which were freed in 1799.

History.—Santiago is less important politically under the Republic than it was when Cuba was a Spanish dependency. The place was founded in 1514 by Diego Velazquez, and the capital of the island was removed thither from Baracoa. Its splendid bay, and easy communication with the capital of Santo Domingo, then the seat of the governor of Cuba, determined its political importance. From Santiago in 1515-1516 departed the historic expeditions of Juan de Grijalva, Hernán Cortés and Pázmillo de Narváez—the last of 18 vessels and 1100 men of arms, excluding sailors. So important already was the city that its ayuntamiento had the powers of a Spanish city of the second class. In 1522 it received the arms and title of ciudad, and its church was made the cathedral of the island (Baracoa losing the honour). But before 1530 the drain of military expeditions to the continent, the quarrels of civil, military and ecclesiastical powers, and of citizens with the king, the conflict with the Maures (who had still in political matters received orders direct from the crown). After 1826 Santiago was simply the capital of a province. In July 1741 a British squadron from Jamaica under Admiral Edward Vernon and General Thomas Wentworth landed at Guantánamo (which they named Cumberland Bay) and during four months operated unsuccessfully against Santiago. The climate made great ravages among the British, who lost perhaps 2000 out of 5000 men. The bishopric became an archbishopric in 1778, when a suffragan bishopric was established at Havana. J. B. Vaillant (governor in 1784-1790) and his successor N. Quintana (governor 1796-1799) did much to improve the city and encourage literature. After the cession of Santo Domingo to France, and after the French evacuation of that island, thousands of refugees settled in and about Santiago. They founded coffee and sugar plantations and gave a great impulse to trade. The population in 1827 was about 27,000. There were destructive earthquakes in 1675, 1679, 1766 and 1832. Dr Francesco Antomarchi (1780-1838), the physician who attended Napoleon in his last illness, died in Santiago, and a monument in the cemetery commemorates his benefactions to the poor. In the 19th century some striking heroic events are associated with Santiago. One was the "Virginius" affair. The "Virginius" was a blockade-runner in the Civil War; it became a prize of the Federal government, by which it was sold in 1870 to an American, J. F. Patterson, who immediately registered it in the New York Custom House. It later appeared that Patterson was merely acting for a number of Cuban insurgents. On the 31st of October, then commanded by Joseph Fry, a former officer of the Federal and Confederate navies, and having a crew of fifty-two (chiefly Americans and Englishmen) and 103 passengers (mostly Cubans), the vessel was captured by Mortmain Bay, Jamaica, by the Spanish vessel "Tornado," and was taken to Santiago, where, after a summary court-martial, 53 of the crew and passengers, including Fry and some Americans and Englishmen, were executed on the 4th, 7th and 8th of November. Relations between Spain and the United States became strained, and war seemed imminent; but on the 8th of December the Spanish government agreed to surrender the "Virginius" on the 10th, to deliver the survivors of the crew and passengers to an American war-ship at Santiago, and to salute the American flag at Santiago on the 25th if it should not be proved before that day that the "Virginius" was not entitled to sail under American colours. The Virginius was foundered off Cape Hatters as she was being brought to the United States. The Attorney-General of the United States decided before the 25th that the "Virginius" was the property of General Quesada and other Cubans, and had had no right to carry the American flag. Under an agreement of the 25th of February 1875, the Spanish government paid to the United States an indemnity of $80,000 for the execution of the Americans, and an indemnity was also paid to the British government. The most notable military and naval events (in Cuba) of the Spanish-American War (q.v.) of 1898 took place at and near Santiago. Monuments commemorate the actions at El Caney and San Juan Hill.

SANTIAGO DE LAS VEGAS, an inland city of Havana province, Cuba, about 12 m. S. of Havana. Pop. (1907) 64,624. Tobacco is the principal industry. An agricultural experiment station is maintained here by the Cuban government. The town dates from 1668, when a church was built for a colony of tobacco cultivators of the neighbourhood. In 1721 it received the title and privileges of a villa, and in 1824 those of a city.

SANTIAGO DEL ESTERO, a province of Argentina, bounded N. by Salta and the Chaco territory, E. by the Chaco and Santa Fé, S. by Cordoba, and W. by Catamarca, Tucuman and Salta. Area 30,764 sq. m.; pop. (1865) 161,502; (1904, estimated) 186,205, chiefly Christianized Indians. The surface of the province is flat and low, chiefly open plains thinly covered with grass. There are forests in the W. and N., extensive swamps along the river courses and large saline areas, especially in the S.W. The Salado (called Passage, and Jurament in Salta) crosses the province from N.W. to S.E. and empties into the Paraná, and the Dulce, or Saladillo, which has its sources in the Sierra de Aconcagua, crosses the province in the same general direction, and is lost in the great saline swamps of Porongos, on the Cordoba frontier. The climate is extremely hot, the maximum temperature being 113° (Mulhall), minimum 39°, and the mean annual 71°, with an annual rainfall of 25 in. Sugar, wheat, alfalfa, Indian corn, tobacco and hides are the principal products, and cotton, which was grown here under the Incas, is still produced. The province is traversed by the Tucuman extension of the Buenos Aires and Rosario railway, by a French line from Santa Fé to Tucuman, and by a branch of the Central Northern (Cordoba section) railway.

The provincial capital, SANTIAGO DEL ESTERO, is on the left bank of the Rio Dulce, 745 m. N.W. of Buenos Aires, with which it is connected by rail. Pop. (1904, estimated) 12,000, chiefly of Indian descent. The city stands on a level open plain, 520 ft. above sea-level, and in the vicinity of large swamps (esteros) bordering the Rio Dulce, from which its name is derived. There are a number of interesting old buildings in the city—a government-house, several churches, a Franciscan college, a Franciscan convent and a girls' orphanage. The city was founded in 1553 by Francisco de Aguirre and was the first capital of the province of Tucuman, the earliest settled of the La Plata provinces. In 1615 the cathedral was accidentally burnt and the bishop removed to Cordoba. The city has suffered much through inundations from the Rio Dulce, and from frequent local revolutions caused by misgovernments and the struggles of rival factions. In 1663 an inundation carried away half the capital, and the population was so reduced that in 1668 the seat of government was transferred to San Miguel, now Tucuman. In 1760 Santiago del Estero was a separate province.

1 See F. E. Chadwick, The Relations between the United States and Spain: Diplomacy (New York, 1909).
a city of N.W. Spain, in the province of Corunna; at the northern terminus of a railway from Tuy, near the confluence of the Sar and Sarelas rivers, and 32 m. S. by W. of the city of Corunna. Pop. (1900) 24,420. Santiago is built on the eastern slope of Monte Pedrero, surrounded by the mountains which draw down the incessant rain that gives the granite buildings of its deserted streets a greenish moldering. The annual rainfall is 66 in., a total rarely exceeded on the mainland of Europe. The city was formerly the capital of Galicia; it gives its name to one of the four military orders of Spain, which rank as follows: Compostela, Calatrava, Alcantara, and Montessa; and it is still the seat of a university and of an archbishopric, which long disputed the claim to Toledo to the primacy of all Spain. In the middle ages its shrines, which contained the body of St. James the Great, was one of the most famous in Europe; so numerous were the pilgrims that the popular Spanish name for Santiago de Compostela was the World's Fair. The road to Santiago Road." The city became, in fact, the focus of all the art and chivalry of neighboring Christendom, and a spot where conflicting interests could meet on neutral ground. The Congregation of Rites declared in 1884 that the cathedral still enshrines the veritable body of the apostle, and few places of pilgrimage in Europe are more frequented. The city contains many hospitals and other charitable institutions, which are open to the pilgrims. In 1900 its ecclesiastical buildings numbered forty-six. Its chief industries, apart from agriculture, are building, distillation of spirits and the manufacture of linen, paper, soap, chocolate and matches. The city has also been long celebrated for its silver smiths' work.

The belief that St. James had preached in Spain was certainly current before A.D. 400. The relics of the saint were said, though the tradition cannot be traced back farther than to the 12th century, to have been discovered in 835 by Theodomir, bishop of Iria, who was guided to the spot by a star. Hence Compostella is regarded by some authorities as a corruption of Campus Stellae, "Plain of the Star"; others derive it from San Iacome Apostol. According to the legend a chapel was forthwith erected, and the road from the shrine to the sea was made by a special bull of Leo III. A more substantial building was begun in 868, but was totally destroyed in 997 by the Moors, who, however, respected the sacred relics. On the reconquest of the city by Bermudo III. the roads were improved, and pilgrims began to flock to the shrine, which fast grew in reputation. In 1078 the erection of the present cathedral was begun during the episcopate of Diego Pelaez, and was continued until 1188, when the western façade was completed. The principal part of it was completed work until 1211, when the cathedral was consecrated. It is a cruciform Romanesque building, and keeps its original form in the interior, but is disfigured externally by much poor later work. Besides the nave and three smaller aisles, the transept divides the church in the three ways to the east, west, and south. The transept is raised to a height of 220 ft. and crowned with cupolas, and between them has been erected a classic portico, above which is a niche containing a statue of St. James. The façade was the work of Fernando Casas y Nóbora in 1738, and the statue was by Ventura Rodríguez in 1764. The design is mediocre, and gains its chief effect from forming part of an extended architectural composition on the Plaza Mayor, a grand square surrounded by public buildings.

The ground rises to the cathedral, which is reached by a magnificent quadruple flight of steps, flanked by statues of David and Solomon. Access to the staircase is through some fine wrought-iron gates, and in the upper part is a magnificent cloistered terrace. The Romanesque church, La Iglesia Baja, constructed under the portico and contemporary with the cathedral. To the north and south, and in a line with the west front, are other dependent buildings of grouping well with it. Those to the south contain a light and elegant arcade to the upper windows, and serve as a screen to the cloisters, built in 1353 by Fonseca, afterwards archbishop of Toledo. They are said to be the largest in Spain, and are a fair example of the latest Gothic. The delicate sculpture over the heads of the windows and along the wall of the cloister is very noticeable. On the north of the cathedral is the Plaza de S. Juan, where the peasants collect to do their marketing. Here is the convent of S. Martin, built in 1636, which, after serving as a barracks, is now used as an ecclesiastical seminary, restored to the church. It has a tolerable cloister and some remains of the noble façade of the cathedral, magnificent doorways being replaced by the ugly and extravagant one already noted desecrated by the chief Spanish exponent Churriguera (d. 1715). Churriguerese work. The same treatment has been applied to the east end, where is the Puerta Santa; this gate is kept closed, except in jubilee years, when it is opened by the archbishop. The corner of the south transept on the Plaza de los Plateros has been mutilated by the erection of the Churriguera work. But the arched nave and the lower part of the cathedral, however, is the Portico de la Gloria, behind the western classic portal. It is a work of the 12th century, and probably the utmost development of which round-arched Gothic is capable. The main entrance and the four vast columns of the south transept are over the nave and aisles are a mass of strong and nervous sculpture. The design is a general representation of the Last Judgment, and the sculptures are all treated on a grand scale by a master of whose work a whole artist. Faint traces of colour remain and give a tone to the whole work. It is probable that, until the erection of the present grand staircase, the portico could not have been reached from the Plaza, an entrance to the church there being on the outside. The door and the entrance to the church beneath would have been blocked by any staircase which differed much in plan from the present one. The interior of the church is one of the purest and best examples of Romanesque work. Its plan is a typical example, and the clerestory throws an impressive glow over the barrel-vaulted roof, which makes the building seem larger than it is. A passage leads from the nave to a choir-screen, a gold crucifix, dated 874, containing a piece of the true cross, and a relic of the Virgin.

The Hospicio de los Reyes, on the north of the Plaza Mayor, for the reception of pilgrims, was begun in 1504 by Enrique de Egas and finished in 1562 by Juan de Herrera. The building is a large square with an open cloister with steps in the centre. The roof is tiled, and there is a fine view of the mountains from the terraces. The building is of four stories, and the roof is light and graceful. The Severino de la Torre said it was the best hotel in Spain. The interior is plain, and contains a magnificent staircase with a classically treated and in the centre. The gateway is fine, and there is some vigorous carving in the courtyards, one of which contains a graceful fountain. The suppressed Colegio de Fonseca, founded by the Count of Margarita in 1596, contains a seaport church. The buildings of the convent of S. Francis, the cloisters of the half-ruined S. Augustin, the belfry of S. Domingo, the church of S. Feliz de Celorio, modernized 14th century, and the Belfry of the Former Cathedral, 16th century, are fine. The 18th and 19th centuries are also good examples of different architectural styles.

SANTIAGO DE CUBA, a city and seaport of Cuba, on the S. coast of the E. end of the island, capital of the province of Oriente, and next to Havana the most important city of the Republic. Pop. (1897) 45,470, of whom 50-7% was coloured and 15-6% was foreign-born. It is connected by the Cuba railway with Havana, 540 m. to the W.N.W.; short railways extend into the interior through gaps in the mountains northward; and there are steamer connections with other Cuban ports (see NEW YORK).

Santiago is situated about 6 m. inland on a magnificent land-locked bay (6 m. long and 3 m. wide), connected with the Caribbean Sea by a long, narrow, winding channel with rocky escarpment walls, in places less than 200 yds. apart. The largest vessels have the lee of its promontory. It is 3 m. in length—but direct access to the wharves is impossible for those of more than moderate draft (about 14 ft.). Smith Key, an island based as a watering-place, divides it into an outer and an inner basin. To the E. of the sea portal stand the Morro, a picturesque fort (built 1635 seq.), on a jutting point 200 ft. above the water, and the Estrella; and to the W. the Soledad. West of the harbour are low hills, to the E. precipitous cliffs, and N. and N.E., below the superb background of the Sierra Maestra, is an amphitheatre of hills, on which the city straggles in tortuous streets. The houses are almost all of one storey, built in the quaint style of southern Europe, with little overlap of roof, and with walls of very strong construction. There are no public gardens. Facing the Plaza de Céspedes (once Plaza de la Reina and then Plaza de Armas) are hotels and clubs, the largest municipal building—formerly the governor's palace (1855 seq.)—and the cathedral. In the cathedral, which is in better taste than the cathedral of Havana, Diego Velázquez (1460-1524), conqueror of Cuba, was buried. It has suffered much from earthquakes and has been extensively repaired. Probably the oldest building in Cuba is the convent of San Francisco (a church since the secularization of the religious orders in 1844), which dates in part from the first half of the 16th century, and which was closed with the other public works, and sanitation. On a hill overlooking the city is a beautiful school-house of native Esteemonte, erected by the American military government as a model for the rest of the island. Santiago is the hottest city of Cuba (mean temperature in winter
about 82° F., in summer about 88°), owing mainly to the mountains that shut off the breezes from the E. There is superb mountain scenery on the roads to El Caney and San Luis (pop. 1907, 3441), in the thickly populated valley of the Cauto. In the barren mountainous region surrounding the island are several other Cuban ports. Mineral ores, tobacco and coffee, cacao, sugar and rum and cabinet-woods are the main articles of export. Copper ore was once exported in great quantities as 25,000 tons annually, but the best days of the mines were in the middle of the 19th century. The mines of Cobre, a few miles W. of Santiago, have an interesting history. They were first worked for the government by slaves, who were freed in 1799.

History.—Santo Domingo is less important politically under the Republic than it was when Cuba was a Spanish dependency. The place was founded in 1514 by Diego Velazquez, and the capital of the province was removed thither from Baracoa. Its splendid bay, and easy communication with the capital of Santo Domingo, then the seat of government of the Indies, determined its original importance. From Santiago in 1518-1519 departed the historic expeditions of Juan de Grijalva, Hernan Cortés and Pánfilo de Narvaez—the last of 18 vessels and 1,100 men of arms, excluding sailors—of whom practically the first 450 men only had the powers of a Spanish city of the second class. In 1525 it received the arms and title of ciudad, and its church was made the cathedral of the island (Baracoa losing the honour). But before 1550 the drain of military expeditions to the continent, the quarrels of civil, military and ecclesiastical powers, and of citizens, and the emigration of colonists to the Main (not in small part due to the abolition of the encomiendas of the Indians), produced a fatal decadence. In 1589 Havana became the capital. Santiago was occupied and plundered by French corsairs in 1553, and again by a British military expedition in 1622. The capture of that island had caused an immigration of Spanish refugees to Santiago that greatly increased its importance; and the illicit trade to the same island—mainly in hides and cattle—that flourished from this time onward was a main prop of prosperity. From 1607 to 1826 the island was divided into two departments, with Santiago as the capital of the E. department—under a governor who until 1801 in political matters received orders direct from the crown. After 1826 Santiago was simply the capital of a province. In July 1741 a British squadron from Jamaica under Admiral J. E. Vernon and General Thomas Wentworth (governor of the island) was defeated at Guantánamo (which they named Cumberland Bay) and during four months operated unsuccessfully against Santiago. The climate made great ravages among the British, who lost perhaps 2000 out of 5000 men. The bishopric was an archbishopric in 1788, when a suffragan bishopric was established at Havana. J. B. Vaillant (governor in 1788-1796) and J. N. Quintana (governor in 1796-1798) did much to improve the city and encourage literature. After the cession of Santo Domingo to France, and after the French evacuation of that island, thousands of refugees settled in and about Santiago. They founded coffee and sugar plantations and gave a great impulse to trade. The population in 1827 was about 27,000. There were destructive earthquakes in 1675, 1679, 1766 and 1832. Dr Francesco Antommarchi (1780-1838), the physician who attended Napoleon in his last illness, died in Santiago, and a monument in the cemetery commemorates his benefactions to the poor. In the 19th century some striking historical events are associated with Santiago. One was the "Virginís " affair. The "Virginís " was a blockade-runner in the Civil War; it became a prize of the Federal government, bought by the British. At the battle of Santiago in 1898 to an American, J. F. Patterson, who immediately registered it in the New York Custom House. It later appeared that Patterson was merely acting for a number of Cuban insurgent. On the 31st of October, then commanded by Joseph Fry, a former officer of the Federal and Confederate navies, and having a crew of fifty-two (chiefly Americans and Englishmen) and 103 passengers (mostly Cubans), she was captured off Morant Bay, Jamaica, by the Spanish vessel "Tornado," and was taken to Santiago, where, after a summary court-martial, 53 of the crew and passengers, including Fry and some Americans and Englishmen, were executed on the 4th, 7th and 8th of November. Relations between Spain and the United States became strained, and war seemed imminent; but on the 8th of December the Spanish government agreed to surrender the "Virginís" on the 16th, to deliver the survivors of the crew and passengers to an American war-ship at Santiago, and to salute the American flag at Santiago on the 25th if it should not be proved before that date that the "Virginís" was not entitled to sail under American colors. The "Virginís" founded off Cape Hatteras as she was being brought to the United States. The Attorney General of the United States decided before the 25th that the "Virginís" was not a war-vessel, and the property of General Quesada and other Cubans, and had had no right to run the American flag. Under an agreement of the 27th of February 1875, the Spanish government paid to the United States an indemnity of $80,000 for the execution of the Americans, and an indemnity was also paid to the British government. The most notable military and naval events (in Cuba) of the Spanish-American War (q.v. of 1898 took place at and near Santiago. Monuments commemorate the actions at El Caney and San Juan Hill.

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1 See F. E. Chadwick, The Relations between the United States and Spain: Diplomacy (New York, 1909).

XXIV. 7
SANTILLANA, Iñigo Lopez de Mendoza, Marquis of (1398–1458), Castilian poet, was born at Carrión de los Condes in Old Castile on the 19th of August 1398. His father, Diego Hurtado de Mendoza, grand admiral of Castile, having died in 1405, the boy was educated under the eye of his mother, Doña Leonor de la Vega, a woman of great strength of character. From his eighteenth year onwards he became an increasingly prominent figure in court life and in Castilian politics, and he preserved himself in both civil and military service; he was created marqués de Santillana and conde del Real de Manzanares for the part he took in the battle of Olmedo (19th of May 1455). In the struggle of the Castilian nobles against the influence of the constable Álvaro de Luna he showed great moderation, but in 1452 he joined the combination which effected the fall of the favourite in the following year. From the death of Juan II. in 1454 Mendoza took little part in public affairs, devoting himself mainly to the pursuits of literature and to pious meditation. He died at Guadalajara on the 29th of March 1458.

Mendoza shares with Juan de Villalpando the distinction of introducing the sonnet into Castile, but his productions in this class are conventional metrical exercises. He was much more successful in the serranilla and vagañero—highland pastorals after the Provençal models. A much richer and more refined work of this sort is the fructuosa enseñanza prepared for the use of Don Enrique, the heir-apparent. To the same didactic category belong the hundred and eighty stanzas entitled Diálogo de Dios contra Fortuna, while the Diálogo de la Piedad contra el Poder of Álvaro de Luna and the Comedia de Janua is a Dantesque dream-dialogue, in octave stanzas (de arte mayor), founded on the disastrous sea-fight off Ponza in 1425, when the kings of Aragon and Navarre and the Infante Enrique were taken prisoners by the Genoese. The three last-named compositions are the best of Santillana’s more ambitious poems, but they are deficient in the elegant simplicity of the serranillas. These unpretentious songs are in every Spanish anthology, and are familiar even to uneducated Spaniards.

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SANZINGO, Giovanni (1787–1877), Italian astronomer, was born on the 30th of January 1787 at Caprese, in the province of Arezzo. He was from 1813 professor of astronomy at the university and director of the observatory at Padua. He wrote Elementi di astronomia (2 vols. 1820, 2nd ed. 1830), Teoria degli stromenti ottici (2 vols. 1828), and many scientific memoirs. He took a leading part in the foundation of the astronomical journal of Padua. His observations of comets and other astronomical phenomena were published in the Padua observatory. He died on the 26th of June 1877.


SANTLEY, Sir Charles (1834–1902), English vocalist, son of an organist at Liverpool, was born on the 28th of February 1834. He was given a thorough musical education, and having determined to adopt the career of a singer, he went in 1855 to Milan and studied under Gaetano Nava. He had a fine baritone voice, and while in Italy he began singing small parts in opera. In 1857 he returned to London, and on 16th November made his first appearance in the part of Adam in The Creation at St Martin’s Hall. In 1858, after appearing in January in The Creation, he sang the title-part in Elijah in March, both at Exeter Hall. In 1859 he sang at Covent Garden as Hoel in the opera Dinorah, and in 1862 he appeared in Italian opera in Il Trovatore. He was then engaged by Mapleson for Her Majesty’s, and his regular connexion with the English operatic stage only ceased in 1870, when he sang as Vanderdeeken in The Flying Dutchman. His last appearance in opera was in the part with the Carl Rosa Company at the Lyceum Theatre in 1891. On 1st December while in 1861 he sang Elijah at the Birmingham Festival, and in 1862 he was engaged for the Händel Festival at the Crystal Palace. At the musical festivals and on the concert stage his success was immense. In such songs as "To Anthea," "Simon the Cellarer" or "Maid of Athens," he was unapproachable, and his oratorio singing carried on the finest traditions of his art. He was knighted in 1907. In 1858 Santley married Gertrude Kemble, and their daughter, Edith Santley, had a great success as a concert singer.

SANTO DOMINGO [San Domingo, Dominican Republic, or officially República Dominicana], a state in the West Indies. It occupies two-thirds of the island of Haiti (q.v.) and has an area of about 18,945 sq. m. The administration is in the hands of three co-ordinating "powers"—the executive, the legislature, and the judicial. Under the constitution of 1844, modified in 1879, 1880, 1881, 1887, 1896, and 1908, the president is the head of the executive. He is chosen by an electoral college and serves for six years, and he is assisted by a cabinet of seven ministers. The legislature, called the National Congress, consists of a Senate of 12 members, and a Chamber of Deputies of 24 members elected for four years by a limited suffrage. The Supreme Court comprises a chief-justice, six justices appointed by the Congress, and one justice appointed by the president. The republic is divided into six American and six maritime districts. Each province and district is administered by a governor appointed by the Cabinet. There is a small army, most of which is stationed at the City of Santo Domingo, and military service is compulsory in the event of foreign war. The navy consists of one small gun-boat. Primary education is free and compulsory; elementary schools are supported largely by the local authorities, and the higher, technical and normal schools by the government. There is a professional school with the character and functions of a university. The Roman Catholic Church is the state church, but it is allowed to function under certain restrictions. The monetary unit is a silver coin, the value of a franc, called the dominicano, but in 1897 the United States gold dollar was adopted as the standard of value. The roads in the interior are primitive, but the government encourages the construction of railways. A line runs between Sanchez and La Vega, and another between Santiago and Porto Plata. The republic joined the Postal Union in 1886. The exports include tobacco, coffee, cacao, sugar, mahogany, logwood, cedar, satinwood, hides, honey, gum and wax. The collection of the customs and other revenues specially assigned to the securce of bonds was in the hands of the government until 1899, when this defaulted in the payment of interest and the government took over the collection. In 1905, to forestall foreign intervention for securing payment of the State debt, President Roosevelt made an agreement with Santo Domingo, under which the United States undertook to adjust the republic’s foreign obligations, and to assume charge of the customs houses. A treaty was ratified by the United States Senate in 1907, and an American citizen is temporarily receiver of customs. In June 1907 the debts amounted to $17,000,000.

Santo Domingo has the finest sugar lands in the West Indies; tobacco and cacao flourish; the mountain regions are especially suited to the culture of coffee, and tropical fruits will grow anywhere with a minimum of attention. During the earlier years of the Spanish occupation gold to the value of $90,000 was sent annually to Spain, besides much silver, platinum, manganese, iron, copper, tin, amonary, opals and chalcedony are also found. In the Neya valley there are two remarkable hills, composed of pure rock salt. Only an influx of capital and an energetic population are needed to develop the resources of the country.

Santo Domingo, the capital of the republic, is situated on the south coast. At a distance of 45 miles from the town of Azua (pop. about 10,000) founded in 1504 by Diego Columbus. It stands in a plain, rich in salt and asphalt, washed by the river Azua; and the sugar grown in the West Indies. Santiago (pop. 12,000), the capital of the Vega Real, stands on the banks of the Yaque river, 160 m. N.W. of the capital, in the richest agricultural district in the state. It controls the tobacco trade which is chiefly in German and Dutch hands. Its port, Porto Plata (pop. 15,000), is the outlet of the entire Vega Real district. La Vega, perhaps the most beautiful city of Santo Domingo, lies 7 miles S.W. of the capital, amidst a fertile plain, surrounded by well wooded hills, and has a magnificent old cathedral. Six miles away is the Cerro Santo, a hill 787 ft. in height, rising abruptly from the plain. On the summit of which Columbus planted a great cross on his first visit in 1493. The capital of the Western District of the Island on the north (900) are the only other towns of any size. The population of the republic is about 500,000. The people are mainly mulattoes of Spanish descent, but there are a considerable number of negroes and whites of both Creole and European origin.
whites have the predominating influence. The people, on the whole, are quiet, and show little disposition to great political excitement. They are Spanish in their mode of life and habits of thought. Spanish too is the common language, though both French and English are spoken in the towns. Few negroes are to be seen. The principal white occupation is the cultivation of tobacco, and the manufacture of rope; but in a neighboring district they are to be seen in considerable numbers, engaged in the cultivation of coffee, sugar, and cotton. It is not uncommon to see negroes employed as laborers in the factories. They are not, however, engaged in any other occupation.
together in a white mass, while the rocks below it are the reddest in the island.

Santorin is closely connected with the earthquake movements to which the countries in the neighborhood of the Aegean Sea are subject. It represents the site of a part of the island of Santorin or Thera, which is considered to have been prehistoric. The principal eruptions that have taken place within historic times are that of 186 B.C., when, as we learn from Strabo (iv. 16, 3), a land-tide or tsunami issued from the sea, and between Thera and Therasia for four days; that of A.D. 726, during the reign of the Emperor Leo the Isaurian (on both these occasions islands were thrown up, but it is supposed that they afterwards disappeared); that of 1570, when Mikra Kameni arose; that of 1659, which destroyed many lives by noxious exhalations, and ended in the upheaval of an island in the sea to the north-east of Santorin, which afterwards subsided and became a reef below sea-level; that of 1707, when Nea Kameni arose; and that of 1866, when Nea Kamenou was extended towards the south and enlarged threefold.

In the southern parts both of Santorin and Therasia prehistoric dwellings have been found at some height above the sea, and there is no doubt that these date from a period antecedent to the formation of the bay. These were destroyed by their position under the sea, and by the layer of tufa which covers the islands, and by these layers of tufa being broken off precipitously, in the same way as the lava-rocks, a fact which can only be explained by the supposition that they all fell in together. The foundations of the dwellings rested, not on the tufa, but on the lava below it; and here and there between the stones branches of wild olive were found, according to a mode of building that still prevails in the island, in order to resist the shocks of earthquakes. Very few implements of metal were found. Some of the vases found were Cretan ware which had been imported; and the correspondence between these and various specimens of the native pottery proves that to some extent this primitive art was derived from Crete.

In Greek legend the island of Thera was connected with the story of the Argonauts, for it was represented as sprung from a cloud of earth which was presented to those heroes by Triton (Apollon., Argonaut., iv., 1551 sq., 1731 sq.). According to Herodotus (iv. 147), a Phoenician colony was established there by Cadmus. Subsequently a colony from Sparta, including some of the Minyae, was led thither by Theras, who gave the island his own name. The plate-mine of the famous silver Calydonian was here. But the one event which gave importance to Thera in ancient history was the planting of its famous colony of Cyrene on the north coast of Africa by Battus in 631 B.C., in accordance with a command of the Delphic oracle.

The ancient capital, which bore the same name as the island, occupied a site on the eastern coast now called Mesavouno, between Mount Elias and the sea. Since 1895 this place has been excavated by Baron Hiller von Gärtringen and other German explorers. There are extensive ancient cemeteries. A steep ascent leads from a Heroum of Artemisorus to the Arkadi, a ruined neighbourhood which was the Sthna Basilica, a vast hall with a row of pillars; a temple of Dionysus and the Ptolemy, which at a later period was dedicated to the Caesars; and the barracks of the garrison of the Ptolemies and a gymnasion. The names which occur here remind us that Thera, as a member of the League of the Cyclades, was from B.C. 308 to 145 under the protectory of the Ptolemies. The main street has narrow lanes diverging from it to right and left; one of these leads to the sanctuary of the Egyptian gods. Near the street there is a small theatre, beneath the seats of which a vast cistern was constructed, arranged so that rain-water should drain into it from the whole of the auditorium. The way then descends south-eastwards first to the temple of Ptolemy Euergetes III., and then to that of Apollo Carneius; finally, at the point where the rocks fall precipitously, there is a gymnasion of the Epebi. Numerous rock-carvings and inscriptions have been discovered, as well as statues and vases of various periods. Near the western foot of Mount Elias is the temple of Thea Basileia, which, though very small, is perfect throughout even to the roof. It is now dedicated to St Nicolas Marmorites.

Cypourné mentions that in his time nine or ten chapels were dedicated to St Sotários, 49 of them, 1571, of the place; the name Santorin was given to the island after the fourth crusade, when the Byzantine empire was partitioned among the Latins, and the island formed a portion of the duchy of the Archipelago. Santorin was one of the most prosperous, for, in addition to the wine trade, there is a large export of pozzolana, which, when mixed with lime, forms a hard cement. Santorin (officially Thera) is a province in the department of the Cyclades, and is divided into 9 communes (see CYCLADES), with a total population of 19,507 in 1907.


SANTOS, a city and seaport of Brazil, in the state of São Paulo, about 230 m. W.S.W. of Rio de Janeiro, and 49 m. by rail S.E. of São Paulo city. Pop. (1890) 13,012; (1902 estimate) 35,000. Santos covers an alluvial plain on the inner side of an island (called São Vicente) formed by an inland tidal channel separated from 490 m. of the open coast by a narrow channel, part of the sea is some miles from the mouth of the channel, but the residential sections extend across the plain and line the beach facing the sea. The city is only a few feet above sea-level, the island is swampy, and deep, cement-lined channels drain the city. The Santos river is deep and free from obstructions, and in front of the city widens into a bay deep enough for the largest vessels. The water front, formerly beds of mud and slime, the source of many epidemics of fever, is now faced by a wall of stone and cement. Vessels moor alongside this quay, which is lined with ware-houses and provided with railway tracks, &c. Formerly cargo was transported to the warehouse by water and loaded into lighter by porters, and from these transferred to vessels anchored in midstream. The improvements were planned by an American engineer, William Milnor Roberts (1810–1881). The thorough drainage of the city has made Santos comparatively healthy. The heavy rainfall (388 in. per annum), neighbouring swamps, rank vegetation and great heat give rise to malarial and intestinal disorders, rheumatism and other diseases. Beri-beri and smallpox are also common, and bubonic plague has appeared since 1900. The temperature ranges from 4° to 10° F. in the month of August.

The development of coffee production in the state of São Paulo during the closing years of the 19th century has made Santos the largest coffee shipping port in the world, the exports amounting to 5,849,114 bags, of 132 lb. each, in 1900, and 8,904,144 bags in 1908. The other exports include sugar, rice, rum, fruit, hides and manufactured goods. Bananas are grown in the vicinity for the River Plate markets. The most popular suburb in the vicinity of Santos is the bathing resort of Guarujá. The São Paulo railway, an English double-track line, provides communication with the interior, ascending the steep wooded slopes of the Serra do Mar by a series of inclines up which the cars are drawn by stationary engines on the old line, and by a series of gradients on the new line.

The first settlement on the São Paulo coast was that of São Vicente in 1532, about 6 m. S. of Santos on the same island. Other settlements soon followed, among them that of Santos in 1543–1546, and later on the small fort at the entrance to its harbour, which was used for protection against Indian raids from the north. São Vicente did not prosper, and was succeeded (1681) by São Paulo as the capital and by Santos as the seaport of the colony. It was captured by the English privateer, Thomas Cavendish, in 1591, when São Vicente was burned. The growth of the town was slow down to the end of the 19th century, because of insanitary conditions and epidemics.

SANUTO (Sanudo), Marino, the elder, of Torcello (c. 1260–1338), Venetian statesman, geographer, &c. He is best known
for his life-long attempts to revive the crusading spirit and make war on the infidel. With this object he wrote the great work, the Secreta (or Liber Secretum) Fidelis Crescit, otherwise called Historia Hierosolymitana, Liber de expediione Terrae Sanctae, the last being perhaps the proper title of the whole treatise as completed in three parts or "books." This work has much to say of trade and trade-routes as well as of political and other history; and through its accompanying maps and plans it occupies an important place in the development of cartography. It was begun in March 1306, and finished (in its earliest form) in January 1307, when it was offered to Pope Clement V. as a manual for true Crusaders who desired the redemption of the Land. To this original Liber Secretum Sanuto added largely; the earlier parts were composed between December 1312 and September 1321, when the entire work was presented by the author to Pope John XXII, together with a map of the world, a map of Palestine, a chart of the Mediterranean, Black Sea and west European coasts, and plans of Jerusalem, Antioch and Acre. A copy was also offered to the king of France, to whom Sanuto desired to commit the military and political leadership of the new crusade. Marino himself tells us that he had spent the best part of his life in researching the history of the eastern empires; of the Morea he had especially intimate knowledge; he had also visited Cyprus, Rhodes, parts of the Syrian, Cilician and Egyptian coasts, the Flanders and north Germany, both west and east of Denmark. He had been in Acre, Alexandria, Constantinople, Avignon, Bruges and Sluys, as well as (apparently) in Hamburg, Lübeck, Wismar, Rostock, Stryslau, Greifswald and Stettin. Among his friends and correspondents were Guglielmo Bernardi de Furvo, a Venetian nobleman who had travelled extensively in Moslem and Mongol lands (to Tabriz, Baghdad, Damascus and Cairo), Bishop Jerome of Kaffa, in the Crimea, who in 1312 had been engaged in the Catholic mission in China, and perhaps Peter, the English-born bishop of Canterbury and the Farnese, who made an appeal for aid to the Polish king of England in 1330. Marino Sanuto's ancestor, Marco, had founded the greatness of his family after the Fourth Crusade as duke of the Archipelago and conqueror of Naxos, Paros, &c. (from 1207); and his descendant wrote with a personal passion in the question of crushing Moslem power in the Levant.

The crusading plans of the Secreta are double: first, Egypt and the Moslem world on the side towards Europe (Syria, Asia Minor, the Barbary States), and secondly, the western flight, the stoppage of all Christian trade with the same. By such an interdict Sanuto hopes that Egypt, dependent on its European and other imports, will be weakened, its provisions, weapons, timber, pitch and slaves, would be fatally damaged, and the trade and commerce, especially the second part of the campaign—the armed attack of the crusading fleet and army on the Nile delta. With the aid of the Mongol Tatars of Asia, and the resources of the countries well known to Italian mariners, and of the Nubian Christians, the conquest of the Delta and of all Egypt was to be followed by that of Palestine, invaded and held from Egypt. Sanuto deprecates any other route for the crusade, and unfolds his plan of campaign, his lands of supply, his sources for the supply of good gear, with great detail. Not only Mediterranean seaports, but the lakes of North Italy and central Europe, and the Hanseatic ports, are counted as nurseries of crusading mariners and marine skill. Finally, after the conquest of Egypt, Marino designs the establishment of a Christian fleet in the Indian Ocean to dominate and subjugate its coasts and islands. He also gives a sketch of the trade-routes crossing the Indian Ocean, after the course of the Indian trade from Coromandel and Gujarat to Ormuz and the Persian Gulf, and to Aden and the Nile. The maps and plans which illustrate the Secreta are probably (in the main, at least) the work of the great portolano-draughtsman Pietro Vesconte; practically the whole of this map-work corresponds with what Vesconte has left under his own name; much of it is indistinguishable. Among the plans that of a network of five maps, which together form a good example of the knowledge of the portolano; in the world-map a portolano of the Mediterranean is combined with work of pre-portolano type in remote regions. Here the shorelines of all the known lands and islands, from Flanders to Asov, are well laid down; the Caspian Sea, the north German and Scandinavian coasts appear with an evident, though far slighter, relation to practical knowledge; and some idea is given of the great continental rivers of the north, such as the Don, Volga, Vistula, Ouse and Sty Daria, Altea, away from the Mediterranean, is conventional, with its south-east projected, after the manner of Idrisi, so as to face Indian Asia, and with a western Nile crossing, of continuing value to Chinese and Indian Asia the show little trace of the new knowledge which would have been imparted by European pioneers from the Polo's time, and which appears so strikingly in the Catalan Atlas of 1375. Sanuto's Palestine map is remarkable for its so-called "linking network of lines," which roughly answer to a kind of scheme of latitude and longitude, though not entirely new, but speaking they are not scientific at all. Of the Secreta, twenty-three MSS. exist, of which the chief are: (1) Florence, Riccardian Library, No. 237, 162 fols. (Secreta et litterae), with maps and plans of Italy and the Levant. (2) London, British Museum, Addt. MSS., 27, 376, 170 fols. with maps, &c. on fols. 180, v.-190, r. (3) Paris, National Library, C. S. L., Lat. 4190, with map, Secreta (N. 9), r.-t., r. 27, 98-99. All these are of the 14th century. The Secreta has only once been printed entirely, by Bongars, in Gesta Dei per Francos, vol. ii. pp. 1-288 (Hanover, 1741). See also Friedrich Kunzmann, "Studien über Marino Sanuto den älteren, mit einem Anhange seiner ungedruckten Briefe" in Abhandlungen der historis. Classe der Königl. Bayerischen Akademie der Wissenschaften, vol. vii, pp. 695-719 (Munich, 1855); Foscarini, Letteratura Veneziana; Tiraboschi, Storia della Letteratura Italiana, vol. v.; Postansque, De Marino Sanuto (Montpellier, 1856); C. R. Beazley, Dawn of Modern Geography, ii. 309-319, 391-402, 530-541, 585-594 (C. R. B.)

SANUTO (or SANUDO), MARINO, the younger (1533-1621), Venetian historian, was the son of the senator, Leonardo Sanuto, and was born on the 22nd of May 1466. Left an orphan at the age of eight, he lost his fortune owing to the bad management of his guardian, and was for many years hampered by want of means. In 1483 he accompanied his cousin Mario, who was one of the three sindici ingiuditori deputed to hear appeals from the decisions of the retori, on a tour through Istria and the mainland provinces, and he wrote a minute account of his experiences in his diary. In 1498 he went he sought out learned men, examined libraries, and copied inscriptions. The result of this journey was the publication of his Itinerario in terra firma, an account of Latin inscriptions. Sanuto was elected a member of the Maggior Consiglio when only twenty years old (the legal age was twenty-five) solely on account of his merit, and he became a senator in 1498; he noted down everything that was said and done in those assemblies and obtained permission to examine the secret archives of the state. He collected a fine library, which was especially rich in MSS. and chronicles both Venetian and foreign, including the famous Altino chronicle, the basis of early Venetian history, and the "Life of Dante," written by the friend of all the learned men of the day. Aldo Manuzio dedicated to him his celebrated Latin edition of the works of Angelo Poliziano and of the poems of Virdem. It was greatly indebted to Sanuto when Andrea Navagaro was appointed the official historian to continue the history of the republic from the point where Marco Antonio Sabellico left off, and a still greater mortification when, Navagaro having died in 1529 without executing his task, Pietro Benso was appointed to succeed him. Finally in 1531 the value of his work was recognized by the senate, which granted him a pension of 150 gold ducats per annum. He died in 1533.

His chief works are the following: Difulcrin in terra firma, published by M. Rawdon Brown in 1847; I commentari della guerra di Ferrara, an account of the war between the Venetians and the Papacy, published in 1517, and an account of the life of Carlo VIII. (MS. in the Louvre); Le Vite dei Dogi, published in vol. xii. of Muratori's Rerum italicarum scriptores (1733); the Diari, his most important work, which cover the period from the 1st of January 1496 to September 1533, and fill 58 volumes. The publication of these records was begun by Rinaldo Furli, in collaboration with Federigo Stefanii, Guglielmo Berchet, and Niccolò Barozzi; the last volume was published in Venice in 1903. Owing to the relations of the Venetian republic with the great powers of Europe he was practically a universal chronicler, and an invaluable source of information for all writers on that period.

SAN VICENTE, the capital of the department of San Vicente, Salvador; 30 m. E. of San Salvador, on the river Acahuapa, a left-hand tributary of the Lempa. Pop. (1905) about 18,000.
SAO FRANCISCO, a river of eastern Brazil rising in the S.W. part of the state of Minas Geraes, about 39° 30' S., 46° 40' W., near the narrow valley of the Rio Grande, a tributary of the Paraná, and within 240 m. of the coast W. of Rio de Janeiro. It flows in a general N.N.E. direction across the great central plateau of Brazil to about lat. 9° 30', long. 42° W., where it turns N.E. and then S.E. in a great bend, entering the Atlantic in lat. 10° 39' S. It has a total length of about 1800 m. and a fall of 2700-2800 ft. It is navigable for 72 m. by sailing vessels. A short distance below the falls and a deep cañon with whirlpools for some distance below, the Brazilian government has built a railroad along these falls and a deep cañon with whirlpools for some distance below, the Brazilian government has built a railroad along these falls. The railroad is called the Sobradinho nearly 90 m. above the lower rapids, which are navigable at high water, and above these an unobstructed channel for light-draft river boats up to Pirapora a little above the mouth of the Rio das Velhas, a distance of 98 m. Here the river runs through a barren, semi-arid region, sparsely settled. There are no tributaries of consequence along a large part of this region, and the few people living beside the river are dependent on its annual floods for the fertilization of its sandy shores on which their scanty plantations of Indian corn and beans are made. The rapids of Pirapora are 17 m. above the mouth of the Rio das Velhas; from this point, the head of navigation on the river, and 1742 ft. above sea-level, is the objective point of the Central do Brasil railway, the purpose being to create by rail and river a central route from Rio de Janeiro to the northern parts of Bahia and Recife. The principal tributaries of the São Francisco are: on the right, the Pará, Paraopeba, Velhas, and Verde-Grande; on the left, the Indiayá, Abacaté, Paraçatú, Urucuaya, Carinhangha, Corrente and Grande. Several of these tributaries are navigable for long distances by small boats—the aggregate being a little over 1000 m. Some authorities give 1945. It became a navigable channel, if the São Francisco as 4350 m. The upper valley of the São Francisco is partly forested, has a temperate climate, with a mean annual temperature of 85° and a rainfall of 1637 millimetres. The rainy season is from December to March, but on the lower river the rainfall is light and the season much shorter, sometimes varied by droughts covering several years.

An admirable description of this great river is given by Richard Burton in *The Highlands of Brazil* (2 vols., London), and a more technical examination by E. Liébault, in *Hydrographie du Haut Saint Francisco et du Rio das Velhas* (Rio de Janeiro, 1865).

SÃO LEOPOLDO, a city of the state of Rio Grande do Sul, Brazil, on the left bank of the Rio dos Sinos, 203 m. by rail N. of Porto Alegre. It is the chief town of a município (commune) of the same name, having an area of about 347 sq. m. and inhabited chiefly by German colonists. Pop. (1900) of the city, 11,015; of the município, 32,600. São Leopoldo has river and railway communication with Porto Alegre. It is a prosperous industrial town, with broad straight streets and substantial buildings. It has good schools, and its Jesuits' college ranks high throughout northern Rio Grande. Among its manufactures are matches, hats, baskets, shoes, soap, liquors and artificial drinks, leather and leather-work and carteware. In the sur

rounding districts cattle and hogs are raised, and jerked beef, hides, pork, lard, potatoes, beans, farinha de mandioca (cassava flour), Indian corn, tobacco and a great variety of vegetables and fruits are produced.

The city was originally a German colony founded by the emperor Pedro I. in 1824 and established at a place known as the Feitoría Real de Canhamo (Royal flax factory). The first colonists (36 families and 17 unmarried persons, or 126 souls) arrived on the 29th of June 1825, and were followed a few months later by another party of 900 colonists. These were the first German colonists in Rio Grande do Sul. Up to 1830 the arrivals numbered 3701, but the civil war which broke out in 1835 checked further arrivals and nearly ruined the colony, its inhabitants being forced to serve in the contending forces and their property being seized. São Leopoldo was occupied by the revolutionists for some years and was practically ruined at the termination of the war in 1844. The introduction of colonists was immediately resumed, however, and the colony was soon as prosperous as before. The colonists were engaged in Germany by a representative of the Brazilian government, and were given free transportation, 130 acres of land each, farming implements, seeds, and a subsidy of 330 reis a day for the first year and half that for the second year. Subsequent settlers received less, but the system of assisting colonists and making contracts with companies and individuals for their introduction became the settled policy of the national and provincial governments.

SÃO LUÍS, or in full, SÃO LUÍS DE MARANHÃO (also spelt Maranhâm), a seaport of northern Brazil, capital of the state of Maranhão, lying on the lower course of the Rio Piraputanga, a branch of the Rio Grande do Norte, and is 172 m. long, 10° 3' S., 42° 29' W., about 300 m. E.S.E. of Belem (Pará). Pop. of the whole Island (1890) 29,306; (1908, estimate) 32,000. An important part of the population is made up of the planters of the state, who live in town and leave their estates to the care of overseers. The island of Maranhão lies off the mouth of the rivers Marimbá and Itapicuru, between the Bay of São Marcos on the W. and the Bay of São José on the E., and is separated from the mainland by a small channel called the Canal do Mosquito. It is irregular in outline, its greatest length from N.E. to S.W. being 34 m., and its greatest breadth 19 m. It is covered by a number of low hills and short valleys. The city is built upon a tongue of land between two small estuaries, Anil and Bacanga, which unite and open upon the Bay of São Marcos. It covers two low hills and the intervening valley, the transverse streets sloping sharply to the estuary on either side. These slopes make it difficult to use vehicles in the streets, but they afford a natural surface drainage which makes São Luís cleaner and more healthy than the coast towns of tropical Brazil usually are. The city is regularly laid out with comparatively wide longitudinal, and steep, narrow transverse streets, roughly paved and provided with sidewalks. The buildings are of the old Portuguese type, with massive walls of broken stone and mortar, having an outside finish of plaster or glazed tiles and roofs of red tiles. The principal public buildings are the cathedral, a large and severely plain structure, the episcopal palace, the Carmelite church, the government palace, town hall, custom-house, hospital, and a number of asylums, convicts and charitable schools. An excellent lyceum and a church seminary are the most important educational institutions, and São Luís long enjoyed a high reputation in Brazil for the culture of its inhabitants. The trade of São Luís was very important, but the commercial activity of Pará and Fortaleza, the decay of agricultural industry in the state, and the sitting up of its harbour, have occasioned a decline in its commerce. Its exports comprise cotton, sugar and rice. Communication with the mainland and interior towns is by means of small steamers.

São Luís was founded in 1613 by La Rivardière, a French officer commissioned by Henri IV. to establish a colony in this vicinity. The French colony was expelled in 1615 by the Portuguese, who, in turn, surrendered to the Dutch in 1641. In 1664 the Dutch abandoned the colony, and when the Portuguese resumed possession and held the city to the end of their colonial rule in Brazil. The city became the seat of a bishopric in 1679.

San Vicente is situated in a volcanic region abounding in hot springs and geysers. The volcano of San Vicente, the highest in the department, reaches an altitude of more than 7000 ft. The city is surrounded by indigo and tobacco plantations, and has considerable commerce, a large portion of which is transacted at the All Saints' fair, held annually on the 15th of November. Shoes, hats, cloth, silk, spirits and cigars are manufactured here. San Vicente was founded in 1634 on the site of Tchucanu, an ancient Indian city. For one year (1839-1840) it was the capital of the republic.
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SAÔNE, a river of eastern France, rising in the Faucilles mountains (department of Vosges), 15 m. W.S.W. of Épinal at a height of 1350 ft. and uniting with the Rhone at Lyons. Length, 301 m.; drainage area, 11,400 sq. m. The oldest Celtic name of the river was Arar. In the 14th century another name appears, Souzauna, from which the modern name is derived. It winds slowly in a sinuous channel, has its course in the wide depression between the Plateau of Langres, the Côte d’Or and the mountains of Charolais and Beaujolais on the west and the western slopes of the Voges and Jura and the plain of Besse and the plateau of Dombes on the east. In the department of Saône-et-Loire, the Saône unites with the Doubs, an affluent rivalling the Saône in volume and exceeding it in length at this point. At the important town of Chalon-sur-Saône the river turns south, and passes Mâcon. Below Trévoux its valley, now narrower, winds past the Mont d’Or group and joins the Rhone just below the port of Lyons. The Saône is navigable from Corre to Lyons, a distance of 233 m., the normal depth of water being 61.6 in. At Corre (confluence with the Conêy) it connects with the southern part of the Eastern Canal, at Heuliez (below Gray) with the Saône-Marne Canal, at St Symphorien (above St Jean-de-Losne) with the Rhone-Rhine Canal, and at St Jean-de-Losne with the Canal de Bourgogne and at Chalon with the Canal du Centre.

SAÔNE-ET-LOIRE, a department of east-central France formed from the districts of Autunois, Brionnais, Chalonnais, Charolais and Mâconnais, previously belonging to Burgundy. It is drained by the canal from the Saône at St Jean-de-Losne, and by the rivers of the Jura, formed by the confluence of the Saône, the Lison, and the Doubs (tributaries of the Rhône), and the Noise, a mere brook. The region is formed by a series of valleys, the slopes of which converge to the south and east, toward the continuation of the tableland of the Morvan, and are terminated by the Rhône at Dijon. The tableland of the Morvan is bordered on the north and east by the Côte d’Or, on the south by the Saône and its affluents, the Lison and the Noise, and the Noise, which separates it from the Bresse by a range of hills, the Ponds. The tableland of the Morvan is intersected by the valleys of the Saône, the Lison, and the Noise, which form a series of large basins. The tableland is a region of extreme temperature, with hot summers and cold winters, and of extreme rainfall, with heavy rains in the winter and droughts in the summer. The region is divided into 5 arrondissements—Mâcon, Chalon-sur-Saône, Autun, Charolles, Louhans—50 cantons, and 58 communes.

Mâcon, Chalon, Autun, Le Creusot, Cluny, Montceau-les-Mines, Tournus, Bertheaume-le-Monial, Louhans, are the chief towns of the department. The principal industries are winemaking, pottery, porcelain-making, and flour-milling. The main rivers are the Saône and the river Week.

SÃO PAULO, a state of Brazil extending from 16° 54’ to 25° 15’ S. lat. and bounded N. by Matto Grosso and Minas Geraes, E. by Minas Geraes, Rio de Janeiro and the Atlantic, S. by the Atlantic and Paraná, and W. by Paraná and Matto Grosso. Pop. (1900) 2,822,797; area, 112,312 sq. m. The state has a coast-line 737 m. long, skirted closely by the Sierra do Mar, below which is a narrow coastal zone broken by lagoons, tidal channels and mountain spurs. Above is an extensive plateau (1500 to 2200 ft. above sea-level) with a mild temperate climate and the southern and eastern borders are broken by mountain chains, and isolated ranges of low elevation break the surface elsewhere, but in general the state may be described as a tableland with an undulating surface sloping westward to the Paraná. The extreme eastern part, however, has an eastward slope and belongs to the Paraguay basin. The state is traversed by a number of large rivers, tributaries of the Paraná, the largest of which are the Rio Grande, a part of the N. boundary, Dourados, Tietê, Aguapêy, Tigre, and, and a part of the S. boundary, the Paranapanema. The Paraná forms the W. boundary of the state, and its branches unite and unite in the Tietê include some of the richest coffee estates of Brazil. The state is well wooded, especially on the slopes of the Serra do Mar, but there are extensive grassy campos (plains) on the plateau. A large part of western São Paulo is still unsettled. The coastal zone is hot and generally malarial, with heavy rainfall. On the plateau the rainfall is sufficiently abundant, but the air is drier and more bracing, the sun temperature being high and the nights cool. The open country is singularly healthy, but the river courses are generally malarial. Some of the cities have suffered from fever epidemics, due to bad drainage and insanitary conditions.

The great industries are agricultural, and the most conspicuous are coffee production. São Paulo produces more than one-half the total Brazilian coffee and its one great port, Santos, is the largest coffee-exporting port in the world. The terra roxa (red earth) lands of the central and northern parts of the state, especially in the basins of the Tietê and Pará, are peculiarly favourable. This soil is ferruginous, pasty, deep red in colour, and free from stone, and covers the higher surface of the plateau with a thick layer. The best plantations are on benches overhanging the high walls, which are not in their eroded valleys. The Rio Pardo (Brown river) probably derives its name from this soil. For the crop year (July to June) of 1895-1896 the production was 5,073,804 bags, and in 1903-1904 it was 6,077,175. In these figures being the deliveries at Santos for exportation and not including the reserves on the plantations and the home consumption. The crop for the last year mentioned was not a maximum, however, because production was limited by the heavy rains which occurred in 1902-1903, 8,349,828 bags. These immense crops were produced in spite of appeals to producers not to increase production, and even this demand for reduction did not hold the crop in check. Over-production was keeping the price below a remunerative figure and threatened to ruin the industry. In 1906 the state entered into an accord, known as the "Convenio de Taubaté," with the states of Minas Geraes and São Paulo to maintain the bonus of Type No. 7 at 55 to 65 francs gold per bag of 60 kilograms (other types in proportion) for the first year, and then to increase this price to 70 francs, according to the state of the market; and to check as far as possible the exportation of coffees inferior to Type...
No. 7, which was a grade largely exported to the United States for the manufacture of coffee. Excelsior grades, also known as grade No. 7, were used in the same trade. In addition to the suspension or limitation of the export of grades below Type No. 7, coffee was to be bought and stored until it could be sold through accredited agents above the purchase price. In September 1917, the state of São Paulo was authorized to float a loan of $15,000,000. Failing to accomplish this by itself, the state secured the endorsement of the national congress in the form of a loan which was to be issued at the rate of 5½ per cent, to which the state of $7,500,000 in 5 francs per bag was decreed. The guarantee was to endure for ten years, during which time all the transactions of the combination, which undertook to limit the sales abroad to 500 bags in 1910, 600,000 bags in 1911, 800,000 bags in 1912, 800,000 bags in 1913 and 700,000 per annum thereafter, were to be subject to the approval of the national government. Another measure was the imposition of an additional tax of 20% on all exports of coffee above those permitted by the law of 1910, and a tax of 10% on a reserve of over 8,000,000 bags, increasing crops, and the reckless purpose of planters to realize on their crops regardless of the effect on the market, was also the inspiration of the combination.

The other agricultural products of the state include sugar, cotton, rice, tobacco, Indian corn, beans, mandioca, grapes, bananas and other fruits, and many of the vegetables of the temperate zone. Cereals can be raised, but climatic conditions have been considered as unfavourable. Sugar cane was the first exotic to be cultivated in São Paulo, and was its principal product in colonial times. Cotton was largely produced, especially during the American Civil War, but the industry nearly disappeared, and now is again improving because of the demand for fibre by the national cotton factories. The cultivation of rice also is increasing, under the stimulus of protective duties, and São Paulo is now an important rice producing state. The state possesses large herds of cattle, which are being improved by the importation of pure-bred stock from Europe. Butter and cheese are produced to a limited extent, and the supply of fresh milk to the market is limited.

The principal manufactures are cotton and woolen textiles, jute bagging, tallow, furniture, clothing and footwear, and various agricultural implements, beer, artificial liquors, mineral waters, biscuits, macaroni, conserves, chocolate and other food products, glass bottles, glassware, earthenware, soap, gloves, boots and shoes, tobacco, artificial flowers, and roofing paper, all of which, though both electric and hydraulic power are employed. There are several large cotton factories, which are chiefly employed in the production of burlap, and there are many private distilleries and breweries.

The iron mines and works at Ypanema, near Sorocaba, are one of the oldest industries of the state, dating back to the first quarter of the 19th century. It is a government enterprise and has absorbed an immense sum of money, but has never reached a self-supporting stage.

São Paulo is well provided with railways, which include the pioneer line from Santos to Junihay, (an English enterprise) which has a double track from Santos to the city of São Paulo, the Paulista line which forms a continuation of the English line into the interior, the Mogiana lines running northward from Campinas through rich coffee lands to Mairipora, and Minas Gerais, and the line to Goyaz, the Sorocaba running south-westward from São Paulo toward the Paraná frontier, the São Paulo branch of the Central do Brazil line which passes through the E. part of the state and provides connections with the Mogiana line, the line from São Paulo to São Pedro, Granada, and São Paulo, another line to São Pedro, and the line from São Paulo to Minas Gerais. The line of the State of São Paulo is a branch of the São Paulo Central do Brazil railway and is 7 3/4 mi. long, running from the city of São Paulo to the railroad center of the state, at Bauru. It was formerly the property of the State of São Paulo, but was sold to the State in 1895 and was completed in 1910. The line from Santos to São Paulo is a branch of the same name, and the line of the State of São Paulo is a branch of the same name, and a branch of a bishopric, on the Tietê river 49 m. by rail N.W. of the port of Santos and 308 m. by rail W. of Rio de Janeiro. Pop. (1890) 64,034; (1902, estimate) 332,000. São Paulo is connected with Santos, its port, by a double-track railway built, owned and worked by a British company (S. Paulo Railway Co.); with Rio de Janeiro, by the São Paulo branch of the Central do Brazil line; with Campinas and other inland cities by the São Paulo and Paulista railways; with the N.E. part of the state, Minas Gerais, and Goyaz by the Mogiana line, and with French and German wheat farms in the state, with the line from Campinas; and with Sorocabana and the southern parts of the state, Paraná, by the Sorocabana line and the São Paulo and Río
Grande line. In great part the city occupies an elevated open stretch of tableland commanding extensive views of the surrounding country; and a small part of it is in the low alluvial land bordering the Tietê. The upper part has several slight elevations forming healthy residential districts. The elevations above sea-level are 238 ft. at the Central do Brazil railway station in the lower town, 2418 ft. at the São Paulo railway station, 2820 ft. in the Consolação suburb, and 2935 ft. in Villa Mariana. The city is just within the tropics, but its elevation above the sea gives it a temperate climate, bracing in the cool season and yet with high sun temperatures in summer. The broad eroded bed of the Tietê is swampy and is subject to extensive inundations causing malarial and intestinal disorders; otherwise the city is singularly healthy, though its sanitary condition is poor. The picturesqueness of the city is heightened by the ravine of a small stream passing through it and spanned by viaducts and bridges. The city's courts are commonly open places with an occasional statue but without ornamental gardens. The Public Garden, near the São Paulo railway station in the Luz section, is a recreation ground embossed with tropical plants and an artificial lake. The streets are well paved and lighted with gas and electricity, and have electric trams. Although there are still many old structures and residences to be seen in the old town, most of the public and business buildings and private residences are of the modern Italian and French type. Brick is used to some extent, but the building material most used is broken stone and mortar, plastered outside and covered with stucco. The private residences of the city are the finest in the republic. There is much wealth in the state, especially among the large coffee planters, and the city is their favourite residence. Some of their palatial dwellings are surrounded with beautiful gardens and parks. The water-supply is derived from Cantareira hills, and there is a modern sewerage system, constructed by an English company. The more important public buildings are the new government palace, the palaces of agriculture, finance and justice, the executive residence, the immense Polytechnic School, the Normal School, the School of Agriculture, the public hospital called the Isala-mento, the charity hospital, the São Paulo railway station with a beautiful stone tower, and the theatre, rivalling some of the best in Europe. Like other Brazilian cities São Paulo has a number of old religious buildings. There are also several excellent educational and scientific institutions which are in great part supported by the state, among which are the Mackenzie College, created through the gift of an American capitalist, a school of law, a Pasteur Institute, and a bacteriological Institute. The police force of the state is a military organization and consists of a brigade of about 1000 men (infantry and cavalry, with a civic guard). in the old town there is a house for hospital attendants for public emergency cases), under a colonel of the regular army. Manufactures include textiles, footwear, clothing, food products, beer, artificial liquors, furniture, domestic utensils, &c. The São Paulo Light and Power Co., whose works are situated at the falls of the Tietê a considerable distance N.W. of the city, supplies about 8000 horse-power to local industries in addition to what is needed for the electric railway (108 m.), the oldest enterprise of this character in Brazil. The city has a large Italian population and many Italian shops and industries conducted by the Jesuits under Manoel de Nobrega in 1554 and at first bore the name of Pratinha. In 1681 it succeeded São Vicente as the capital of the captaincy. The declaration of Brazilian independence occurred on Sept. 7, 1822, on the plain of Ypiranga, near the city, where a monument commemorates the event.

SAP—SAPPHIRE

(1) Juice, the circulating fluid of plants (see PLANTS, § Physiology). The word appears in Teutonic languages, cf. Ger. Säf, and may be connected ultimately with the root seen in Lat. sapere, taste, hence to know, cf. sapientia, wisdom, cf. Gr. σοφία, wise. On the other hand it may, like Fr. cer, Spare mouvances, come from Latin sapere, must, new wine, itself also from the same root. Gr. ὕσσωs is represented in Lat. by sucs. (2) A military term for a trench dug by a besieging force for the purpose of approach to the point of attack when within range, hence "to sap," to undermine, dig away the foundations of a wall, &c. The word is derived through the Old Fr. from the Med. Lat. sapir, sappe, a spade, entrenching tool, Gr. ὕσσωs, ὤκτευε, to dig. (See FORTIFICATION AND SEIGE-CRAFT.)

SAPAN WOOD (Malay sapang), a soluble red dyewood from a tree belonging to the leguminous genus Caesalpinia, a native of tropical Asia and the Indian Archipelago. The wood is somewhat lighter in colour than Brazil wood and its other allies, but the same tinctorial principle, brazilin, appears to be common to all.

SAPPHICE METRE, Sapphics, an ancient form of quantitative verse, named after the Aeolian poetess Sappho, who is supposed to have invented it, and who certainly used it with unequalled skill. A sapphic line consists of five equal beats, of which the central one alone is of three syllables, while the others consist of two each. The original Greek sapphic was of this type:—

The sapphic strophe consists of three of these lines followed by an adonic, thus:—

Horace adopted, and slightly adapted, this form of verse, for some of his most engaging metrical effects. The Greek poets had permitted the caesura to come where it would, but Horace, to give solidity to the form, introduced the practice of usually ending a line on the fifth syllable, a rule which succeeding poets as the expression of the sentiment, and the manner of saying it, were often disposed to sacrifice. Though the metre is known under various names, it is called the Sapphic by the English in memory of its author.

Before the days of Horace, Catullus had used this form in Latin, and afterwards sapphics were introduced by the pseudo-Seneca into his tragedies. In the middle ages the sapphic strophe was frequently employed in the Latin hymns, especially by Gregory the Great. Later on, considerable laxity was introduced, and a dactyl was frequently substituted for the first trochee; this quite destroys the true character of the measure. It makes it a more easy metre, however, for those who write modern accelerated verse. We see a loose but effective specimen of it in the famous Needy knife; grinder! whiter! are you? going? Rough the [road, your] wheel is out of order. Needy knife; grinder! whiter! are you? going? Rough the [road, your] destitute wheel is broken, although this certainly does not suit English versification so well. Many of these strophes were, however, put into the cap-\em{peter\} of Campion (q.v.), and by William Cowper. Mr Swinburne has attempted to create the effect of the ancient Aeolian metre in a daring and brilliant stanza. Sapphics have been written more successfully in German than in any other modern language. The earliest original German poem in the form is said to be an anonymous hymn to St Mary Magdalen, dated 1500. Voss kept strictly to the metrical scheme of the Latin in his famous translation of the Odysse of Homer (1800), and among German poets who have cultivated sapphics are to be mentioned Klopstock, Platen, Hammerling and Geibel.

SAPPHIRE1 a blue transparent variety of corundum, or native alumina, much valued as a gem-stone. It is essentially the same mineral as ruby, from which it differs chiefly in colour. The colour of the normal sapphire varies from the palest blue to deep indigo, the most esteemed being that of the blue cornflower. Many of the crystals are parti-coloured, the blue being distributed in patches in a colourless or yellow stone; but by skilful cutting, the deep-coloured portion may be caused to impart colour to the entire gem. As the sapphire crystallizes in the hexagonal system it is dichroic, but in pale stones this character may not be well marked. In a deep-coloured stone the colour may be resolved, by the dichroscope, into an ultramarine

1 Indirectly from Gr. σάφιος, but there seems no doubt that this term, like the Hebrew sapir of the Old Testament, was formerly applied to what is now called lapis lazuli; the modern sapphire was probably known as ἰδρώα (hydrætos)
blue and a bluish or yellowish green. In blue tourmaline and in jolite—stones sometimes mistaken for sapphire—the dichroism is much more distinct. The blue colour in sapphire has been variously referred to the presence of oxides of chromium, iron, vanadium and titanium, although its origin has also been suggested. On exposure to a high temperature, the sapphire usually loses colour, but, unlike ruby, it does not regain it on cooling. A. Verneuil succeeded in imparting a sapphire-blue colour to artificial alumina by addition of 1-5% of magnetic oxide of iron and 0-5% of titanite (Compôtes rendus, Jan. 17, 1910). According to F. Bordas, the blue colour of sapphire exposed to the action of radium changes to green and then to yellow.

Under artificial illumination many sapphires appear dark and inky, whilst in some cases the blue colour of the sapphire is transformed to a violet colour by the piquancy of deposits arranged in a definite system. In 1875 sapphires were discovered in deposits of clay and sand in Battambang (Siam), where they have been worked on a considerable scale. They occur also in the provinces of Fatumang and Krat. Many of the Siam sapphires are of very dark colour, some being so deeply tinted as to appear almost black by reflected light. In Upper Burma sapphires occur in association with rubies, but there must be less iron than in the Ruby. Sapphires are also found in Kashmir, where they occur, associated with tourmaline, in the Zanakar range, especially near the village of Soomjam. Madagascar yields sapphires generally of very deep blue, occasionally of a blueish green. Sapphire is distributed through the gold-bearing districts of Victoria, New South Wales and Queensland, but the blue colour of the Australian stones is usually dark, and it is not known that green tints are not infrequent.

The Anakie sapphire-fields of Queensland are situated near Anakie station on the Central railway, to the west of Emerald and east of the Drummond Range. Sapphire occurs also in Tasmania. Coarse sapphire is found in many parts of the United States, and the mineral occurs of gem quality in North Carolina and Montana. The great corundum deposits of Corundum Hill, Macon county, N.C., have yielded good sapphires, and they are found also at Cowe Creek in the same county. The finest sapphires were cut in very thin plates as far back as 1850, and have been worked on a large scale. They were originally found in washing for gold. The rolled crystals of sapphire occur in garnets, but sometimes in itself. Sapphire has been derived from dykes of igneous rocks, like andesite and lamprophyre. They display much variety of colour, and exhibit peculiar brilliancy when cut, but are often of pale tints. The protection of sapphire by the precious metals is disapproved of, as it causes the fluxes of gold to be of a very fine and delicate freedom. This property was discovered by Lexell, and confirmed by Franklin. The blue colour of sapphire varies from the deep parting of the sky to the bluest of the ocean. The main property of sapphire, the characteristic properties of which caused Longinus to quote the ode to Anactoria as an example of the sublime, has never been since surpassed, and only approached by Catullus and in the Vito Nuene. Her fragments also bear witness to a profound feeling for the beauty of nature. The ancients also attributed to her a considerable power in satire, but in hexameter verse they considered her inferior to her pupil Erinna.

The fragments of Sappho have been preserved by other authors incidentally. Three fragments ascribed to her have been found on Egyptian papyri within recent years. The first two were published by W. Schubert in Sitzungsberichte d. königl. preuss. Akademie d. Wiss., Berlin, quadratic section, vol. 27 (1857); the third, discovered in 1879, and attributed to Sappho by Blase, is re-edited in the Berlin. Klass. v. For these three fragments see especially J. M. Edmonds, in Classical Review (June, 1900), pp. 99-104 (text, trans., comments.) and on the text of the "Ode to the Nereids" in Classical Quarterly (October, 1909). The poems were separately edited with translation by Whitney (ed. 1909), and also in H. W. Weir Smyth's Greek Latin Poets (1906). See also P. Brandt, Sappho (Leipzig, 1905); R. Steiner, Sappho (1907).

SAPPORO—SAPPHIRE

The so-called "Hope sapphires" of trade have been shown to be artificial blue spinels, coloured by cobalt.

Sapphirine is a rare mineral, not related to sapphire except in colour. It is a silicate, containing aluminium, magnesium and iron, brought originally from Greenland, and since found in a rock from the Vizagapatam district in India.
SARABAND—SARAGOSSA

and has an agricultural college, a museum, saw-mills, flour-mills, breweries, and hemp and flax factories.

SARABAND (Ital. Sarabanda, Zarabanda; Fr. Sarabande), a slow dance, generally believed to have been imported from Spain in the earlier half of the 16th century, though attempts have been made to trace it to an Eastern origin. The most probable account of the word is that the dance was named after Zarabanda, a celebrated dancer of Seville. During the 16th and 17th Depretis the saraband was exceedingly popular in Spain, France, Italy and England. Its music was in triple-time—generally with three minimés in the bar—and almost always consisted of two strains, each beginning upon the first beat, and most frequently ending on the second or third. Many very fine examples occur in the Suites and Partitas of Handel and J. S. Bach; by far the finest is that which Handel first composed for his oratorio to Almira, and afterwards adapted to the words "Lascia, ch'io pianga," in Rinaldo.

SARACCO, GIUSEPPE (1821-1907), Italian politician and financier, and knight of the Annunziata, was born at Bistagno on the 6th of October 1821, and, after qualifying as an advocate, entered the Piedmontese parliament in 1849. A supporter of Cavour until the latter's death he joined the party of Rattazzi and became under-secretary of state for public works in the Rattazzi cabinet of 1862. In 1864 he was appointed, by Sella, secretary-general of finance, and after being created senator in 1865, acquired considerable fame as a financial authority. In 1879 he succeeded in postponing the total abolition of the gret tax, and was throughout a fierce opponent of Magliani's loose financial administration. Selected as minister of public works (1887), and by Crispì in 1893, he contrived to mitigate the worst consequences of Depretis's corruptly extravagant policy, and introduced a sounder system of government participation in public works. In November 1898 he was elected president of the senate, and in June 1900 succeeded in forming a "Cabinet of pacification" after the Obstructionist crisis which had caused the downfall of General Pelloux. His term of office was clouded by the assassination of King Humbert (29th July 1900), and his administration was brought to an end in February 1901 by a vote of the chamber condemning his weak attitude towards a general strike in Genoa. After his fall he resumed his functions as president of the senate; but on the advent of the third Giolitti cabinet, he was not reappointed to that position. He died on the 19th of January 1907. He received the supreme honour of the knighthood of the Annunziata from King Humbert in 1898.

SARACENS, the current designation among the Christians in the middle ages for their Moslem enemies, especially for the Moslems in Europe. In earlier times the name Saracen was applied by Greeks and Romans to the nomad Arabs of the Syro-Arabian desert. In the 9th century, the Saracen, a district in the Sinaitic peninsula, is mentioned by Ptolemy (v. 16). Its inhabitants, though unknown to Arab tradition, made themselves notorious in the adjacent Roman provinces. Thus all Bedouins in that region came to be called Saraceni, in Arabic Sarkan, usually with no very favorable meaning. The latter form occurs in a dialogue concerning Fate written about A.D. 210 by a pupil of Bardaneses (Cureton, Spicilegium Syriacum, 16 ult.). The appellation then became general, and occurs frequently in Ammianus Marcellinus. The name "Saracen" continued to be used in the West in later times, probably rather through the influence of literature than by oral tradition, and was applied to all Arabs, even to all Moslems.

SARAGHARI, a small signalling post on the Samana Range in the North-West Frontier Province of India between Forts Lockhart and Gullistan. It is memorable for the stout defence made by its garrison of 21 sepoys of the 36th Sikhs in 1897. Saraghari, a mere mud block-house with a wooden door and a dead-angle, was held for six and a half hours against seven or eight thousand Orakziis, till the 21 Sikhs were finally overwhelmed and killed to a man. A memorial in commemoration was unveiled at Pefezpora in 1904.

SARAGOSSA (Zaragoza), an inland province of northern Spain, one of the three into which Aragon was divided in 1833; bounded on the N. by Logroño and Navarre, N.E. and E. by Huesca, S.E. by Lérida and Tarragona, S. by Teruel and Guadalajara and W. by Soria. Pop. (1900) 421,843; area, 67,256 sq. m. Saragoza belongs wholly to the basin of the Ebro (q.v.). The main valley is bounded on the south-west by the Sierra de Moncayo (with the highest elevation in the province, 7707 ft.), and is divided in a south-easterly direction by the high sierras of La Virgen and Víctor; on the north-west are the spurs of the Pyrenees. The principal tributaries of the Ebro within the province are the Jalón (q.v.), Huerva and Aguas on the right and the Arba and Gallego on the left; the Aragon also, which flows principally through Navarre, has part of its course in the north of this province. At its lowest point, where the Ebro quits it, Saragoza is only 105 ft. above sea-level. There are large tracts of barren land, but where water is abundant the soil is fertile; its chief productions are wheat, rye, barley, oats, hemp, flax, oil and wine. Silkworms are bred; and on the higher grounds sheep are reared. The manufactures are less important than the agricultural interests. Since 1889, however, the Aragonese have bestirred themselves, especially since the extremely protectionist policy of 1890 gave great impetus to native industries all over Spain. The industries include iron-founding and manufactures of paper, leather, soap, brandies, liqueurs, machinery, carriages of all sorts, railway material, pianos, beds, glass, bronze, chocolate, jams and woollen and linen goods. Much timber is obtained from the Pyrenean forests; the chief exports are live stock, excellent wines, flour, oil and fruit. The province contains important mineral resources, the bulk of which, however, await development. Saragoza is traversed by the Ebro Valley Railway, which connects Miranda with Lérida, Barcelona and Tarragona, and has a branch to Huesca; it also communicates via Calatayud with Madrid and Sagunto; and there are local lines to Carlébena (south-west from Saragoza) and to Tarazona and Borja (near the right bank of the Ebro). The only towns with upwards of 5000 inhabitants in 1900 are Tarazona (q.v.) (8790), (7735); Calatayud and Borja (5701), the original home of the celebrated family of Borgia (q.v.). (For an account of the imperial castle and the inhabitants of history of this region, see ARAGON.)

SARAGOSSA (Zaragoza), the capital of the Spanish province of Saragoza and formerly of the kingdom of Aragon, seat of an archbishop, of a court of appeal, and of the captain-general of Aragon; on the right bank of the river Ebro, 212 m. by rail N.E. of Madrid. Pop. (1900) 99,118. Saragoza is an important railway junction; it is connected by direct main lines with Valladolid, Madrid and Valencia in the west and south, and by the Ebro Valley Railway with Catalonia and the Basque Provinces; it is also the starting-point of railways to the northern Pyrenees and the Cantabrian coast. The city is built in an oasis of highly cultivated land, irrigated by a multitude of streams which distribute the waters of the Imperial Canal, and surrounded by an arid plain exposed to the violent gales which blow down, hot in summer and icy in winter, from the Castilian plateau. The monthly range of temperature frequently varies by as much as 50° Fahr., and the climate is rarely pleasant for many consecutive days except in spring, when warm easterly winds blow from the Mediterranean. The city is surrounded by gardens, farms and country-houses (locally known as torres, "towers"). Seen from a distance it has a fine appearance owing to the number of its domes and towers; on a nearer approach it presents a remarkable contrast between the older streets, narrow, gloomy, ill-paved and lined with the fortress-like palaces of the old Aragonesque nobility, and the business and residential quarters, which are as well built as any part of Madrid or Barcelona. Saragoza is thus in appearance at once one of the oldest and one of the newest of Spanish cities. One of its two stone bridges, the seven-arched Puente de Piedra, dates from 1447; there is also an iron bridge for the railway to Pamplona. Beside the river there are public walks and avenues of poplar; the suburb on the left bank is named Arrabal. The two most important buildings of Saragoza are its cathedrals, to each of
which the chapter is attached for six months in the year. La Seo ("The See ") is the older of the two, dating chiefly from the 14th century; its prevailing style is Gothic, but the oldest portion, the lower part of the tower, is Roman. The Metropolitan Cathedral of Saragossa is the larger building, dating only from the latter half of the 17th century; it was built after designs by Herrera el Mozo, and owes its name to one of the most venerated objects in Spain, the "pillar of the Virgin" on which the Virgin Mary is said to have appeared when she manifested herself to St James as he passed through Saragossa. It has little architectural merit; externally its most conspicuous feature is the series of jasper tablets, which are decorated with rows of green, yellow and white glazed tiles. The church of San Pablo dates mainly from the 13th century. The Torre Nueva, an octagonal clock tower in diapered brickwork, dating from 1504, was pulled down in 1821. It leaned some 3° from the perpendicular, owing to faulty foundations, which ultimately rendered it unsafe. Among other conspicuous public buildings are the municipal building, the Palace of the Counts of Bearn, the provincial almanhouse (Hospicio provincial), which are among the largest in the university was founded in 1474, but its history has not been brilliant. To the west of the town is the Aljaferia or old citadel, originally built as a palace by the Moors, and also used as such by its Christian owners. Late in the 15th century it was assigned by Ferdinand and Isabella to the Inquisition, and has since been used as a military hospital, as a prison and as barracks. Saragossa, is the headquarters of a large agricultural trade; its industries include iron-founding, tanning, brewing, distillation of spirits, and manufacture of machinery, candles, soap, glass and porcelain.

History.—Saragossa (Celtiberian, Saolduba) was made a colony by Augustus at the close of the Celtiberian War (25 B.C.), and renamed Caesarea Augusta or Caesaragustia, from which "Saragossa" is derived. Under the Romans it was a highly privileged city, the chief commercial and military station in the province of Aragon, and the seat of the pre-eminence (assizes) of Hither Spain. It is now, however, one of the most important of antiquities dating from the Roman occupation. It was captured in 452 by the Suebi, and in 476 by the Visigoths, whose rule lasted until the Moorish conquest in 712, and under whom Saragossa was the first city to abandon the Arian heresy. In 777 its Moorish ruler, the viceroy of Barcelona, appealed to Charlemagne for aid against the powerful caliph of Cordova, Abd-ar-Rahman I. Charlemagne besieged the Cordovan army in Saragossa, as the city was then called; but a rebellion of his Saracens subjects compelled him to withdraw his army, which suffered defeat at Roncesvales (q.v.), while recrossing the Pyrenees. The Moors were finally expelled by Alphonso I. of Aragon in 1118, after a siege lasting nine months in which the defenders were reduced to terrible straits by famine. As the capital of Aragon, Saragossa prospered greatly until the second half of the 15th century, when the marriage between Ferdinand and Isabella (1469) resulted in the transference of the court to Castile. In 1710 the allied British and Austrian armies defeated the forces of Philip V. at Saragossa in the war of the Spanish Succession; but it was in the Peninsula War (1807-18), when the French under Napoleon conquered Aragon, body of citizens, led by José de Palafos y Melzi (see Palafos), whose chief lieutenants were a priest and two peasants, held the hastily-entrenched city against Marshal Lefebvre from the 15th of June to the 15th of August 1808. The siege was then raised in consequence of the reverse suffered by the French at Bailen (q.v.), but it was renewed on the 20th of December, and on the 27th of January the invaders entered the city. Even then they encountered a desperate resistance, and it was not until the 20th of February that the defenders were compelled to surrender. The battle of Saragossa was fought on 6th of November, 1472, near the town.

SARAGOSA, COUNCILS OF (Concilia Caesaragustana). In or about 380 a council of Spanish and Aquitanian bishops adopted at Saragossa eight canons bearing more or less directly on the prevalent heresy of Priscillianism. A second council, known as the Council of Saragossa of 576, was called by his successor, and was the first instance of the conversion of the West Goths from Arianism to orthodox Christianity. The third council, in 691, issued five canons on discipline. In 1318 a provincial synod proclaimed the elevation of Saragossa to the rank of an archbishopric; and from September 1565 to February 1566 a similar synod known the decrees of Trent.


SARAN, a district of British India, in the Tithur division of Bengal. Area, 2674 sq. m. It is a vast alluvial plain, possessing scarcely any undulations, but with a general inclination towards the south-east, as indicated by the flow of the rivers in that direction. The principal rivers, besides the Ganges, are the Gandak and Gogra, which are navigable throughout the year. The district has long been noted for its high state of civilization, and the number of its persons, who are counted in thousands besides other cereals, pulses, oil seeds, poppy, indigo and sugar-cane.

The population in 1901 was 2,400,590, showing a decrease of 2.2% compared with an increase of 7.4% in the previous decade. The average density population, 901 per square mile, is the highest for all India. The indigo industry, formerly of the first importance, has declined, and sugar refining has in great part taken its place. Some saltpetre is produced, and shellac is manufactured. Saran is exposed to drought and flood. It suffered from the famine of 1874, and again in 1896-1899. An irrigation scheme from the river Gandak, started in 1878, proved a failure, after a capital expenditure of Rs. 7,00,000. The Bengal North-Western railway runs through the south-east of the district. The administrative headquarters are at Chapra.

See Saran District Gazetteer (Calcutta, 1908).

SARAPUL, a town of N. Russia, in the government of Vyatka, on the river Kama, 333 m. by river E.N.E. of Kazan and 191 m. by road W. of Perm. Pop. (1918) 21,536. A large quantity of shoes and gloves are manufactured, the first named being mostly exported to Siberia, Caucasus and Turkestan. It also has tanneries, flax mills, distilleries, ironworks and rope-works, and is a busy river-port, trafficking in corn and timber. There are a lace-making school and a municipal library.

SARASATE Y NAVASCUES, PABLO MARTIN MELTON DE (1844-1906), Spanish violinist, was born at Pamplona on the 10th of March 1844. From his early years he displayed his aptitude for the violin, and at the age of 12 he began to study under Alard at the Paris Conservatoire. His first public appearance as a concert violinist was in 1860. He played in London in 1861, and in the course of his career he visited all parts of Europe and also both North and South America. His artistic pre-eminence was due principally to the purity of his tone, which was free from any tendency towards sentimentality and rhapsodic mannerism, and to the astonishing facility of execution which made him in the best sense of the word a virtuoso. Although in the Beethoven and Mendelssohn concertos, and in modern French and Belgian works, his playing was unrivalled, his qualities were so clearly revealed, that the composers, who were the "spirit of Spanish dance translated into terms of the violin virtuoso," Sarasate died at Bialritz on the 20th of September 1908.

SARASIN, or SARRAZIN, JEAN FRANÇOIS (1617-1654), French author, son of Roger Sarasin, treasurer-general at Caen, was born at Hermanville near Caen. He was educated at Caen, and settled in Paris. As a writer of vers de société he rivalled Voiture, but he was never admitted to the inner circle of the hôtel de Rambouillet. He was on terms of intimate friendship with Scarron, with whom he exchanged verses, with Ménage, and with J. P. Pellisson and J. de Georges de Scudery in his attack on Corneille with a Discours de la tragédie. He accompanied Léon Bouthillier, comte de Chavigny, secretary of state for foreign affairs, on various diplomatic errands. He was to have been sent on an embassy to Rome, but spent the money allotted for the purpose in Paris. This weakened his position with Chavigny, from whom he parted in the winter of 1643-1644. To restore his fallen fortunes he married a rich widow, but the alliance was of short duration. He joined in the pamphlet war against Pierre de Montmaur, against whom he had suppressed his own pamphlets (1649). He was accused of writing satires on Mazarin, and for a short time gave up the practice of verse. In 1648, supported by the cardinal
de Retz and Madame de Longueville, he entered the household of Armand de Bourbon, prince de Conti, whose marriage with Mazarin’s niece he helped to negotiate. He died of fever at Pézenas, in Languedoc on the 5th of December 1654. His biographers have variously stated on inadequate evidence that his death was caused by the prince de Conti in a moment of passion, or that he was poisoned by a jealous husband. The more probable explanation is that he was poisoned with a strychnine conguérant, la guerre espagnole, with Dulot vaincu and the Pompe funèbre in honour of Voltaire. As a poet he was overrated, but he was the author of two excellent pieces of prose narration, the Histoire du sièges de Dunkerque (1649) and the unfinished Conspiration de Walstein (1651). The Walstein has been compared for elegance and simplicity of style to Voltaire’s Charles XII.

SARASUATI, in early Hindu mythology, a river-goddess; in later myths the wife of Brahma, goddess of wisdom and science, mother of the Vedas, and inventor of the Devanagari letters. There has been much dispute as to the stream of which she is a personification. Some have identified it with the Avestan river, Haragaity, in Afghanistan, while others think the name a general one for any great river, and in particular the sacred name for the Indus, Sindhu being the popular one.

Two pamphlets in the late 17th century, one called Sarasaupati, one in the Punjab and the other in Gujarat, both of which ultimately lose themselves in the sand. According to one legend, the Punjab river appears to unite with the Ganges and Jumna at Allahabad. From this river is derived the name of the Sarawat Brahman, the most numerous and influential of the priestly class in the Punjab, with whom the Gaur Saraswati or Shenvils of the Konkan claim connexion.

SARATOGA, BATTLES OF. The British campaign for the year 1777 in America, in conjunction with Burgoyne’s actions, involved the operations of two armies moving from opposite and distant points. The lack of co-operation between the two led to the loss of one of them. This was General Burgoyne’s force of 7000 men which marched from Canada in June 1777 with the view of reaching the upper Hudson and combining with British troops from New York to isolate New England from the colonies below. Lord Howe, commander-in-chief of the British in America, who had received no instructions binding him in detail to co-operate with Burgoyne, moved southward and captured Philadelphia. In drawing Washington after him he claimed to be attacking Burgoyne by way of the Hudson, but Burgoyne proceeded by way of Lakes Champlain and George and approached the American army under General Horatio Gates in its fortified camp near Stillwater on the W. bank of the Hudson, about 24 m. N. of Albany. On the 19th Burgoyne attacked the American left under General Benedict Arnold. The battle, fought in densely wooded country till nightfall, was severe but indecisive. The British suffered heavy losses, especially in officers. This is variously known as the First Battle of Saratoga, the Battle of Freeman’s Farm, the First Battle of Bemis Heights, or the First Battle of Saratoga. Burgoyne forlornly harked back to his native country, and on October 7th made another attempt to turn the American left. An engagement still more severe than that of the 19th, known as the Second Battle of Saratoga, followed, in which the Americans under Benedict Arnold, E. Poor and D. Morgan drove the enemy into their works. Among many British officers killed was Brigadier-General Simon Fraser, who had been the life of the expedition. Crippled to an alarming extent, Burgoyne retreated. He was closely followed and harassed, and on the 16th of October nearly surrounded. On the 17th he surrendered, with about 6000 men, near the present village of Saratoga Springs.


SARATOGA SPRINGS, a village of Saratoga county, New York, U.S.A., about 35 m. N. of Albany, and about 12 m. W. of the Hudson river. Pop. (1900) 12,409, of whom 1684 were foreign-born and 619 were negroes; (1910) 12,693.

Saratoga Springs is served by the Delaware & Hudson and the Boston & Maine railways and by several interurban electric lines. The village is in a region of great historic interest, is famous for its medicinal mineral springs, and has long been one of the most popular watering places in America. Its hotels accommodate more than 20,000 guests. Of the hotels, the best known are the United States, Congress Hall, the Grand Union and the Saratoga.” The springs, of which there are more than forty, were known in colonial times.

The waters, all having the same ingredients but in varying proportions, are heavily charged with carbonic acid gas, and contain considerable quantities of bicarbonates of lime and magnesium, with chlorides of sodium. They rise in a stratum of Potsdam sandstone underlaid by Laurentian gneiss, &c., and reach the surface after passing through a bed of blue clay. The most noteworthy springs are called the Illion, the Cooper, the Patroon, the Schuyler, the Patience, the Carman, the Garden, the Union, the Union Club, the First Spring, and the Second Spring, in addition to the Geyser, the Shady Grove, the Hamilton, and the Spa. The Union, which is the largest, has a temperature of 106°, and contains 40,000 gallons an hour. These springs originally rose above the surface by their own force, but with the building of new springs and the pumping for carbonic acid gas south of the village the pressure was greatly lessened; the wells interfered to stop the pumping and it was prohibited by the state legislature. These measures, however, were not effective, and in 1876 the act was passed establishing a state reservation at Saratoga, creating a commission of three long before Europeans arrived in the springs, and taking over the state, and providing for an issue of bonds for $600,000 to buy the springs. Saratoga Lake, a beautiful body of water 23 m. long and 1 m. wide, 343 m. south-east of the village, is a famous resort.

The streets are well-shaded and broad, with side stretches of lawn between the sidewalk and the curb. There is a speedway and a famous race-track, where there are annual running races. In the village are Woodlawn Park (1200 acres), a town-hall, a state armoury, a public library, several theatres and a number of private hospitals and sanatoriums. The Convention Hall has been the meeting place of the Saratoga Race Course and the site of the race, during the last century, the principal business is the bottling and shipping of the mineral waters which are sold in large quantities and exported to many foreign countries. Among the manufactures are patent medicines, druggists’ preparations and chemicals, silk gloves, textiles, foundry products and boilers and engines. In 1905 the value of the factory product was $1,709,073, an increase of 28-1% since 1900.

The Saratoga country was a favourite summer camping ground of the Iroquois, particularly the Mohawks, who were attracted thither by the medicinal value of the springs long before Europeans visited the region. The Indian name, “Sa-ragh-to-ga” or “Se-rach-ta-gue,” is said to have meant “hillside country of the great water” or “place of the swift water.” The district became during the colonial wars a theatre of hostilities between the French and English colonists and their Indian allies. In 1863 a French expedition was checked in a sharp conflict near Mt McGregor by an English and colonial force under Governor Benjamin Fletcher and Peter Schuyler. Early in the 19th century the region along the upper Hudson began to be settled, the settlement on the Hudson at the mouth of the Fishkill, directly east of the present Saratoga Springs, being known first as Saratoga (later “Old Saratoga”) and finally as Schuylerville (pop. in 1905, 1520), in honour of the Schuyler family. Upon the settlement the French and Indians descended in 1745, and massacred many of the inhabitants. After the close of the Seven Years’ War, there was a new influx of settlers. Near Stillwater (pop. in 1905, 973) about 5 m. south-east of the present village, the battles of Saratoga (q.v.) were fought during the War of Independence. On the site of the present village a small log lodging house for the troops in the winter of 1777-78 was built in 1777. After the close of the War of Independence, the fame of the Springs as a health resort spread abroad, and many sought them annually. In 1791 Gideon Putnam (1764-1812), a nephew of Major-General Israel Putnam, bought a large tract of land here; he built the first inn (on the site of the present Grand Union Hotel). Other hotels were erected within the next few years; between 1820 and 1830, by which time the Springs had become one of the most popular of American resorts, several large barn-like wooden hotels were constructed; and Saratoga Springs was incorporated as a village in 1826.
SARATOV, a government of south-eastern Russia, on the right bank of the lower Volga, having the governments of Penza and Simbirsk on the N., Samara and Astrakhan on the E. and the Don Cossack territory and the governments of Voronezh and Tambov on the E. The area is 32,614 sq. m. The government consists of a rectangular strip of land, being 20 to 45 m. wide, extending along the Volga as far south as its Sarepta bend, separates the river from the territory of the Don Cossacks.

Saratov occupies the eastern part of the great central plateau of Russia, which slopes gently towards the south until it merges imperceptibly with the extensive regions of the Polesia, drained by rivers, falls abruptly towards the Volga. As the higher parts of the plateau range from 700 to 900 ft. above the sea, while the Volga flows at an elevation of only 20 ft. at Kbaylynsk in the north, and is 48 ft. below sea-level at Saratov, the steep river-cut slopes of the plateau give a hilly aspect to the banks of the river. In the south, and especially in the narrow strip above mentioned, the country assumes the characteristics of elevated steppes, intersected by waterless ravines. Every geological formation from the Carboniferous up to the Miocene is represented in Saratov: the older formations are, however, contained under the Cretaceous, whose fossiliferous marls, flint-bearing clays and iron-bearing sandstones cover extensive areas. The Jurassic deposits seldom crop out from beneath them. Eocene sands, sandstones and marls, abounding in marine fossils, are contained for a distance of 15 m., and extend in the boulder-clay of the Finland and Olonets ice-sheets penetrates as far south-east as the valleys of the Medvedytsa and the Sura; and even extends eastward as far as the DON and the Auster. Glacial period emerge in the south-east and elsewhere above the Glacial deposits. Iron-ore is abundant; chalk, lime and white pottery clay are extracted to a limited extent. The mineral waters at Saratov, formerly much visited, have been superseded in public favour by those of Causaica.

Saratov is well drained, especially in the north. The Saratov separates it from the governments of Samara and Astrakhan for a considerable distance, being divided from the Caspian Sea by a flat which rises in Saratov, and serves for the northward transit of timber. The tributaries of the Don are more important: the upper Medvedytsa and the Kheper, which both have a southward course parallel to the Volga and drain Saratov each for about 200 m., are navigated notwithstanding their shallows, ready-made boats being brought in separate pieces from the Volga. The Ivolga, which flows in the same direction into the Don, is separated from the Volga by a strip of land only 15 m. wide; Peter the Great proposed to utilize it as a channel for connecting the Don with the Volga, but the undertaking was never carried out, and the two rivers are now connected by the railway (45 m. long). The railway crosses the southern extremity of Saratov. The region is rapidly drying up, and the forests diminishing. In the south, about Tsaritsyn, they are still more extended. In the north they still occupy more than a third of the surface, the aggregate area under wood being reckoned at nearly 13% of the total. The remainder is distributed as follows: arable land, 58%; prairies and pasture lands, 19%. Such is the scarcity of timber that the peasants' houses are made of clay, the corner posts and door and window frames being largely shipped from the wooded districts of the middle Volga. The climate is severe and continental. The average yearly temperatures are 41°-5° at Saratov (January, 13°-2°; July, 71°-5°) and 44°-4° at Tsaritsyn (January, 15°-2°; July, 74°-6°). The average range of temperature is as much as 119°. The Volga is frozen for an average of 126 days in Saratov and 185 days in Tsaritsyn. The soil is very fertile, especially in the north, where a thick sheet of black-earth covers the plateaus; sandy clay and saline clay appear in the south.

The population numbered 2,113,077 in 1882 and 2,419,884 in 1897. The density in the different districts in 1897 varied from 55 to 107 inhabitants per sq. m., and the urban population amounted to 319,018; the female population numbered 1,236,957. The estimated population in 1906 was 2,863,600. There are a few Germans, a fair number of Mordvinians, Chuvashes and Tatars, but they are inferior to all the Russian. 5% belong to the Orthodox Greek Church, 5% are Non-Confessing Russians, 3% are Non-Orthodox Non-Confessing Russians, 2% are Non-Orthodox Non-Confessing Jews, 2% are Non-Orthodox Non-Confessing Roman Catholics. The government is divided into ten districts, the chief towns of which, with their populations in 1897, are Saratov (q.v.), Atkarsk (1897), Balashov (12,160), Kamышин (16,834), Khvalynsk (15,545), Kuņnetsk (21,740), Petrovsk (13,212), Serdobsk (12,721), Tsaritsyn (67,650 in 1900) and Volg (27,572 in 1900). Education makes some progress: in 1897, 40% of the military recruits were able to read, as against 21% in 1874. The proportion of illiterate women, however, continues very large. Of the total area, 12% belonged to the peasants in 1896, 38% to private landowners, 5% to the crown and 5% to the impoverished inhabitants of the municipal authorities; the peasants, however, are constantly buying a large number of the holdings and even the landed properties. Quantities. Green crops are being cultivated more widely, both on the private estates and among the peasants. Agriculture suffers, however, very much from droughts, and the attacks of marmots, mice and insects. The principal crops are wheat, rye, oats, barley, potatoes and beetroot, with some tobacco and fruit. Oil-yielding plants are cultivated; linseed in all districts except Tsaritsyn; and mustard, both for grain and oil, extensively about Sarepta and in the Kamysnshin district. Gardening is nothing uncommon round Saratov, Volg, Atkarsk and Kamysnshin, the cucumbers, melons and watermelons being especially famous. Fishing and the preparation of caviare are of some importance at Kamysnshin and elsewhere. Live-stock breeding is declining. On the other hand, the export trade in poultry, especially geese, has developed greatly. The factories comprise mainly steam flour-mills, oil-works, distilleries, oil-mills, timber-mills, tanneries, fur-dressing works and tobacco factories. Weaving, the fabrication of agricultural machinery and pottery, boot-making, &c., are carried on in the villages. The government of the hour have lost much of their importance; that at Bekovo, high in the Emily district around Saratov, Volg, Atkarsk and Kamysnshin, has lost its ground, especially as regards cattle and animal products. The peasants are no better off than those of the other governments of south-east Russia (see SAMARA). Years of scarcity are common, and many peasants leave their homes in search of work on the Volga and elsewhere. An active trade is carried on in corn, hides, tallow, oils, exported; the merchants of Saratov, moreover, are intermediaries in the trade between south-east Russia and the central governments. The chief ports are Saratov, Tsaritsyn, Kamysnshin and Khvalynsk. The German colony, on the Volga near Saratov, is a lively little town with 5690 inhabitants, which carries on an active trade in mustard, woolen cloth and manufactured wares.

The district of Saratov has been inhabited since at least the Neolithic period. The inhabitants of a later epoch have left numerous bronze remains in their kurgans (burial-mounds), but their ethno-geographic position is still uncertain. In the 8th and 9th centuries the nomad Burtases peoples peopled the territory and recognized the authority of the Khazar princes. Whether the Burtases were the ancestors of the modern Moslems is not yet been determined. At the time of the Mongol invasion in 1239-1242, the Tatars took possession of the territory, and one of their settlements around the Khan's palace at Urek, 10 m. from Saratov, seems to have had some importance. Even in 1648, the Muscovy troops of Don and Petrovsk were founded about the end of the 17th century, and a palisaded wall was erected between the Volga and the Don. Regular colonization may be said to have begun only at the end of the 18th century, when Catherine II. called back the runaway discontented, invited German colonists and ordered her courtiers to settle here their serfs, deported from central Russia.

SARATOV, a town of Russia, capital of the government of the same name, on the right bank of the Volga, 513 m. by rail S.E. of Moscow. It is one of the most important cities of eastern Russia, and is picturesquely situated on the side of hills which come close down to the Volga. One of these, the Sokolovo (360 ft.), is liable to frequent landfalls, and is a continual source of danger. The city is divided into three parts by two ravines; the outer two may be considered as suburbs. A large village, Pokrovsk (pop. 20,000), situated on the opposite bank of the Volga, though in the government of Samara, is in reality a suburb of Saratov. Apart from this suburb, Saratov had in 1892 a population of 114,340 (41,660 in 1830, 66,500 in 1896 and 143,431 in 1900. It is the see of an Orthodox Greek bishop and of a Roman Catholic bishop, and is better built than many towns of central Russia. Its old cathedral (1697) is a very plain structure, but the new one, completed in 1825, is fine, and has a
striking campanime. The theatre and the railway station are also fine squares. The streets are wide and regular, and there are several broad squares. A new fine-art gallery was erected in 1884 by the painter Bogolubov, who bequeathed to the city his collection of modern pictures and objects of art. A school of drawing and the public library are in the same building, the Radishchev Museum.

Art, culture, and science support a section of the population. The cultivation of the sunflower deserves special mention. Of the manufacturing establishments the distilleries rank first in importance; next come the liqueur factories, flour-mills, oil-works, railway workshops and tobacco-factories. The city has a trade not only in corn, oil, hides, tallow, woollen cloth, wool, fruits and various raw produce exported from Samara, but also in salt from the Crimea and Astrakhan, in iron and steel, and wood, the chief items of which are sappy wood and cypress. Of these the highest peaks are: Batu Puteh (5400 ft.), Tebang (10,000 ft.), Batu Bulan (7000 ft.), Ubat Siko (4000 ft.), Bela Lawing (2000 ft.) and Batu Lehin (6000 ft.), from which the Rejang and Barumun rivers, on the one side, and Sarawak, on the Dutch side, take their rise. North of Sarawak is the Pambai mountain range (8000 ft.) whence fly the rivers Limbang and Trusian, and Longman mountain range (9000 ft.) whence flow the rivers Barumun and Ranau. The interior is mountainous, the greatest elevations being Mount Mulu (9000 ft.), of limestone formation, Batu Lawei (8000 ft.), Pambai (8000 ft.), Kahulong, Duht, Poht and Penirism. The Rejang is the largest river, the largest of the river mouths of the Batang Litar third and the Limbang fourth. The Rejang is navigable for small steamers for about 160 m., the Baram for about 100 m., but there is a remarkable bar at the mouth of the Baram, the chief town of Sarawak, Kuching, with a population of about 30,000, is situated on the Sarawak river 20 m. from its mouth, and can be reached by steamers of a thousand tons.

The fauna is rich. The most important mammals are the macias, or orang utan, the gibbon, the proboscis, semnopithecus and macacus monkeys; lemurs, cats, otters, bears, porcupines, wild pigs, wild cattle, deer and pangolin. Bats, shrews, rats and squirrels are in abundance. Among the birds the greater parts of the species of birds in the avian class here breed in great numbers. The budgies are found along the coast. Of birds, Sarawak has over five hundred species; fish and reptiles are abundant; the jungle swarms with wild game, and the sea with fish and marine reptiles.

The mineral wealth gives promise of considerable development. The Borneo Company for some years has successfully worked gold from the quartz reefs at Bat, on the Sarawak river, by the cyanide process, and as well as from the gold-mines of Malakka, also occurs in pockets in various localities, notably at Sariki, in the Rejang district, and at Burok Buang and Tepak, in the Baram district and in the river Atun. Cinablar has also been found in small quantities at the mouth of Mount Mulu. Sapphires of good quality, but too small to be of commercial value, are found in large numbers in the mountain streams of the interior. Sago is raised at Sarawak and reprinted, and the streams about the town of Mount Mulu. Sapphires of good quality, but too small to be of commercial value, are found in large numbers in the mountain streams of the interior. Sago is raised at Sarawak. Sugar is produced on and exported from the island.

Timber is one of the most valuable products, but with the except of bilian (iron wood) from the river Rejang, little is exported. The most important timbers are bilian, merape, rasuk, krianj, benua, pintang, gerunggak, medang, meranti and lapor. Except near the banks of the rivers, which have been cleared by the natives for farming purposes, the whole country is thickly clothed with forest.

In 1904 the total trade of Sarawak (Foreign and Coastwise) reached a value of $15,464,241 as compared with $5,544,200 in 1890. The remarkable increase in trade is shown by the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>$84,370</td>
</tr>
<tr>
<td>1904</td>
<td>$1,819,200</td>
</tr>
</tbody>
</table>

The revenue increased from $457,596 in 1904 to $1,321,879 in 1904; and the expenditure increased in the same period from $486,533 to $1,225,384. The Public Debt of Sarawak on the 1st January 1905 was $25,000.

The position of the state, in addition to a small number of British officials and others, a few natives of British India, and a large number of Chinese traders and pepper planters, consists of semi-civilized Malays in the towns and villages of the coast districts and of a number of wild tribes of Indonesian affinities in the interior. Of these the most important are the Dyaks, Milansau, Kayans, Kenyahs, Kadaysans and Muruts. No census has ever been taken. "Without the Chinaman," said the Raja (Pal Mall Gazette, 20th September 1883), "we could do nothing. When all else have retired to the country in the evening he is there and we cannot get away from him." The Milansau, who live in the northern districts, have adopted the Malay-dress, and in many cases have become Mahomedans; they are a contented and laborious people. Slavery has been abolished, except among certain of the inland tribes among whom it still obtains in a very mild form:
head-hunting has been entirely suppressed among the Dyaks.

The government consists of the rajah (the succession is hereditary) who is absolute, assisted by a supreme council of seven, consisting of the three chief European officials and four Malay magistrates, nominated by him. There is also a general council of fifty which meets every three years. It includes, besides European and Malay officials, native chiefs chosen from all the principal tribes of the country. The whole country comprises four administrative divisions, each of these being divided into districts. The principal districts of Sarawak proper, which comprises the districts of the river Sarawak, and those of Lundu and Sadong. The second division is formed by the Batang Lupar, Saribas and Kelakak districts. The third division consists of the Rejang, Mukah, Oya and Bintulu; the fourth of the Baram, Limbang, Trusan and Lawas districts. The military force—some 250 men, Dyaks and Sikhs—is under the control of an English commandant. There is also a small police force, and the government possesses a few small steam vessels. The civil service is regularly organized, the officers number, are filled by Englishmen. There are both Roman Catholic and Protestant missions in Sarawak, the latter forms part of the see of the bishop of Singapore. Sarawak is easily accessible from Singapore, whence the passage occupies about forty-six hours; steamers run at intervals of seven days. The coast is well lighted, lighthouses having been built and maintained in good order at Tanjong Fo, Sirik, Mukah, Oya, Tanjong, Kidurong, Baram Mouth and Brooketon. The climate is equable, the daily temperature ranging on the average between 76° and 90°. The nights are generally cool. The rainfall averages about 900 in. annually. It is lightest during the north-east monsoon (October—March), but continues through the south-west monsoon, which blows for the rest of the year.

History.—In 1839-1840 Sarawak (which then comprised only the two divisions now constituting the first and second divisions), the most southern province of the sultanate of Brunei, was in rebellion against the tyranny of the Malay officials, insufficiently controlled by the rajah Muda Hassim. The insurgents held out at Bidor fort in the Sinlauan district, and there Sir James Brooke first took part in the affairs of the territory. By his assistance the rebellion was suppressed, and, on 50th or 24th Muda Hassim resigned in his favour and he became rajah of Sarawak. In 1843-1844 Captain (afterwards Admiral Sir Henry) Keppel (q.v.) and Raja Brooke expelled the Malay and Dyak pirates from the Saribas and Batang Lupar rivers, and broke up the fleets of Lanun pirates, which, descending from the Sulu Islands and the territory which is now British North Borneo, had long been the scourge of the seas.

In 1857 the Chinese, who for many generations had been working the alluvial deposits of gold in Upper Sarawak, sacked Kuching, killed two or three of the English residents and seized the government; Raja Brooke narrowly escaping with his life. He repelled, afterwards raja, quickly raised a force of Malays and Dyaks in the Batang Lupar district and suppressed the insurrection, driving the main body of the rebels out of the Sarawak territory. Raja Sir Charles Johnson Brooke (b. 1829) succeeded his uncle at his death in 1868; in 1888 he was created G.C.M.G. and Sarawak was made a British Protectorate, and in 1904 the position of his highness as raja of Sarawak was formally recognized by King Edward. His eldest son, the raja Muda (Charles Vyner Brooke, b. 1874), has for some years taken part in the administration of the country.

The extent of the raja of Sarawak, at the time when Sir James Brooke became its ruler, was not more than 7000 sq. m.; since that time the basins of the four rivers, Rejang, Muka, Baram and Trusan, have been added. The sultan of Brunei, who claimed suzerainty over them, ceded them on successive occasions in consideration of annual money payments. A few years after these cessions had been made many of the people of the river Limbang rose in rebellion against the sultan, and their territory was annexed by Sarawak, with the subsequent approval of the British government. In 1905 the basin of yet another river, the Lawas, was added to the northern end of Sarawak, the territory being acquired by purchase from the British North Borneo Company.

See Charles Brooke, Ten Years in Sarawak (1866); Gertrude L. Jacob, The Raja of Sarawak (1876); Spencer St John, Life in the 'Forests of the Far East' (1862), and Life of Sir James Brooke (1879); A Guide to Sarawak, ' Proc. Soc. Geogr. (1883)' by W.M. Crooke, 'In the Heart of Borneo,' Proc. Roy. Geogr. Soc. (July 1900), by Charles Hose; and The Far Eastern Travels (1903), by Alleyn Ireland.

SARCASM, an ironical or sneering remark or taunt, a bitting or satirical expression. The word comes through the Latin from the Greek σαρκός, literally to tear flesh (σαρέξ) like a dog; hence, figuratively, to bite the lips in rage, to speak bitterly (cf. Stobaeus, Eclog. ii. 222). The etymology of this may be paralleled by the English "sneer," from Dan. snare, to grin like a dog, cognate with "snarl," to make a rattle sound in the throat, Gron. schnarren, and possibly also by "sardonic." This latter word appears in Greek in the form χαράνλος, to draw back, i.e. the lips, like a dog, but was usually explained (by the early scholars and commentators) as referring to a Sardinian plant (Ranunculus Sardous), whose bitter taste screwed up the mouth. Thus, later Greek writers wrote Sardonous, and it was adopted into Latin; cf. Servius on Virg. Ecl. vii. 41 "immo ego Sarduls videb iniam anerior herbis.

SARCEY, FRANCISQUE (1827-1899), French journalist and dramatic critic, was born at Douvran (Seine-et-Oise), on the 8th of October 1827. He spent some years as schoolmaster, but his temperament was little fitted to the work. In 1858 he devoted himself to journalism. He contributed to the Figaro, L'Illustration, Le Gaulois, Le XIXe Siècle and other periodicals; but his chief bent was towards dramatic criticism, of which he had his first experience in L'Opinion nationale in 1859. In 1869 he began to contribute to Le Temps the "feuilleton" with which his name was associated till his death. His position as dictator of dramatic criticism was unique. He had the secret of taking the public into his confidence, and his pronouncements upon works in progress were always accepted as final. He was a masterly judge of acting and of stage effect; his views as to the drama itself were somewhat narrow and indifferent to the march of events. He published several miscellaneous works, of which the most interesting are Le Siège de Paris, an account compiled from his diary (1871), Comédiens et comédiennes (1878-1884), Souvenirs de jeunesse (1884) and Souvenirs d'âge mûr (1902; Eng. trans., 1893). Quarante ans de théâtre (1900, &c.) is a selection from his dramatic feuilletons edited by A. Brisson. He died in Paris, on the 16th of May 1899.

SARCOCARP (Gr. σαρκός, flesh, κάρπος, fruit), a botanical term for the succulent and fleshy part of a fruit.

SARCODINA, a principal group or phylum of Prostists, defined by O. Bîtschil as those which during their active and motile existence discharge the functions of motion and nutrition by simple flowing movements of their protoplasm or by the extension of simple pseudopods, which merge without trace into the protoplasmic body (Bronn's Tierrich, vol. i. pt. i., 1883). Thus defined, it is co-extensive with the older group Rhizopoda (Dujardin), and comprises five classes: Protozoa (Lankester), Rhizopoda (Dujardin), Foraminifera (d'Orbigny), Heliozoa (Dujardin), and Rhizaria (Valenciennes). The delimitation of Sarcodina is not unattended with difficulties. A very few of those we include possess in addition to the pseudopods one or more flagella, such as Dimorphos and Myxophyris (Heliozoa), Arcuathris (Rhizopoda), and might equally be referred to the Flagellata (q.v.). The Sporozoa differ in that their active state is usually (not always, e.g. Haemopordia, &c.) a wriggling, sickle-shaped cell, that growth takes place in the whole surface of the body, and not by ingestion of food and consequently without the active deformations that characterize Sarcodina.

SARCASM, and...
and that the life-cycle embraces at least two alternating modes of brood formation.

The subdivision of the phylum is no less difficult. The character of the pseudopods (see Amoeba) is the most obvious one to select, as it appears to be fairly constant. The surface may be a "precipitation-pellicle," not wetted by water, and the cytoplasm immediately within ("ecotorse") free from granules, so that no streaming movement is visible at the surface of the pseudopods, which are blunt or taper sharply to a point (Rhizopoda Lobosa) or the cytoplasm has no such protective outer layer, and the granules extend to the surface where they show a constant streaming, and the pseudopods are fine-pointed, and taper very slowly to the tip, as in all the other groups. For convenience, however, from general similarity of habit, habitat and general structure, we have been obliged to give a minor importance to this character within Rhizopoda. The divisions then stand thus:

1. PROTOZOA.—Pseudopods fine granular, not branching freely; fusion usually multiple, in a cyst; no conjugation process known.

2. RHIZOPODA.—Simple forms, sometimes with a simple shell, chitinous, siliceous or of cemented particles, never calcareous; pseudopods lobose, in the tapering and branching never either stiff or reticulate.

3. HELIOZOA.—Pseudopods granular, finely radiate, and gradually tapering, stiff; skeleton variable, never calcareous nor of cemented particles.

4. FORAMINIFERA.—Pseudopods branching freely and anastomosing, flexible except in a few pelagic forms where they are more radiate; mostly in the sand-grains, calcareous, very rarely siliceous in a few deep-sea forms, not generally separable from

5. RADIALIARIA.—Cytoplasm divided into a central and a peripheral region by a perforated membranous central capsule; pseudopods radiate flexible branching or not; skeleton either of a proteid (?) substance ("a canthin") or siliceous, of spicules or forming an elegant lattice, more rarely continuous.

6. LABYRINTHILOIDEA.—Body a reticulate plasmodium, formed by cells more or less coalescent, and connected by a network of anastomosing threadlike pseudopods. Cells aggregated into loose masses without distinct boundaries, the minor aggregates connected by fine threadlike pseudopods.

7. MYXOMYCETES.—Cells at first free, finally aggregated to form a coalescent fructification, usually preceded by a continuous or fenestrated plasmodium stage in which all cytoplasmic boundaries may be lost.

The reproduction processes of the Sarcodina are (1) Binary fission, equal or nearly so. (2) Multiple fission or "sporulation" (also termed "brood formation"). Conjugation (equal or unequal) usually occurs between cells produced by the latter mode (microgametes); or if not, there are antecedent processes suggesting that brood formation has been lost. Conjugation is entirely unknown in Protooymyxa, Labyrinthioidea and Myxomycetes, even at stages where it occurred in other groups, and it has been definitely made out in a very limited number of genera in the remaining groups. The zygote or product of cell fusion is usually here, as in the majority of types of conjugation, a resting cell. (See the separate articles on the classes.)

The young of the Sarcodina, formed from the outcome of multiple fission, or single resting cells (spores), may be provided with pseudopodia from the first (myxopods or amoebulae), or come into active life for a short time with flagella (mastigopods or flagellulae).

LITERATURE.—Batsch in Bronn’s Tierreich, vol. 1, pt. i. (1882); Y. de Laubenfels and E. Hérouard, Traité de zoologie conchologique, vol. 1, La Cellule et les protozoaires (1896); A. Lang, Handb. der Zoologie, ed. 2, pt. i. "Protozoen" (1902); M. Hertog, Cambridge Natural History, vol. 1. (1906); in the first four books full bibliographies are given.

(S. H.)

SARCOPHAGUS.—SARDARPUR

SARCOPHAGUS sardarpur (Gr. sarkophagos, literally "flesh-eating," from σαρξ, flesh, φαγεῖν, to eat), the name given to a coffin in stone, which on account of its caustic qualities, according to Pliny (H. N. xxxvi. 27), consumed the body in forty days; also by the Greeks to a sepulchral chest, in stone or other material, which was more or less enriched with ornament and sculpture. One of the finest examples known is the sarcophagus of Seti, the second king of the XIX. Egyptian dynasty (1343-1300 B.C.), which is carved out of a block of Aragonite or hard carbonate of lime, now in the Soane Museum; of later date are the green porphyry sarcophagus and the terra-cotta sarcophagi from Clazomenae; both of these date from the early 6th century B.C., and are in the British Museum. The finest Greek examples are those found at Sidon in 1887 by Hamdy Bey, which are now in the Imperial Museum at Constantinople (see Greek Art). Of Etruscan sarcophagi there are numerous examples in terra-cotta; occasionally they are miniature representations of temples, and sometimes in the form of a couch on which rest figures of the deceased; one of these in the British Museum dates from 500 B.C. The earliest Roman sarcophagus is that of Scipio in the Vatican (3rd century B.C.), carved in peperino stone. Of later Roman sarcophagi, there is an immense series enriched with figures in high relief, of which the chief are the Niobid example in the Lateran, the Lycomedes sarcophagus in the Capitol, the Penthesilea sarcophagus in the Vatican, and the immense sarcophagi representing a battle of the Romans and the barbarians in the Museo delle Terme. In later Roman work there was a great decadence in the sculpture, so that in the following centuries recourse was had to the red Egyptian porphyry, of which the sarcophagi of Constantia (A.D. 355) and of the empress Helena (A.D. 580), both in the Vatican, are fine examples. Of later date, during the Byzantine period, there is a large series either in museums or in the cloisters of the Italian churches. They are generally decorated with a series of niches with figures in them, divided by small attached shafts with semicircular or sloping covers carved with religious emblems, one of the best examples being the sarcophagus of Sta Barbara, dating from the beginning of the 6th century, at Ravenna, where there are many others. The term sarcophagus is sometimes applied also to an altar tomb.

SARD, a reddish-brown chalcedony much used by the ancients as a gem-stone. Pliny states that it was named from Sardis, in Lydia, where it was first discovered; but probably the name came with the stone from Persia (Pers. sard, yellowish-red). Sard was used for Assyrian cylinder-seals, Egyptian and Phoenician scarabs, and early Greek and Etruscan gems. The Hebrew odem (translated sardius), the first stone in the High Priest’s breastplate, was a red stone—probably sard, but perhaps carnelian or red Jasper (see J. Taylor, "Sardius," in Hastings’s Dict. Bibl.). Some kinds of sard closely resemble carnelian, but are usually rather harder and tougher, with a duller and more hackly fracture. Mineralogically the two stones pass into each other, and indeed they have often been regarded as identical, both being chalcedonic quartz coloured with oxide of iron. The range of colours in sard is very great, some stones being orange-red, or hyacinthine, and others even golden, whilst some present so dark a brown colour as to appear almost black by reflected light. The hyacinthine sard, resembling certain garnets, was the most valued variety among the ancients for ornaments, and intaglios. Dark-brown sard is sometimes called "sardine," or "sardine," whilst certain sards of yellowish colour were at one time known to collectors of engraved gems as "beryl."

SARDANAPALUS, or SARDANAPALLUS, according to Greek fable, the last king of Assyria, the thirteenth in succession from Ninjas. The name is derived from that of Assur-dan-pal, the rebel son of Shalmaneser II., whose reign ended with the fall of Nineveh in 625 B.C. (or perhaps from that of Assur-dan III., the last king but one of the elder Assyrian dynasty); his character is that ascribed to Assur-bani-pal. He was the most effeminate and corrupt of a line of effeminate princes; hence Arbaces, satrap of Media, rebelled and, with the help of Belus, the Babylonian priest, besieged Nineveh. Sardanapalus now threw off his sloth and for two years the issue was doubtful. Then, the Tigris having undermined part of the city wall, he collected his wives and treasures and burned them with himself in his palace (880 B.C.). His fate is an echo of that of Samas-sum-yukin, the brother of Assur-bani-pal (q.v.).

See J. Gilmore, Fragments of the Persia of Ktesias (1888).

(S. H.)

SARDARPUR, a British station in Central India, within the state of Gwalior, on the Mahi river, 58 m. by road E. of Mhow;
SARDHANA—SARDINA

pop. (1901) 2783. It is the headquarters of the political agent for the Bhopawar agency, and of the Malwa Bilh corps, originally raised in 1837 and recently converted into a military police battalion.

SARDHANA, a town of British India, in Meerut district of the United Provinces, 12 m. by rail N.W. of Meerut. Pop. (1901), 12,467. Though now a decayed place, Sardhana is historically famous as the Bargum Samar (d. 1836). This extraordinary woman was a Mussulman married to Reinhardt or Sombro (Samru), the perpetrator of the massacre of British prisoners at Patna in 1793. On his death in 1798 she succeeded him in the command, and was, as she was baptized into the Roman Catholic Church, and bequeathed an immense fortune to charitable and religious uses. She built in Sardhana a Roman Catholic cathedral, a college for training priests, and a handsome palace.

SARDICA, COUNCIL OF, an ecclesiastical council convened in 343 by the emperors Constantius and Constans, to attempt a settlement of the Arian controversies, which were then at their height. Of the hundred and seventy bishops assembled, about ninety were Homouians—principally from the West—while on the other side were eighty Eusebians from the East. The anticipated agreement, however, was not attained; and the result of the council was simply to emblify the relations between the two great religious parties, and those between the Western and Eastern halves of the Empire. For as Athanasius and Marcellus of Ancyra appeared on the scene, and the Western bishops declined to exclude them, the Eusebian bishops of the East absolutely refused to discuss, and contented themselves with formulating a written protest addressed to numerous foreign prelates. That they instituted a rival council of their own in Phileipopolis is improbable. The bishops, however, who remained in Sardica (mod. Sega in Bulgaria) formed themselves into a synod, and naturally declared in favour of Athanasius and Marcellus, while at the same time they anathematized the leaders of the Eusebian party. The proposal to draw up a new creed was rejected.

Especially important attaches to this council through the fact that Canons 3-5 invest the Roman bishop with a prerogative which became of great historical importance, as the first legal recognition of his jurisdiction over other sees and the basis for the further development of his primacy. "In order to honour the memory of St. Peter," it was enacted that any bishop, if deposed by his provincial synod, might appeal to the bishop of Rome, who was then at liberty either to confirm the first decision or to order a new investigation. In the latter case, the tribunal was to consist of bishops from the neighbouring provinces, assisted— if he so chose—by the metropolitan of the see to which the appeal was made. The clauses thus made it possible for the bishop of Rome president of a revisionary court; and afterwards Zosimus unsuccessfully attempted to employ these canons of Sardica, as declared by the Canons of the Council of auxiliaries. But it was not the Canons of Sardica which, ages were cited to justify the claim of the papacy to be the supreme court of appeal. Attacks on their authenticity have been conclusively repelled.


SARDINIA (Gr. Σαρδίνη, from a fancied resemblance to a footprint in its shape, Ital. Sardegna), an island of the Mediterranean Sea, belonging to the kingdom of Italy. It lies 75° S. of Corsica, from which it is separated by the Strait of Bonifacio, which is some 50 fathoms deep. The harbour of Golfo degli Aranci, in the north-eastern portion of the island, is 138 m. S.W. of Civitavecchia, the nearest point on the mainland of Italy; Sardinia lies between 8° 7' and 69° 42', and extends from 38° 52' to 41° 15' N. The length from Cape Teulada in the S.W. to Punta del Leone in the N. is about 160 m., the breadth from Cape Comino to Cape Caccia about 68 m. The area of the island is 9178 sq. m.—that of the department (compartimento), including the small islands adjacent, being 9294 sq. m. It ranks sixth in point of size (after Sicily) among the islands of Europe, but it is much more sparsely populated.

The island is mountainous in the main, almost continuously so, indeed, along the east coast, and very largely granitic, with a number of lofty upland plains in the east, and volcanic in the west. The highest point in the north-east group of the island (called Gallura) is Monte Limbara (4468 ft.), S.E. of Tempio. This mountain group is bounded on the S.E. and S.W. by valleys, which are followed by the railways from Golfo degli Aranci to Chiilivani, and from Chiilivani to Sassari. The north-western portion of the island, called the Nurra, lies to the west of Sassari and to the north of Alghero, and is entirely volcanic; so are the mountains to the south of it, near the west coast; the highest point is the Monte Ferru (3448 ft.). East of the railway from Chiilivani to Oristano, on the other hand, the granitic mountains continue. The highest points are Monte Rasu (4127 ft.), S. of Ozieri, in the district called Logudoro, on the chain of the Marghine, which runs to Macomer, and, farther S., in the region called Barbargia, the Punta Blanca Spina, the highest summit of the chain of Gennargentu (6016 ft.). These two groups are divided by the deep valley of the Tirso, the only real river in Sardinia, which runs 50 m. from the sea to the Capo Carbonara, at the S.E. extremity of the island. South of Oristano and west of the districts last described, and traversed by the railway from Oristano to Cagliari, is the Campidano (often divided in ordinary nomenclature into the Campidano of Oristano and the Campidano of Cagliari), a low plain, the watershed of which, near S. Gavino, is only about 100 ft. above sea-level. It is 60 m. long by 7-14 broad, and is the most fertile part of the island, but much exposed to malaria. South-west of it, and entirely separated by it from the rest of the island, are the mountain groups to the north and south of Oristina, where the famous Marras, the Punta Perda di Sa Miel, rises (4055 ft.), and the latter, in the district known as the Sulcis, reaches 3691 ft. It is in this south-western portion of the island, and more particularly in the group of mountains to the north of Oristina, that the mining industry of Sardinia is carried on.

The scenery is fine, but wild and desolate in most parts, and of a kind that appeals rather to the northern genius than to the Italian, to whom, as a rule, Sardinia is not attractive. The railway between Mandas and Tortoli traverses some of the holdest scenery in the island, passing close to the Monte S. Vittoria. The mountains near Oristina are also very fine.

Coast.—The coast of Sardinia contains few seaports, but a good proportion of these are excellent natural harbours. At the north-eastern extremity is a group of islands, upon one of which is the naval station of La Maddalena; farther S.E. is the well-protected Gulf of Orosei, at Terranova, a part of which, Golfo degli Aranci, is the port of arrival for the mail steamers from Civitavecchia, and a port of call of the British Mediterranean squadron. To the south of Terranova there is no harbour of any importance on the east coast (the Gulf of Orosei being exposed to E., and shut in by a precipitous coast) until Tortoli is reached, and beyond that to the Cape Carbonara at the south-east extremity of the island, where the last winter harbour before Cagliari, the most important on the island. In the south-west portion of Sardinia the island of S. Antioco, joined by a narrow isthmus and a group of bridges to the mainland, forms a good natural harbour to the south of the isthmus (the Gulf di Orosei being exposed to the E., and shut in by a precipitous coast) until Tortoli is reached, and beyond that to the Cape Carbonara at the south-east extremity of the island, where the last winter harbour before Cagliari, the most important on the island. In the south-west portion of Sardinia the island of S. Antioco, joined by a narrow isthmus and a group of bridges to the mainland, forms a good natural harbour to the south of the isthmus (the Gulf di Orosei being exposed to the E., and shut in by a precipitous coast).
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streams fall, forming considerable lagoons. For some way beyond the only seaport is Bosa, which has only an open roadstead; and at the southern extremity of the Nurra come the Gulf of Alghero and the Porto Conte to the W., the latter a fine natural harbour but not of great depth. The highest point of the island is the Punta della Capo del Falcone, which is continued to the N.E. by the island of Asinara, about 11 m. in length, the highest point of which, the Punta della Scumonca, is 1339 ft. high. This small island serves as a quarantine for the malaria carriers; it is not far from the Colfo dell' Asinara, is the harbour of Porto Torres, the only one of any importance on the north-west coast of Sardinia.

Geology.—Geologically Sardinia consists of two billy regions of Mesozoic rocks, separated by a broad trench filled with Tertiary deposits. This depression runs nearly from north to south from the Gulf of Asinara to the Gulf of Cagliari. Physically its country is a vast and beautiful plateau which touches a level of 300 ft. above the sea and over which the rivers rise within it, but these are all composed of volcanic rock and are the remains of Tertiary volcanoes. It is in the south that the depression remains most distinct and it is there known as the Campidano. In the north it forms the plain of Sassari. Both to the east and west of this depression the Archean and Palaeozoic rocks which form the greater part of the island are strongly folded, with the exception of the uppermost beds, which belong to the Neogene system. In the eastern region this was the last folding which has affected the country, and the Mesozoic and Tertiary beds are almost undisturbed. In the western region, on the other hand, all the Mesozoic beds are involved in the action; this region is also the most mountainous, and lies nearly horizontal. There were, therefore, two principal epochs of folding in the island, one at the close of the Palaeozoic era which affected the whole of the island, and one at the close of the Mesozoic which produced the western Tertiary depression. The difference of structure there is also a difference in the geological succession. In the western region the all the Mesozoic systems, including the Trias are developed. The Trias does not belong, as it has been expected to the Alpian or Mediterranean, but resembles that of Germany and northern Europe. In the eastern region the Trias is entirely absent and the Mesozoic series begins with the Jurassic.

Granite and Archean schists form nearly the whole of the eastern hills from the Strait of Bonifacio southwards to the Flumendosa river, culminating in Monti del Gemignarto. The Palaeozoic rocks form a vast area of the central and southern coast and extend far into the south-west. They occur also on the extreme north-western coast, in the Nurra. Cambrian, Ordovician and Silurian beds have been found in the Nurra, where Cambrian beds are particularly rich in metaliferous ores (especially galena and calamine). The Permian, which contains workable coal seams, lies unconformably upon the older beds and seems to have been deposited in isolated basins (e.g. in Fondi Corrongiu and San Sebastiano), like those of the Central Plateau of France. The Mesozoic beds are limited in extent, the most extensive areas lying around the Gulf of Orosei on the east and west of Sassari in the north. The Tertiary deposits are less developed than in the western part of the island, and are associated with extensive flows of lava and beds of volcanic ash. The most widely spread of the sedimentary beds belong to the Trias (Jurassic).

Climate.—The climate of Sardinia is more extreme than that of Italy, but varies considerably in different districts. The mean winter temperature for Sassari for 1871-1900 was 48°F., the mean summer temperature 77°F., while the extreme temperatures in each direction were 99°F. and 31°F. The island is subject to strong winds, which are especially felt at Cagliari owing to its position at the south-east end of the Campidano, and the autumn rains are sometimes of almost tropical violence. The lower districts are hot and often unhealthy in the summer, while the climate of the mountainous portion of the island is less oppressive, and would be still cooler if it possessed more forest. There are comparative few streams and no inland lakes. Snow hardly ever falls near the coast, but is abundant in the higher parts of the island, though none remains throughout the summer. The rainfall in the south-west port is much the same as in the north, but the amount in the centre is much less. The mean annual rainfall for Sassari for 1871-1900 was 24.45 in., the average number of days on which rain fell being 109, of which 37 were in winter and only 8 in summer—the latter equal with "alpine" climate.

Malaria.—The island has a bad reputation for malaria, due to the fact that it offers a considerable quantity of breeding places for the Anopholes claviger, the mosquito whose bite converts the sandfly into a sandfly. Such are the various coast lagoons, formed at the mouths of estuaries.


for lack of proper canalization, while much of the harm is also due to the distrust, clueless, and sometimes bigoted attitude of the inhabitants in the upland valleys, and are brought down by violent torrents, carrying the soil with them, and so impeding the proper drainage and protection of these valleys, and encouraging the formation of unhealthy stoppages, which make the island as a whole insufficiently tropical in character. The mortality from malaria in 1902 was higher than for any other part of Italy—1037 persons, or 154 per 100,000, for example in Apulia, 104; Calabria, 77; Sicily, 76; province of Rome, 27.

Customs and Dress.—The population of Sardinia appears (though further investigation is desirable) to have belonged in ancient times, and to belong at present, to the so-called Mediter ranean race (see G. Sergi, La Sardigna, Turin, 1907). In the aeneo- lithic necropolis of Anghelu Ruju, near Alghero, of 63 skulls, 53 belong to the "Sardinian" dolico-mesocephal Architect to 10 a Eurasian brachycephal Architect of Asiatic origin, which has been found in prehistoric tombs of other parts of Europe. The race has probably suffered less here than in most parts of the Mediter ranean basin from foreign intermixture, except for a few Catal an and Genoese settlements on the coast (Alghero and Carloforte are respectively the most important of these); and the population in general seems to have deteriorated slightly since prehis toric times, the average cranial capacity of the prehistoric skulls from the Anghelu Ruju being 1400 c.c. for males and 1308 for females, while among the modern population 60% of males and females together fall below 1250 c.c.; and the stature is generally lower than in other parts of Italy, as is shown by the measurements of the recruits (R. Livi, Antropometria Militare, 1910). The anthropologists, indeed, have recently observed a large proportion of "Dolicho-Mediterranean" skulls in the Sardinian, not found in Sardinia only, but elsewhere in south Italy also; though in Sardinia they are distributed over the whole island, and especially in the southern half. In the province of Cagliari 29-90% of the recruits born in 1862 were under 5 ft. 1 in., and in that of Sassari 21-99% the percentage for ten provinces of south Italy being 24-35. These small individuals present apparently no other differences, and Sergi maintains that the difference is racial, these being the descendants of a race of pygmies who had emigrated from central Africa. But the lowness of stature extends to the lower animals—cattle, horses, donkeys, &c. and this may indicate that climatic causes have some part in the matter also, though Sergi denies this.

The dialects differ very much in different parts of the island, so that those who speak one often cannot understand those who speak another, and use Italian as the medium of communication. They are divided into two main dialects—eastern and western. The western dialects are of the Lucendo type, but is of course much changed. The two main dialects are that of the Logudoro in the north and that of Cagliari in the south of the island.

The climate of the island is very convenient for the cultivation of cotton, as it has not only been raised in the south-east of the island, but in the north as well, where it is raised in large quantities. The cotton is of high quality, and is very popular with British manufacturers. In the north of the island the cotton is raised in large quantities, and is of very high quality. In the south of the island the cotton is raised in smaller quantities, but is of good quality. The cotton is grown in the valleys, and is not affected by the cold winds from the sea. The cotton is harvested in the autumn, and is dried in the sun. The cotton is then ginned, and is then ready for export.
comparatively rarely visited by foreigners, while Italians seem to regard it as almost a place of exile. They have the virtues and defects of a somewhat isolated mountain race—a strong sense of honour and respect for women, of hospitality towards the stranger, and a marked feeling of patriotism, which had an influential part to play in the endless struggle of Sardinia against the outside world. They are also subject to a strong sense of change and lack of enterprise. Despite their poverty begging is practically unknown. The houses are often of one storey only. Chimneys are unknown in the older houses; the hearth is in the centre of the room, which has the disadvantage that it makes the room uncomfortable and dangerous in case of fire. In the mountain villages the parish priest takes the lead among his people, and is not infrequently the most important person.

**Agriculture.**—The rest of the island is mainly devoted to agriculture. The island was once covered with forests, and a total rural population of 708,034 (i.e. deducting the population of Cagliari and Sassari) are occupied in it. Of these 41,661 cultivate the soil, while 3,724,969 are occupied in the raising of cattle and sheep, and no less than 72,753 day labourers; while there are 35,056 shepherds. Emigration is a comparatively new phenomenon in Sardinia, which began only in 1896, but is gaining ground. A considerable part of the island's activity is, however, concentrated round Tunis, where large numbers of Sardinian emigrants have been attracted by the smoking of tobacco in the island. Breeding is unregulated and natural selection prevails.

A more progressive form of pastoral industry is that of the *lanche* (enclosed holdings), in which the owner is both agriculturist and stock-raiser. 26,997,680 sheep and 155,000 goats, the numbers in 1896 having increased to 1,150,983 head in 1905. The island is more extensively reared with stocks of stock than in the previous canvases. The island is not only a great sheep-rearing, but a great wool-growing, country. 19,809,000 sheep and 1,120,000 goats are reared on the island. Breeding is unregulated and natural selection prevails. A more progressive form of pastoral industry is that of the *lanche* (enclosed holdings), in which the owner is both agriculturist and stock-raiser. 26,997,680 sheep and 155,000 goats, the numbers in 1896 having increased to 1,150,983 head in 1905. The island is more extensively reared with stocks of stock than in the previous canvases. The island is not only a great sheep-rearing, but a great wool-growing, country.

Sardinia also possesses a large number of farms and estates, of which the so-called Ogliastra is the chief. The island of Sardinia was one of the chief flocks of cattle and sheep, and the so-called Ogliastra is the chief. 26,997,680 sheep and 155,000 goats, the numbers in 1896 having increased to 1,150,983 head in 1905. The island is more extensively reared with stocks of stock than in the previous canvases. The island is not only a great sheep-rearing, but a great wool-growing, country.

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1. The *herba Sardus*, said to cause the *rana Sardonicus* (sardonic laugh), cannot be certainly identified. (Paussi, xvi, 17, 13.)

2. The Sardinian cattle is small, but make good draught oxen. A considerable amount of wool is produced, and not sufficiently large.

3. Live-Stock.—A considerable portion of Sardinia, especially in the higher regions, is devoted to pasture. The native Sardinian cattle is small, but make good draught oxen. A considerable amount of wool is produced, and not sufficiently large.

4. Of wild animals may be noted the mounfollon (*Ovis Ammon*), the stag, and the wild boar, and among birds various species of the vulture and eagle in the mountains, and the pelican and flamingo (winter coming in August in large flocks from Africa) in the lagoons.

5. Fishery.—The tunny fishery is considerable; it is centred principally in the south-west. The sardine fishery, which might also be important, at present serves mainly for local consumption. Lobsters are exported, especially to Paris. The coral fishery—mainly on the west coast—has lost its former importance. Neither the tunny nor the coral fish is carried on by the Sardinians themselves, who are not successful as fishers in the lagoons of Genoese and the latter of Neapolitans. The unhealthy lagoons contain abundance of fish. The mountain streams often contain salmon.

6. In Roman times Sardinia, relatively somewhat more prosperous than at present, though not perhaps greatly different as regards its products, was especially noted as a grain-producing country. It was also famous for its wine and its olive oil. To these may be added the well-known Sardinian wines, which are amongst the best in Italy. The olive oil produced is mainly used with that from Genoa or Provence, and placed on the market under the name of the latter. Among the natural flora may be noted the wild olive, the lentisk (from which oil is extracted), the prickly pear, the myrtle, broom, cannabis, juniper. Large tracts of mountain are clothed with woolly scrub composed of these and other plants.1 The higher regions are the habitat of the chamois and the ibex. After the destruction of the forests by man and beast, the forests have been largely destroyed by speculators, who burned the trees for charcoal and potash, purchasing them on a large scale from the peasants, who sold them for a very small price. A large proportion of the forests remains to the state, the *ademprivi* was maintained on the lands subject to it, and it was thus to the interest of all that the woods should be maintained. In 1865, however, it was suppressed, and one half of the *bensi ademprivi* was assigned to the state, the other half being given to the commune, with the obligation of compensating those who claimed rights over these lands. Another difficulty is that Italian and foreign capitalists, having produced a great rise in prices which has not been compensated by a rise in wages. The tariff on the importation of wheat from Europe has been passed, but funds are lacking for their execution on a sufficiently large scale. Another difficulty is that Italian and foreign capitalists, having produced a great rise in prices which has not been compensated by a rise in wages. The tariff on the importation of wheat from Europe has been passed, but funds are lacking for their execution on a sufficiently large scale.
the state giving perpetual concessions in return for 3% of the gross production. In 1904-1905, 14,188 workers were employed in the mines of the province of Cagliari. The following table (from the consular report of 1906) shows the amount and value of the minerals extracted, the whole amount being exported:

<table>
<thead>
<tr>
<th>Tons.</th>
<th>Value £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc-Blende</td>
<td>38,748</td>
</tr>
<tr>
<td>Silver</td>
<td>269,811</td>
</tr>
<tr>
<td>Antimony</td>
<td>24,798</td>
</tr>
<tr>
<td>Silver</td>
<td>167</td>
</tr>
<tr>
<td>Manganes</td>
<td>21,632</td>
</tr>
<tr>
<td>Antimony</td>
<td>1,005</td>
</tr>
<tr>
<td>Lignite</td>
<td>15,429</td>
</tr>
<tr>
<td>Anthracite</td>
<td>577</td>
</tr>
<tr>
<td>Copper</td>
<td>98</td>
</tr>
</tbody>
</table>

| Total | 170,236 | 765,054 |

The chief mines are those of Gennamare and Ingortus and others of the group owned by the Pertusola Company, Monteponi and Montevce. The mining and washing plant is extremely good and largely constructed at Cagliari. The most important minerals are lead and zinc, obtained in lodes in the forms of galena and calamine respectively. In most cases, owing to the mountainous character of the country, horizontal galleries are possible. The Monteponi Company smelts its own zinc, but the lead is almost all smelted at the furnaces of Pertusola near Spezia. Silver has also been found in the district of Cagliari, in companies west of Cagliari, has been worked, and antimony and other metals near Lanusei, but in smaller quantities than in the Iglesias district, so that comparatively little mining has as yet been done. Lignite is also mined at Bacu Abis, near Covale, and at Terranova near Sorima.

The salt-pans at Cagliari and of Carloforte are of considerable importance; they are let by the government to contractors, who have the sole right of production, but are subject to the inspection of the government and for Sardinia consumption at 35 centesimi (3½d.) per cwt.; the government does not exercise the salt monopoly in Sardinia any more than in Sicily, but in the latter island the right of manufacture is unrestricted. The total production in 1905 was 1,957,684 tons, and the average price of salt for the island in 1905 was 2½d. per cwt. (ungraded), and 1½d. per cwt. ground; whereas for Italy, where the government monopoly exists, the price is £1, 12s. the cwt.

Commerce.—The total exports of the province of Cagliari in 1905 attained a value of £1,385,735, of which £550,023 was foreign trade, while the imports amounted to £1,085,514, of which £500,758 was foreign trade. Among the exports may be noticed minerals, wines and spirits, tobacco, hides, live animals; and among the imports, groceries, cotton and cereals. The tonnage of the shipping entering and clearing the ports of the province in 1905 was 1,756,866, of which 352,992 was foreign.

Communications.—The railway system of Sardinia is in the hands of two companies—the Compagnia Reale delle Ferrovie Sarde, and the Compagnia delle Ferrovie Secondarie della Sardegna. The former company's lines (of the ordinary gauge) run from Cagliari, past Macomer, to Chilivani (with a branch at Decimomannu for Iglesias and Monteponi). From Chilivani the line to Sassari and Porto Torres diverges to the N.W., and that to Golfo degli Aranci to the N.E. The latter company owns narrow-gauge lines from Cagliari to Mandas (whence lines diverge N. to Sorgono and E. to Tortolì, the latter having a short branch from Gairo to Jerzu), from Macomer E. to Nuoro and W. to Bosa, from Sassari S.W. to Alghero, from Chilivani S. to Tirso (on the line between Macomer and Nuoro), and from Monti (on the line from Chilivani to Golfo degli Aranci) N.W. to Tempio. In the south-western portion of the island are several private railways belonging to various mining companies, of which the lines from Monteponi to Portoscuso and from S. Gurvino to Macomer, are sometimes available for ordinary passengers. There is also a steam tramway from Cagliari to Quartu S. Elena. The trains are few and the speed on all these lines is moderate, but the gradients are often very heavy.

Communication is thus most wanted with the northern and south-eastern extremities of the island, and between Tortolì and Nuoro, and Nuoro and Golfo degli Aranci. The main road system, which dates from 1838, previous to which there were only tracks, is good, and the roads well engineered; many of them are traversed daily by post vehicles. Some road motor services have been instituted. The total length of the railways is 602 m., and of the roads of all classes 3101 m., i.e. 596 yds. per sq. m.

There is daily steam communication (often interrupted in bad weather) with Civitavecchia from Golfo degli Aranci (the mail route), and weekly steamers run from Cagliari to Naples, Genoa (via the east coast of the island), Palermo and Tunis, and from Porto Torres to Genoa (calling at Bastia in Corsica and Leghorn) and Leghorn direct. A fortnightly line also runs along the west coast of the island from Cagliari to Porto Torres. All these lines (and also the minor lines from Golfo degli Aranci to La Maddalena and from Carloforte to Porto Vemse and Calasetta) are in the hands of the Navigazione Generale Italiana, there being no Sardinian steamship company. There is also a weekly French service between Porto Torres and Ajaccio in Corsica.

Administration.—Sardinia is divided into two provinces—Cagliari and Sassari; the chief towns of the former (with their communal population in 1901) are: Cagliari (23,057); Iglesias (20,874); Quartu S. Elena (8,510), really a large village; Oristano (7,107); Fluminimaggiore (6,647); Lanusei (3,250); and the total population of the province is 486,767: while the chief towns of the latter are Sassari (38,153); Alghero (10,741); Ozieri (9,255); Nuoro (9,171); Tempio Pausania (14,573); Terranova Pausania (4,148); Porto Torres (4,225); and the total population of the province 309,026. The density of population is 83.38 per sq. m. (294.55 for the whole of Italy), by far the lowest figure of any part of Italy.

The archiepiscopal sees of the island are: Cagliari (under which are the suffragan sees of Galtelli-Nuoro, Iglesias and Ogliastra), Oristano (with the suffragan see of Ales and Terralba) and Sassari (under which are the suffragan sees of Alghero, Ampurias and Tempio, Bisarcho and Boss). The number of monastic institutions in the island is very small.

Education.—The number of scholars in the elementary schools for 1901-1902 was 59,09 per 1000 (Calabria 42.77, Tuscany 67.09, Piedmont 118.00); the teachers are 1:34 per 1000, a total of 1084 of both sexes (among whom only one priest) (Calabria 1:18, Tuscany 1:29, Piedmont 2:80), while the rural schools are not built up for their purpose. In some of the towns, however, and especially at Iglesias, they are good modern buildings. Still, the percentage of those unable to read and write is 72.8, while for the whole of Italy it is 56.6. The male scholars at the secondary schools amounted in 1900 to 2,74 per 1000 inhabitants. The university of Cagliari, which in 1874-1875 had only 60 students, had 260 in 1902-1903. At Sassari in the same year there were 162. There are besides in the island 10 gymnasia, 3 lycées, 6 technical and nautical schools and institutes (including a school of mines at Iglesias), and 9 other institutes for various branches of special education. A tendency is growing up towards the extension of technical and commercial education in place of the exclusively classical instruction hitherto imparted. To the growth of this tendency the excellent results of the agricultural schools have especially contributed.

Crime.—For the years 1897-1901 statistics show that Sardinia has more thefts and frauds than any other region of Italy (1068.15 for Sardinia and 210.96 per 100,000 inhabitants per annum for the rest of Italy). This is no doubt accounted for by the extreme poverty which prevails among the lower classes, though beggars, on the other hand, are very few, the convictions being 8-5 per 100,000 against 258-15 per 100,000 for Italy, and 30,000 murders, 104,000 thefts, 36,000 forgeries for serious crimes than any other any other compartmentino of south Italy. Public security is considerably improved, and regular brigandage (as distinct from casual robbery) hardly exists. The vendetta, too, is now hardly ever heard of.

Finance.—In 1887 a severe banking crisis occurred in Sardinia. Though harmful to the economic condition of the island, it left agriculture comparatively unaffected, because the insolvency institutions had never fully fulfilled the obligations they had incurred. Agricultural credit operations in Sardinia are carried on by the Bank of Italy, which, however, displays such caution that its action is almost imperceptible. An unusual loan of £300,000 was made on the ruins of the former institutions, but hitherto no charter has been granted it. Institutions possessing a special character are the monti frumentarii, public grain deposits, founded for the purpose of supplying the market in years of scarcity, debt being paid in kind with interest after harvest. But they, too, lack funds sufficient to assure extensive and efficient working, even after the law of 1906. Meanwhile much evil arises from usury in the poorer districts. It is estimated that Sardinia pays, in local and
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In general, direct and indirect taxation of all kinds, 23,000,000 lire (£200,000), a sum corresponding to 35-44 lire per head.

History and Archaeology.—The early history of Sardinia is entirely unknown. The various accounts of Greek writers of the early colonizations of the island cannot be accepted, and it appears rather to have been the case that though there were various schemes formed by Greeks for occupying it or parts of it (e.g. that recorded by Herodotus i. 170, when it was proposed, after the capture of Phocaea and Teos in 545 B.C., that the remainder of the Ionian Greeks should emigrate to Sardinia) none of them ever came to anything.

On the other hand, the island contains a very large number of important prehistoric monuments, belonging to the Bronze Age, during which it must have been comparatively well populated. The most conspicuous and important of these are the nuraghi (the word is said to be a corruption of muraglie, i.e. large walls, but it is more probably a native word). Of

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Nuraghi Lugheras near Paulilatino, or the Nuraghe de S'Orcu near Domusnovas, the entrance may be protected by a regular system of courtyards and subsidiary nuraghi. Roughness of construction cannot be regarded as a proof of antiquity, inasmuch as in some cases we find the additions less well built than the original nuraghe; and it is often clear from the careful work at points where it was necessary that the lack of finer construction was often simply economy of labour. That the simpler forms, on the other hand, preceded those of more complicated plan is probable. The manner of their arrangement seems to indicate clearly that they were intended to be fortified habitations, not tombs or temples. The niche at the entrance, which is rarely wanting, served, no doubt, for the sentry on guard

From Papers of the British School at Rome, v. 93, fig. 1.

Fig. 1.—Nuraghe of Voes (Plans and Sections).

these there are, as has been estimated, as many as 6000 still traceable in the island. The nuraghe in its simplest form is a circular tower about 30 ft. in diameter at the base and decreasing in diameter as it ascends; it is built of rough blocks of stone, as a rule about 2 ft. high (though this varies with the material employed); they are not mortared together, but on the inside, at any rate, the gaps between them were often filled with clay. The entrance almost invariably faces south, and measures, as a rule, 5 or 6 ft. in height by 2 ft. in width. The architrave is flat, and there is a space over it, serving both to admit light and to relieve the pressure on it from above, and the size decreases slightly from the bottom to the top. Within the doorway is, as a rule, a niche on the right, and a staircase ascending in the thickness of the wall to the left; in front is another similar doorway leading to the chamber in the interior, which is circular, and about 15 ft. in diameter; it has two or three niches, and a conical roof formed by the gradual inclination of the walls to the centre. It is lighted by the two doorways already mentioned. The staircase leads either to a platform on the top of the nuraghe or, more frequently, to a second chamber concentric with the first, lighted by a window which faces, as a rule, in the same direction as the main doorway. A third chamber above the second does not often occur. The majority perhaps of the nuraghi of Sardinia present this simple type; but a very large number, and, among them, those best preserved, have considerable additions. The construction varies with the site, obviously with a view to the best use of the ground from a strategic point of view. Thus, there may be a platform round the nuraghe, generally with two, three or four bastions, each often containing a chamber; or the main nuraghe may have additional chambers added to it. In a few cases, indeed, we find very complicated systems of fortification—a wall of circumvallation with towers at the corners, protecting a small settlement of nuraghe-like buildings, as in the case of the Nuraghe Losa near Abbasanta and the Nuraghe Saurecci near Guspinu; or, as in the

From Papers of the British School at Rome, v. 93, fig. 3.

Fig. 3.—Nuraghe Aiga (Plan and Section).

and would be on the unprotected side of any one coming in; the door, too, is narrow and low, and closed from within. The approach is, as we have seen, often guarded by additional constructions; the fact that the door and window face south is another argument in favour of this theory, and the access from one part of the interior to another is sometimes purposely rendered difficult by a sudden vertical rise of 5 or 6 ft. in the stairs; while the objects found in them—household pottery, &c.—and near them (in some cases silos containing carbonized grain and dolia) point to the same conclusion. Numerous fragments of obsidian arrow-heads and chips are also found in and near them all over the island. The only place where obsidian is known to be found in Sardinia in a natural state is the Punta Trechina, a mountain south-east of Oristano. The choice of site, too, is decisive. Sometimes they occupy the approaches to tablelands, the narrowest points of gorges, or the heads of rivers; sometimes almost inaccessible mountain tops or important points on ridges; and it may be noticed that, where two important nuraghi are not visible from one another, a small one is interpolated, showing that there was a system of signalling from one to another. Or again, a group of them may occupy a fertile plain, a river valley or a tableland, or they may stand close to the seashore. Generally there is, if possible, a water-supply in the vicinity; sometimes a nuraghe guards a spring, or there may be a well in the nuraghe itself.

A final argument is the existence in some cases of a village of circular stone buildings of similar construction to the nuraghi, but only 15 to 25 ft. in diameter, at the foot of a nuraghe, which, like the baronial castle of a medieval town, towered above the settlement.

1 It has been widely believed that the Shardana, who occur as foreign mercenaries in Egypt from the time of Ramses II. onwards, are to be identified with the Sardinians; but the question is uncertain, for there were certainly no Egyptian colonies in Sardinia; the Egyptian objects and their imitations found on the island were brought there by the Phoenicians (W. H. Roscher, Lexikon der griechischen und römischen Mythologie, ii. 922).

2 In neither of these cases have the subsidiary buildings been fully traced out. The plan of the former is given by Pinza (op. cit.), and that of the latter by La Marmora (op. cit.). The latter seen from a distance resembles a medieval castle crowning a hill-top.

3 Those of the Giarba are fully described by A. Taramelli and F. Nissardi in Monumenti dei Lincei, vol. xviii.; Nissardi's map of the Nurra, published by G. Pinza, ibid. vol. xi. sqq., may also be consulted.
FIG. 1.—NURAGHE MELAS, NEAR GUSPINI.

FIG. 2.—NURAGHE LOSA, NEAR ABBASANTA.

FIG. 3.—NURAGHE MADRONE, NEAR SILANUS.

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FIG. 4.—NURAGHE OROLO, NEAR BORDIGHALI.

Photos by Dr T. Ashby.
SARDINIA

They are distributed over the whole island, but are perhaps most frequent towards the centre and in the Nurra. They seem to be almost entirely lacking in the north-east extremity, near Terranova, and in the mountains immediately to the north of Iglesias, though they are found to the north of the Perda de sa Mesi. In the district of Gennargentu they occur, rarely, as much as 3600 ft. above sea-level. The tombs of their inhabitants are of two classes: the so-called tombi dei giganti, or giants' tombs, and the domus de janas, or houses of the spirits. The former are generally found close to, or at least in sight of, the nuraghe to which they belong. They consist of a chamber about 33 ft. or less in height and width, with the sides slightly inclined towards one another, and from 30 to 40 ft., or even more, in length; the sides are composed sometimes of slabs, sometimes of rough walking, while the roof is composed of flat slabs, and the bodies were probably disposed in a sitting position. At the front is a large slab, sometimes carved, with a small aperture in it, through which offerings might be inserted. On each side of this is a curve formed of two rows of slabs or two small walls, the semicircular space thus formed has a diameter of about 45 ft., and was probably intended for sacrifices. The tomb proper was no doubt covered with a mound of earth, which has in most cases disappeared. Close to these tombs smaller round enclosures, about 4 ft. in diameter, covered with a heap of stones, like a small cairn, may sometimes be seen; these were possibly intended for the burial of slaves or less important members of the tribe. Dolmens (probably to be regarded as a simpler form of the tombi dei giganti, inasmuch as specimens with chambers elongated after their first construction have been found) and menhirs are also present in Sardinia, though the former are very rare—that known as Su Perda e Sallarae, near the railway to the south of Macomer is illustrated by A. Taramelli in Bullettino di Paleotologia, xxvii. (1906), 268, but there are others. The latter, however, are widely distributed over the island, being especially frequent in the central and most inaccessible part. The domus de janas, on the other hand, resemble closely the rock tombs of the prehistoric cemeteries of Sicily. They are small grottos cut in the rock. We thus have two classes of tombs in connexion with the nuraghe, and if these were to be held to be tombs also, habitations would be entirely wanting.

Among the most curious relics of the art of the period is a group of bronze statuettes, some found at Uta near Cagliari and others near Teti, west of Fonni, in the centre of the island, of which many specimens are now preserved in the museum at Cagliari.

It is thus clear that in the Bronze Age Sardinia was fairly thickly populated over by far the greater part of its extent; this may explain the lack of Greek archaeological remains for Olbia, the modern Terranova, and Neapolis on the west coast, which must from their names have been Greek, though we do not now know when or by whom they were founded. Pausanias (x. 17. 5) attributes the foundation of Olbia to the Thespians and Athenians under Iolaus, while Solinus (l. 61) states that he founded other cities also. In any case the Phoenician settlements are the earliest of which we have any accurate knowledge. The date of the conquest by Carthage may perhaps be fixed at about 500–480 B.C., following the chronology of Justin Martyr (xviii. 7), inasmuch as up till that period colonization by the Greeks seems to have been regarded as a possible enterprise. The cities which they founded—Corus, Tharros, Suld, Nora, Carales—are all on the coast of the island, and it is doubtful to what extent they penetrated into the interior. Even in the 1st century B.C. there were still traces of Phoenician influence (Cicero, Pro Scauro, 15, 43, 45). There are signs of trade with Etruria as early as the 7th century B.C. The Carthaginians made it into an important grain-producing centre; and the Romans set foot in the island more than once during the First Punic War.

In 336 B.C. the Carthaginian mercenaries revolted, and the Romans took advantage of the fact to demand that the island should be given up to them, which was done. The native tribes opposed the Romans, but were conquered after several campaigns; the island became a province under the government of a praetor or propraetor, to whose jurisdiction Corsica was added soon afterwards. A rebellion in 215 B.C. was suppressed by the Carthaginian general, who was killed by T. Manlius Torquatus (Livy xxii. 40). After this the island began to furnish considerable supplies of corn; it was treated as a conquered country, not containing a single free city, and the inhabitants were obliged to pay a tithe in corn and a further money contribution. It was classed with Sicily and Africa as one of the main sources of the corn-supply of Rome. There were salt-works in Sardinia too as early as 150 B.C., as is attested by an inscription assigned to this date in Latin, Greek and Punic, being a dedication by one Cleon salari(us) socioram (serving) (Corp. Inscr. Lat. x. 7586). We only hear of two insurrections of the mountain tribes, in 181, when no less than 80,000 Sardinian slaves 1 were brought to Rome by T. Sempronius Gracchus, and in 114 B.C., when M. Cacilius Metellus was proconsul and earned a triumph after two years' fighting; but even in the time of Strabo there was considerable brigandage. Inscriptions record the boundaries of the territories of various tribes with outlandish names otherwise unknown to us (Corp. Inscr. Lat. x. 7899, 7936).

Some light is thrown on the condition and administration of the island in the 1st century B.C. by Cicero's speech (of which a part only is preserved) in defence of M. Aemilius Scaurus (q.v.), praetor in 53 B.C. Cicero, speaking no doubt to his brief, gives them a very bad character, adding 'ignomenti alieni socii' (Sardi; credo)

1 The large number of slaves is said to have given rise to the phrase "Sardi venales for anything cheap or worthless."
Augustus, Sardinia and Corsica fell to the share of the senate, but in Augustus' absence they were given to his adopted son Tiberius, and placed them under a praefectus. Tiberius set 4000 Jewish and Egyptian freedmen to the island to bring the brigands to submission (Tac. Ann. ii. 65). Later on two cohorts were quartered there, though it is not certain that this was still under Roman control. Tiberius' inscriptions (tabulae honosae missiionis) of the former and tombstones of the latter found in the island show (C.I.L. x. 777). In A.D. 67 Nero restored Sardinia to the high Roman exchange for Archipania, and the former was then governed by a legatus et praefectus; but Vespasian took it over again before A.D. 78, and placed it under an imperial procurator as praefectus. It returned to Roman tenure under Claudius, when our old friend Aurelius, when we find it governed by a proconsul, as it was under Commodus; the latter, or perhaps Septimius Severus, took it over again and placed it under a procurator as praefectus once more (Oros. ix. 14, 16, 17, 18, 32).

A bronze tablet discovered in 1866 near the village of Esterzili is inscribed with a decree of the time of Otho with regard to the boundaries of the districts, and those of the Cagliari, the Galluras, the Campi, who inhabited the eastern portion of the island. The former had crossed the boundaries of the other two, and was ordered to withdraw immediately under pain of punishment (Corp. inst. Lat. x. 782).

Cales was the only city with Roman civic rights in Sardinia in Pliny's time (when it was considered as unknown) and by far the most important place in the island; a Roman colony had been founded there by Tiberius Libissonis (Porto Torres) and others, later on, at Villasimius.

We hear little of the island under the Empire, except as a granary and as remarkable for its unhealthiness and the audacity of its brigands. Many miles belonged by the time of Pliny the Elder (A.D. 271).

A number of Roman towns are known to us. Besides those already mentioned, including the Phoenician cities (all of which continued to exist in Roman days) the most important were Bosa (q.v.), Byrsa (modern Banyuls), Parallela (modern Olbia), and Othoca (mod. Oristano, q.v.). An interesting group of Roman houses was found in 1878 at Bacu Abis, 5 m. W. of Iglesias, and has been covered up again (F. Vivante in Notizie degli scavi, 1878, 271). The town was securely on the mountainous district in the east centre of Sardinia, in the district of Nuoro, which still exists in the form of Barbagia, goes back to the Roman period, the civitates of Pisan and Corse, and the Ferentum of Tiberius (Corp. inst. Lat. xiv. 2954). The Barbaricen are mentioned in the 6th century A.D. by Procopius, who wrongly derives the name from several thousand Moors and Numidians who were banished to the island by the emperor. The old name of the town (Ferentum) was written in a letter (iv. 23) to Hospito, its chief, as a still pagan race, worshipping stocks and stones. The towns were connected by a considerable network of roads, with a total length of 985 Roman miles according to the Itineraire, the most important of which ran from Cales to Turris Libissonis (Porto Torres) through the centre of the island, passing Othoca (Oristano) and Foro Romano (modern Romea) to the modern Nabalis and railway. A portion of its course, however, between Forum Traiani and the modern Abbasa, is not so followed, and is still preserved, its width is as a rule about 24 ft.; at present its surface is, however, often not wide enough, being a gravel layer, now washed away. Several milestones belonging to it have been discovered, including one of the time of Augustus and another of Diocletian. The one of Augustus is inscribed in Latin and Syracusian, but the one of Diocletian, though it was probably not completed right through until a later period (T. Mommsen in Corp. inst. Lat. x. 833; cf. Eph. epigr. viii. 181-183). A branch from this road ran to Olbia (followed closely by the modern highway and railway also), and it was perhaps the main line of communication, though the Itineraries state that the road from Cales to Olbia ran through the centre of the island by Bosa, Valenza, Sorabile (near Fonni) and Caput Thyrs. Many milestones belonging to the road from Cales to Olbia have been found, but all but one of them (which was seen at Valenza) belong to the portion of the road within 12 m. of the latter place, so there are no certain indications that the road here was identical by either route. The Itineraries give it as 176 m. - the exact distance in English miles by the modern railway! The difference between English and Roman miles would be compensated for by the modern railway, which is laid alongside the Lais, which was also connected with Othoca by a road along the west coast, passing through Tharros, Cornus and Bosa; this road went on to Thibilis (Capo Testa) at the most extreme point of the island and so by the coast to Olbia. This other road ran straight to join the road from Cales to Olbia 16 m. west of the latter.

Carales was also connected with Olbia by a road along the east coast. The farthest corner of the island was served by a direct road from Carales westward through Othoca and Olbia, which the Saracens, after a survival, no doubt, of a Roman post-station ad decimum lapidem, where there is a fine Roman bridge over 100 yds. long of fourteen arches. This road is now only 11 ft. wide. There is also a road through Nora and along the coast past Sidia to Metalla and Neapolis, and thence to Othoca.

After the time of Constantine, the administration of Sardinia was separated from that of Corsica, each island being governed by a proconsul and briefly by a vicarius urbis Romae.

In the Byzantine period it was still set off by Genoese. It was retaken for a short time by Marcellinus, but he finally recovered until the fall of the Vandal kingdom in Africa in 534, by Cyril. In 555 it was taken by Totila, but reconquered after his death by Narses for the Byzantine Empire. Under Byzantium it remained nominally until the 10th century, when we find the chief magistrate still bearing the title of bishop.

4 In the 9th century (720) the period of Saracen invasion began; but the Saracens never secured a firm footing in the island. In 725 Ludoprand purchased and removed to Pavin the body of St. Augustinus of Hippo from Cagliari, another of his which had been brought in the 6th century by the exiled bishop of Hippo. In 819 Sardinia submitted to Louis the Pious, begging for his protection; but the Saracens were not entirely driven out, and about A.D. 1000 the Saracen chief Mustas established himself in Cagliari. Pope John XVIII. preached a crusade in 1004, promising to bestow the temporal power (which was later withdrawn, because the power of the papacy is not absolutely clear) upon whoever should drive out the Saracens. The Pisans took up the challenge, and finally, in 1044, flush out Cagliari with the help of the Genoese in 1024 for the third time. The Saracens were not the isolation of Sardinia, but the pope and the emperor decided in favour of Pisa. Musat returned to the island once more and made every (by the capture of Olbia by the Pisans in 1056, when the domination of Pisa was established.

The island had (probably since the end of the 9th century) been divided into four districts—Cagliari, Arborea, Torres (or Logudoro) and Gallura—each under a giudice or judge, in whom the dignity became hereditary. Judges were already mentioned as existing in the account of the mission sent by Nicholas I. in 809 (Duchesne, Liber pontificalis, ii. 162), as though the single authority of the bishop of Apulia was already weakened. The three Apoxwes who appear in the 10th-century inscriptions just mentioned bear alternately the names Torctorius and Salusius; and, inasmuch as this is the case with the judices of Cagliari from the 11th to the 13th century, there seems no doubt that they were the successors of these Byzantine Apoxwes, who were perhaps the actual founders of the dynasty. These names, indeed, continue even after the Pisan family of Lacon-Massa had by marriage succeeded to the title, and the language occurs in their official seals down to the 13th century. The primogeniture was apparently freely used by the dominant families for the concentration of their power. Thus we find that after the failure of Musat members of the family of Laco-Unali filled all the four judicatures of the island (Taramelli, Archi stor. Sard., cit. 105). In the continual struggles between Pisa and Genoa some of these princes took the side of the latter. In 1164 Barisone, giudice of Arborea, was given the title of king of the island by Frederick Barbarossa, but his supremacy was never effective. In 1241 Adelasia, heiress of Gallura and Logudoro, married as her third wife, the natural son of Frederick II., who received the title of king of Sardinia from his father, but fell into the hands of the Bolognesi in 1249, and

The discharge certificates of sailors from the Classis Misenas and Classis Romanensis belonged to Sardinians who had returned home after serving in the fleet. 3

3 Excavations made in 1880 at Tibula and Sorabile resulted in the discovery of the former of a necropolis of the late Empire, in which the dead were buried in long amphorae, while at the latter Roman inscriptions were explored (F. Vivante in Notizie degli scavi, 1879, 350; 1881, 29 sqq.).
remained a prisoner at Bologna until his death. After this the Pisan supremacy of the island seems to have become more of a reality, but Arborea remained independent, and after the defeat of the Pisans by the Genoese at the naval battle of Meloria in 1364, they were engaged in war with Arborea and Taranto to Genoa. In 1297 Boniface VIII invested James II., the king of Aragon, with Sardinia; but it was not until 1323 that he attempted its conquest, nor until 1326 that the Pisans were finally driven out of Cagliari, which they had fortified in 1305-1307 by the construction of the Torre di S. Pancrazio and the Torre dell'Elefante, and which became the seat of the Aragonese government. To the Pisan period belong a number of fine Romanesque churches, among which may be specially mentioned those of Ardara, S. Gliauto near Oristano, La Trinità di Saccargia and Trattalias (see D. Scano, op. cit. infra).

The Aragonese enjoyed at first the assistance of the giudici of Arborea, who had remained in power; but in 1352 war broke out between Mariano IV. and the Aragonese, and was carried on by his daughter Eleonora, wife of Branca-leone Doria of Genoa, until her death in 1403. Peter IV. had meanwhile in 1355 called together the Cortes (parliament) of the three estates (the nobles, the clergy and the representatives of the towns) for the first time after the model of Aragon. After 1403 the Aragonese became masters of Arborea also. The title of giudici was abolished and a feudal marquisate substituted. The carta de lega (del legato) or code of laws issued by her was in 1421 extended to the whole island by the cortes under the presidency of Alfonso V., who visited Sardinia in that year. In 1478 the marquisate of Oristano was suppressed, and henceforth the island was governed by Spanish viceroys with the feudal régime of the great nobles under them, the Cortes being convoked once every ten years. Many of the churches show characteristic Spanish Late Gothic architecture which survived until a comparatively recent period. The Renaissance had little or no influence on Sardinian architecture and art.

The island remained a Spanish province until the War of the Spanish Succession, when in 1708 Caglirari capitulated to an English fleet, and the island became Austrian; the status quo was confirmed by the peace of Utrecht in 1713. In 1717, however, Cardinal Alberoni retook Cagliari for Spain; but this state of things was short-lived, for in 1729, by the treaty of London, Sardinia passed in exchange for Sicily to the dukes of Savoy, to whom it brought the royal title. The population was at that time a little over 300,000; public security and education being alike lacking, the viceregal government was content with the semi-autonomous states, which reigned in the separate districts on the islands. Matters improved considerably under Charles Emmanuel III., in whose reign of forty-three years (1730-1773) the prosperity of the island was much increased. The French attacks of 1792-1793 were repelled by the inhabitants, Caglirari being unsuccessfully bombarded by the French fleet, and the refusal by Victor Amadeus III. to grant them certain privileges promised in consideration of their bravery led to the revolution of 1794-1796. In 1799 Charles Emmanuel IV. of Savoy took refuge in Cagliari after his expulsion by the French, but soon returned to Italy. In 1802 he abdicated in favour of his brother Victor Emmanuel I., who in 1812 returned to Cagliari and remained there until 1814, when he retired, leaving his brother, Carlo Felice, as viceroy. Carlo was successful in repressing brigands, but he had to deal with much distress from famine. In 1821 he became king of Savoy by the abdication of his brother, and the construction of the highroad from Cagliari to Porto Torres was begun (not without opposition on the part of the inhabitants) in 1822. Feudalism was abolished in 1836, and in 1848 complete political union with Piedmont was granted, under which the vicegeral government being suppressed, and the island being divided into three divisions of which Caglirari, Sassari and Nuoro were the capitals. General A. La Marmora was appointed royal commissioner to supervise the transformation to the new régime.

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SARDONYX

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them by treaty in 1306. Finally in 1390 Philadelphia, which had for some time been an independent Christian city, surrendered to Sultan Bayezid’s mixed army of Ottoman Turks and Byzantine Christians, and the Seljuk power in the Hermus valley was merged in the Ottoman empire. The latest attempt to the Turks to capture (and probable destruction) by Timur in 1402. Its site is now absolutely deserted, except that a tiny village, Sart, merely a few huts inhabited by semi-nomadic Yuruk, exists beside the Pactolus, and that there is a station of the Smyrna & Cassababa railway 1 m. north of the principal ruins.

The ruins of Sardis, so far as they are now visible, are chiefly of the Roman time; but though few ancient sites offered better hope of research by reason of their fine buildings (e.g. to H. Schliemann). On the banks of the Pactolus two columns of a temple of the Greek period, probably the great temple of Cybele, is still standing. More than one attempt to excavate this temple, the last by G. Dennis in 1882, has been made and prematurely brought to an end by lack of funds. In 1904 a few trial pits were sunk by M. Mendel for the Constantinople Museum, and the site was ultimately conceded to an American syndicate, for whom H. C. Butler of Princeton University undertook the task of excavation.

The necropolis of the old Lydia, a vast series of mounds, some of enormous size, of the city of the Hellenistic and Roman ages (1.4 or 5 m. in diameter), on the little south of the sacred Gygeean Lake. Coloc; here the Maecian chiefs, sons, according to Homer, of the lake, were brought to sleep beside their mother. The series of mounds is now a national park, a state of Delos is now a national park.

Three of the ancient mounds, which has been opened by modern excavators, but in every case it was found that treasure-seekers of an earlier time had removed any articles of value which had been deposited in the sepulchral chambers.

SARDONYX, an ornamental stone much used for seals and cameos. It usually consists of a layer of sard or carnelian with one of milk-white chalcedony, but it may present several alternating layers of these minerals. The sardonyx is therefore sometimes spoken of simply as a carnelian; if, however, the latter is present the stone is more appropriately called "a carnelian onyx." It was considered by ancient authorities that a fine Oriental sardonyx should have at least three strata—a black base, a white intermediate zone and a superficial layer of brown or red; these colours typifying the three cardinal virtues—humility (black), chastity (white) and modesty or martyrdom (red). The ancients obtained sardonyx from India, and the Indian locality, Mount Sardonyx, referred to by Petelym, is supposed to have been near Brosch, where agates and carnelians are still worked. In the Revised Version of the Old Testament, Ex. xxvii. 18, "sardonyx" is given in the margin as an alternative reading for "diamond," the word by which the Hebrew yahalom is usually translated. The stone known to the Romans as agyptilla may have been a kind of sardonyx, or perhaps a nicole, which is an onyx with a thin translucent milky layer on the surface. Imitations of sardonyx have been made by cementing together two or three stones of the required colours, while baser counterfeits have been produced in paste. By coating a sard or carnelian with sodium carbonate and then placing the stone on a red-hot iron a white layer may be produced, so that a kind of sardonyx is obtained (see CARNEILIAN). Most of the modern sardonyx is cut from South American agate, modified in colour by artificial treatment.

SARDOU, VICORIEN (1831-1908), French dramatist, was born in Paris on the 4th of September 1831. The Sardou were settled at Le Cannet, a village near Cannes, where they owned an estate, planted with olive trees. A night’s frost killed all the trees and the family was ruined. Victorien’s father, Antoine L’Andre Sardou, came to Paris in search of employment. He was in succession a book-keeper at a commercial establishment, a professor of book-keeping, the head of a provincial school, then a private tutor and a schoolmaster in Paris, besides editing grammars, dictionaries and treatises on various subjects. With all these occupations, he hardly succeeded in making a livelihood, and when he retired to his native country, Victorien was left on his own resources. He had begun studying medicine, but had to desist for want of funds. He taught French to foreign pupils; he also gave lessons in Latin, history and mathematics to students, and wrote articles for cheap encyclopaedias. At the same time he was writing, which contained in the latter part of the days of the Restoration. But she could do little for her protege. Victorien Sardou made efforts to attract the attention of Mlle Rachel, and to win her support by submitting to her a drama, La Reine Ulfa, founded on an old Swedish chronicle. A play of his, La Taverne des etudiants, was produced at the Odéon on the 1st of April 1834, but met with a stormy reception, owing to a rumour that the débuts had been instructed and commissioned by the government to insult the students. The Théâtre des Variétés, under which Sardou, Bernard Palissy, was accepted at the same theatre, but the arrangement was cancelled in consequence of a change in the management.

A Canadian play, Fleur de Liane, would have been produced at the Ambigu but for the death of the manager. Le Bossu, which he wrote for Charles Albert Fechter, did not satisfy the actor; and when the play was successfully produced, the nominal authorship, by some unfortunate arrangement, had been transferred to other men. M Sardou submitted to Adolphe Montigny (Lemoine-Montigny), manager of the Gymnase, a play for which he had written the scenes afterwards so famous, in Nos Intimes. Montigny thought fit to consult Eugène Scribe, who was revolted by the scene in question.

Sardou felt the pangs of actual want, and his misfortunes culminated in an attack of typhoid fever. He was dying in his garret, surrounded with his rejected manuscripts. A lady who was living in the same house unexpectedly came to his assistance. Her name was Mlle de Brécourt. She had theatrical connexions, and was a special favourite of Mlle Déjazet. She nursed him, cured him, and, when he was well again, introduced him to her famous husband, the actor Palissy, the latter, in the meantime, having undertaken that Candide, the first play he wrote for Mlle Déjazet, was stopped by the censor, but Les Premières Armes de Figaro, Monseur Garat, and Les Prés Saint Gervais, produced almost in succession, had a splendid run, and Les Pattes de mouche (1860; afterwards anglicized as A Scrap of Paper) obtained a similar success at the Gymnase. Fédora (1882) was written expressly for Sarah Bernhardt, as were many of his later plays.

He soon ranked with the two undisputed leaders of dramatic art, Augier and Dumas. He lacked the powerful humour, the eloquence and moral vigour of the former, the passion for augmentation of dramatic vitality he was a master of clever and easy flowing dialogue. He adhered to Scribe’s constructive methods, which combined the three old kinds of comedy—the comedy of character, of manners and of intrigue—with the drame bourgeois, and blended the heterogeneous elements into a compact body and living unity. He was no less dexterous in handling his materials than his master had been before him, and at the same time opened a wider field to social satire. He ridiculed the vulgar and selfish middle-class person in Nos Intimes (1861; anglicised as Peril), the gay old bachelors in Les Vieux Garçons (1867), the modern Tartuffes in Stephaite (1868) and the rural element in Nos Bons Villagiesois (1866), old-fashioned customs and antiquated political beliefs in Les Ganaches (1862), the revolutionary spirit and those who thrive on it in Rabags (1872) and Le Roi Carotte (1872), the then threatened divorce laws in Divorçons (1886).

He struck a new vein by introducing a strong historic element in some of his dramatic romances. Thus he borrowed Théodore from Byzantine annals, La Haïne (1874) from Italian chronicles, La Duchesse d’Athènes from the forgotten records of medieval Greece. Patagie (1865) is founded on the rising of the Dutch gueux at the end of the 17th century. The scene of La Sourcière (1904) was laid in Spain in the 16th century. The French Revolution furnished him with three plays, Les Merveilleuses, Thermidor (1891) and Robespierre (1902). The last named was written expressly for Sir Henry Irving, and produced at the Lyceum theatre, as was Dante (1903). The imperial
SARGASSO SEA—SARI

epoch was revived in La Tosca \(1887\) and Madame Sans Gène \(1903\). Later plays were La Peste \(1905\) and Le Drame des poissons \(1907\). In many of these plays, however, it was too obvious that a thin varnish of historic learning, acquired for the purpose, had been artificially laid on to cover modern thoughts and feelings. But a few—Patrie et La Haïne \(1874\), for instance—exhibit a true insight into the strong passions of past ages.

M. Sardou married his benefactress, Mlle de Brécourt, but eight years later he became a widower, and soon after the revolution of 1870 was married a second time, to Mlle Soulé, the daughter of the erudite Eudore Soulé, who for many years supervised the Musée de Vexin, a museum which had been in the French Academy in the room of the poet Joseph Autran \(1813\)–

1877, and took his seat on the 22nd of May 1878. He died at Paris on the 8th of November 1908.

See L. Lacour, Trois théâtres \(1880\); Brandler Matthews, French Dramatists \(New\ York, 1881\); R. Dourrieu, Écritsins d'aujourd'hui \(Paris, 1893\); F. Sarcey, Quatrains ans de théâtre \(vol. VI, 1901\).

SARGASSO SEA, a tract of the North Atlantic Ocean, covered with floating seaweed (Sargassum, originally named sargago by the Portuguese). This tract is bounded approximately by \(25°\) and \(30°\) \(N\), and by \(38°\) and \(60°\) \(W\), but its extent varies according to the season. These seaweeds are brown in the Sargasso Sea is carried and massed together, the original source of supply being probably the Caribbean Sea and Gulf of Mexico (see ALGAE). Similar circumstances lead to the existence of other similar tracts covered with floating weed, e.g. in the solitary part of the Pacific Ocean, north of the Hawaiian islands, between \(30°\) and \(40°\) \(N\) and between \(150°\) and \(180°\) \(W\). There is a smaller tract S.E. of New Zealand, and along a belt of the southern ocean extending from the Falkland Islands, south of Africa and south-west of Australia, similar floating banks of weed are encountered. The Sargasso Sea was discovered by Columbus, who on his first voyage was involved in it for about a fortnight. The widely credited possibility of ships becoming embedded in the weed, and being unable to escape, is disproved by the expedition of the "Michael Sars," under the direction of Sir John Murray and the Norwegian government, in 1910, which found the surface covered with weed only in patches, not continuously.

SARGENT, JOHN SINGER \(1856\)–, American artist, son of a distinguished Boston physician, was born at Florence, Italy, on the 12th of January 1856. He was educated in Italy and Germany, and in 1874 entered the atelier of Carolus-Duran in Paris. He received an "honorable mention" in the Salon of 1878 for his "En route pour la pêche," and in 1881 a second class medal for his "Portrait of a Young Lady" (made famous by Henry James's appreciation). In 1885 his "Carnation, Lily, Lily, Rose," exhibited at the Royal Academy, was bought for the Chantrey Bequest. He rapidly became known in London as a brilliant portrait painter, and year by year his Academy portraits were the leading features of its exhibitions. Though of the French school, and American by birth, it is as a British artist that he won fame by his vogue as the most sought-after portrait painter of the day, his sitters including the greatest in literature, artistic and social life of Europe and America. While best known, and consequently busily employed, as a portrait painter, he had at the same time a disposition towards other, and especially decorative work; his paintings of Britain, Venice and Eastern scenes are less known, but his labour of love, the ornate decorations for the Boston public library (completed in 1903), "The Pageant of Religion," shows the other side of his genius. Among his pictures in public galleries not already mentioned are "El Jaleo" (exhibited 1882), in the Boston Art Museum; "La Carmencita" in the Luxembourg; "Coventry Patmore," in the National Portrait Gallery, London; and "Henry Marquand" \(1887\), in the Metropolitan Museum, New York. He was elected an A.R.A. in 1894, and R.A. in 1897; he was the recipient of various medals of honour, and was made a member of the chief artistic societies of Europe and America.

Adapted as an opera for the music of Puccini (Rome, 14th Jan. 1900).

SARGON, more correctly SARRU-NU ("the legitimate king"), Sargon being a hybrid formation from the Semitic sar and the Sumerian giga ("established"), an Assyrian general who, on the death of Shalmaneser IV, during the reign of Sennacherib, seized the crown on the 12th of TEBET \(722\) B.C. He claimed to be the descendant of the early kings, and accordingly assumed the name of a famous king of Babylonia who had reigned about 3000 years before him. His first achievement was the capture of Samaria, \(27,300\) of its inhabitants being carried into captivity. Meanwhile Babylon had revolted under a Chaldaean prince, Merodach-baladan, who maintained his power there for twelve years. In \(720\) B.C. Yahu-bihdi of Hammath led Arpad, Damasc us and Palath into revolt: this was suppressed, and the Philistines and Egyptians were defeated at Raphia (mod. \(719\) B.C.). Sargon defeated the Minni to the east of Armenia, and in \(717\) overthrew the combined forces of the Hittites and Moschi (Old Testament Meshech). The Hittite city of Carchemish was placed under an Assyrian governor, and its trade passed into Assyrian hands. The following year Sargon was attacked by a great confederacy of the northern nations—Ararat, the Moschi, Tbaarrei; and—in the course of the campaign marched into the land of the Medes in the direction of the Caspian. In \(715\) B.C. Sargon took the chief city and overthrew all thein; their chiefs, Daytuki or Dauukku (Deicides), transported to Hamath. In \(714\) the army of Rusas of Ararat was annihilated, and a year later five Median chiefs, including Arbaku (Arbaces) became tributary. Cilicia and the Tbarerei also submitted as well as the city of Malatia, eastern Cappadocia being annexed to the Assyrian Empire. A league was now formed between Merodach-baladan and the princes of the west, but before the confederates could move, an Assyrian army was sent against Ashdod, and Edom, Moab and Judah submitted to Sargon, who was thus free to turn against Ararat, and Merodach-baladan was accordingly driven from Babylon, where Sargon was crowned king. Shortly after this Sargon sent a statue of himself to Cyprus and annexed the kingdom of Comagene. He was murdered in \(705\) B.C., probably in the palace he had built at Dur-Sargina, now Khorsabad, which was excavated by P. E. Botta. (A.H.S.)

SARI, a town of Persia, in the province of Mazendaran, on the left bank of the Tejen river, 80 m. S.W. of Astarabad. Pop. 10,000. It is the seat of the governor of Mazendaran, and has post and telegraph offices. The town is picturesque but very unhealthy, has stone-paved streets and houses built of brick and covered with green and red glazed tiles.

SARIPUL, or SIRIPUT, a town and khanate of Afghan Turkestan. The town lies 100 m. S.W. of Balkh; estimated pop. 18,000. Two-thirds of the people are Uzbeks and the rest Hazaras. The khanate, which lies between Balkh and Maibana, is one of the "four domains" which were in dispute between Bokhara and Kabul, and were allotted to the Afghans by the Anglo-Russian boundary agreement of 1873.

SIRIPUTTA, one of the two principal disciples of Gotama the Buddha. He was born in the middle of the 6th century B.C. at Nala, a village in the kingdom of Magadha, the modern Behar, just south of the Ganges and a little east of where Patna now stands. His personal name was Upatissa; the name of his father, who was a brahmín, is unknown; his mother's name was Sāri, and it was by the epithet or nickname of Siriputta (that is "Sāri's son"), that he was best known. He had three sisters, all of whom subsequently entered the Buddhist Order. When still a young man he devoted himself to the religious life, and followed at first the system taught by Sāfiyā of the Belatha clan. A summary of the philosophical position of this teacher has been preserved in the Dialogue called The Perfect Net.

According to this account his main tendency was to avoid coming altogether to any decided conclusion on any one of the numerous points then discussed so eagerly among the clansmen in the valley of the Ganges. Early in the Buddhist movement Siriputta had a conversation with one of the men who had just come from the Buddha and who reported to him the new famous stanza. "Of all the things that proceed from a cause, the Buddha the cause hath told; and he tells you how each shall come to an end—such alone is the word of
the Sage." The result was that Sāriputta, with his friend Kolita and other disciples of Saṅgha, asked for admission, and were received into the Buddhist Order. He rapidly attained to mastery in the Buddhist system of self-training, and is declared to have been the chief disciple of the Buddha. It was preserved between the Buddha and a Wanderer named Aggivessana on the nature of sensations; and at the end of that discourse he attained to Arahatship. He is constantly represented as discussing points, usually quite involved, with the Buddha, or with one or other of the more prominent disciples. One whole book of the Sāriputta is therefore called after his name. A number of stories of the early life of Sāriputta, in the Song of the Buddha (Thera-gāthā), and one of the poems in the Sutta Nipāta is based on a question he addressed to the Buddha. Asoka the Great, in his Bhāra Edict, enjoins on the Buddhists the study of seven passages in the Sutta Nipāta, and three in the Sāriputta-piṭaka, both of which were selected for their special beauty. One of these is called The Question of Upāsīsa, and this poem may be the passage referred to. Feeling his end approaching, he went home, and died just six months before the death of the Buddha, that is, approximately in 480 B.C. He was cremated with great ceremony, and the ashes placed in a place or burial-mound. An inscribed casket in such a mound at Sāchchī opened by Cunningham in February 1851 contained a portion of these ashes which had been removed to that spot, in General Cunningham's opinion by Asoka.


SARK, a small island of the Channel Islands, 7 m. E. of Guernsey, much visited on account of its magnificent cliff-scenery and caves. It is 3 m. long from N. to S. and 11/2 m. in extreme breadth. Area, 1274 acres; pop. (1901) 504. It is divided into two unequal parts, known in Great Sark (the more northern) and Little Sark, connected by the Coupée, a lofty isthmus so narrow at the summit that it bears only a roadway, artificially built up, and flanked by a precipice on either side. Many islets and detached rocks lie off the coast; Brechou Island to the west is large enough to have a few fields and a house upon it. Some of the rocks are very fine, such as the four lofty flat-topped pillars called the Autelets (altars). The harbour of Sark lies on the east coast, a tiny cliff-bound bay protected by a breakwater, communicating with the interior only through two tunnels, one of which is modern, while the other dates from 1588. The harbour is called Creux. This is a term of common use in the Channel Islands, applying primarily to natural tunnels or pits, but extended also to clefts such as that which forms the harbour. The Creux du Derrible (Old French, a downfall of rocks) is a wide shaft opening from the summit of the cliff and communicating with the sea by a narrow passage. The point is the greatest salt-water level, at high water. Of the many majestic caverns in the cliffs the Botiques and the Goulets, both on the west coast of Great Sark, may be especially mentioned. As in the case of the caves of Guernsey, Sark are the majority of the houses, the church, and the seigneurie or manor-house. An ancient mill stands at the summit of the island (375 ft.). Agriculture and fishing are carried on. In Little Sark is a disused old mine, worked in 1835, but soon abandoned. The island is included in the bailiwick of Guernsey, but has a court of justice of feudal character, the officers being appointed by the seigneur.

SARLAT, a town of south-western France, capital of an arrondissement in the department of Dordogne, 44 m. E. by rail of the N.B. of France. Pop. (1906) town, 4018, commune 6195. The town grew up round a monastery founded in the 8th century and early in the 14th century became the seat of a bishopric which was suppressed in 1790. The former cathedral and abbey-church preserves interesting architecture of the Romanesque and later periods and remarkable wood-carving of the 15th century. There is also a curious pyramidal structure of the 12th century, which was probably used as a burial-place. The house where Étienne de la Boëtie (d. 1563), the moralist, was born, and other houses in the Gothic and Renaissance styles of architecture, is worthy of notice. La Dordogne has a large trestle bridge across it, and there is a large trade in cattle. Distilling, the manufacture of tin-boxes, and the preparation of treasures, pâtes de foie gras and other delicacies and of nut-oil are carried on; there are coal and iron mines and stone-quarries in the vicinity.

SARMATAE, or Sauromatae (the second form is mostly used by the earlier Greek writers, the other by the later Greeks and the Romans), a people whom Herodotus (iv. 21. 117) puts on the eastern boundary of Scythia (q.v.) beyond the Tanais (Don). He says expressly that they were not pure Scythians, but, being descended from young Scythian men and Amazons, they spoke an impure dialect and allowed their women to take part in war and to enjoy much freedom. Later writers call some of them the "woman-ruled Sarmatae." Hippocrates (De Aere, &c., 24) classes them as Scythian. From this we may infer that they spoke a language cognate with the Scythic. The greater part of the barbarian names occurring in the inscriptions of Olbia, Tanais and Panticapaean are supposed to be Sarmatian, and as they have been well explained from the Iranian language by the Ossaeans of the Caucasus, these are supposed to be the representatives of the Sarmatae and can be shown to have a direct connexion with the Alani (q.v.), one of their tribes. By the 3rd century B.C. the Sarmatae appear to have superseded the Scyths proper in the plains of south Russia, where they remained dominant until the Gothic and Hunnish invasions. Their chief divisions were the Rhoaxolani (q.v.), the Iazyges (q.v.), with whom the Romans had to deal on the Danube and Thess, and the Alani. The term Sarmatia is applied by later writers to as much as was known of what is now Russia, including all that which the older authorities call Scythia, the latter term transferred to Russia further east. Particularly these maps of European and Asiatic Sarmatia.

(S. E. H. M.)

SARMENSE, or Sarrentino (Lat. sermentum, twigs), a botanical term for plants producing long runners.

SARNEN, the capital of the western half (or Obwalden) of the Swiss canton of Unterwalden. It stands 1558 ft. above sea-level, at the north end of the lake of Sarnen (3 sq. m. in extent) and on the river Aa. Pop. (1900) 3940. It has a large parish church and two convents. In the archives is preserved the famous MS. known from the colour of its binding as the White Book of Sarnen, by the osseans of the Caucasus, these are supposed to be the representatives of the Sarmatae and can be shown to have a direct connexion with the Alani (q.v.), one of their tribes. By the 3rd century B.C. the Sarmatae appear to have superseded the Scyths proper in the plains of south Russia, where they remained dominant until the Gothic and Hunnish invasions. Their chief divisions were the Rhoaxolani (q.v.), the Iazyges (q.v.), with whom the Romans had to deal on the Danube and Thess, and the Alani. The term Sarmatia is applied by later writers to as much as was known of what is now Russia, including all that which the older authorities call Scythia, the latter term transferred to Russia further east. Particularly these maps of European and Asiatic Sarmatia.

(S. E. H. M.)

SARNIA, a town and port of entry, Ontario, Canada, capital of Lambton county, 55 m. N.E. of Detroit, on the left bank of the river St Clair. Pop. (1901) 8176. It is on the Grand Trunk and Lake Erie & Detroit River railways, and is a port of call for steamers plying on the Great Lakes. It contains a large oil-refinery which handles the greater part of the product of the Ontario oil region. The Grand Trunk railway crosses the river by a 3600 ft. steel span, 6025 ft. long or, including the approaches, 24 m., which connects the town with the American city of Port Huron (Michigan).

SARNO (anc. Sarnus), a town of Campania, Italy, in the province of Salerno, 15 m. N.E. from that city and 30 m. E. of Naples by the main railway. Pop. (1901) 15,130 (town), 19,192 (commune). It lies at the foot of the Apennines, 92 ft. above sea-level, near the sources of the Sarno (anc. Sarnus), a stream connected by canal with Pompeii and the sea. Sarno has the ruins of a medieval castle, which belonged to Count Francesco Coppola, who took an important part in the conspiracies of Ferdinand of Aragon in 1485. Walter of Brione is buried in the ancient church of S. Maria della F scars rebuilt in 1701. Paper, cotton, silk, linen, hemp and hemp are manufactured. The travertine which forms the springs of the Sarno was used even at Pompeii as building material. Before its incorporation with the domains of the crown of Naples Sarno gave its name to a countship held in succession by the Orsini, Coppola, Suttavilla and Colonna families.

SARONNO, a town of Lombardy, Italy, in the province of Milan, from which city it is distant 13 m. N.N.W. by rail. Pop. (1901) 8730 (town), 9533 (commune). The pilgrimage church of the Madonna dei Miracoli, begun in 1495 by Vincenzo dell'Orto, has a dome of rich architecture externally; the campanile dates from 1516, the rest of the church is later. Internally it is decorated with fine frescoes by Gaudenzio Ferrari, representing a concert of angels, while those in the choir are by Bernardino Luini and are among his finest works (see F. Malaguzzi Valeri
The mathematics of the sun or moon recurs with little change as regards the time and the character of the eclipse. It is supposed to have afforded in ancient times the principal method of predicting eclipses.

SARPEDON, in Greek legend, son of Zeus and Laodamia, Lycian prince and hero of the Trojan war. He fought on the side of the Trojans, and after greatly distinguishing himself by his bravery, was slain by Patroclus. A terrible struggle took place for the possession of his body, until Apollo rescued it from the Greeks, and by the command of Zeus washed and cleansed it, anointed it with ambrosia, and handed it over to Sleep and Death, by whom it was conveyed for burial to Lycia, where a sanctuary (Sarpedoneum) was erected in honour of the fallen hero. Virgil (Aeneid, ii. 421) remarks that the body of Sarpedon was recovered intact.

In later tradition, Sarpedon was the son of Zeus and Europa and the brother of Minos. Having been expelled from Crete by the latter, he and his comrades sailed for Asia, where he finally became king of Lycia. Euripides (Rhesus, 20) confuses the two Sarpedons.

See Homer, IIiad, v. 479, xii. 292, xvi. 419-683; Apollodorus iii. 1, 2; Appian, Bell. civ. iv. 78; Herodotus i. 173, with Rawlinson’s notes.

SARPI, PAOLO (1552-1629), Venetian patriot, scholar and church reformer, was born at Venice, on the 14th of August 1552, and was the son of a small tradesman, who left him a orphan at an early age. Notwithstanding the opposition of his relatives, he entered the order of the Servi di Maria, a minor Augustinian congregation of Florentine origin, at the age of thirteen. He assumed the name of Paolo, by which, with the epithet Servila, he was always known to his contemporaries. In 1570 he sustained no fewer than three hundred and eighteen theses in a dispute in Mantua, in such an applause that the duke made him court theologian. Sarpi spent four years at Mantua, applying himself to mathematics and the Oriental languages. After leaving Mantua, he repaired to Milan, where he enjoyed the protection of Cardinal Borromeo, but was then transferred to his residence at Seregno,whence in 1574 he was sent to Rome on business connected with the reform of his order, which occupied him several years, and brought him into intimate relations with three successive popes, as well as the grand inquisitor and other persons of influence. Having successfully terminated the affairs entrusted to him, he returned to Venice in 1585, and passed the next seventeen years in study, occasionally interrupted by the part he was compelled to take in the internal disputes of his community. In 1601 he was recommended by the Venetian senate for the small bishopric of Caorle, but the papal nuncio, who wished to obtain it for a protégé of his own, informed the pope that Sarpi denied the immortality of the soul, and had controverted the authority of Aristotle. An attempt to procure another small bishopric in the following year also failed, Clement VIII. professing to have taken umbrage at Sarpi’s excessive correspondence with learned heretics, but more probably determined to thwart the desires of the liberal rulers of Venice. The sense of injury, no doubt, contributed to exasperate Sarpi’s feelings towards the court of Rome. For the time, however, he tranquilly pursued his studies, writing the notes on Vieta which established his proficiency in mathematics, and a metaphysical treatise now lost, which, if Foscarini’s account of it may be relied upon, anticipated the sensationalism of Locke. His anatomical pursuits probably date from a somewhat earlier period. They illustrate his versatility and thirst for knowledge, but are far from possessing the importance ascribed to them by his disciples. His claim to have anticipated Harvey’s discovery rests on no better authority than a memorandum, probably copied from Caesalpinus or Harvey himself, with whom, as well as with Bacon and Gilbert, he maintained a correspondence. The only physiological discovery which can be safely attributed to him is that of the contractility of the iris. It must be remembered, however, that his treatises on scientific subjects are lost, and only known from imperfect abstracts.

Clement died in March 1605; and Paul V. assumed the tiara with the resolution to strain papal prerogative to the uttermost. At the same time Venice was adopting measures to restrict it still further. The right of the secular tribunals to take cognizance of the offences of ecclesiastics had been asserted in two remarkable decrees, and the scheme of two ancient laws of the city of Venice, forbidding the foundation of churches or ecclesiastical congregations without the consent of the state, and the acquisition of property by priests or religious bodies, had been extended over the entire territory of the republic. In January 1606 the papal nuncio delivered a brief demanding the unconditional submission of the Venetians. The senate having promised protection to all ecclesiastics who should in this emergency aid the republic by their counsel, Sarpi presented a memoir, pointing out that the threatened censures might be met in two ways—de facto, by suppressing their publication, and de jure, by an appeal to a general council. The Venetians, however, were received with universal applause, and Sarpi was immediately made canonist and theological counsellor to the republic. When in the following April the last hopes of accommodation were dispelled by Paul’s excommunication of the Venetians and his attempt to lay their dominions under an interdict, Sarpi entered with the utmost energy into the controversy. He prudently began by republishing the anti-papal opinions of the famous canonist Gerson. In an anonymous tract published shortly afterwards (Risposta di un Dottore in Teologia) he laid down principles which struck at the very root of the pope’s authority in secular things. This book was promptly put upon the Index, and the republication of Gerson was attacked by Bellarmine with a severity which obliged Sarpi to reply in an Apologia. The Considerazioni sullecensurae and the Trattato dell’ interdetto, the latter partly prepared under his direction by other theologians, speedily followed. Numerous other pamphlets appeared, inspired or controlled by Sarpi, who had received the further appointment of censor over all that should be written at Venice in defence of the republic. Never before in a religious controversy had the appeal been made so exclusively to reason and history; never before had an ecclesiastic of his eminence maintained the subjection of the clergy to the state, and disputed the pope’s right to employ spiritual censures, except under restrictions which virtually abrogated it. Material arguments were no longer at the pope’s disposal. The Venetian clergy, a few religious orders excepted, disregarded the interdict, and discharged their functions as usual. The Catholic powers refused to be drawn into the quarrel. At length (April 1607) a compromise was arranged through the mediation of the king of France, which, while salving over the pope’s dignity, conceded the points at issue. The great victory, however, was not so much the defeat of the papal pretensions as the demonstration that interdicts and excommunications had lost their force. Even this was not wholly satisfactory to Sarpi, who longed for the toleration of Protestant worship in Venice, and had hoped for a separation from Rome and the establishment of a Venetian free church by which the decrees of the council of Trent would have been rejected, and in which the Bible would have been an open book. The republic rewarded her champion with the further distinction of state counsellor in jurisprudence, and, as a mark of confidence, the liberty of access to the state archives. These honours exasperated his adversaries to the uttermost. On the 5th of October he was attacked by a band of assassins and left for dead, but the wounds were not mortal. The braves found a refuge in the papal territories. Their chief, Poma, declared that he had been moved to attempt the murder by his zeal for religion, a degree of piety and self-sacrifice which seems incredible in a bankrupt oil-merchant. “Agnosco stylium Curiae Romanae,” Sarpi himself pleasantly said, when his surgeon commented upon the ragged and inartistic character of the wounds, and the justice of the observation is as
SARPSBORG—SARRETTE

In addition to the above works see Balan, Fra Paolo Sarpi (Venice, 1887) and Pascolato, Fra Paolo Sarpi (Milan, 1893). Some hitherto unpublished letters of Sarpi were edited by Karl Benrath under the title Paolo Sarpi. Neue Briefe, 1905–1906 (at Leipzig in 1909).

(R.G.)

SARPSBORG, a seaport and manufacturing town of Norway, in Smaalenene amt (county), 68 m. S.S.E. of Christiania on the Gothenburg railway. Pop. (1900) 6888. It is the junction for an alternative line to Christiania following the Glommen valley. It sprang into importance through the utilization of the falls in the river Glommen for driving saw-mills and generating electric power. The Sarpsfoss, south-east of the town, is a majestic fall, descending 74 ft. with a width of 120 ft. There are wood-pulp factories (one worked by an English company employing over 1000 hands), factories for calcium carbide (used for manufacturing acetylene gas), paper and aluminium; and spinning and weaving mills. There are two large electric supply stations, and power and light are furnished from this point to Frederikstad, 9 m. S.W. The port is at Sannesund, 1 m. S.; its quays can be reached by vessels drawing 2 ft. The town was originally founded in the 11th century, and destroyed by the Swedes in 1567. The existing town dates from 1839.

SARRACENIA, or SIDE-SADDLE FLOWER, a genus of pitcher-plants with seven species native in the eastern states of North America. They are perennial herbaceous marsh-plants with a rosette of leaves from the centre of which springs a tall stalk bearing a large single nodding flower. The leaves are erect and in the form of long slender pitchers, with a longitudinal wing and a terminal hood, to which insects are attracted by the bright colouring of the upper parts and the sweet scent exhaled there. The interior of the pitcher is half-filled with water and the wall is lined internally in the lower part with stiff downward pointing hairs, which prevent the escape of insects. The insects which are drowned in the pitcher become decomposed and digested by the fluid, and the products of digestion are ultimately absorbed by the walls of the pitcher and serve as a source of nitrogenous food. (See also Pitcher Plants.)

SARRAZIN, JACQUES (1588–1660), French painter, born at Noyon in 1588, went to Rome at an early age and worked there under a Frenchman named Anguille. Starting thus, Sarrazin speedily obtained employment by the Jesuit Cardinal Alberandini at Frascati, where he won the friendship of Domenichino, with whom he afterwards worked on the high altar of St Andrea della Valle. His return to Paris, where he married a niece of Simon Vouet, was signalized by a series of successes which attracted the notice of Sublet des Noyers, who entrusted to him the work by which Sarrazin is best known, the decoration of the great portal and the dome of the western façade of the interior court of the Louvre. The famous Caryatides of the attic show the influence of Mignard, which he had not conveyed to any extent the master, to which Sarrazin had devoted all the time he could spare from bread-winning whilst in Rome. He now executed many commissions from the queen, and was an active promotor of the foundation of the Academy. The mausoleum for the heart of the prince de Condé in the Jesuit church of the Rue Saint Antoine was his last considerable work (see Lenoir, Musée des monuments français, v. 5); he died on the 3rd of December 1660, whilst it was in progress, and the crucifix of the altar was actually completed by one of his pupils named Gros.

SARRETTE, BERNARD (1765–1858), founder of the Conservatoire National de Musique et de Déclamation in Paris, was born in Bordeaux on the 27th of November 1755, and died in Paris on the 11th of April 1858. Forty-five musicians from the dépôt of the Gardes Françaises were gathered together by him after the 14th of July 1789, and formed the nucleus for the music of the Garde Nationale. In May 1790, the municipality of Paris increased the body to seventy-eight musicians. When the financial embarrassments of the commune necessitated the suppression of the paid guard, Sarrette kept the musicians near him and obtained from the municipality, in June 1795, the establishment of a free school of music. On the 18th of Brumaire in the year II. (Nov. 8, 1793) this school was converted
into the Institut National de Musique by decree of the convention, and by the law of the 16th of Thermidor in the year III. (Aug. 3, 1795) it was finally organized under the name of Conservatoire. The motives for the imprisonment of Sarrette from the 25th of March to the 10th of May 1794, have been a source of historical controversy, nor is it possible to ascertain exactly what were his political views throughout this period of the French Revolution. But there is no longer foundation for the theory of Zimmermann, his biographer, that he was imprisoned for singing aloud Créty's air, O Richard, ô mon roi! For the last forty years of his life Sarrette lived in retirement. The protection of Napoleon I. was a source of disaster to him in 1815, when the conservatoire was closed; its subsequent history was watched by its founder as a mere spectator from outside.


SARSETAPILLA, a popular drug, prepared from the long fibrous roots of several species of the genus Smilax, indigenous to Central America, and extending from the southern and western coasts of Mexico to Peru. These plants grow in swampy forests, and, being diocious and varying much in the form of leaf in different individuals, are imperfectly known to botanists, only two species having been identified with certainty. These are Smilax officinalis and S. medica, which yield respectively the so-called "Jamaica" and the Mexican varieties. They are large perennial climbers growing from short thick underground stems, from which rise numerous semi-woody flexuous angular stems, bearing large alternate stalked long-persistent and prominently net-veined leaves, from the base of which spring the tendrils which support the plant. The genus is a member of the natural order Smilaceae, and constitutes the tribe Smilacoideae, characterized by the climbing habit, net-veined leaves and dioecious flowers.

The introduction of sarsaparilla into European medicine dates from the middle of the 16th century. Monardes, a physician of Seville, records that it was brought to that city from New Spain about 1536-1545. Sarsaparilla must have come into extensive use soon afterwards, for John Gerard, about the close of the century, states that it was imported into England from Peru in great abundance.

When boiled in water the root affords a dark extractive matter, the bitterness of which is increased by the boiling, and is employed as a tonic to the system. It is also employed as a dislike to the stomach, and is used as a sedative to the nerves, and as a diuretic in cases of the small-pox.

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Irish. His generosity, his courage and his commanding height, had already commanded him to the affection of the Irish. When the cause of King James was ruined in Ireland, Sarsfield arranged the capitulation of Limerick and sailed to France on the 22nd of December 1601 with many of his countrymen who entered the French service. He received a commission as lieutenant-general (maraudel de camp) from King Louis XIV, and fought with distinction in Flanders till he was mortally wounded at the battle of Landen on 8th August 1693. He died at Hay's way on the 11th or 12th of August about three days after the battle. In 1691 he had been created earl of Lucan by King James. He married Lady Honora de Burgh, by whom he had a daughter who died childless in 1718. His widow married the duke of Berwick.


**SARTAIN, JOHN** (1808–1897), American artist, was born in London, England, on the 24th of October 1808. At the age of twenty-two he emigrated to America, and settled in Philadelphia. He was the pioneer of mezzotint engraving in America. Early in his career he painted portraits in oil and made miniatures; he engraved plates in 1841–1848 for *Graham's Magazine*, published by George Rex Graham (1813–1894); became editor and proprietor of *Campbell's Foreign Semi-Monthly Magazine* in 1843; and from 1849–1852 published with Graham Sartain's *Union Magazine*. He had charge of the art department of the Centennial Exhibition, Philadelphia, in 1876; took a prominent part in the work of the committee on the Washington Memorial, by Rudolf Siemerling, in Fairmount Park, Philadelphia; designed medallions for the monument to Washington and Lafayette erected in 1865 in Monument Cemetery, Philadelphia; and was a member of the Pennsylvania Academy of the Fine Arts and a cavaliere of the Royal Equestrian Order of the Crown of Italy. He died in Philadelphia on 9th July 1896. His *Reminiscences of a Very Old Man* (New York, 1890) are of unusual interest. Of his children William Sartain (b. 1843), landscape and figure painter, was born at Philadelphia on the 21st of November 1843, studied under his father and under Léon Bonnat, Paris, was one of the founders of the Society of American Artists, and became an associate of the National Academy of Design. Another son, Samuel Sartain (1830–1906), and a daughter, Emily Sartain (b. 1841), who in 1886 became principal of the Philadelphia School of Design for Women, were also American artists.

**SARTHE**, a department of north-western France, formed in 1790 out of the eastern part of Maine, and portions of Anjou and of Perche. Pop. (1906) 421,470. Area 2410 sq. m. It is bounded by the department of Orne, N.E. by Eure-et-Loir, E. by Loir-et-Cher, S. by Indre-et-Loire and Maine-et-Loire and W. by Mayenne. The Sarthe, a sub-tributary of the Loire, flows in a south-westerly direction through the department; and the Loire, which along with the Sarthe joins the Mayenne to form the Maine above Angers, traverses its southern borders. Broken and elevated country is found in the north and east of the department, which elsewhere is low and undulating. The highest point (on the boundary towards Orne) is 1115 ft. The Sarthe flows past Le Mans and Sablé, receiving the Merderet and the Vêvre from the right, and the Orne Saonoise and the Huisme from the left. The Loir passes La Flèche, and along its chalky banks caves have been hollowed out which, like those along the Cher and the Loire, serve as dwelling-houses and stores. The mean annual temperature is 52° to 59° Fahr. The rainfall is between 25 and 26 in.

The majority of the inhabitants live by agriculture. There are three distinct districts:—the corn lands to the north of the Sarthe and Neerwinden, on the region of barren lands and forest, between those two streams and the Loir; and the wine-growing country to the south of the Loir. Sarthe ranks high among French departments in the production of barley, and more hemp is grown there than in any other department of France. The region is full of horses, notably those of the Perche breed, prosperous, and fowls and geese are fattened in large numbers for the Paris market. Apples are largely grown for cider. The chief forests are those of Pontorson, the principal places being La Flèche, Mans and the Loir. The Sarthe, with its numerous small streams, owes its well-wooded appearance in a great measure to the hedges planted with trees which divide the fields. Coal, marble and freestone are also worked in the department. The mineral products of the Sarthe include weaving of hemp and flax, and cotton and wool-weaving are also carried on. Paper and cardboard are made in several localities.

**SARTAIN—SARZANA**

Iron-foundries, copper and bell foundries, factories for provision-preserving, marble-works at Sablé, potteries, tile-works, glass-works and stained-glass manufactories, curries, machine factories, wire-gauze factories, flour-mills and distilleries are also prominent industries of the Sarthe. Various numbers of which are found at Le Mans. Flour, agricultural products, live stock and poultry form the bulk of the exports. The department is served by the Western, the Orleans and the State railways, and the Sarthe and Loir provide 590 m. of waterway, though the latter river carries little traffic.

The department forms the diocese of Le Mans and part of the ecclesiastical province of Tours, has its course of appeal at Angers, and its educational centre at Caen, and constitutes part of the territory of the IV, army corps, with its headquarters at Le Mans. The four arrondissements are named from Le Mans, the chief town, to the east La Flèche, Mans and St. Calais. The principal places are Le Mans, La Flèche, La Ferté Bernard, Sablé and Solesmes, which receive separate treatment. Besides these places, those of chief architectural interest are Le Lude, which has a fine château of the Renaissance period, Sillé-le-Guillaume, where there is the Géraldine church and a stronghold of the 15th century, and St Calais, the church of which dates from the 14th to the 17th centuries.

**SARTI, GIUSEPPE** (1770–1802), Italian composer, was born at Faenza on the 28th of December 1770. He was educated by Padre Martini, and appointed organist of the cathedral of Faenza before the completion of his nineteenth year. Resigning his appointment in 1790, Sarti devoted himself to the study of dramatic music, becoming director of the Faenza theatre in 1792. In 1793 he produced his first opera, *Pomona*, with great success. His next works, *Il Re Pastore*, *Medonte*, *Domenico* and *L'Olimpiade*, assured him so brilliant a reputation that in 1753 King Frederick V. of Denmark invited him to Copenhagen, with the appointments of Hofkapellmeister and director of the opera. Here he produced his *Ciro riconosciuto*. In 1765 he travelled to Italy to engage some new singers; meanwhile the death of King Frederick put an end for the time to his engagement. In 1769 he went to London, where he could only contrive to exist by giving music lessons. In 1770 he obtained a post in Venice where his masterpieces of the opera *Le furetto* were produced many new pieces, besides some very striking sacred music, including a *Te Deum* for the victory of Ochakov, in which he introduced the firing of real cannon. He remained in Russia until 1801, when his health was so broken that he solicited permission to return. The emperor Alexander dismissed him in 1802 with a liberal pension; letters of nobility had been granted to him by the empress Catherine. His most successful operas in Russia were *Armina* and *Olega*, for the latter of which the empress herself wrote the libretto. Sarti died at Berlin on the 28th of July 1802.

Sarti's opera *I Due Litiganti* has been immortalized by Mozart, who introduced an air from it into the supper scene in *Don Giovanni*. It should be noted that Mozart's *Nozze di Figaro* owed a great deal to the influence of this opera, which was performed in Vienna in 1784. The admirable libretto by Da Ponte, author of the libretti of *Figaro* and *Don Giovanni*, shows similar situations, and the complicated finale of the first act served as a model to Mozart for the finale of the last act of *Don Giovanni*.

**SARZANA**, a town and episcopal see of Liguria, Italy, in the province of Genoa, 9 m. E. of Spezia, on the railway to Pisa, at the point where the railway to Parma diverges to the north, 59 ft. above sea-level. Pop. (1901) 6531 (town); 11,850 (commune). The handsome cathedral of white marble in the Gothic style, dating from 1355, was completed in 1474. It contains two elaborately-sculptured altars of the latter period. The former
citadel (now gaol), built by the Pisans, was demolished and re-erected by Lorenzo de' Medici. The castle of Sarzanello was built by Castruccio Castracani (d. 1328), whose tomb by the Pisan Giovanni di Balducci is in S. Francesco. The Palazzo del Capitano, by Giuliano da Maiano (1472), has been entirely altered. Sarzana has one of the most important glass-bottle factories in Italy, also brick-works and a patent fuel factory.

Sarzana was the birthplace of Pope Nicholas V. Its position at the entrance to the valley of the Magra (anc. Maora), the boundary between Etruria and Liguria in Roman times, gave it military importance in the middle ages. It arose as the successor of the ancient Luna, 3 m. S.E.; the first mention of it is found in 983, and in 1202 the episcopal see was transferred hither. A branch of the Cadolingi di Borgia新区 family, lords of Fucecchio in Tuscany from the 10th century onwards, which had acquired the name of Bonaparte, had settled near Sarzana before 1264; in 1512 a member of the family took up his residence in Ajaccio, and hence, according to some authorities, was descended the emperor Napoleon I. Sarzana, owing to its position on the frontier, changed masters more than once, belonging first to Pisa, then to Florence, and lastly to Genoa; in 1572 it was ceded to Genoa and from 1572 to Genoa itself. In 1814 it was assigned to the kingdom of Sardinia, the frontier between Liguria and Tuscany being now made to run between it and Carrara.

SASANA VAMSA, a history of the Buddhist order in Burma, which was composed, in that country, by Panâh-sámi in 1831. It is written in Pali prose and is based on earlier documents, in Pali or Burmese, still extant, but not yet edited. The earlier part of the work deals with the history of Buddhism outside of Burma. This is based on the Mahâvâpa, and other well-known Ceylon and Indian books and has no independent value. The latter part of the work, about three-fifths of the whole, deals with Buddhism in Burma, and contains information not obtainable elsewhere. Down to the 11th century the account is meagre, legendary and incredible. After that date it is sober, intelligible and in all probability mostly accurate. This portion occupies about one hundred pages 8vo in the excellent edition of the text prepared for the Pali Text Society in 1897 by Dr Mabel Bode. It shows a continuous literary effort through the eight and a half centuries, and constantly renewed ecclesiastical controversy. The latter is concerned for the most part with minor questions relating to rules of the order, there being a tendency, as relations of the rules crept in with the lapse of time, to hark back to the original simplicity. Of differences in matters of doctrine there is no mention in this manual. Dr Bode has prefixed to her edition a detailed summary of the contents of the book. (T. W. R. D.)

SASARAM, a town of British India, in the Shahabad district of Bengal, with a station on the East Indian railway, 406 m. N.W. from Calcutta. Pop. (1901) 23,644. It is famous as containing the tomb of the Afghan Sher Shah, who defeated Humayun and became emperor of Delhi (1540-1545). The tomb, which is the finest example of Mohomedan architecture in Bengal, stands on an island in the middle of an artificial lake. Close by is the tomb of Sher Shah's father.

SASH. (1) A framework of wood in which glass is fixed for a window, particularly a framework for large panes of glass in two parts which open and shut by sliding up or down. The word is a corruption of the Fr. châssis, chord, Lat. capsa, box, case, capere, to hold. The word is, therefore, a doublet of "case" and "cash" (q.v.). (2) A long band of silk or other fine or ornamented material wound round the waist or over the shoulders as part of a woman's or child's dress, or as a sign of office, or as part of an official costume or uniform. The word is an adaptation of the Arab. šâsh, muslin, especially used (of the soft muslin or silken bands used for wrapping round the head in the form of a turban). In its early uses in English it appears as a term used by oriental travellers and writers on the East as an equivalent for a Mahommiedan.

SASKATCHEWAN, a province of Western Canada, lying between the two provinces of Alberta and Manitoba. Area, 259,850 sq. m. The south-eastern portion is chiefly prairie, being the continuation of the second prairie steppe found in Manitoba. About 104° W. the Missouri Coteau, an elevation of several hundred feet, probably an old glacial moraine, crosses the southern boundary and runs north-westward, being the eastern escarpment of the third prairie steppe which runs to the Rocky Mountains. Several elevations of note are found in the southern half of the province. On the central part of the southern boundary is Wood Mountain, a succession of clay hills. On the lower level is Moose Mountain, and north of it Beaver Hills and Touchwood Hills. These are elevations of morainal or glacial deposits. The river Saskatchewan (p.e.) gives its name to the province. In central Saskatchewan near the south bend of the South Saskatchewan begins the river Qu'Appelle ("Who Calls?"), which runs eastward, and crossing the western boundary of Manitoba falls into the Assiniboine river. Farther to the south rises the Souris river, which flows parallel to the Missouri Coteau, passes southward into N. Dakota, and again entering the province of Manitoba finds its way at length into the Assiniboine river. North of the Saskatchewan river the
The Saskatchewan is to some extent navigated, but a serious obstacle, the Grand Rapids, near the mouth of the river, requires a canal to allow the entrance of steamers into Lake Winnipeg. The southern part of the province is covered by railways, the Canadian Northern and the Canadian Pacific railways connecting the international boundary line, at a distance of one hundred to one hundred and fifty miles. This railway has south of its main line two important branches, (1) the Sppoos-Moose Jaw to Estevan, and (2) the Arcola branch from the south-eastern corner of the province running to Regina. Another branch leaves the main line for the north at Kirkella, and this will make a direct communication with Edmonton, while another branch line enters the province at Harrowby and runs westward to join the Kirkella branch on its way to Saskatoon and Edmonton. The Canadian Northern railway has a line which enters the province at Togo and following the Saskatchewan leaves the province at Lloydminster and pushes on to Edmonton. The Grand Trunk Pacific railway follows a direct line from Winnipeg to Edmonton, entering the province at 51° 25' N. and leaving it at 52° 35' N. for the west.

The chief industries of Saskatchewan are cattle-rearing in the northern part and grain growing in the south of the province. Coal is found on the southwestern border of the province, and a light variety of lignite on the Souris river near the international boundary. The province follows in general the plan of government found in the other provinces of the Dominion. The capital of the province is Regina (q.v.), a provincial city, and the seat of the government of the province and of four ministers. The legislature consists of twenty-five members. The province has adopted a public schools act, which has a proviso for the establishment of separate schools for Catholics and Protestants, but with restrictions as to being almost non-effective, every such school being required in all particulars to follow the public school model. The system covers both secondary and primary public schools. A newspaper is in circulation.

The religions of the people are similar to those in the other western provinces of Canada. The principal denominations were in 1901 as follows:

- Presbyterians: 17,151
- Roman Catholics: 17,116
- Church of England: 10,418
- Methodists: 11,528
- Lutherans: 12,098
- Baptists: 2648
- Doukhobors: 8700
- Greek Church: 2579
- Mennonites: 3683

The animal life of Saskatchewan resembles that of Alberta (q.v.).

Population.—By the census of 1901 the population of Saskatchewan was found to be 257,263. It had grown from 91,279 in 1905 (the area of the province being in 1906 somewhat greater than in 1901). The population is to a large extent Canadian, and the immigration has been largely from (1) the British Isles; (2) the United States; (3) the continent of Europe. Several large bodies of foreigners are found. There is a community of upwards of 8000 Doukhobors—a sect of Russian Quakers. Their tenets are peculiar, involving opposition to form in religion, to marriage and to submission to governmental requirements. They desire to hold their land in common. The Russian writer Tolstoy was a proponent of this immigration. Considerable numbers of Galitzins are also found in the province. On the Indian population there were 9049 in 1901; and of Indian half-breeds 7049 in the same year. The Indians of Saskatchewan are chiefly Plain or Wood Cree, with a mixture among them of Saulteaux. Toward the south small bands of Assiniboines are found, and here and there small companies of refugee Sioux from the United States. All the Indians are on government reserves. In these reserves along the Qu'Appelle river are presented many examples of the successful management of the Indians by the Dominion government. These reserves are largely self-supporting; the Indians have comfortable houses, grow considerable crops of grain, make large quantities of hay and possess herds of cattle. At Regina, Qu'Appelle, Crooked Lakes and other industrial schools, young Indians—both male and female—receive a practical education. Many of these are making excellent farmers.

Government, etc.—Throughout the province the municipal system of self-government, especially in the towns and villages, is being introduced. There are two cities in the province, (1) Regina (pop. 9804 in 1907), the capital; (2) Moose Jaw (pop. 6249). The latter is a divisional point on the Canadian Pacific railway, and owes its importance chiefly to its railway connections. In the northern portion of the province are two considerable towns (1) Prince Albert (pop. 2003), on the banks of the North Saskatchewan river, giving promise of becoming a manufacturing centre, having as it has the great forest on the north side of the Saskatchewan river, adjoining it. (2) Saskatoon (pop. 3011), on the South Saskatchewan river. This, though a new town, bids fair to become a great railway centre. The Grand Trunk Pacific railway all the way from the North to the South of the North Saskatchewan district, the Grand Trunk Pacific railways all across the great river of the province, and tributary to this town is a large area of arable and prairie land.
A.D. 226 and destroyed by the Arabs in 637. The dynasty is named after Sassân, an ancestor of Ardashir I. For a list of the kings and the history of the empire see Persia: Ancient History, section viii.; for its fall see also Caliphate, section A, § 2.

SASSÂN, SIR ABDULLAH DAVID BART. (1838–1896). British Indian philanthropist and merchant, was born at Bagdad on the 25th of July 1818, a member of a Jewish family settled there since the beginning of the 16th century, and previously in Spain. His father, a leading Bagdad merchant, was driven by repeated Anti-Semitic outbreaks to remove from Bagdad to Bushir, Persia, and in 1832, he settled in Bombay where he founded a large banking and mercantile business. Albert Sassoon was educated in India, and on the death of his father became head of the firm. He was a great benefactor to the city of Bombay, among his gifts being the Sassoon dock, completed in 1875, and a handsome proportion of the cost of the new Elphinstone High School. In 1867 he was made a C.S.I., and in 1872 a Knight of the Bath. In 1873 he visited England and received the freedom of the city of London. Shortly afterwards he settled in England, and was made a baronet in 1890. He died at Brighton on the 24th of October 1896.

SASSARI, a town and district of British India, in the Central division of Bombay. The name is derived from the "seventeen" walls, towers and gates which the fort was supposed to possess. The town is 2320 ft. above sea-level, near the confluence of the rivers Kistna and Venal, 86 m. S. of Poona. Pop. (1911) 26,022.

The District of SASSARI has an area of 4825 sq. m. It contains two hill systems, the Sahyadri, or main range of the Western Ghats, and the Mahadeo range and its offshoots. The former runs through the district from north to south, while the Mahadeo range starts about 10 m. north of Mahabaleshwar and stretches east and south-east across the whole breadth of the district. The Mahadeo hills are bold, presenting bare scarps of black rock like fortresses. Within SASSARI are two river systems—the Bhima system in a small part of the north and north-east, and the Kistna system throughout the rest of the district. The hill forests have a large store of timber and firewood. The whole of SASSARI falls within the Deccan trap area; the hills consist of trap intersected by strata of basalt and topped with laterite, while, of the different soils on the plains, the commonest is the black loamy clay containing carbonate of lime. This when well watered is capable of yielding heavy crops. SASSARI contains some important irrigation works, including the Kistna canal. In some of the western parts of the district the average annual rainfall exceeds 200 in.; but on the eastern side water is scanty, the rainfall varying from 40 in. in SASSARI town to less than 10 in. in some places farther east. The population in 1901 was 1,416,550, showing a decrease of 6% in the preceding decade. The principal crops are millet, pulse, oil-seeds and sugar-cane. The only manufactures are cotton cloth, blankets and brass-ware. The district is traversed from north to south by the Southern Mahratta railway, passing 10 m. from SASSARI town. The SASSARI agency comprises the two feudatory states of Phaltan and Aundh. Total area 843 sq. m.; pop. (1911) 109,660.

On the overthrow of the Jadhav dynasty in 1312 the district passed to the Mahommedan power, which was consolidated in the reign of the Bahmani kings. On the decline of the Bahmani dominions towards the end of the 15th century the Bijapur kings finally asserted themselves, and under these kings the Maharratans arose and laid the foundation of an independent kingdom with SASSARI as its capital. Intrigues and dissensions in the palace led to the ascendency of the Peshwas, who removed the capital to Poona in 1749, and degraded the rajah of SASSARI into the position of a political prisoner. The war of 1817 closed the career of the peshwas, and the British then restored the titular rajah, and assigned to him the principality of SASSARI, which was much larger than the present district. In consequence of political intrigues, he was deposed in 1830, and his brother was placed on the throne. This prince dying without male heirs in 1848, the state was resumed by the British government.

SATELLITE (from the Lat. satelles, an attendant), in astronomy, a small opaque body revolving around a planet, as the moon around the earth (see Planet). In the theory of cubic curves,
Arthur Cayley defined the satellite of a given line to be the line joining the three points in which tangents at the intersections of the given (primary) line and curve again meet the curve. SATIN-SPAR, however, given to certain fibrous minerals which exhibit, especially when polished, a soft satiny or silky lustre, and are therefore sometimes used as ornamental stones. Such fibrous minerals occur usually in the form of veins or bands, having the fibres disposed transversely. The most common kind of satin-spar is a white finely-fibrous gypsum not frequently found in the Keuper marls of Nottinghamshire and Derbyshire, and used for beads, &c. Other kinds of satin-spar consist of calcium carbonate, in the form of either aragonite or calcite, these being distinguished from the fibrous gypsum by their transparency and often by the presence of a large number of great and optical characters. The satin-spar of Alston, Cumberland, is a finely-fibrous calcite occurring in veins in a black shale of the Carboniferous series. Fibrous calcite is known sometimes to German mineralogists as Atlaspahl.

SATIN-WOOD, a beautiful light-coloured hard wood, having a rich, silky lustre, sometimes finely mottled or grained, the produce of a moderate-sized tree, Chloroxylon Swietenia (natural order Meliaceae), native of India and Ceylon. A similar wood, known under the same name, is obtained in the West Indies, the Ireland and elsewhere; and it is probable that the name was derived from the fibrous structure of the wood, and the Indian name is a derivative of the Sanskrit word Rukaceae. Satin-wood was in request for rich furniture about the end of the 18th century, the fashion then being to ornament panels of it with painted medallions and floral scolls and borders. It is used for inlaying and small veneers, in covering the backs of chairs and clothes-boards, and in making small articles of turnery.

SATIRE (Lat. satira, satura; see below). Satire, in its literary aspect, may be defined as the expression in adequate terms of the sense of amusement or disgust excited by the ridiculous or the unseemly, provided that the impression made by the utterance is invested with literary form. Without humour, satire is invective; without literary form, it is mere clownish jeering. It is indeed exceedingly difficult to define the limits between satire and the regions of literary sentiment into which it shades. The first exercise of satire was no doubt coarse and boisterous. It must have consisted in gibing at personal defects; and Homer's description of Thersites, the earliest example of literary satire that has come down to us, probably conveys an accurate delineation of the first satirists. The character reappears in the heroic romances of the Middle Ages as a popular element, and the blind, licensed backbiter is a warped and distorted being, reader with his tongue than his hands. To dignify satire by rendering it the instrument of morality or the associate of poetry was a development implying considerable advance in the literary art. The latter is the course adopted in the Old Testament, where the few passages approximating to satire, such as Jotham's parable of the brahme and Job's ironical address to his friends, are embellished either by fancy or by feeling. An intermediate stage between personal ridicule and the correction of faults and follies seems to have been represented in Greece by the Margites, attributed to Homer, which, while professedly lampooning an individual, practically rebuked the meddling sciolism impersonated in him. In the accounts that have come down to us of the writings of Archilochus, the first great master of satire, we seem to trace the elevation of the instrument of private animosity to an element in public life. Though a merciless assailant of individuals, Archilochus was also a distinguished statesman, naturally for the most part in opposition, and his writings seem to have fulfilled many of the functions of a newspaper press. Their merit is attested by Quintilian, and the Vergilian comparison of them with Plato's parasillige of the Sophists proves that their virulence must have been tempered by grace and refinement. Archilochus also gave satiric poetry its accepted form by the invention of the iambic trimeter, slightly modified into the scasonic metre by his successors. Simonides of Amorgus and Hipponax were distinguished like Archilochus for the bitterness of their attacks on individuals, with which the former combined a strong ethical feeling and the latter a bright active fancy. All three were restless and turbulent, aspiring and discontented, impatient of abuses and theoretically enamoured of war, and one would have thrown great light on the politics as well as the morals of Greece, is to be lamented. With Hipponax the direct line of Greek satire is interrupted; but two new forms of literary composition, capable of being the vehicles of satire, almost simultaneously appear. Fable is first heard of in Asiatic Greece about this date; and, although its original intention does not seem to have been satirical its adaptability to satiric purposes was soon discovered. A far more important step was the elevation of the rude fun of rustic merrymakings to a literary status by Lucian, whose Fables approximate very closely to the Bacchic festivals. The means had now been found of alloying the satiric spirit with exalted poetry, and their union was consummated in the comedies of Aristophanes.

A rude form of satire had existed in Italy from an early date in the shape of the Fessescena verses, the rough and licentious pleasantry of the vintage and harvest, which, lasting down to the 16th century, was finally modified about 1540 and gave rise to the Fessescena odes employed, these probably improvised composition were entitled Saturnalia, after the name of the god from the saturn laxus, "a charger filled with the first-fruits of the produce, annually offered to Bacchus and Ceres. The Romans thus had dignified the name of satyr, but, in so far as the ancient drama consisted of raillery and ridicule, possessed the thing also; but it had not yet assumed a literary form among them. Livius Andronicus (240 B.C.), the first regular Latin dramatic poet, appears to have been inspired by a little more than a translator from the Greek. Satires are mentioned among the literary productions of Ennius (200 B.C.) and Pacuvius (170 B.C.), but the title refers to the variety of metres employed than to the genius of the composition. The realSatires of Lucilius (170 B.C.) are the first real instances of a literary genre. The Satirae seem to have been mostly satirical in the modern acceptation of the term, while the subjects of some of them prove that the title continued to be applied to miscellaneous collections of poems, as was the case even to the time of Varro, whose "Satirae" included prose as well as verse, and appear to have been only partially satirical. The fragments of Lucilius preserved are scanty, but the verdict of Horace, Tacitus and Quintilian demonstrates that he was a considerable poet. It is needless to dwell on compositions so universally known as the Satires of Lucilius's successor Horace, in whose hands the compound of the ancient with the modern development, becoming genial, playful and persuasive. "Arch Horace, you sorrowing!"
The didactic element predominates still more in the philosophic satires of Persius. Yet another form of satire, the rhetorical, was the appropriate vehicle of the devices and sentiments of the age, as example of a great tragic satirist. Nearly at the same time Martial, improving on earlier Roman models now lost, gave that satirical turn to the epigram which it only exceptionally possessed in Greece, but has ever since retained. About the same time another variety of satire came into vogue, destined to become the most important of any. The Milesian tale, a form of entertainment probably of Eastern origin, grew in the hands of Petronius and Apuleius into the satirical romance, immensely widening the satirist's field and exempting him from the restraints of metre. Petronius's "Satyr of Trimalchio" is the revelation of a new vein, never fully worked till our days. As the novel arose upon the ruins of the epic, so dialogue sprung up upon the wreck of comedy. In Lucian comedy appears adapted to suit the exigencies of an age in which a living drama had become obscure. With him satire explodes into a distinct branch of literature—though mention should be made of the satires and oracles of Plutarch from which the population of Egypt were for centuries accustomed to insult the Roman conqueror and his parasites. A direct association of the apostate poet Hor-Us-ta—a kind of Egyptian "Lost Leader"—composed under Augustus, has been published by M. Reville from a demotic papyrus.

After the great deluge of barbarism has begun to retire, one form of the passion for them from another, the modern consciousness of development being determined by the circumstances of time and place. In the Byzantine empire, indeed, the link of continuity is often lost, and much such work as is preserved finds vent in the palae copies of Lucian published in Adolf Eilissen's Analyse. The first really important satire, however, is a product of western Europe, recurring to the primitive form of fabula, upon which tool the same character as the "Satyr of Trimalchio". John Fox, a genuine expression of the shrewd and homely Teutonic mind, is a landmark in literature. It gave the beast-epic a development of
SATISFACTION

which the ancients had not dreamed, and showed how ridicule could be conveyed in a form difficult to resent. About the same time, however, seeing in the work of Ficino the germs of a new era of Rabblerous literature, fashioned Moroff, the prototype of Sancho Panza, the incarnation of sublunar mother-wit contrasted with the starchy wisdom of Solomon; and the Tii Eulenspiegel is a kindred Text. Their work marked the beginning of a new epoch in satire. The next great work of the class, adapts the apocalyptic machinery of monastic and anchoritic visions to the purposes of satire, as it had often before been adapted to those of ecclesiastical agrarianism. The works of the two men are not unlike; the Moroff, however, is too earnest to be urbane. Satire is a distinct element in Chaucer and Boccaccio, who nevertheless cannot be ranked as satirists. The mores of the age, the licence of the public, and the polity of the songs of the 14th and 15th centuries attest the diffusion of a sense of humour among the people at large. The Renaissance, restoring the knowledge and encouraging the imitation of classic models, changed the character of the comic by that of the pastoral. Partly, perhaps, because Erasmus was no poet, the Lucianic dialogue was the form in the ascendant of his age. Erasmus not merely employed it against superstition and ignorance with infinite and irresistible pleasantry, but fired by his example a bold writer, untramelled by the dignity of an arbiter in the republic of letters. The ridicule of Ulric von Hutter's Epitobolus obscurorum virorum is annihilating and the process the first time for a long time, though long previously introduced by Plato, of putting the ridicule into the mouth of the victim, is perhaps the most deadly shaft in the quiver of sarcasm. It was afterwards used with even more pointed wit by Rabelais, with the inevitable overwroughtness of the modern example, if Dante may not be so classed of a great tragic satirist. Ethical satire is vigorously represented by Sebastian Brant, who founded a new class of satirical literature; the metrological satirists of the age seem tame in comparison with Erasmus and Hutter, though including the great name of Machiaveli. Sir Thomas More cannot be accounted a satirist, but his idea of an imaginary commonwealth embodied the germ of much subsequent satire. In the succeeding periods politics take the place of literature and religion, producing in France the Satire Ménippe, elsewhere the satirical romance as represented by the Argosy of Fables, which may be defined as the adaptation of the style of Petronius to state affairs. In Spain, where no freedom of criticism existed, the satiric side of the national character is more marked, Cortez, where the poet and the ancestor of Fielding: Quevedo revived the medieval device of the vision as the vehicle of reproof; and Cervantes immortal work might be classed as a satire were it not so much about. About the same time we notice the appearance of direct imitation of the Roman satirists in English literature in the writings of Donne, Hall and Marston, the further elaboration of the mock-heroic by Tassoni, and the culmination of classical Italian satire in Salvador Rosa. The prodigious development of the drama at this time absorbed much talent that would otherwise have been devoted to satire proper. Most of the great dramatists of the 17th century were more or less693 lly engaged in satirical enterprises, even their plays not marked, but, with an occasional exception like Les Precieuses ridicules, the range of their works is too wide to admit of their being regarded as satires. The next great example of unalutated satire is Butler's Hudibras of which there is no need to say more. The last word, and methods cannot easily be found. At the same period dignified political satire, bordering on invective, received a great development in Andrew Marvell's Advice to a Painter, and was shortly afterwards carried to the starkest of its form in Dryden's Absalom and Achitophel: a fact that the light literary parody of which Aristophanes had given the pattern in his assaults on Euripides, and which Shakespeare had handled somewhat carelessly in his Midsummer Night's Dream, was effectively revived in the duke of Buckingham's Rehearsal. In France Boileau was long held to have attained the ne plus ultra of the Horatian style in satire and of the mock-heroic, but Pope was soon to place himself in the first rank of both. The point and concentration of Pope remain unsurpassed, as do the calm of Addison and the daring yet severely logical imagination of Swift; while the History of John Bull and the Pseudos were place the first in the field of political satirists. The 18th century was, indeed, the age of satire. Serious poetry had for the time worn itself out; the most original geniuses of the age, Swift, Defoe and Richardson, are decidedly prosaic, and Pope, though a true poet, is less of a poet than Dryden. In process of time imaginative power revives in Goldsmith and Rousseau; meanwhile Fielding and Smollett have fitted the novel to be vehicle of satire and of the comic. We are still more directly interested; Swift, wholly engrossed by a colloquial satirist, a man who has dared to universal application of Shaftesbury's maxim that ridicule is the test of truth. The world had never before seen a satirist of the first rank of the eighteenth century, one who could be called a genius. With English humorists, statesmen and philosophers. English humour also played an important part in the literary regeneration of Germany, where, after Liscow and Rabener, imitators of Swift and the essaysists, Lessing, imbued with Pope but not mastered by him, showed how powerful an auxiliary satire can be to criticism—a relation which Kortum's Josephid, a most humorous fnom, innovates successfully to Auguste Comte, the founder of modern sociology. The balance of the French schools, Diderot and Voltaire, also, have not neglected the subject of burlesque. Goethe and Schiller, Scott and Wordsworth, are now at hand, and as imagination gains ground satire declines. Byron, who in the 18th century would have been the greatest satirist, was a critic and a poet, a political satirist, a novelist of the next generation, bequeathing, however, a splendid proof of the possibility of satirical art with sublimity in his Vision of Judgment. Moore gives us an impression of the English satirist. In his time, the general spirit of the age, the political spirit of the nation, are seized; and the faults and follies he chastises are those especially characteristic of British society. Good sense and the perception of the ridiculous are amalgamated in him: his satire is a thoroughly British form of the ancient art, a vehicle for truth, not for the slinging of rapid and one-time jest before a crowd and the bringing of the private wit to the public stage. He also imitated the political art, though, of course, the political satire of his time is of some importance in itself; and it was, in the main, the social satire of the age. It was, in the main, not the political satire of the age. It was, in the main, not the political satire of the age. It was, in the main, not the political satire of the age. It was, in the main, not the political satire of the age.

Satisfaction (Lat. satisfacere, to satisfy), to satisfy for an injury or offence; payment, pecuniary or otherwise, of a debt or obligation; particularly, in law, and equitable doctrine of much importance. It may operate either as between strangers or as between father and child. As between strangers: it was laid down in Talbot v. Duke of Shrewsbury, 1714, Pr. Ch. 394, that where a debtor bequeathed to his creditor a legacy as great as, or greater than the debt, the legacy shall be deemed a satisfaction of the debt. This rule, however, has fallen under a considerable amount of discussion, and is generally required to rebut the presumption of satisfaction. If the debt was incurred after the execution of the will, there is no satisfaction, nor is there where the will giving the legacy contains a direction to pay debts. As between parent and child, the doctrine operates (a) in the satisfaction of legacies by portions, and (b) of portions by legacies. In the case of (a), it has been laid down that where a parent, or one acting in loco parentis, gives a legacy to a child, without stating the purpose for which he gives it, it will be understood as a portion; and if the father afterwards advance a portion on the marriage, or preference
in life, of that child, though of less amount, it is a satisfaction of the whole, or in part. This application of the doctrine is based on the maxim that "equality is equity," as is also the rule (6) that where a legacy bequeathed by a parent, or one in loco parentis, is as great as, or greater than, a portion or provision previously secured to the child, a presumption arises that the legacy was intended by the parent as a complete satisfaction. In each of the above cases, of course, the presumption may be rebutted by evidence of the testator's intentions.

In theology, the doctrine of satisfaction is the doctrine that the sufferings of Christ are accepted by the divine justice as a substitute for the punishment due for the sins of the world (see ATONEMENT).

**SATNA,** a British station in Central India, within the state of Rewah, with a station on the East Indian railway, 102 m. S.W. from Allahabad. Pop. (1901) 7477. It is the headquarters of the political agency for Baghelkhand, and an important centre of trade.

**SATPURA,** a range of hills in the centre of India. Beginning at the lofty plateau of Amarkantak (about 82° E.), the range extends westward almost to the W. coast. From Amarkantak an outer ridge runs S.W. for about 100 m. to a point known as the Satekeli hills in Balaghat district. As it proceeds westward the range narrows from a broad tableland to two parallel ridges enclosing the valley of the Tapti, as far as the famous hill-fortress of Asirgarh. Beyond this point the Khandesh hills, which separate the valley of the Nerbudda from that of the Tapti, complete the chain as far as the Western Ghats. The mean elevation is about 2500 ft.; but the plateaus of Amarkantak and Chauradarad in the east of Mandla district rise to nearly 3500 ft., and many of the peaks and some of the tablelands exceed this altitude. The hill of Khamla in Betul district is 3750 ft., which is also the general height of the Chikaldih hills overlooking the Berar plain, while the Pachmari hills east of Betul, rising abruptly from the Nerbudda valley, culminate in Dhoogarh at an elevation of 4500 ft. Just east of Asirgarh there is a break in the range, through which passes the railway from Bombay to Jubbulpore, the elevation at this point being about 1240 ft. The extreme length of the range is about 600 m.; the breadth, which is 100 m. at its head across Balaghat and Mandla, diminishes to the narrow ridges of Nimar.

**SATRAE,** in ancient geography, a Thracian people, inhabiting part of Mount Pangaesus between the rivers Nestus (Mestta) and Strymon (Struma). According to Herodotus, they were independent in his time, and had never been conquered within the memory of man. They dwell on lofty mountains covered with forests and snow, and on the highest of these was an oracle of Dionysus, whose utterances were delivered by a priest. They were the chief workers of the gold and silver mines in the district. Herodotus is the only ancient writer who mentions the Satrae, and Tomasekhe regards the name not as that of a people but of the warlike nobility among the Thracian Dii and Bessi. J. E. Harrison and others identify them with the Satyri (Satyrus), the attendants and companions of Dionysus in his revs, and also with the Centaurs. The name Satareketa, a Thracian tribe according to Heckets (quoted in Stephanus of Byzantium), seems to support the second identification.

See Herodotus, Hist. XII, 12; J. E. Harrison, Prolegomena to Greek Religion (1903), p. 379; W. Tomasekhe, Die alten Thraer (1893).

**SATRAP** [Pers. Kškhatropavān, i.e. "protector (superintendent) of the country (or district)"] Heb. sakhshādōrān, Gr. ἐξαρτάτος (insc. of Milletus, Sitzungsber. Berl. Ak. 1900, 112), ἐξαρτάτων (insc. of Mysia, Dittenberger, SYLLOGE, 95), ἐξαρτάτος (insc. of Mysia Lebas.iiii. 388, Theopomp. P. 117), shortened into ἐσχατηρής, in ancient history, the name given by the Persians to the governors of the provinces. By the earlier Greek authors (Herodotus, Thucydides, and often in Xenophon) it is rendered by ἑφαρμος "lieutenant, governor" in the documents from Babylonia and Egypt and in Ezra and Nehemiah by ὑφόκα, "governor"; and the satrap Mazaeus of Cilicia and Syria in the time of Darius III. and Alexander (Arrian iii. 8) calls himself on his coins "Mazaid, who is [placed] over the country beyond the Euphrates and Cilicia." Cyrus the Great divided his empire into provinces; a definitive organization was given by Darius, who established twenty great satrapies and fixed their tribute (Herodot. iii. 89 sqq.). The satrap was the head of the administration of his province; he collected the taxes, controlled the local officials and the subject tribes and cities, and was the supreme judge of the province to whose "chair" (Nehem. iii. 7) every civil and criminal case coming before him was referred. He was responsible for the safety of the roads (cf. Xenophon, Anab. i. 9. 13), and had to put down brigands and rebels. He was assisted by a council of Persians, to which also provincials were admitted; and was controlled by a royal secretary and by emissaries of the king (esp. the "eye of the king"). The regular army of his province and the fortresses were independent of him and commanded by royal officers; but he was allowed to have troops in his own service (in later times mostly Greek mercenaries). The great provinces were divided into many smaller districts, the governors of which are also called satraps and hyparchs. The destruction of these provinces was changed occasionally, and often two or more were given to the same man. When the empire decayed, the satraps often enjoyed practical independence, especially as it became customary to appoint them also as generals in chief of their army district, contrary to the original rule. Hence rebellions of satraps became frequent from the middle of the 5th century; under Artaxerxes II. occasionally the greater part of Asia Minor and Syria was in open rebellion. The last great rebellions were put down by Artaxerxes III. The satrapic administration was retained by Alexander the Great for the East which he intended to make a Seleucid empire, where the satrap generally is designated as strategus; but their provinces were much smaller than under the Persians.

In later times the cult of a god Satrapes occurs in Syrian inscriptions from Palmyra and the Hauran; by Pausanias vi. 25, 6, Satrapes is mentioned as the name of a god who had a cult and a statue in Els and is identified with Korybas. The origin of this god is obscure; perhaps it arose from a cult connected with a statue or a tomb of some satrap.

See further under PERSIA: Ancien History, from the Achaemenid period onwards, and works there quoted (especially section v. § 2).

(ED. M.)

**SATRICUM** (mod. Conca), an ancient town of Latium, situated some 30 m. to the S.E. of Rome, in a low-lying region to the S. of the Alban Hills, to the N.W. of the Pontine Marshes. It was accessible direct from Rome by a road running more or less parallel to the Via Appia, to the S.W. of it. It is said to have been an Alban colony: it was a member of the Latin league of 499 B.C. and became Volscian in 488. It was several times won and lost by the Romans, and twice destroyed by fire. After 346 B.C. we hear of it only in connexion with the temple of Mater Matuta. A. Nilby (Annales della carta dei dintorni di Roma, rome, 1848, iii. 64) was the first to fix the site upon the low hill, surrounded by tufa cliffs, on which were still scanty remains of walling in rectangular blocks of the same material, which is now occupied by the farm-house of Conca. One mile W.N.W., on the hill above Le Ferriere, remains of an archaic temple, ascribed to Mater Matuta, were discovered by excavation in 1896. The work was begun under the direction of Professor H. Grallot of the University of Bordeaux, member of the French School of Rome, but after two weeks' work was suspended by order of the Italian government, and then resumed under the supervision of their own officials. The objects discovered are in the Museo di Papa Giulio to Rome. Another Satricum lay on the right bank of the Liris, not far from Arpinum.

See H. Grallot in Mélanges de l'école française de Rome (1896), 131; and Notizie degli scavi (1896), passim. (T. As.)

**SATSUMA ISLANDS,** a group of islands belonging to Japan, lying westward of the province of Satsuma (34° 40' N. and 129° 40' E.). The two principal are Kami-Koshiki-shima (24 m. by 5), and Shimo-Koshiki-shima (84 m. by 5).

**SATTERLEE, WALTER** (1844-1908), American figure and genre painter, was born in Brooklyn, New York, on the 18th of January 1844. He graduated at Columbia University in 1863, studied in the National Academy of Design, and with Edwin
Italy, where he ruled as king in the golden age and gave the name Saturnia to the country. 4 Janus, another of the most ancient gods of Italy, is said to have welcomed him to Rome, and here he settled at the foot of the Capitol, which was called after him the Janiculum. His temple stood at the ascent from the Forum to the Capitol, and one of the buildings of the temple was called the House of the Dead. The temple was not simply a place of sacrifice, but the eight remaining columns of the temple probably formed a portion of a new temple built in the imperial times. The image of Saturn in this temple had woolen bands fastened round its feet all the year through, except at the festival of the Saturnalia; the object of the bands was probably to detain the deity. Similarly there was a fettered image of Enyalius (the War God) at Sparta, and at Athens the image of Victory had no wings, lest she might fly away. The mode of sacrifice at this temple was far peculiar that the head of the sacrificer was bare as in the Greek ritual, instead of being covered, as was the usual Roman practice. Legend said that the Greek ritual was introduced by Hercules, who at the same time abolished the human sacrifices previously offered to Saturn. Others said that the rule had been observed by the Pelasgians before. Under or behind the temple was the Roman treasury, in which the archives as well as the treasures of the state were preserved. Dionysius Halicarnassensis (Ant. Rom. 1. 34) tells that there were many sanctuaries of Saturn in Italy and that many towns and places, especially mountains, were called after him. The oldest national form of Saturn was known as the Saturnian. Many other figures in Roman mythology, Saturn is said to have vanished, at last from earth. His emblem was a sickle. The substitution, of a great scythe for the sickle, and the addition of wings and an hour-glass, are modern. 5 Ops ("plenty "), wife of Saturn, was an earth-goddess, as appears from the custom observed by her suppliants of sitting and carefully touching the earth while they made their vows to her. As goddess of crops and the harvest, she was called Consiva, and under this name had a sanctuary at Rome, to which only the Vestals and the priest were admitted. As a goddess of the time of the year, she was worshipped with Rhea. Another goddess mentioned as wife of Saturn was Lua, a goddess of barrenness. She was one of the deities to whom after a victory the spoils of the enemy were sometimes dedicated, and burned.

Saturnalia.—This, the great festival of Saturn, was celebrated on the 19th, but after Caesar's reform of the calendar on the 17th, of December. Augustus decreed that the 17th should be sacred to Saturn, and that on that day the(Vespasian and Titus, in 9 and 35 A.D., instead of the 17th and 18th were devoted to the Saturnalia, and the 19th and 20th to the Opalia, a festival of Ops. 1 Caligula added a fifth day, the day of youth (diei juventutis), devoted to the god of the time of the young. But in popular usage the festival lasted seven days. The woolen fetters were taken from the feet of the image of Saturn, and each man offered a pig. During the festival schools were closed; no war was declared or battle fought; no punishment was inflicted. In the place of the toga an undress garment (synthesis) was worn. Distinctions of rank were laid aside: slaves sat at table with their masters or were waited on by them, and the utmost freedom of speech was allowed them. Gambling with dice, at other times illegal, was now permitted. All classes exchanged gifts, the commonest being wax tapers and clay dolls. These dolls were especially given to children, and the makers of them held a regular fair at this time. Varro thought these dolls represented original sacrifices of human beings to the infernal gods. There was, as we have seen, a tradition that human sacrifices were once offered to Saturn, and that these sacrifices were performed by the nation together, and at Carthage. The Cronus to whom human sacrifices are said to have been offered in Rhodes was probably a Baal, for there are traces of Phoenician worship in Rhodes. It may be conjectured that the Saturnalia was originally a celebration of the winter solstice. Hence.

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5 During the first centuries of the Christian era, Saturn was one of the chief popular divinities of northern Africa, representing the Carthaginian Baal under the title of the Saturnian. See Toutain, De Saturni in Africa Romana cultu (1894).

6 There was also a special festival, Opconinsula, on August 25.

7 The fourth day of the festival was added by some unknown authority.

8 It is curious to find a similar rule with a similar exception in Nepal. See H. A. Oldfield, Sketches from Nepal, vol. ii, pp. 353 sq.
the legend that it was instituted by Romulus under the name of the Romia (from winter solstice). The prominence given to candles at the festival points to the custom of making a new fire at this time. The custom of solemnly kindling fires at the summer solstice, the Eve of Saint John, is also found in most of Europe, notably in Germany, and there are traces (of which the yule-log is one) of the observance of a similar custom at the winter solstice. In ancient Mexico a new fire was kindled, amid great rejoicings, at the spring equinox.

The designation of the planets by the names of gods is at least as old as the 4th century B.C. The first certain mention of the star of Cronus (Saturn) is in Aristotle (Metaphysics, p. 1073 b. 35). The name also occurs in the Epitome (p. 687 b), a dialogue of Cicero. The date, generally ascribed to Plato. In Latin, Ciceró (1st century B.C.), is the first author who speaks of the planet Saturn. The application of the name Saturn, ascribed to the planet at a certain time, is first found in Tullius (i. 3, 18).

**SATURN**, in astronomy, the sixth major planet in the order of distance from the sun, and the most distant one known before the discovery of Uranus in 1781. Its symbol is S. Its periodic time is somewhat less than 30 years, and the interval between oppositions is from 12 to 13 days greater than a year. It appears as a star of at least the first magnitude, but varies much in brightness with its orbital position, owing to the varying phases of its rings. It seems to resemble Jupiter in its physical constitution, but the belts and cloud-like features so conspicuous on that planet are so faint on Saturn that they can be seen only in a general way as a slight mottling. In colour the planet has a warmish tint, not dissimilar to that of Arcturus. Its density is less than that of Saturn, being only 13% of that of the earth, and this is probably due to the absence of water.

Owing to the difficulty of distinguishing any individual feature, the rotation of the planet has been observed only on a few rare occasions when a temporary bright spot appeared and continued during several days. The first observation of such a spot was made by the elder Herchel, who derived a rotation period of 10 h. 16 m. In December 1786 a bright spot appeared near the equator of the planet, which was observed by Asaph Hall at Washington for more than a month. It gradually spread out in longitude, and finally faded away. The time of rotation found by Hall was 10 h. 16 m. Saturn is 4° north of the equator on the northern hemisphere, and had a rotation period of about 10 h. 35 m. The deviation of this period from the others indicates that, as in the case of Jupiter and the sun, the time of rotation is least at the equator, and increases toward the poles. Both from this difference and from the appearance presented by the planet it is clear that the visible surface is not a solid, as in the case of Mars, but consists of a layer of cloudy or vaporous matter, which conceals from view the solid body of the planet, if any such exists. Owing to the rapid rotation the figure of the disk is not symmetrical, but when, owing to the rings being separated by sidewise, the entire disk is visible, the latter sometimes seems to have the form of a square with its edges rounded off. This may be an illusion.

The most remarkable feature associated with Saturn is its magnificent system of ring and satellites. The former is unique in the solar system. The ring, the seeming ends of which were first seen by Galileo as handles to the planet, was for some time a mystery. After Galileo had seen it at one or two oppositions, it faded from sight, a result which we now know was due to the advancement of the observer in its orbit, bringing our line of sight edgewise to the ring. When it reappeared, Galileo seemed to have abandoned telescopic observation, but the "ansa" of Saturn remained a subject of study through a generation of his successors without any solution of their mystery being reached.

The truth was at length worked out in 1656 by Huygens, who first circumscribed his solution in the form of an anagram. When arranged in order the letters read:

- Anulo cingitur tenel plano, nasquam coaherente, ad eclipticam inclinato.

This designation of a plain thin ring surrounding the planet, the 'lens' separated from it, and inclined to the ecliptic, is accurate and as complete as the means of observation permitted.

The varying phases presented by the ring arise from its having an inclination of 27° to the orbit of the planet, while its plane remains invariable in direction as the planet performs its orbital revolution. There are three periods of change in the appearance of the rings, in which the change of appearance is produced by the variation of the plane of the ring passing through the sun, and is seen nearly edgewise from the earth. At the two intermediate points the ring is seen as opened out at an angle of 27°. The apparent illuminated portion of the ring is visible at the time of the first opposition, when it is 99% of the ring, and at the time of the second opposition, when it is 98.6% of the ring.

The demonstration of the existence of a ring surrounding Saturn was continued in the opposition of 1667, when the bright spot of the same kind as that observed by Huygens in 1656 was seen, and the rings were seen to be edgewise. In the opposition of 1681, the ring was seen in an inclination of about 28°, and in the opposition of 1690, it was seen in an inclination of about 50°. At the opposition of 1698, the ring was observed in an inclination of about 60°, and in the opposition of 1702, it was observed in an inclination of about 70°. The rings were seen to be edgewise at the oppositions of 1692, 1704, and 1722, and in the opposition of 1739, the ring was seen in an inclination of about 80°.

The rings of Saturn are of two kinds, one a part of the planet, and the other a separate portion of matter. The former are designated as "inner" and "outer" rings, and the latter as "main" and "secondary" rings. The inner rings are the most prominent, and are visible to the naked eye. The outer rings are much more subtle, and can only be seen with the aid of a telescope.

The appearance of the rings is due to the fact that the planet is surrounded by a system of rings, consisting of countless particles of matter, which are held together by their mutual gravitation. The rings are composed of particles of matter of various sizes, and are distributed in a circular path around the planet. The rings are not uniform in thickness, and are thickest at the equator of the planet.

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SATURNIA—SATURNINUS

Elements of the Satellites of Saturn.

<table>
<thead>
<tr>
<th>Name.</th>
<th>Distance.</th>
<th>Periodic Time.</th>
<th>Discoverer.</th>
<th>Date of Discovery.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mimas</td>
<td>3.1</td>
<td>0.23</td>
<td>W. Herschel</td>
<td>1780, Sept. 17</td>
</tr>
<tr>
<td>Enceladus</td>
<td>4.0</td>
<td>1.08</td>
<td>G. D. Cassini</td>
<td>1838, March</td>
</tr>
<tr>
<td>Tethys</td>
<td>5.8</td>
<td>2.17</td>
<td>G. D. Cassini</td>
<td>1838, March</td>
</tr>
<tr>
<td>Dione</td>
<td>5.0</td>
<td>1.98</td>
<td>G. D. Cassini</td>
<td>1838, March</td>
</tr>
<tr>
<td>Rhea</td>
<td>5.8</td>
<td>2.17</td>
<td>G. D. Cassini</td>
<td>1838, March</td>
</tr>
<tr>
<td>Titan</td>
<td>15.0</td>
<td>15.23</td>
<td>J. D. Cassini</td>
<td>1871, October</td>
</tr>
<tr>
<td>Hyperion</td>
<td>13.5</td>
<td>13.21</td>
<td>W. H. Pickering</td>
<td>1898, August</td>
</tr>
</tbody>
</table>

The five inner satellites seem to form a class by themselves, of which the distinguishing feature is that the orbits are so nearly circular that no eccentricity has been definitely noted in them, and that the planes of their orbits coincide with that of the ring and, it may be inferred, with the plane of the planet’s equator. Thus, so far as the position of the planes of rotation and revolution are concerned, the system keeps together as if they were rigid. This results from the mutual attraction of the various bodies. A remarkable feature of this inner system is the near approach to commensurability in the periods of revolution. The period of Tethys is nearly double that of Mimas, and the period of Enceladus nearly double that of Dione. The result of this near approach to commensurability is a wide libration in the longitudes of the satellites, having periods very long compared with the times of revolution.

Each of the four outer satellites has some special feature of interest. Titan is much the brightest of all and has therefore been most accurately observed. Hyperion is so small as to be visible only in a large telescope, and has a quite eccentric orbit. Its time of revolution is almost commensurable with that of Titan, the ratio of the period being 3to4. The result is that the major axis of the orbit of Hyperion has a retrograde motion of 18° 40′ annually, of such a character that the conjunction of the two satellites always occurs near the apocentre of the orbit, when the distance of the orbit from that of Titan is the greatest. This is among the most interesting phenomena of celestial mechanics. Japetus has the peculiarity of always appearing brighter when seen to the west of the planet than when seen to the east. This is explained by the supposition that, like our moon, this satellite always presents the same face to the central body, and is darker in colour on one side than on the other.

In studying a series of photographs of the sky in the neighbourhood of Saturn, taken at the branch Harvard observatory at Arequipa, Peru, W. H. Pickering found on each of three plates a very faint star which was missed in the other two. He concluded that these were the images of a satellite moving around the planet. The latter was then entering the Milky Way, where minute stars were so numerous that it was not easy to confirm the discovery. When the planet began to emerge from the Milky Way no difficulty was found in locating the object, and proving that it was a ninth satellite. Its motion was found to be retrograde, a conclusion confirmed by Frank E. Ross. This phenomenon may be regarded as unique in the solar system, for, although the motion of the satellite of Neptune is retrograde, it is only the known satellite of that planet.

Another extremely faint satellite has probably been established by Pickering, but its orbit is still in some doubt.

The conclusions from the spectrum of Saturn, and numerical particulars relating to the planet, are found in the article PLANET. The planes of the orbits of the inner six satellites are coincident with the plane of the ring system, of which the elements are as follows:

- **Longitude of ascending node on ecliptic**: 165° 43′ 27″
- **Inclination**: 28° 10′ 22″
- **Exterior diameter of outer ring, in miles**: 60,000
- **Interior diameter of outer ring**: 53,000
- **Breath of outer bright ring**: 9,625
- **Breath of division between the rings, in miles**: 6,600
- **Breath of inner bright ring**: 17,000
- **Breath of dark ring**: 8,660
- **Breath of system of bright rings**: 28,910
- **Breath of entire system of rings**: 37,570
- **Space between planet and dark rings**: 9,370

SATURNIA (mod. Saturnia), an ancient town of Etruria Italy, about 23 m. N.E. of Orbetello and the coast. Dionysius of Halicarnassus enumerates it among the towns first occupied by the Pelasgi and then by the Etruscans. A Roman colony was conducted there in 183 B.C., and it was a profectura, but otherwise little is known about it. Remains of the city walls, in the polygonal style, still exist, to which Roman gates were added. Roman remains have also been discovered within the town, and remains of tombs outside, originally covered by tumuli which have now disappeared, so that Dennis wrongly took them for megalithic remains. Pitigliano, some 12 m. to the S.W., is another Etruscan site.

See G. Dennis, Cities and Cemeteries of Etruria (London, 1882), i. 496; ii. 275; A. Pasquini in Notizia degli scavi (1882), 52.

SATURNIAN METRE (Lat. Saturnius, i.e. which relates to Saturn), the name given by the Romans to the crude and irregular measures of the oldest Latin folk-songs. The scansion is generally of the following type: 

with which Macaulay compares the nursery rhyme. “The Queen was in her parlour, eating bread and honey.” There was, however, considerable licence in the scansion, and we can gather only that the verse was generally of this type, and had a light and vivacious movement. It occurs in a few inscriptions (the verses on the stones of the Scipios: cf. Bücheler, Anthologia Latina, 1895) in fragments, Livius Andronicus and the Bellum Punicum of Naevius. Subsequently it was ousted by Greek metres. The question as to whether it depended upon accent or upon quantity has been much discussed.

See Keller, Der saturniniache Vers (Prague, 1886 and 1887); Thurneysen, Der Saturninische Vers (Heidelberg, 1887); Hafet, De saturniniache Latioinorum versus (Paris, 1880); Müller, Der saturniniache Vers und seine Denkmäler (1888); Leo, Der saturniniache Vers (1905); Du Bois, Stress Accent in Roman Poetry (New York, 1906); also Mommsen, Hist. of Rome, i. chap. xxv.

SATURNINUS, LUCIUS APPULEIUS, Roman demagogue. As quaestor (104 B.C.) he superintended the importation of corn at Ostia, but had been removed by the Senate (an unusual proceeding), and replaced by M. Aemilius Scaurus (q.v.), one of the chief members of the government party. He does not appear to have been charged with incapacity or mismanagement,
and the injustice of his dismissal drove him into the arms of the popular party. In 103 he was elected tribune. He entered into an agreement with C. Marius, and in order to gain the favour of his soldiers proposed that each of his veterans should receive an allotment of 100 jugera of land in Africa. He was also chiefly instrumental in securing the election of Marius to his fourth consulship (102). An opportunity of retaliating on the nobility was afforded him by the arrival (101) of ambassadors from Mithra-
dates VI. of Pontus, with large sums of money for bribing the senate; compromising revelations were made by Saturninus, who insul led the ambassadors. He was brought to trial for violating the law of nations, and only escaped conviction by ad minis-
cordiam appeal to the people. To the first tribunate of Saturninus is probably to be assigned his law on majestas, the exact provi-
sions of which are unknown, but its object was probably to strengthen the power of the tribunes and the popular party; it dealt with the minuta majestas (diminished authority) of the Roman people, that is, with all acts tending to impair the integ-
ity of the Commonwealth, being thus more comprehensive than the modern word “treason.” One of the chief objects of Saturninus’s hatred was Q. Caecilius Metellus Numidicus, who, when censor, endeavoured to remove Saturninus from the senate on the ground of immorality, but his colleague refused to assent. In order to ingratiate himself with the people, who still cherished the memory of the Gracchi, Saturninus took up with him Equiti,
us, a paid freedman, who gave himself out to be the son of Tiberius Gracchus. Although the mother of the Gracchi refused to acknowledge him, the people stoned Metellus because he had charged the young man with not being a roman. The tribune afterwards declined to accept the office of quaestor after he had been elected tribune. Marius, on his return to Rome after his victory over the Cimbri, finding himself isolated in the senate, entered into a compact with Saturninus and his ally C. Servilius Glaccia, and the three formed a kind of triumvirate, supported by the veterans of Marius and the needy rabble. By the aid of bribery and assassination Marius was elected (100 consul for the sixth time, Glaccia praetor, and Saturninus tribune for the second time. Saturninus now brought forward an agrarian law, an extension of the African law already alluded to, which was passed that all the land north of the Padus (Po) lately possessed by the Cimbri included, that of the inde-
pendent Celtic tribes which had been temporarily occupied by them, should be held available for distribution among the veterans of Marius. This was unjust, since the land was really the property of the provincials who had been dispossessed by the Cimbri. Colonies were to be founded in Sicily, Achaea and Macedonia, on the purchase of which the “Tolosan gold,” the temple treasures embroiled by Q. Servilius Caepio (praetor 110), was to be employed. Further, Italians were to be admitted to these colonies, and as they were to be burgess colonies, the right of the Italians to equality with the Romans was thereby partially recognised. This part of the bill was resisted by many citizens, who were unwilling to allow others to share their privileges. A clause provided that, within five days after the passing of the law, every senator should take an oath to observe it, under penalty of being expelled from the senate and heavily fined. All the senators subsequently took the oath except Metellus, who went into exile. Saturninus also brought in a bill, the object of which was to gain the support of the rabble by supplying corn at a nominal price. The quaestor Q. Servilius Caepio appeared to have despaired of the passage of the law, and Saturninus’s own colleagues interposed their veto. Saturninus ordered the voting to continue, and Caepio dispersed the meeting by violence. The senate declared the proceedings null and void, because thunder had been heard; Saturninus replied that the senate had better remain quiet, otherwise the thunder might be followed by hail. The bills (leges Appuleia) were finally passed by the aid of the Marian veterans. 
Marius, finding himself overshadowed by his colleagues and compromised by their excesses, thought seriously of breaking with them, and Saturninus and Glaccia saw that their only hope of safety lay in their retention of office. Saturninus was elected tribune for the third time for the year beginning the 10th of December 100, and Glaccia, although at the time praetor and therefore not eligible until after the lapse of two years, was a candidate for the consulship. M. Antonius the orator was elected without opposition; the other government candidate, Gaius Memmius, who seemed to have the better chance of success, was beaten to death by the hired agents of Saturninus and Glaucia, while the voting was actually going on. This produced a complete revulsion of public feeling. The senate met on the following day, declared Saturninus and Glaucia public enemies, and called upon Marius to defend the State. Marius had no alternative but to obey. Saturninus, defeated in a pitched battle in the Forum (Dec. 10), took refuge with his followers in the Capitol, where, the water supply having been cut off, they were forced to capitulate. Marius, having assured them that their lives would be spared, removed them to the Curia Hostilia, intending to proceed against them according to law. But the more impetuous members of the aristocratic party climbed on to the roof, stripped off the tiles, and shoted Saturninus and many others to death. Glaucia, who had escaped into a
house, was dragged out and killed.

BIBLIOGRAPHY.—Appian, Bell. civ. i. 28-33; Diod. Sic. xxxvi.
12; Plutarch, Marius, 28-30; Livy, Bpil. 69; Florus iii. 16; Vel. Patr. 12; Herodian, ch. i. 24; Ael. N. c. 21; P. Planc. 30-32; De viris illustribus, 73; Sossius v. 17; Cicero, Pro Balbo, 21, 48, Bruis, 62, De oratore, ii. 49, De harustum responsis, 19, Pro Sextio, 47, Pro Rabini, p. 400; Mommsen, Hist. of Rome (Eng. trans.), v. 1, 566; G. Long, De orat.叁 reg. v. 11. 5; E. Klebs in Pauly-Wissowa’s Realencyclopaie, ii. 1 (1896); see further Rome: History, ii., “The Republic,” Period C.

SATYRS (Satyri), in Greek mythology, spirits, half-man, half-
beast, that haunted the woods and mountains, companions of Pan and Dionysus. They are not mentioned in Homer; in the fables of Herodotus they are depicted as nympha, nymphs and Curetes, an idle and worthless race. Fancy represented them as strongly built, with flat noses, pointed ears, small horns growing out of the forehead, and the tails of horses or goats. They were a rogish but faint-hearted folk, lovers of wine and women, roasting to the music of pipes and cymbals, castanets and bagpipes, dancing with the nymphs or pursuing them and striking terror into men. They had a special form of dance called Sitthis. In earlier Greek art they appear as old and ugly, but in later art, especially in works of the Attic school, this savagery is softened into a more youthful and graceful appearance.

They were credited with the invention of the satyr-play, the first play of which a work of Praxiteles, representing a graceful satyr leaning against a tree with a flute in his hand. In Attica there was a species of drama known as the Satyric; it parodied the legends of gods and heroes, and the chorus was composed of satyrs. Euripides’s play of the Cyclops is the only extant example of this kind of drama. The older satyrs were called Sileni, the younger Satyrici. By the Roman poets they were often confounded with the Fauns. The symbol of the shaggy demon satyr was the hare. In some districts of modern Greece the spirits known as Callcantsars offer points of resemblance to the ancient satyrs; they have goats’ ears and the feet of asses or goats, are covered with hair, and love women and the dance. The herdsmen of Parnassus believe in a demon of the mountain who is lord of hares and goats.

In the Authorized Version of Isa. xiii. 21, xxxiv. 14 the word “satyr” is used to render the Hebrew ś’îrīm, “pashers.” A Kind of demon or supernatural being known to Hebrew folklore as inhabiting waste places is meant; a practice of sacrificing to the ś’îrīm is alluded to in Lev. xvii. 17; importation. The Cynics and V. p. 20 “devils. They correspond to the on

shaggy demon of the mountain-pass” (wadd el-akaba) of Arabian superstition.

SAUCE, flavouring or seasoning for food, usually in a liquid or semi-liquid state, either served separately or mixed with the dish. The preparation of suitable sauces is one of the essentials of good cookery. The word comes through the Fr. from the Lat. salsa, salted or pickled food (salver, to season or sprinkle with salt, salt). The same Latin word has also given “saucer,” properly a dish for sauce, now a small flat plate with a depressed centre to hold a cup and so prevent the spilling of liquid, and
SAUERLAND—SAUL

"sausage" (O. Fr. saucisse, Late Lat. salicium), minced seasoned meat, chiefly pork, stuffed into coverings of skin. The colloquial use of "saucy," imperient, "checky" is an obvious transfer from the tartsiness or pungency of a sauce, and has a respectable literary ancestry; thus Latimer (Misc. Sel.) when we see a fellow sturdy, lofty and proud, men say this is a saucy fellow.

SAUERLAND, a mountainous district of Germany, in the Prussian province of Westphalia, between the Sieg and the Ruhr, separated by the former from the Westerwald on the S., and by the latter from the coal formation of Arden on the N. It is a well-wooded plateau of the Devonian formation, diversified by deep valleys and tracts of heather land. The district is a favourite resort of tourists, who can enjoy the scenery of the Sauerland from the towns of Bielefeld, (Bühl), and Kneusbusch, (Dortmund, 1892).

SAUGOR, or Sagar, a town and district of British India, in the Jubbulpore division of the Central Provinces. The town, in a picturesque situation on a spur of the Vindhyan hills, 1758 ft. above sea-level, has a station on the Indian Midland railway. Pop. (1901) 42,330. It has long ceased to be a growing place, though it is still third in importance in the province. It was founded in 1669, but owes its importance to having been the capital of the Maharatta governor, who was established in the whole district was in the possession of the Mahabatta Pasha in 1818, the greater part of the present district was made over to the British; and the town became the capital of the Saugor and Nerudda Territories, then attached to the North-Western Provinces. During the Maharatta period of the entire district was in the possession of the rebels, excepting the town and fort, in which the Europeans were shut up for eight months, till relieved by Sir Hugh Rose. The rebels were totally defeated and order was again restored by March 1838. See the Sager District Gazetteer (Allahabad, 1907).

SAUBULAH, or Subulak, the principal town of the Mukri district, in the province of Azerbaijan in Persia, in a fertile valley, between 30 and 40 m. S. of Lake Urmia, at an elevation of 4270 ft. It has post and telegraph offices, and a population of about 7000, mostly Kurds of the Mukri tribe, and exports dried fruit, grain and tobacco. There are many more localities with this name (Turkish, meaning "cold stream") or "cold spring") in Persia, the most notable, after the above-mentioned Kurdish city, being a district of the province of Teheran, with many villages. The place was temporarily occupied by Turkish troops in January 1908.

SAUL (Heb. shá`ul, "asked"), in the Old Testament, son of Kish, and king of Israel.1 His history is closely interwoven with that of the prophet Samuel and the Judaean king David. Two distinct accounts are given of his rise. In one Samuel, after defeating the Philistines, rules as the last "judge" of Israel; the people demand a king, and Saul, a young giant of Benjamin, is chosen by lot. The story then describes how Saul delivers Jabs-Gilead from the Ammonites (1 Sam. i-ix., x. 17-27, xi., xii.). In the other, Saul is raised up by Yahweh to deliver Israel from a sore Philistine oppression. Samuel, a seer of local family previously unconnected with Saul, gives him the divine commission, and ultimately a complete victory is gained which is celebrated by the erection of an altar (ix. 1-8, xii. seq.). See further Samuel. Once king, Saul achieves conquests over the surrounding states, and the brief summary in 1 Sam. xiv. 47-51 may be supplemented by 2 Sam. i. 19 sqq., where the brave deeds of the loving pair Saul and his son Jonathan, and their untimely death, form the subject of an old poem which vividly describes the feelings of a prostrate nation. Saul and his sons fell in the battle on Mt. Gilboa in the north and the land was made a confusion. According to Pss. cxxix. 12-14, Jabs-Gilead's debt, secretly carried away the dead bodies (cf. 2 Sam. xiii. 12 seq.), and Abner the commander hurriedly recovered the surviving son, Ishboseth, to Mahanaim and at length succeeded in establishing his power over all Israel north of Jerusalem (2 Sam. ii. 8 seq.). But the sequel is lost in the more popular accounts of the rise of David.

Little old tradition is preserved of the house of Saul. The interest now lies in the prominence of Samuel, and more particularly in the coming supremacy of the Judaean king David (see the introductory verses of 1 Sam. iv. 5 seq.). As a result, Saul is depicted in less sympathetic colours; his pettiness and animosity stand in strong contrast to David's chivalry and resignation, and in the melancholy Benjamite court with its rivalry and jealousy, the romantic attachment between David and Jonathan forms the one redeeming feature. The great Israelite disaster is fore-shadowed in a thrilling narrative of Saul's visit to the famous Witch of Endor (1 Sam. xxviii.). Israel had lost its mainstay through the death of Samuel (cf. xii. 23), and the king, uneasy at the approach of the enemy, invoked the shade of the prophet only to learn that his cause was lost through his own sin. The incident is now connected with David's near-supremacy, and refers to a previous act of disobedience in his Amalekite campaign. In a detailed account of Saul's expulsion we learn that his failure to carry out Yahweh's commands to the letter had brought the prophet's denunciation (cf. I Abab, I Kings xx. 42), and that he had lost the divine favour (xv.). This in turn ignores an earlier occasion when Saul is condemned and the loss of his kingdom foretold ere he had accomplished the task to which he had been called (xii. 15). Therefore though the latest and most popular section of the history of Saul to that of David appears especially in a number of detailed and popular narratives encircling Judah and Benjamin, superseding older traditions which give an entirely different representation of David's move from the south to Jerusalem. Consequently it proves impossible to present a consistent outline of the history. Instead of the sequel to Ishbaal's recovery of power, and instead of David's incessant conflicts north of Hebron, ending with the capture of Jerusalem and its district from a strange people (2 Sam. v. xxi. 15-22, xxii. 8 seq.), we meet with the stories of the war with Benjamin and Israel, of the intrigue of Abner (q.v.) and the vengeance of Joab (q.v.). While Saul's death had left Israel in the hands of the Philistines, it is David who accomplishes the deliverance of the people (2 Sam. iii. 18, xix. 9). So, also, in accordance with his generous nature, David takes vengeance upon the Amalekite who had slain Saul (2 Sam. i. 6-10, contrast the details in 1 Sam. xxxi.), and upon the treacherous aliens who had murdered Ishbaal (iv.). When king at Jerusalem (seven years after Saul's death) he seeks out the survivors of Saul in order to fulfil his covenant with Jonathan. Jonathan's son Mephiboseth1 is found in safe-keeping east of the Jordan

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1 Ishboseth, i.e. Ishbaal, "man of Baal," cf. 1 Chron. viii. 53.
2 For other explanations see 1 Chron. x. 13 seq. (which refers to 1 Sam. xxviii.), and Josephus Antiq. v. 3.44 (a reference to Saul's massacre of the priests at Nob, 1 Sam. xxii., a crime which is not brought to his charge in biblical history and probably belongs to the later tradition). Perhaps Meribaal, "man of Baal," or Meribbaal, "Baal contends"; for the intentional alteration of the name cf. note 2 above, and see Baal.
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and is installed at court (ix.). Another impression is given by the relations between David and Saul's daughter, Michal (vi. 16 seq., cf. also the "wives" in xii. 8), and we learn from yet another source that he handed over Saul's sons to the Gibeonites who had previously suffered from the king's bloodthirsty zeal (xii. 1-14). On this occasion (the date is quite uncertain) the remains of Saul and Jonathan were removed from Jabesh-Gilead and solemnly interred in Benjamin. During Absalom's revolt, Mephibosheth entertained some hopes of reviving the fortunes of his house (xvi. 1-4, xix. 24-30), and two Benjamites, Shim'ai and Sheba, appeared (xx. 9 seq.), xvi. 25, xvii. 27 that there is no evidence that the three independed figures whose presence indicates that Judaean supremacy over Israel was not accepted without a protest, and that the split blood of the House of Saul was laid upon the shoulders of David. Henceforth Saul's family disappears from the pages of history. But a genealogy of his descendants (1 Chron. viii. 33-40, ix. 39-44) tells of "mighty men of valor, archers," who with their sons number 150 strong, and this interesting post-exilic list is suggestive for the vitality of the traditions of their ancestors.

In iii. 19 there seems to be a reference to the date of the Exodus from Egypt. It is clear that the desperate state of Israel leaves little room for the quiet picture of the inexperienced youth wandering around in search of his father's asses, or for the otherwise valuable representation of popular cult at the beginning of the antiquarian account. Saul was called upon to deliver Israel, it is disconcerting to meet his grown-up son who slays the Philistine "garrison (rather "officer")" (Geba (Judg. x. 29) before the initiative in overrunning the Philistines (xiv. 16-17); yet the account which follows of Jonathan's violation of Saul's hasty vow and its consequences prepares us for the subsequent stories of the unfriendly relations between Saul and David, the son of Jesse, if ever there was a case of irremediable misunderstanding in the Israelite history.

The development of views regarding the pre-monarchical "judges," the dynasty of Saul and David, and the role of Philistine expansion in the history of Israel is not yet settled. It is certain that the growth of the Philistines, the strained circumstances of the people, and their penitent appeal to Yahweh, when at length Yahweh "could bear the misery of Israel no longer," it is evident that in the original conception there was a leaven raised to the judgment of Saul committed in the Danite Samson, the priest Eli, or the seer Samuel, and it is only in the history of Saul that Yahweh's answer to the people's cry leads to the appointment of the saviour. The traces of the older accounts of Saul's rise and the fragments in the highly composite introduction in Judg. x. (vii. 17, 8b, 10-16) agree so materially that unless both the prelude to the former and the sequel to the latter have been lost it is probable that the two were once closely connected, but have been severed in the course of time. The growth of the body of tradition has been a matter of some discussion, but the view that the older accounts have been factors quite as powerful as the growth of national tradition of the first king of Israel and the subordination of the narratives in order to give greater prominence to the first king of the Judaean dynasty, who was also its most illustrious, is practically abandoned. There were yet three great Israelite heroes (cf. Ahab, Jephthah, the wars of Arameans and Ammonites), Saul is pre-eminently a Benjamite figure. From the biblical evidence alone it is far from certain that this is the earlier phase. Saul's deliverance of Jabesh-Gilead from Amnon and his burial may suggest (on the analogy of Jephthah) that Gilead regarded him as his hero. Some connexion between Gilead and Benjamin may be inferred from Judg. xvi. and, indeed, the decimation of the latter (see ibid. xx. 4, 7, xxi. 13 seq.) seems to link the appearance of the tribe in the earlier history with its new rise under Saul. But the history of the tribe as such in this period is shrouded in mist, and it may be inferred that it was only in the reign of David that these secondary and purely local forms of the great founder of the Israelite monarchy, whose traditions contain features which link him now with another founder of Israel—the warrior Joshua, and now with Saul—were associated in a unified people.

See S. A. Cook, Critical Notes on O. T. History (Index, v. and art. Jews, §§ 6-8, Samuel (Books) (S. A. C.)

SAINT MARIE, a city and the county-seat of Chippewa county, Michigan, U.S.A., on Saint Mary's river, at the outlet of Lake Superior and at the E. end of the upper peninsula. Pop. (1850) 3766; (1860) 10,538, of whom 3529 were foreign-born; (1870) 22,123; (1880) 29,965; (1890) 53,298; (1900) 80,051; (1910) 87,052; (1920) 87,339; (1930) 89,111; (1940) 100,144; (1950) 114,227; (1960) 116,212; (1970) 126,296; (1980) 132,686; (1990) 136,293; (2000) 135,514; (2010) 133,179 and (2015) 131,011. It is the outlet of Great Lake Superior, bounded on the W. by Superior Peninsula, the Duluth, South Shore & Atlantic, and the Minneapolis, Saint Paul & Sainte Marie railways. A railway bridge (3607 ft. long, completed in 1887) and steam ferries connect it with the Canadian town of Sault Sainte Marie (pop. 1901, 7169) on the opposite side of the river. The principal buildings are the Court House, City Hall, Post Office, Custom House and Carnegie Library (1905). Fort Brady, in the south-western part of the city, is an infantry garrison; the old Ft. Brady (built about 1822) in another part of the city is still standing.

The river is here nearly 1 m. wide and falls 20 ft. in three-fourths of a mile; it has been made navigable by lock canals for vessels drawing less than 8 ft. of water by the North Western Company built a lock here in 1797-1798. A canal 5700 ft. long, navigable for vessels drawing 11 ft. draught, was completed by the state in 1855. Between 1870 and 1881 the Federal government widened the canal to 100 ft., making a lock 150 ft. long but the drainage and route of the locks and the construction of a new lock, 1350 ft. long between gates and having a draft of 24-5 ft. at extreme ends. The annual cost of the locks is $6,000,000. In 1907 the commerce passing here during the navigation season of eight months and twenty-three days amounted to $8,217,214 tons of freight, valued at more than $600,000,000; the commerce passing through the canals at this point is larger than that of any other canal in the world. There is a ship canal (14 m. long) on the Canadian side of the river, which was completed in 1895 at a cost of $3,750,000. From the rapids opposite the city two water-power plants (of 36,000 and 10,000 h.p. respectively) derive their power; the larger, a hydraulic water-power canal (costing, with power equipment, $6,500,000) is 14 m. long, and extends from the lake to a point a little over a mile above the rapids. These plants have 320 turbines. The total value of the factory product in 1904 was $2,412,821, an increase of 231-3% over that of 1900. Much hay and fish are packed and shipped here.

The place was long a favourite fishing-ground of the Chippewa Indians. It was visited by the French missionaries Rambault and Jougues in 1641 and by Père René Ménard in 1660. In 1668 Jacques Marquette founded a mission here. In 1669 the governor-general of New France called a great council of the Indians here and in the name of the king of France took formal possession of all the country S. to the Gulf of Mexico and W. to the Pacific. The mission was abandoned in 1689; but as a trading post of minor importance—for a time protected by a palisade fort—the settlement was continued. In 1870 Sault Sainte Marie was incorporated as a village; in 1887 it was charted as a city.


SAUMAREZ, JAMES SAUMAREZ [or SAUMAREZ], BARON DE (1610-1686), English admiral, was descended from an old family, and was born at St Peter Port, Guernsey, 11th of March 1617. Many of his ancestors had distinguished themselves in the naval service, and he entered it as midshipman at the age of thirteen. For his bravery at the attack of Charleston in 1776 on board the "Bristol" he was raised to the rank of lieutenant, and he was promoted commander for his gallant services on the Dogger Bank, 5th of August 1781, when he was wounded. In command of the "Russell," 70, he contributed to Rodney's victory over De Grasse (12th of April 1782). For the capture of "La Réunion," a French frigate, in 1793, he was knighted. While commanding a small squadron he was on the 5th of June 1794 attacked by a superior French force on the way from Plymouth to Guernsey, but succeeded in gaining a safe anchorage in Guernsey harbour. After being promoted to the "Orion," 74, in 1795, he took part in the defeat of the French fleet off Lorient, on the 22nd of June, distinguished himself in the battle of Cape St Vincent in February 1797, and was present at the blockade of Cadiz from February 1797 to April 1798, and at the battle of the Nile, where he was wounded. On his return from Egypt he received the command of the "Cæsar," 84, with orders to watch the French fleet off Brest, and on the 12th of February 1799, at the last battle of Brest, he was appointed to the rank of rear-admiral of the blue, was created a baronet, and received the command of a small squadron which was destined to watch the movements of the Spanish fleet at Cadiz. Between the 6th and 12th of July he performed a brilliant piece of service, in which after a first repulse at Algeriers he routed a much superior combined force of French and Spanish ships. For his services
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Saumarez received the order of the Bath and the freedom of the city of London. In 1803 he received a pension of £1200 a year. On the outbreak of the war with Russia in 1809 he was given command of the Baltic fleet. He held it during the wars preceding the fall of Napoleon, and his tact was conspicuously shown towards the government of Sweden at the crisis of the invasion of Russia. Charles XIII. (Bernadotte) bestowed on him the grand cross of the military order of the Sword. At the peace of 1814 he attained the rank of admiral; and in 1819 he was made rear-admiral, in 1821 vice-admiral of Great Britain. He was raised to the peerage as Baron de Saumarez in 1831, and died at Guernsey on the 9th of October 1836.

See Memoir of Admiral Lord de Saumarez, by Sir John Ross (2 vols., 1838).

SAUMUR, a town of western France, capital of an arrondissement in the department of Maine-et-Loire, 28 m. S.E. of Angers on the railway to Tours. Pop. (1906) 14,747. Saumur is well situated on the left bank of the Loire, which here receives the Thouet, and on an island in the river. A large metal bridge connects the Thouet-Angers railway with that of Montreuil-Bellay, by which Saumur communicates with Poitiers and Niort. Two stone bridges (764 and 905 ft. long) unite the town on the island with the two banks of the river. Several of the Saumur churches are interesting. St. Pierre, of the 13th century, has a 17th-century façade and a Renaissance nave; and Notre-Dame of Nantilly, often visited by Louis XI., who rebuilt portions of it, has a remarkable though greatly damaged façade, a doorway and choir of the 12th century, and a nave of the 11th. Both of these churches contain curious tapestries, and in the latter, fixed in the wall is the famous “Dropper” or Runner of the Clocks of Saumur. St. Louis. St. Jean is a small building in the purest Gothic style of Anjou. St Nicolas-du-Chardonnet, in the Gothic style of the 12th century, has a fine modern spire. Notre-Dame of Ardilliers, of the 16th century, was enlarged in the following century by Richelieu and Madame de Montespan. The hotel de ville, containing a museum and library, is an elegant 16th century edifice; and the whole town is rich in examples of the domestic architecture of the 15th, 16th and 17th centuries. The house known as le Maison de la Reine Cécile (15th century) was built by René, duke of Anjou. The castle, built between the 11th and the 13th century, and remodelled in the 17th, is used as an arsenal and powder magazine. There is also an interesting almshouse, with its chambers in part dug out in the rock. The famous cavalry school of Saumur was founded in 1768 and is used for the special training of young officers appointed to cavalry regiments on leaving the cadet school of St Cyr. Other public institutions are the sub-prefecture, tribunals of first instance and of commerce, a chamber of commerce, a branch of the Bank of France, colleges for both sexes and a horticultural garden, with a school of vines. Saumur prepares and carries on a large trade in the sparkling white wines grown in the neighbourhood, as well as in brandy, grain, flax and hemp; and it manufactures enamels and rosaries and carries on liqueur-distilling.

The Saumur caves along the Loire and on both sides of the valley of the Thouet must have been occupied at a very remote period. The Tour du Tronc (9th century), the old stronghold of Saumur, served as a refuge of refuge for the inhabitants of the surrounding district during foreign invasions (whence perhaps the name Saumur, from Salons Murus) and became the nucleus of a monastery built by St. Martin. In 1776, on the death of the last Prior of Saumur, the town passed into the possession of the Duchy of Anjou. In 1339 the town was granted to the Bishop of Luçon, and in 1422 to the Bishop of Poitiers. After the Reformation the town became the metropolis of Protestantism in France and the seat of a theological seminary. The school of Saumur, as opposed to that of Sedan, represented the more liberal side of French Protestantism. The fortifications were dismantled; and the revocation of the edict of Nantes reduced the population by more than one half. In June 1793, the town was occupied by the Vendéens, who on 24th June 1793 were on the point of taking Saumur after a desperate resistance on the part of the republican army.

SAUNDERS, EDWARD JAMES (1837–1906), Irish politician, was born at Castle Saunderson, Co. Cavan, on the 1st of October 1837. He was the son of Alexander Saunderson, M.P. for Cavan (d. 1857), his mother being a daughter of the 6th Baron Farnham. The Irish Saundersons were a 17th century branch of an old family, originally of Durham; a Lincolnshire branch, the Saundersons of Saxby, held the titles of Viscount Castletown (1735–1838) and Baron Saunderson (British: cr. 1714) up to 1723. Edward Saunderson was educated abroad, and, having succeeded to the Cavan estates, married in 1865 a daughter of the 3rd Baron Ventry, and in the same year was elected M.P. for the county as a Palmerstonian Liberal. He lost his seat in 1874, and by 1885, when he again entered parliament for North Armagh, he had become a prominent Orangeman and a Conservative; the question of Irish home rule had now come to the front, and Saunderson's political career as a representative Irish Unionist had begun. He had entered the Cavan militia under Lieut. General Royal Ire. (later an Irish peer) in 1862, and was now major (1875), becoming colonel in 1880 and in command of the battery from 1893 to 1893. Almost from the first he became leader of the Irish Unionist party in the House of Commons, his uncompromising speeches being full of force and humour. In 1898 his services were recognized by his being made a privy councillor. He died on the 21st of October 1906. In private life Colonel Saunderson was well known as a keen yachtsman; his character was deeply marked by stern religious feeling, and his fine sincerity, while endearing him to his friends, never lost him the respect of his opponents.

See the Memoir by Reginald Lucas (1908).

SAUNDERSON, or SANDERSON, NICHOLAS (1625–1739), English mathematician, was born at Thorstune, Yorkshire, in January 1625. When about a year old he lost his sight through smallpox; but this did not prevent him from acquiring a knowledge of Latin and Greek, and studying mathematics. In 1707 he began lecturing at Cambridge on the principles of the Newtonian philosophy, and in November 1711 he succeeded William Whiston, the Lucasian professor of mathematics in Cambridge. In 1718 he published a volume of his mathematical work, an account of which is given in his elaborate Elements of Algebra (2 vols., Cambridge, 1740). Of his other writings, prepared for the use of his pupils, the only one which has been published is The Method of Fluxions (1 vol., London, 1736). At the end of this treatise he gives a Latin explanation of the principal propositions of Sir Isaac Newton's philosophy.

SAUNDERSON, to loiter, lounge, walk idly or lazily. The derivation of the word has given rise to some curiously far-fetched guesses; thus it has been referred to the Holy Land, La Sainte Terre, where pilgrims lingered and loitered, or to the supposed tendency to idle propensities of those who possess no landed property, sans terre. The most probable suggestions are (1) that of Wedgwood, who connects it with a word in exactly the English sense which appears in various forms in Scandinavian languages, Icel. slentur, Dan. slentor, Swe. slento, cf. sloth, lout; this derivation assumes the disappearance of the l (2) That supported by Skeat, and first propounded by Blackley (Word Gossip, 1860), which connects it with the Middle Eng. aufler, adventure; it may represent the Fr. s'aventurer, to go out on an adventure, and the sense-development would be from the idle and apparently objectless expeditions of knights-errant in search of adventure.

SAUROPSIDA. This name was introduced by T. H. Huxley in his Introduction to the Classification of Animals (1869), to designate a province of the Vertebrata formed by the union of the Aves with the Reptilia. In his Elements of Comparative Anatomy (1864) he had used the term "Sauroids" for the same province. The five divisions of the Vertebrata—Pisces, Amphibia, Reptilia, Aves, and Mammalia—are all distinctly definable, but their relations to one another differ considerably in degree. Whilst it
was Huxley's great merit to emphasize by the term *Sauropterygia* the close and direct relationship between the classes of reptiles and birds, it was an unfortunate innovation to bridge the Amphibia and fishes as *Ichthyopterygia*, thereby separating the Amphibia negatively from the fishes and birds. Saussure himself intended to be himself intended. The great gulf within the recent Vertebrata lies between fishes, absolutely aquatic creatures with internal gills and "fins" on the one side, and on the other side all the other, tetrapodous creatures with lungs and fingers and toes, for which H. Credner has found this peculiar term of *Tetrapoda*.

Another drawback of Huxley's divisions resulted in the tendency of alienating the Mammalia, the third division, from the reptiles whilst trying to connect their ancestry with the Amphibia, a view which even now has some vigorous advocates. For Saussure the reptiles and birds, *Sauropterygia*, that is, which are common to birds and reptiles, and not found combined in the other classes, have been thus summarized by Huxley: "no branchiae at any period of existence; a well-developed amnion and allantois present in the embryo; mandible composed of many bones and articulated to the skull by a quadrat bone; nucleated blood-corpuscles; no separate paraplenid bone in the skull; and a single occipital condyle.* In addition to these principal characters of which there are found in the reptiles, but none are exclusively confined to them. The oviduct is always a Mullerian duct separate from the ovary and opening from the body cavity. The mesonephric ducts in the embryo are separated, the mesonephric and mesonephric duct become in the adult male the efferent duct of the testis. The intestine and the reproductive and uriniferous ducts open into a common cloaca. There is usually an efferent duct of the testis. The kidney* is a flattened curled sheet. In all the eggs are mottled blastic and large, possessing a large quantity of yolk; in all the eggs is provided in the oviduct with a layer of albumen and outside this with a horny or calcareous shell. In a few cases the egg is hatched in the oviduct, but in these cases there is no intimate connection between the embryo and the walls of the duct. Fertilization takes place internally, occurring at the upper end of the oviduct previously to the deposition of the albuminous layer and egg shell.

Classification

Two of the four great portions of the birds are closely allied to reptiles; enthusiasts even spoke of them as "glorified reptiles," and this view seemed to receive its proof by the discoveries of Archaeopteryx (a.), and the numerous bipedal Dinosaurs. But Archaeopteryx was after all a bird, although still somewhat primitive, and the question, what group of reptiles has given rise to the birds? is still unanswered. By irony of fate, mere lack of the fossil material, it has come to pass that the bridges between Amphibia and reptiles and from them to Mammals are in a fairer way of reconstruction than that between reptiles and birds, the very two classes of which we know that they "belong together." (H. F. G.)

**SAUSSURE, HORACE BÉNÉDICT DE** (1740-1799), Swiss physicist and Alpine traveller, was born at Geneva on the 17th of November 1740, the youngest son of a wealthy pharmacist, his maternal uncle, Charles Bonnet, he devoted himself to botany. In 1758 he made the acquaintance of Albrecht von Haller, and in 1762 he published his first work, *Observations sur l'étoiles des feuilless et des pétales.* The same year he was chosen professor of philosophy at the academy of Geneva, and retained this chair till 1786. His health began to fail in 1771, when too suffered great pecuniary losses. But he was able to complete his great work in 1796, before his death on the 22nd of January 1799. He became a F.R.S. after his visit to England (autumn of 1768), and a foreign member of the French Academy of Sciences in 1793. He visited Italy, France and Spain, and was a sociéty member of the Swiss Academy of Sciences in Geneva. His early devotion to botanical studies naturally led him to undertake journeys among the Alps, and from 1773 onwards he directed his attention to the geology and physics of that great chain. Incidentally, he did much to clear up the topography of the snowy portions of the Alps, and to attract the attention of pleasure travellers towards spots like Chamonix and Zermatt. In 1760 he first visited Chamonix, and offered a reward to the man who should first succeed in reaching the summit of Mont Blanc (then unscaled). He made an unsuccessful attempt himself in 1785, by the Aiguille du Goûter route. Two Chamonix men attained the summit in 1786, by way of the Grands Mulets, and in 1789 Saussure himself had the delight of gaining the summit (the third ascent). In 1788 he spent 17 days (4th-20th September) on the summit of the Rhaetian Alps (4,140 ft.). In 1774 he mounted the Crammont, and again in 1778, in which year he also explored the Valsorey glacier, near the Great St Bernard. In 1776 he had ascended the Buet (10,201 ft.). In 1789 he visited the Pizzo Bianco (near Macugnaga) and made the first traveller's passage of the St Théodule Pass (10,899 ft.) to Zermatt, which he was the first traveller to visit. On that occasion he climbed from the pass up the Klein Matterhorn (17,750 ft.) while in 1792 he spent three days on the same pass (not descending to Zermatt), making observations, and then visited the Valsorey glacier, passing over the Roche Michel, above the Mont Cenis Pass. The descriptions of seven of his Alpine journeys (by no means all), with his scientific observations gathered en route, were published by him in four quarto volumes, under the general title of *Voyages dans les Alpes* (1779-1796); there was an octave issue in eight volumes, issued 1750-1756, while the non-scientific portions of the work were first published in 1834, and often since, under the title of *Partie pittoresque des ouvrages de M. de Saussure.*

The Alps formed the centre of Saussure's investigations. They formed the most beautiful influence in the development and displacement of the geology of the earth, and among them he found opportunity for studying geology in a manner never previously attempted. The inclination of the strata, the nature of the rocks, the fossils and the minerals were all his constant objects of attention. He studied the depths of the gulf of the ocean, the relations of the chemistry of the day; and he applied it to the study of minerals, water and air. Saussure's geological observations made him a firm believer in the Neptunian theory: he regarded all rocks and minerals as deposited from aqueous solution or suspension, and in view of this he attached much importance to the study of meteorological conditions. He carried barometers and boiling-point thermometers with him; he would measure the heat at the summit and the relative humidity of the atmosphere at different heights, its temperature, the strength of solar radiation, the composition of air and its transparency. Then, following the precipitated moisture, he investigated the temperature of the earth at all depths to which he could drive his thermometer staves, the course, conditions and temperature of streams, rivers, glaciers and lakes, even of the sea. The most beautiful and complete of his subsidiary researches is described in the *Essai sur l'hygrométrie*, published in 1783. In it he records experiments made with various forms of hygrometer in all climates and at all altitudes, and supports the claims of his hair-hygrometers against those of Allard, Nardini and other investigators of the time. He adapted that instrument to many purposes: for ascertaining the temperature of the air he used one with a fine bulb hung in the air; for the atmospheric temperature of the sea he was being converted into an evaporometer by inserting its bulb into a balsam barometer and making it revolve in a circle of known radius at a known rate; for experiments on the earth and in deep water he employed large thermometers wrapped in non-conducting soaks as to render them extremely sluggish, and capable of long retaining the temperature once they had attained it. By the use of these instruments he showed that the bottom water of deep lakes is uniformly cold at all seasons, and that the annual heat wave takes six months to penetrate to a depth of 30 ft. in the earth. He recognized the immense advantages to meteorology of high-level observing stations, and whenever it was possible to establish such stations he did so. He made valuable contributions on matters of theory were in many cases very erroneous he was instrumental in greatly advancing that science.

See *Lives* by J. Senebier (Geneva, 1815), and *Riv. Curier in the Bibliotheque universelle* (March, April, May 1883), *v. viii.;* and *Riv. des Grands Monts de la Suisse* (two editions between 1877 and 1892).

**SAUSSURE, NICOLAS THÉODORE DE** (1767-1845), eldest son of Horace Bénédict de Saussure, was born on the 14th of October 1767, at Geneva, and is known chiefly for his work on the chemistry of vegetable physiology. He lived quietly and avoided society; yet like his ancestors he was a member of the
Genevan representative council, and gave much attention to public affairs. In the latter part of his life he became more of a recluse than ever, and died at Geneva on the 18th of April 1835. His son Nicolas Thodore accompanied his father in his Alpine journeys and assisted him by the careful determination of many physical constants. He was attracted to chemistry by Lavoisier’s brilliant conceptions, but he did not become great as an observer of nature by learning the art of ultimate organic analysis; and he determined the composition of ethyl alcohol, ether and some other commonly occurring substances. He also studied fermentation, the conversion of starch into sugar, and many other processes of minor importance. The greater number of his 36 published papers dealt with the chemistry and physiology of plants, the nature of soils, and the conditions of vegetable life, and were republished under the title Recherches chémiques sur la végétation.

SAUVAL, HENRI (1623-1706), French historian, son of an advocate in the Parlement, was born in Paris, and baptised on the 5th of March 1623. He devoted most of his life to researches among the archives of his native city, and in 1656 even obtained a licence to print his "Paris ancien et moderne;" but on his death (21st March 1706) the whole work was still in manuscript. A long time afterwards it appeared, thanks to his collaborator, Claude Bernard Rousseau, under the title of Histoire des recherches des antiquités de la ville de Paris (1724), but remodelled, with the addition of long and dull dissertations which were not by Sauval. The work was not without merits, and it was re-issued in 1733 and 1750. The original manuscript first belonged to Montmerqué, and then passed into the possession of Le Roux de Lincy, who prepared an annotated edition; unfortunately this material, together with the original MS., was lost in the incendiary fires which took place under the Commune (1871). There remain, however, Le Roux de Lincy's researches, a series of articles on Sauval which appeared in the Bulletin du bibliophile et du bibliothécaire (vol. 1866 and 1868. See also the Bibliographie de Paris avant 1789, by the Abbé Valentin Dufour (1882).

Savage, Minot Judson (1847-1909), American Unitarian minister and author, was born in Norridgewock, Maine, on the roth of June 1841. He graduated at the Bangor Theological Seminary in 1864, and for nine years was in the Congregational ministry, being a home missionary at San Mateo and Grass Valley, California, until 1867, and holding pastorates at Framingham, Mass. (1867-1869), and Hannibal, Missouri (1869-1873). He then became a Unitarian, and was pastor of the Third Church at Macclesfield, Maine, of the Church in Boston in 1874-1896, and of the Church of the Messiah in New York City in 1896-1906.

He wrote many books, including Christianity, the Science of Manhood (1873), The Religion of Evolution (1876), The Morals of Evolution (1880), The Religious Life (1885), My Creed (1887), The Evolution of Our Faith (1889), and The Story of Civilization (1901). He was the author of the counsel books for assistance in Discrepancies of our History (1901), Life Beyond Death (1901), Can Telepathy Explain It? (1902), Life’s Dark Problems (1905), and, besides other volumes in verse, America to England (1909).

Savage, Richard (d. 1743), English poet, was born about 1697, probably of humble parentage. A romantic account of his origin and early life, for which he at any rate supplied the material, appeared in Curll's Poetical Register in 1779. On this and other information provided by Savage, Samuel Johnson founded his Life of Savage, one of the most elaborate of the Lives. It was printed anonymously in 1774, and has made the poet the object of an interest which would be hardly justified by his writings. In 1698 Charles Gerrard, 2nd earl of Macclesfield, obtained a divorce from his wife, Anna, daughter of Sir Richard Mason, who shortly afterwards married Colonel Henry Brett. Lady Macclesfield had two children by Richard Savage, 4th earl Rivers, the second of whom was Charles, the 11th earl, born on 12th February of January 1691, and christened two days later at St. Andrews, Holborn, as Richard Smith. Six months later the child was placed with Anne Portlock in Covent Garden; nothing more is positively known of him. In 1718 Richard Savage claimed to be this child. He stated that he had been cared for by Lady Mason, his grandmother, who had put him to school near St Albans, and by his godmother, Mrs Lloyd. He said he had been pursued by the relentless hostility of his mother, Mrs Brett, who had prevented Lord Rivers from leaving £5000 to him and had tried to have him kidnapped for the West Indies. His statements are not corroborated by the depositions of the witnesses in the Macclesfield divorce case, and Mrs Brett always maintained that he was an impostor. He was wrong in the date of his birth; moreover, the godmother of Lady Macclesfield's son was Dorothea Ousley (afterwards Mrs Delgardo), not Mrs Lloyd. There is nothing to show that Mrs Brett was the cruel and vindictive woman he describes her to be, but abundant evidence that she provided for her illegitimate children. Discrepancies in Savage's story made Boswell suspicious, but the matter was thoroughly investigated for the first time by W. Moy Thomas, who published the results of his researches in Notes and Queries (second series, vol. vi., 1858). Savage's impostor or not, blackmailed Mrs Brett and her family with some success, for after the publication of The Bastard (1728) her nephew, John Brownlow, Viscount Tyrconnel, purchased his silence by taking him into his house and allowing him a pension of £200 a year. Savage's first certain work was a poem satirizing Bishop Hoadly, entitled The Convocation, or The Battle of Pamphlets (1717), which he afterwards tried to suppress. He adapted from the Spanish a comedy, Love in a Veil (acted 1718, printed 1719), which gained him the friendship of Lord Chancellor Steere and of Robert Wilks. With Steele, however, he soon quarrelled. In 1720 he published in the title rôle of his tragedy, Sir Thomas Overbury (pr. 1724), and his Miscellaneous Poems were published by subscription in 1726. In 1727 he was arrested for the murder of James Sinclair in a drunken quarrel, and only escaped the death penalty by the intercession of Frances, countess of Hartford (d. 1754).

Savage was at his best as a satirist, and in The Author to be Let he published a quantity of scandal about his fellow-scribblers. Proud as he was, he was servile enough to supply Pope with petty gossip about the authors attacked in the Dunciad. His most considerable poem, The Wanderer (1729), shows the influence of Thomson's Seasons, part of which had already appeared. Savage tried without success to obtain patronage from Walpole, and hoped in vain to be made poet-laureate. Johnson states that he received a small income from Mrs Oldfield, but this seems to be fiction. In 1732 Queen Caroline settled on him a pension of £30 a year. Meanwhile he had quarrelled with Lord Tyrconnel, and at the queen's death was reduced to absolute poverty. Pope had been the most faithful of his friends, and had made him a small regular allowance. With others he now raised money to send to the Pope, the r & l of which he obtained, but he resented bitterly the conditions imposed by his patrons, and removed to Bristol, where he was imprisoned for debt. All his friends had ceased to help him except Pope, and in 1743 he, too, wrote to break off the connexion. Savage died in prison on the 1st of August 1743.

See Johnson's Life of Savage, and Notes and Queries as already quoted. He is the subject of a novel, Richard Savage (1842), by Charles Whitehead, illustrated by John Leech. Richard Savage, a play in four acts by J. M. Barrie and H. B. Marriott-Watson, was presented at an afternoon performance at the Criterion theatre, London, in 1897. The dramatists took considerable liberties with the facts of Savage's career. See also M. Malouer, Richard Savage, a Mystery in Biography (1909).

Savage, a word by derivation meaning belonging to the wilds or forests (O. Fr. sauvage, mod. sauvage, Late Lat. silvaticus, silva, wood, forest), hence wild, uncultivated, barbarian, and so used of races in an uncivilized or barbarous condition, or of animals or human beings generally, untamed, ferocious.

Savah, a small province of central Persia, north of Irak and south of Teheran, comprising the districts of Savah, Khalejstan (inhabited by the Turkish Khalej tribe), Zerend and Karaghan. It pays a yearly revenue of about £5000. The capital is the ancient city of Savah, which has a population of about 7000, and is 72 m. S.W. of Teheran, at an elevation of 3330 ft., in 35° 4' N., 50° 30' E. The soil is very fertile, is well watered, and produces much wheat, barley and rice. It is occasionally joined to the province of Teheran to facilitate the governor's arrangements for supplying the capital of Persia with grain.
SAVANNA or SAVANNAH (Span. savana, a sheet; Late Lat. sabanum, Gr. σαβανον, a linen cloth), a term applied either to a plain covered with snow or ice, or, more generally, to a treeless plain. Its use in English, more frequent formerly than now, is most common in application to the great plains of central America, in which it is practically the equivalent of "prairie" (q.v.). The application it was first used (accented thus—savanha) by the Spanish historian Gonzalo de Oviedo y Valdés in the 16th century.

SAVANNAH, a city, a port of entry, and the county-seat of Chatham county, Georgia, U.S.A., on the right (south) bank of the Savannah river, about 18 m. from the Atlantic Ocean. Pop. (1890) 43,189; (1900) 54,244, of whom 28,000 were negroes and 3434 were foreign-born; (1910, census) 65,064. It is served by the Atlantic Coast Line, the Central of Georgia, the Southern, and other railways; by river steamers to Augusta; by coastwise steamers to Baltimore, Philadelphia, New York and Boston; and by transatlantic steamers to European ports.

The city is situated on a plateau some 40 ft. above the Savannah river and covers about 6-3 sq. m. Savannah owes its regular form, with streets intersecting each other at right angles, to James Edward Oglethorpe, the founder. At the mouth of the Savannah river, 42 small parks and squares, whose total area is 166-79 acres. The larger parks are the Daffin, the Colonial, Oglethorpe Avenue (former Twenty-seventh Street), the Parade, and Gaston Street, with fine tropical and semi-tropical flora. The smaller squares are mostly in five series parallel to the Savannah river. On account of the large number of its shade trees Savannah has been called the "City of Trees." Its downtown area is about 4 m. east of the city, has avenues of fine live-oaks, draped with Spanish moss. In the principal commercial street, Bay Street, are the Cotton Exchange (1908), on the site of the old City Hall built in 1779, the Custom House, completed in 1850, the Cotton Exchange and a granite seat marking the spot where Oglethorpe first pitched his tent; and in Bull Street, a fashionable promenade, named in honor of William Bull, by whose order the city was platted in 1733, a military officer who sided Oglethorpe in his survey of the city, are Chatham's Marble, a marble post-office building, the county court house, and the Savannah theatre established in 1818, remodelled in 1895, rebuilt in 1914, and owned by the United States of Georgia. At Johnson Square, a little south of the City Hall and Custom House, stands a plain dignified monument, in the design of a Roman sword, erected in memory of General Nathaniel Greene, to whom a tract of land near Savannah was given by Congress in recognition of his service in the War of American Independence, and who was buried in a vault in the old cemetery in South Broad Street (now Oglethorpe Avenue); his remains were transferred to the monument in 1900.

In Monterey Square there is a monument to Caroline,-wife of General Lafayette, by the German sculptor Robert Eberhard Launzit (1806-1870), in honour of Count Casimir Pulaski, who was mortally wounded during the Battle of Vernon on 27th August, 1778, a military officer who sided Oglethorpe in his survey of the city, a hero of the War of Independence, who was the last colonel in the line of fire of the battle of Savannah, and was mortally wounded during the siege of the city in 1779. In Chippewa Square there is a bust of Major-General Lafayette McLaw (1821-1897), The Ladies' Memorial Association erected a Confederate Soldiers Monument in the "Parade Ground," which forms an extension to Forsyth Park, in the south central part of the city; and in honour of Tomochichi, an Indian chief who was the staunch friend of the early settlers, a large granite column has been erected in Wright Square, where he was buried. At the corner of Anderson and Waters streets is a memorial to Major-General Alexander Robert Lawton (1818-1886), state senator in 1854-1856, who seized Fort Pulaski in 1861 upon the governor's orders, and laid the foundations of the Civil War in the Confederate Army, and was U.S. minister to Austria-Hungary in 1887-1889.

Since the founding of Georgia as a bulwark against the Spaniards and French, Savannah has had an ardent martial spirit, and there are five military posts in and near Savannah, named after the War of 1812, the Georgia Hussars, formed after the War of 1812 by the Georgia Volunteer companies; the First Volunteer Regiment of Georgia, composed of five companies, organized respectively in 1868, 1843, 1846, 1860 and 1861, three of which were engaged in the Civil War; and the White Buff and Montgomery, distant 5 m., 6 m., 8 m. and 9 m. respectively.

Among the religious corporations in Savannah, the oldest is Christ Church, whose first building was erected in 1740-1750 and whose present edifice was built in 1838. Its third rector was John Wesley, who is said to have governed "the Southern churchn made Savannah almost half a century before Robert Rikes established such a school in England. The first African Baptist Church, organized in 1758, is the oldest in the United States. The Convent of St Vincent de Paul was founded in 1842; the Cathedral of St John the Baptist was dedicated in 1876, was destroyed by fire in 1868, but was subsequently rebuilt; and a few years later another church was built. The two cathedrals are Roman Catholic and of a Protestant Episcopal bishop. There are several hospitals and charitable institutions in or near Savannah, and among these are the Baptist General Asylum, about 8 m. from the city, founded by George Whitefield in 1740; the Catholic Sisterhood, and the Savannah Female Asylum (1750). In 1885 the Temple Academy of Arts and Sciences (near Telfair Square or Telfair Theatre) was opened. The collections are Wilhem von Kaublach's "Peter Arbues of Epila" and Joseph von Brandt's "Ein Gefecht." The Georgia Historical Society, organized in 1839 and in 1847 united with the Savannah Library Society, has a handsome building (Hodgen Hall) at the intersection of Whataker and Gaston Streets, and a library of about 35,000 volumes; it published six volumes of Collections between 1858 and 1866, and is near the city. The Chatham Academy was opened and endowed with some of the confiscated property of Loyalists in 1788.

Savannah harbour has permanent seawall defences, and is the most important harbour on the coast of Georgia. The United States government, however, has not been pleased with the growth of Savannah over the harbour. The breakwater is nearer the Panama Canal than either New Orleans or Galveston, and after the completion of harbour improvements by the United States government, begun in 1902, the depth of the river from its mouth to the city increased to 26 ft., thus making Savannah the deepest port on my continent. Savannah's exports include rice, lumber, and sawn timber; and the chief imports are rice, cotton, and cotton goods. Savannah being first among the world's markets of naval store.

The city's rice-mills and cotton compresses are commonly visited by tourists. The total value of the city's factory products in 1905 was $9,540,000 ($9,1 7-1 more than in 1900).

The city government is vested in a council, consisting of a mayor and twelve aldermen, elected for two years in January of odd-numbered years; the council's committees act as heads of several of the administrative departments; the mayor is head of the police; and the council appoints other city officers. The Board of aldermen may pass a measure by a two-thirds vote over the mayor's veto, and the city council is organized in four committees; the mayor is self-perpetuating and practically non-partisan. A free school had been established as early as 1816. In 1900 the assessed value of real estate was $492,000,000; city debt, $12,828,973; and the bonded debt was $2,701,050 ($218,050 due in 1909 and $2,483,000 due in 1990); the rate of taxation was $1.39 per $100.

The first European settlement in Georgia was made at Savannah in February 1733 by James Edward Oglethorpe. Among the early inhabitants were Charles and John Wesley, who arrived in 1735, but returned to England in 1736 and 1737 respectively, and George Whitefield, who lived in Savannah in 1738 and 1740. Savannah was the seat of government of Georgia until the capture of the city by the British in 1778. Here, on the ist of January 1775, met the first legislature of Georgia. In the years preceding the War of Independence the political issues excited much enthusiasm. Oglethorpe's administration completely prevented the execution of the Stamp Act, and the stamps destroyed on board the ship that brought them to Savannah. In 1760 the merchants agreed not to import any articles mentioned in the Townshend Acts of 1767.

On the 18th of January 1775 the first Provincial Congress was convened; on the night of the 11th of May the powder magazine was robbed of all its ammunition, part of which was sent to Boston and, according to tradition, was used at Bunker Hill, and on the 22nd of June the people of the city elected a Committee of Safety. On the 4th of July the same Provincial Congress again met, and the news of the fall of the British fleet was announced. Probably the first naval capture of the War of Independence was made off Tybee Island on the 10th of July, when a schooner,
The first vessel chartered by the Continental Congress, seized a British ship and its cargo of 14,000 lb of powder. Yet the Loyalists were strong in Savannah, and many families were dispersed among themselves.

In October 1776—February 1777 the convention which framed the first constitution of Georgia was held in Savannah, and the first state legislature assembled here in May 1778; but the British captured the city on the 29th of December in that year, and the seat of the state government was then transferred to Augusta. In 1779 Savannah was unsuccessfully besieged by a French fleet under Comte d'Estaing and land forces under General Benjamin Lincoln, but in May 1782 it was evacuated after a short siege by General Anthony Wayne. It once more became the capital of Georgia in 1784, and governed Augusta again transferred to Augusta. Savannah soon became the commercial rival of Charleston, South Carolina. It was chartered as a city in 1789. As early as 1817 the Savannah Steamboat Company, which ran a steamer to Charleston, was organized, and in 1819 the "Savannah," the first vessel fitted with steam-engines to cross the Atlantic,1 owned by Savannah capitalists but built in the North, sailed from Savannah to Liverpool in 25 days. In 1861 the state convention which adopted the ordinance of secession met in Savannah. A blockade of the port was imposed by the Union fleet, and General Sherman, who took the city December 1862 Fort Pulaski (on Cockspur Island, at the mouth of the Savannah river), which commanded the channel, and had been seized by the state at the outbreak of the war, was forced to surrender. Savannah was the objective of General W. T. Sherman's "march to the sea," and on the 21st of December 1864 surrendered to him after futile opposition by General William J. Hardee (1816–1873) with a force very inferior in numbers. The city limits were extended in 1879, 1883 and 1900.

SAVARY, ANNE JEAN MARIE RENÉ, DUKE OF RoviGo (1774–1833), French general and diplomatist, was born at Marco in the Ardennes on the 26th of April 1774. He was educated at the college of St Louis at Metz and entered the royal army in 1790. His first campaign was that waged by General Custine against the retreating forces of the duke of Brunswick in 1792. He next served in succession under Pichegru and Moreau, and distinguished himself during the skillful retreat of the latter from an untenable position in the heart of Swabia. He became chef d'escadrons in 1797, and in 1798 served under General Desaix, in the Egyptian expedition, of which he left an interesting and valuable account. He also distinguished himself under De Tilly at Marengo (14th of June 1800). His fidelity and address while serving under Desaix, who was killed at Marengo, secured him the confidence of Bonaparte, who appointed him to command the special body of gendarmes charged with the duty of guarding the First Consul. In the discovery of the various ramifications of the Cadoudal-Pichegru conspiracy Savary showed great skill and activity. He proceeded to the cliff of Biville in Normandy, where the plotters were in the habit of meeting, and caught them, imitating the signals of the royalist plotters, to tempt the comte d'Arlot (afterwards Charles X.) to land. In this he was unsuccessful. He was in command of the troops at Vincennes when the duc d'Enghien (q.v.) was summarily executed. Hullin, who presided at the court-martial, afterwards accused Savary, though not by name, of having intervened to prevent the despatch to Bonaparte of an appeal for mercy which he (Hullin) was in the act of writing up. Savary afterwards denied this, but his denial has not generally been accepted. In February 1803 he was raised to the rank of general of division. Shortly before the battle of Austerlitz (2nd of December 1805) he was sent by Napoleon with a message to the emperor Alexander I. with a request for an armistice, a device which caused that monarch all the more eagerly to strike the blow which brought disaster to the Russians. After the battle Savary again took a message to Alexander, which induced him to treat for an armistice. In the campaign of 1806 Savary showed signal daring in the pursuit of the Russians after the battle of Jena. Early in the next year he received command of a corps, and with it gained an important success at Osterlou (16th of April 1807). After the treaty of Tilsit (7th of July 1807) Savary proceeded to St Petersburg as the French ambassador, but was soon replaced by General Caulaincourt (q.v.), another accessory to the execution of the duc d'Enghien. The repugnance of the empress dowager to Savary is said to have been one of the reasons of his recall, but it is more probable that Napoleon felt the need of his gifts for intrigue in the Spanish affairs which he undertook at the close of 1807. With the title of duke of RoviGo (a small town in Venetia), Savary set out for Madrid when Napoleon's plans to conquer the Bay of Biscay and the mastery of Spain were nearing completion. With Murat Savary made skillful use of the schisms in the Spanish royal family (March–April 1808), and persuaded Charles IV., who had recently abdicated under duress, and his son Ferdinand VII, the de facto king of Spain, to refer their claims to Napoleon. Savary induced Ferdinand to cross the Pyrenees and proceed to Bayonne—a step which cost him his crown and his liberty until 1814. In September 1808 Savary accompanied the emperor to the famous interview at Erfurt with the emperor Alexander. In 1809 he took part, but without distinction, in the campaign against Russia. On the 5th of November of the same year he was in consequence of Fouché (q.v.) in the spring of 1810, Savary received his first ministerial post. There he showed his wonted skill and devotion to Napoleon; and this office, which the Jacobin Fouché had shorn of its terrors, now became a veritable inquisition. Among the incidents of this time may be cited the cynical brutality with which Savary carried out the order of Napoleon for the exile of Mme de Staël and the destruction of her work De l'Allemagne. Savary's wariness was, however, at fault at the time of the strange conspiracy of General Mallet, two of whose confederates seized him in his bed and imprisoned him for a few hours (23rd of October 1812). Savary's reputation never quite recovered the ridicule caused by this event. He was among the last to desert the emperor at the time of his abdication (11th of April 1814) and was the first to welcome his return in 1815, when he became inspector-general of gendarmerie and a peer of France. After Waterloo he accompanied the emperor to Rochefort and sailed with him to Plymouth on H.M.S. "Bellerophon." He was not allowed to accompany him to St Helena, but underwent several months' "internment" at Malta. Escaping thence, he proceeded to Smyrna, where he settled for a time. Afterward he travelled about in more or less distress, but finally was allowed to return to France and regained civil rights; later he settled at Rome. The July revolution (1830) brought him into favour and in 1837 he received the command of the French army in Algeria. Ill-health compelled him to return to France, and he died at Paris in June 1833.

See Mémoires du duc de RoviGo (4 vols., London, 1828); English edition also in 4 vols., London, 1828); a new French edition annotated by D. Lacroix (5 vols., Paris, 1900); Extrait des mémoires de M. le duc de RoviGo concernant le catastrophé de M. le duc d'Enghien (London, 1825); Le Duc de RoviGo jugé par lui-même et par ses contemporains, by L. F. E... (Paris, 1823); and A. P. M. Macquart. Réfutation de l'écrit de M. le duc de RoviGo (1823). (J. Hl. R.)

SAVE, or Sava (Ger. Saov; Hungarian "Sézsa"; Lat. Savaut), one of the principal right-bank affluents of the Danube. It runs almost parallel with the other great tributary of the Danube, the Drave, both having about the same length. The Save rises in the Triglav group in Carniola from two sources, the Wurzener Save and the Wotheiner Save, which join at Radmannsdorf. It then takes a south-easterly course, and flows through Carniola and Croatia-Slavonia—forming from Jasenovac the frontier-line between it and Bosnia and Servia—and joins the Danube at Belgrade. The Save has a length of 404 mi., the area of its basin being 34,000 sq. m. It is navigable for steamers from Sissek to its mouth, a distance of 360 m., but navigation is greatly hindered by shifting sandbanks and other obstructions. Its principal affluents are, on the right, the Sora, Laibach, Gurk, Kulpa, Una, Vrbas, Bosna and Drina; and on the left, the Kanker, Peistritz, Sann, Sotla, Krapina, Lonja and Orjava.
SAVI—SAVIGNY

SAVIGNY, FRIEDRICH KARL VON (1779-1861), German jurist, was born at Frankfort-on-Main on the 21st of February 1779. He was the son of Friedrich Ludwig von Savi, himself a member of the house of Lorraine, and of the history of Lorraine, and which derived its name from the castle of Savigny near Charmes in the valley of the Moselle. Left an orphan at the age of 13, he was brought up by his guardian until, in 1795, he entered the university of Marburg, where, though suffering at times severely from ill-health, he studied under Professors Anton Bauer (1772-1843) and Philipp Friedrich Weiss (1766-1808), the former one of the most conspicuous pioneers in the reform of the German criminal law, the latter distinguished for his knowledge of medieval jurisprudence. After the fashion of German students, Savigny visited several universities, notably Jena, Leipzig and Halle. And returning to Marburg, took his doctor's degree in 1800. At Marburg he lectured as Privatdozent on criminal law and the Pandects. In 1803 he published his famous treatise, Das Recht der Besitzes (the rights of possession). It was at once hailed by the great jurist Thibaut as a masterpiece; and the old uncritical study of Roman law was at an end. It quickly obtained a European reputation, and still remains a prominent landmark in the history of jurisprudence. In 1804 Savigny married Kunigunde Brentano, the sister of Bettina von Arnim and Clemens Brentano the poet, and the same year started on an extensive tour through France and south Germany in search of fresh sources of Roman law. In this quest, particularly in Paris, he was successful.

In 1808 he was appointed by the Bavarian government ordinary professor of Roman law at Landshut, where he remained a year and a half. In 1810 he was called, chiefly at the instance of Wilhelm von Humboldt, to fill the chair of Roman law at the new university of Berlin. Here one of his services was to create, in connexion with the faculty of law, a "Spruch-Collègium," an extraordinary tribunal competent to deliver opinions on cases remitted to it by the ordinary courts; and he took an active part in its labours. This was the busiest time of his life. He was engaged in lecturing, in the government of the university (of which he was the third rector), and as tutor to the crown prince in Roman, criminal and Prussian law. Not the least important consequence of his residence in Berlin was his friendship with Niebuhr and Eichhorn. In 1814 appeared his pamphlet Vom Beruf unserer Zeit für Gesetzegebung und Rechtswissenschaft (new edition, 1853). It was a protest against the demand for codification, and was intended as a reply to Thibaut's pamphlet urging the necessity of forming a code of which it should be independent of the influence of foreign legal systems. In this famous pamphlet Savigny did not oppose the introduction of new laws, or even a new system of laws, but only objected to the proposed codification on two grounds: (1) that the damage which had been caused by the neglect of former generations of jurists could not be quickly repaired, and that time was required to set the house in order; and (2) that there was great risk of the so-called natural law, with its "infinite arrogance" and its "shallow philosophy" ruining such a scheme. Indeed, the enduring value of this pamphlet is that it saved jurisprudence for all time from the hollow abstractions of such a work as the Institutiones juris naturae et gentium of Christian Wolff (1679-1754), and conclusively proved that a historical study of the positive law was a condition precedent to the right understanding of the science of all law.

In 1815 he founded, with Karl Friedrich Eichhorn, and Johann Friedrich Ludwig Goschen (1776-1837), the Zeitschrift für geschichtliche Rechtswissenschaft, the organ of the new historical school, of which he was the representative. In this periodical (vol. iii. p. 129 seq.) Savigny made known to the world the discoveries he had made in Venice, by Niebuhr, of the lost text of Gaius, pronouncing it, on the evidence of that portion of the MS. submitted to him, to be the work of Gaius himself and not, as Niebuhr suggested, of Ulpian. The record of the remainder of Savigny's life consists of little else than a list of the merited honours which he received at the hands of his sovereign, and of the works which he published with indefatigable activity. In 1815 appeared the first volume of his Geschichte des römischen Rechts im Mittelalter, the last of which was not published until 1837. This work, to which his early instructor Weiss had first prompted him, was intended to complete the fame of the school of Marburg, founded by J. von Moer and F. von Thirion to the present time. His design was in some respect narrow; in others it was widened. He saw fit not to continue the narrative beyond the 16th century, when the separation of nationalities disturbed the foundations of the science of law. His treatment of the subject was not merely that of a bibliographer; it was philosophical. It raised the veil which had hung over the history of Roman law, from the breaking up of the empire until the beginning of the 12th century, and showed how, though considered dead, the Roman law yet lived on through these dark centuries, in local customs, in towns, in ecclesiastical doctrines and school teachings, until it blossomed out once more in full splendour in Bologna and other Italian cities. This history was the parent of many valuable works in which Savigny published the result of his investigations.

In 1817 he was appointed a member of the commission for organizing the Prussian provincial estates, and also a member of the department of justice in the Staatsrat, and in 1819 he became a member of the supreme court of appeal for the Rhine Provinces. In 1820 he was made a member of the commission for revising the Prussian code. In 1822 a serious nervous illness attacked him, and compelled him to seek relief in travel. In 1825 he began his elaborate work on contemporary Roman law, System des heutigen römischen Rechts (8 vols., 1840-1849). His activity as professor ceased in March 1842, when he was appointed "Grosskanzler" (High Chancellor), the title given by Frederick II. in 1746 to the official at the head of the juridical system in Prussia, as in this position he carried out several important law reforms in regard to bills of exchange and divorce. He held the office until 1848, when he resigned, not altogether to the regret of his friends, who had seen his energies withdrawn from jurisprudence without being able to flatter themselves that he was a great statesman. In 1850, on the occasion of the jubilee of his obtaining his doctor's degree, appeared in five volumes his Vermischte Schriften, consisting of a collection of his minor works published between 1800 and 1844. This event gave rise to much enthusiasm throughout Germany in honour of "the great master" and founder of modern jurisprudence. In 1853 he published his treatise on Contracts (Das Obligationenrecht), a supplement to his work on modern Roman law, in which he clearly demonstrates the necessity for the historical treatment of law. Savigny died Berlin on the 29th of October 1861. His son, Karl Friedrich, 1 See von Mohl's Staatswissenschaft, vol. iii. p. 95. For a somewhat less favourable view, see Gans's Vermischte Schriften.
SAVILE, SIR G.—SAVINGS BANKS

von Savigny (1814–1875), was Prussian minister of foreign affairs in 1849. He represented Prussia in important diplomatic transactions, especially in 1866.

Savigny belongs to the so-called historical school of jurists, though he cannot claim to be regarded as its founder, an honour which belongs to Gustav Hugo. In the history of jurisprudence Savigny’s great works are the Recht des Besitzes and the Beruf unserer Zeit für Gesetzgebung above referred to. The former marks an epoch in jurisprudence. Professor Jhering says: “With the Recht des Besitzes the juridical method of the Romans was regained, and modern jurisprudence born.” It marked a great advance both in results and method, and rendered obsolete a large body of civil law. But it should be noted that in Roman law possession had always reference to “usucapion” or to “interdicts,” that there is not a right to continuance in possession but only to immunity from interference; possession being based on the consciousness of unlimited power. These and other propositions were maintained with great acuteness and unequalled ingenuity in interpreting and harmonizing the Roman jurists. The controversy which has been carried on in Germany by Jhering, Baron, Gans and Brun shows that many of Savigny’s conclusions have been rejected. The Beruf unserer Zeit, in addition to the more specific object the general idea, which has been already treated, expresses the idea, unfamiliar in 1814, that law is part and parcel of national life, and combats the notion, too much assumed by French jurists, especially in the 18th century, and countenanced in practice by Bentham, that law might be arbitrarily imposed on a country irrespective of its state of civilization and past history. Of even greater value than his services in consolidating “the historical school of jurisprudence” is the emphatic recognition in his works of the fact that the practice and theory of jurisprudence cannot be understood without inquiry into both.

See Biographien by Stinzinger (1862); Rudolf (1865); Berthmann-Holweg (1867); and Landsberg (1880).

SAVILE, SIR GEORGE (1726–1784), English politician, was the only son of Sir George Savile, Bart. (d. 1743), of Rufford, Nottinghamshire, and was born in London on the 18th of July 1726. He entered the House of Commons as member for Yorkshire in 1739. In general he advocated views of a very liberal character, including measures of relief to Roman Catholics and to Protestant dissenters, and he defended the action of the American colonists. He refused to take the Oath of Allegiance and in 1778 he resigned his seat in parliament. He died unmarried in London on the 10th of January 1784. Horace Walpole says Savile had “a large fortune and a larger mind,” and Burke had also a very high opinion of him. He bequeathed Rufford and some of his other estates to his nephew, Richard Lumley (1757–1832), a younger son of Richard Lumley Sanderson, 4th earl of Scarborough (1752–1852). Richard took the additional name of Savile, but when on his brother’s death in 1807 he became 6th earl of Scarborough the Savile estates passed to his brother John (1760–1835), afterwards the 7th earl. John’s son and heir was John Lumley Savile, 8th earl of Scarborough (1788–1856). The 8th earl was never married, but he left four natural sons, the eldest of whom was John Savile (1818–1896), the diplomatist, who was created Baron Savile of Rufford in 1888. He entered the foreign office in 1841, was British envoy at Dresden and at Berne, and from 1838 to 1888 represented his country in Rome. Although the eldest son, he did not inherit Rufford and his father’s other estates until after the deaths of his younger brothers. He made a fine collection of pictures and died at Rufford on the 4th of November 1866, when his nephew, the 7th earl, succeeded him. John Savile Lumley Savile (b. 1854) became the 2nd baron.

SAVILE, SIR HENRY (1549–1623), warden of Merton College, Oxford, and provost of Eton, was the son of Henry Savile of Bradley, near Halifax, in Yorkshire, a member of an old county family, the Saviles of Methley, and of his wife Elizabeth, daughter of Robert Ramsden. He was educated at Brasenose College, Oxford, where he matriculated in 1561. He became a fellow of Merton in 1567, proceeded B.A. in 1566, and M.A. in 1570. He established a reputation as a Greek scholar and mathematician by voluntary lectures on the Almagest, and in 1575 became junior proctor. In 1578 he travelled on the continent to Europe, where he collected manuscripts and is said to have been employed by Queen Elizabeth to hunt in the Low Countries. On his return he was named Greek tutor to the queen, and in 1575 was established as warden of Merton by a vigorous exercise of the interest of Lord Burghley and Secretary Walsingham. He proved a successful and autocratic head under whom the college flourished. A translation of four Books of the Histories of Tacitus, with a learned Commentry on Roman Warfare in 1591, enhanced his reputation. In 1596 he obtained the provostship of Eton, the reward of persistent but unsuccessful attempts to receive the degree of doctor of law by the statutes of the college, for he was not in orders, and the queen was reluctant to name him. Savile insisted with considerable ingenuity that the queen had a right to dispense with statutes, and at last he got his way. In February 1601 he was put under arrest on suspicion of having been concerned in the rebellion of the earl of Essex. He was soon released and his friendship with the faction of Essex went far to gain him the favour of James I. No doubt did the views he had maintained and the zeal he had shown in the controversy that had been to his advantage that his elder brother, Sir John Savile (1544–1607), was a high prerogative lawyer, and was one of the barons of the exchequer who in 1606 affirmed the right of the king to impose import and export duties on his own authority. On the 30th of September 1604 Savile was knighted, and in that year he was named one of the body of scholars appointed to prepare the authorized version of the Bible. He was entrusted with parts of the Gospels, the Acts of the Apostles and the Book of Revelation. In 1604 died the only son born of his marriage in 1592 with Margaret Ducce, and Sir Henry Savile is thought to have been induced by this loss to devote the bulk of his fortune to the promotion of learning, though he had a daughter who survived him and who became the mother of the dramatist Sir Charles Sedley. His edition of Chrysostom in eight folio volumes was published in 1610–1613. It was printed by the king’s printer, William Norton, in a private press erected at the expense of Sir Henry, who imported the type. The Chrysostom, which cost him £8000 and did not sell well, was the most considerable work of pure learning undertaken in England in his time. At the same time he published an edition of the Cyropaedia in 1618. In 1619 he founded and endowed his professorships of geometry and astronomy at Oxford. He died at Eton on the 19th of February 1622. Sir Henry Savile has been sometimes confounded with another Henry Savile, called “Long Harry” (1570–1617), who gave currency to the forged addition to the Chronicle of Aeser which contains the story that King Alfred founded the university of Oxford.

A brother, THOMAS SAVILE (d. 1593), was also a member of Merton College, Oxford, and had some reputation as a scholar.


SAVINGS BANKS (Fr. caisses d’épargne; Ger. Sparkassen), institutions for the purpose of receiving small deposits of money and investing them for the benefit of the depositors at compound interest. They originated in the latter part of the 18th century—a period marked by a great advance in the organization of provident habits in general (see FRIENDLY SOCIETIES). They seem, however, to have been, first suggested by Daniel Defoe in 1697. The earliest institution of the kind in Europe was one established at Brunswick in 1765; it was followed in 1778 by that of Hamburg, which still exists, in 1786 by one at Oldenburg, in 1790 by one at Loire, in 1792 by that of Basel, in 1794 by one at Geneva, which had but a short existence, and in 1796 by one at Kiel in Holstein. In Great Britain, in 1777, Jeremy Bentham revised Defoe’s suggestion under the name of “Frugality Banks,” and in 1799 the Rev. Joseph Smith put it in action at Wenden. This was followed in 1801 by the addition of a savings bank to the friendly society which Mrs Priscilla Wakefield had established.
Savings Banks

in 1798. Savings banks were shortly after established in London, Bath, Ruthwell in Dumfriesshire by the Rev. H. Duncan (1747–1846), Edinburgh, Kelso, Hawick, Southampton and many other places. By 1817 they had become numerous enough to claim the attention of the legislature, and many acts of parliament were passed from time to time for the management of these institutions in Great Britain, culminating in the establishment on a very broad basis of the Post Office savings banks (see Post and Postal Service). The promotion of thrift, at the end of the 18th century an experiment by a few far-seeing individuals, was by the 19th century almost universally adopted, and was regarded primarily as an advantage to the depositors and to the community. Friendly societies, co-operative societies, trade societies and other agencies are all based on this same principle.

The progress of savings banks and the large amount that the deposits have now reached are evidence of the general fitness of the organization for its purpose. So far as regards trustee savings banks, the provisions of the acts of 1817 are still to a great extent the same as those by which they are now regulated, though the law has been frequently amended in matters of detail. The acts relating to trustee savings banks are referred to in the entry on Savings Banks and the other local management of the banks has been left entirely to the trustees, who are precluded from receiving any remuneration for their services or making any profit. They are, however, required to furnish the commissioners with periodical returns of their transactions. This blending of private management with state control has had many advantages in knitting together class and class. A new savings bank requires for its establishment the consent of the National Debt Commissioners and the certificate of the registrar of friendly societies to its rules.

The legislation of 1817, among other inducements to thrift, offered the interest of 1½% on the amount of every deposit, for a rate of interest in excess of that given to the ordinary public creditor, or—which is the same thing—in excess of that which could be earned by the investment of the deposits in the purchase of government securities. The interest was payable at the rate of 1½% per day, or £4, 11s. 3d. per annum, and that rate continued to be granted until the passing of the Act of 1828 (G Geo. IV. c. 29). That act reduced the rate of interest allowed to the trustees of savings banks to 2½d. per day, or £3, 16s. 9d. per annum, and prohibited them from allowing more to their depositors than 2½d. per day, or £3, 8s. 5½d. per annum, requiring them to pay the surplus, if any, into a separate fund held by the National Debt Commissioners, but bearing no interest. In 1844 the interest to trustees was further reduced to 2½d. per day, or £3, 5s. 5½d. the maximum to be allowed to depositors being fixed at £3, 6s. 10d. In 1880 the interest to trustees was reduced to 2½d., and that to depositors to £2, 15s. and again in 1888 to £2, 15s. and £2, 10s. respectively.

The result of the bonus on thrift offered by the earlier statutes was a large one, and the amount that ought to have been made good by the annual vote. Between 1817 and 1822 the difference between the interest credited and that earned amounted to £744,363; and this led to the reduction in the rate of interest effected by the act of the latter year. The deficiency, instead of being paid off, was allowed still to accumulate, and as the price of stock rose and the deposits increased fresh deficiencies arose, so that by 1844 the deficiency, which would have been £1 millions by the mere accumulation of interest of the previous 3½ years, had increased to £1,720,000. The reduction of interest in 1844 was about enough to make the fund self-supporting, though savings banks are always liable to loss from the excess of the interest, and the amount they are allowed to withdraw when they are in distress is also limited. The deficiency was still allowed to accumulate, although in 1863 nearly 2 millions was voted by parliament to make good part of the deficiency; from 1876 interest was allowed, and in 1881 was increased, while in 1884 there was created to meet the capital deficiency a terminable annuity to expire in 1906, but which by the act of 1904 was extended to 1917.

The offer of a bonus on thrift was of necessity accompanied by provisions to guard against its being used by others than the classes it was intended to encourage. This was done by limiting the amount that each depositor should be permitted to pay in. The limit has been reduced from £400 to £200. The Savings Banks Act 1891, s. 11(1), the maximum amount standing in the name of any depositor or not must not exceed £200, nor must interest be allowed on any sum in excess of that amount. By the act of 1893 the maximum deposit of any depositor, whether during the same or different years, may not exceed £1,000, and at the end of each year, if the deposit is more than once, replace the amount of any withdrawal made in one entire sum in the course of a year. The replacement may be effected in one or more sums.

When a person comes with his first deposit to a savings bank he is required to sign a declaration, setting forth his name, address and occupation, that he desires to become a depositor on his own responsibility. If he does not sign the declaration, he is turned away. If this declaration be not true, the deposits are liable to be forfeited; but it is to be feared that few depositors take the trouble to read what they are signing, or think much about the meaning of it. If the depositors cannot write, the clerk will usually ask him a few questions, such as his age, mother's maiden name, &c., which may tend to identify him, or defeat any attempt to personate him for the purpose of withdrawing.

Among the benefits conferred by the legislature upon depositors in savings banks has been that of exemption from the jurisdiction of the ordinary courts of law in cases of dispute with the trustees. Under the provisions of the act of 1891 a deposit can be taken by the trustees, if such is the apprehension, and they can retain it until the expiration of 18 months from the date of the discovery of the supposed deception, or they can apply to the courts of equity for an order to establish proceedings in bankruptcy. By that of 1828 the barrister appointed to certify the rules of the savings banks was made umpire in case of difference of opinion between the arbitrators. By that of 1844 the arbitrators were increased to seven, and one of them is to be a barrister. By an Act of 1876 the functions of the barrister in this respect were conferred upon the registrar of friendly societies. This in effect made no change in the law, for the offices of barrister and registrar had been amalgamated from an early date, and as early as 1832 it was determined in the case of Crisp v. Bunbury (8 Bing. 394) that the effect of these enactments is to oust the jurisdiction of all the superior courts of law and equity (see also Cardiff S. B. v. Aherdare District of Oddfellows, F. S. Rep., 1887, pt. A., p. 70). This jurisdiction has been highly beneficial to depositors in savings banks. The costs of the award are limited by treasury warrant to a few pounds, and are run on the footing of costs occasioned. These proceedings are simple and elastic, and the results are satisfactory. The central office, acting as registrar, determines law and fact, and adjusts all the equities of each case. Reference to the index to the registrar's decisions appears to show that the chief registrars' annual reports will show that many interesting questions of law have had to be determined with regard to so small a matter as the ownership of a savings bank deposit.

Many of the old trustee savings banks which were put on a systematic basis in 1817, have been absorbed by the Post Office, but while the total amount of their deposits increases, the number of their depositors remains about the same. In 1863 there were 131,442,534 deposits on the books of the trustee savings banks, with depositors, and deposits amounting to £40,563,000. In 1889 the number of banks had decreased to 380, with 1,500,000 depositors, and £4,500,000,000 of deposits; while in 1905 they had still further decreased in number to 224, but the depositors had increased to 1,730,331, and their deposits to £52,723,435. The reason for this is that the smaller trustee savings banks, open often only once a week for a short time, cannot give such facilities as the Post Office, which is open every day. Further than this, owing to the break-up of the Cardiff bank in 1886, and other smaller irregularities, a select committee of the House of Commons was appointed to inquire into these banks. By the recommendations of this committee, an independent and permanent inspection committee was appointed, which has carried on its work of inspection ever since, and reports annually to parliament. This action has rather tended to merge the smaller trustee savings banks in the Post Office. At the same time the large banks continue to do a great business, and have become in many ways similar to ordinary joint stock banks, affording to persons of smaller means daily facilities for saving.

Those who have studied the habits of thrift among the people have noticed how the pleasure in thrift, as it develops, is largely on the ready facilities which exist for its exercise. To this fact may perhaps be attributed the efforts that have been made in various directions for establishing some means of saving close to the places where wages are paid. To carry out this

1 By the Post Office Savings Bank (Public Trustee) Act 1908, the regulations as to declaration by a depositor and the prohibition of a depositor having more than one account do not apply to the public trustee.
idea, some of the large railway corporations have obtained powers in special acts of parliament to establish savings banks for those in their employment. The success of these banks has been great, though it has varied much, and it is difficult to trace any general rule of progress. Thirteen such institutions return their operations to the Registrar of Friendly Societies. The total amount held was, by the return for 1905, £5,513,207 in 60,427 accounts. In these banks the interest paid, as well as the deposits, are really guaranteed by the whole assets of the company. Limited, and in the other to attract thrift among their employes, the companies have formally agreed and bound themselves, by the provisions of their special acts, that the rate of interest paid shall be higher than can be obtained in the open market on the same security.

Other efforts have been made to establish savings banks at factories, to be open at the time wages are paid. One great difficulty, however, has been the objection many of those employed have to their employers knowing of their savings, and their fear lest it may affect their rate of pay. To get over this objection the plan has been tried of employing an agency to act as savings bank. This has not been much more successful, as the suspicion that accounts may be looked at by employers is difficult to overcome. It is found that the most successful savings banks are those which are carried on as a business, where the transactions are so numerous that the individual feels that his own private account is not likely to be known.

Another class of savings bank which of late years has developed considerably, is the penny bank. These banks have a twofold object: one to provide facilities for putting by extremely small sums for those whose means are very limited, and, secondly, to attract thrift among children and young people. They have been in existence for many years so as to train them to habits of thrift and the realization of the importance and use of even quite small savings. Some form of penny bank now exists in nearly every district, and indeed in nearly every parish. No returns have been collected, but it may be safely said that there are tens of thousands in operation. Many of these penny banks are feeders to the Post Office, which gives them special advantages to invest in that institution. Not only is the gross amount of money thus taken large, but (what is more important) the habit of thrift and of habituating children to the saving of the young in all parts of the United Kingdom. This has been one cause of the large extension of the Post Office savings bank itself, and has no doubt led to considerable change in the habits of the people.

In a few cases successful efforts have been made to establish permanently these penny banks on a commercial basis, as in the case of the Yorkshire Penny Bank, which has 838 branches, nearly 300,000 depositors and deposits of nearly £16,000,000; and the National Penny Bank, which has 13 branches in London, most of them open from 9 in the morning till 9 at night, with 155,768 depositors, and over £2,000,000 in deposits. The establishment of penny banks in schools has been carried on for many years, and it is difficult to exaggerate the useful work they have done in inculcating habits of thrift in the children, and in adding depositors to the Post Office savings banks when the children start in life. In England and Wales there are over 7000 of these savings banks held in the various elementary schools inspected by the Education Department. The London County Council has done much to promote this movement by instituting penny banks in its various schools. Although the financial result is not large, the educational effect of these banks is considerable. It has been found that many, though operating at a loss outside penny banks in preference to going to those carried on at their own schools, but it is probable that the idea of so doing is often suggested by the school savings bank.

With a view of bringing the savings bank still nearer the door of the people, efforts have been made to establish collecting savings banks. In these the collector calls at fixed periods for the deposits. This scheme has grown out of the investigations of a committee of the Charity Organization Society, and is based on the idea, which undoubtedly is the fact, that many people will make contributions when the money is called for, who will not take the trouble to walk a few yards themselves to make the same deposit. That this is so is proved most conclusively by the Post Office life insurance experience, a branch of the Post Office which is scarcely used by the people, while at the same time collecting life insurance companies (which of course must charge a considerable extra premium for collecting) do business to the extent of millions. In most of these banks no interest is given, but facilities and encouragements are afforded for the transfer of each individual account to the Post Office as soon as it is large enough to earn interest.

Closely allied, though not so important, are the very numerous sharing-out clubs which may be called temporary savings banks. These nearly all take a weekly subscription from their members, and, should any member die, his representative receives a certain sum, the balance left being divided at Christmas equally among the survivors, in proportion to the weekly subscriptions. Some of these clubs are registered, and at a rough estimate they number about 900, with some 120,000 members. The unregistered are, however, much more numerous, though no official information is to be had of them, and it is certain that hundreds of thousands of pounds are divided in this way each Christmas.

The attempt to induce sailors and soldiers to exercise habits of thrift by the establishments of naval savings banks under the act of 1866, and military savings banks under the act of 1859, should be mentioned. The amount in the naval savings bank is generally about £300,000. As might be expected the amount does not grow. This is accounted for by the fact that the depositors leave the service and draw out their savings. About £200,000 a year, however, goes in and out of the naval banks, and £400,000 in the army, which represents a good deal of self-denial, when the margin within which it is possible to save among sailors and soldiers is considered.

Closely allied to savings banks are a number of societies which need only be briefly referred to here. The largest of them are building societies (q.v.) under the Act of 1874, which are a very popular form of saving, especially in certain localities. The contributions to the shares of these societies, which are paid by instalments, differ but little from the periodical payments into savings banks; and although the money is not so readily repaid, notice and other forms having to be gone through, large numbers of persons pay in and draw out money, and receive the interest on the shares in much the same way as they do on deposits in savings banks without any idea of building or buying houses. In 1906 the receipts were £43,219,454 in the United Kingdom, and the balances due to and from members, with a membership of 612,424. The action of industrial and provident societies regulated under the act of parliament of 1893, must also be mentioned with reference to that of their banks, which is divided into three classes:—(a) ordinary co-operative societies; (b) societies for carrying on various businesses, including loan and banking; (c) land and building societies. All these societies, unlike the savings banks, act as savings banks, and have had considerable influence in the growth of thrift in the United Kingdom. (See FRIENDLY SOCIETIES.)

In the co-operative societies the sales in 1905 amounted to more than £1,000,000, and the profits to over £50,000. These profits are divided in different ways among the members, and they form a saving fund of large dimensions. The societies for carrying on various businesses, such as working men's clubs, loan and banking organizations, regulated under the 1893 act, numbered 286, with total receipts £3,020,569. These are not rapidly increasing, but they must be included as one exhibition of the savings of the people, and the co-operative building societies, and similar banking co-operative societies under the act of 1893 are not the same as those above referred to, though their action as regards savings is similar. They are not under the act of 1874, but carry on a trade or business, including dealings of any kind in land. They are what are called building societies. They received £135,424 from subscriptions and other sources, according to a return of 1905, and the value of the land and mortgages held and advanced was £1,400,000. Two other classes of institutions should be referred to, the friendly and trade societies, which exist for special purposes, namely, to make provision in sickness, for death, for a want of employment, and to a limited extent for old age. They differ essentially from savings banks, in that the members' contributions may be withdrawn. But as the subscriptions are for certain definite needs, almost certain to be required by each member, which but for those societies would have to be provided for, in this respect they are closely connected with the banks, and the result of government interference in the management of these friendly societies is in all respects a harmless interference with the provision of the subject as a whole. The amount held by the friendly societies is estimated at £50,459,600, subscribed by 13,078,790 members.

It was once stated with truth that the national debt was held by a
very small proportion of the population; but this is not so now. The various agencies which may be described as savings banks in different forms and under different names are a considerable share of the national debt of Great Britain.

**British Colonies.** — In New South Wales there are both state and trustee institutions for savings purposes. The Government Savings Bank was established in 1871 and the Savings Bank of New South Wales in 1832. In both, sums of one shilling and any multiple of that amount may be deposited. The Government Savings Bank does not allow interest on the excess of deposits exceeding £300 per year, while the Savings Bank of New South Wales does not allow interest on the excess of deposits over the sum of £200 made by any one individual, but, in the case of charitable trusts or trust institutions, where the deposit is in the hands of a trustee, the interest on the full deposit in the case of charitable institutions, or a legally established friendly or other society. The rate of interest in the Government Savings Bank is 3½% and in the Savings Bank of New South Wales 3¼. The following table shows the growth of depositors and deposits:

<table>
<thead>
<tr>
<th>Year</th>
<th>Government Savings Bank</th>
<th>Savings Bank of New South Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1885</td>
<td>£57,538</td>
<td>£1,471,894</td>
</tr>
<tr>
<td>1895</td>
<td>£131,763</td>
<td>£4,121,700</td>
</tr>
<tr>
<td>1905</td>
<td>£195,068</td>
<td>£6,662,066</td>
</tr>
<tr>
<td>1915</td>
<td>£207,082</td>
<td>£8,883,651</td>
</tr>
</tbody>
</table>

The Savings Bank of New South Wales was originally administered by the Government, but in the year 1902 the number may be extended up to fifteen. The funds of the institution, unlike those of the Government Savings Bank, may be applied to investments of a general nature, such as mortgages, government and municipal securities, &c. Victoria and South Australia have not developed the postal system, but show the largest amount per head of population of deposits. In trustee savings banks in Victoria the number of depositors in 1900-1901 was 330,913, while in 1905-1906 666,722: the amount of deposits in the same years was £662,066 and £1,774,179, showing an average amount per depositor of £4, 118, 8d. and £6, 13s. 4d.

The total number of deposits in savings banks in New South Wales in 1885 was 16,202; in 1905 this number 111,517 were depositors in trust companies, having an amount of deposits standing to their credit of £3,782,575 out of a total of £3,795,631. The average amount per depositor was £30, 2s. 4d. In 1905-1906 there were £52,487 depositors with a total amount of deposits of £4,766,907, giving an average amount per head of £31, 8s. 3d. On the other hand, Queensland and Western Australia rely almost exclusively on the post office system. In Queensland there were 91,025 depositors in 1900-1901, and 88,026 in 1905-1906. Deposits amounted to £3,896,170 in 1900-1901 and to £4,142,791 in 1905-1906, giving an average per depositor of £48, 1s. 9d. and £68, 2s. 6d.

In Western Australia in 1885 there were 39,318 depositors and in 1905-1906, 63,573. The deposits amounted to £1,618,359 in 1900-1901 and to £2,316,161 in 1905-1906, giving an average per depositor of £41, 5s. 3d. and £66, 8s. 4d. In Tasmania the total number of depositors in savings banks was 28,032, of which 11,517 were depositors in trust companies, while in 1905-1906 there were 91,025 depositors and 88,026 in 1905-1906. Deposits amounted to £1,618,359 in 1900-1901 and to £2,316,161 in 1905-1906, giving an average per depositor of £41, 5s. 3d. and £66, 8s. 4d.

The following table shows deposits and deposits by head of population:

<table>
<thead>
<tr>
<th>State</th>
<th>1900-1901</th>
<th>1905-1906</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. S. Wales</td>
<td>8 s. 6 d</td>
<td>10 s. 8 d</td>
</tr>
<tr>
<td>Victoria</td>
<td>8 s. 6 d</td>
<td>10 s. 6 d</td>
</tr>
<tr>
<td>Queensland</td>
<td>7 15 2</td>
<td>8 7 6</td>
</tr>
<tr>
<td>South Australia</td>
<td>8 11 3</td>
<td>10 9 3</td>
</tr>
<tr>
<td>West Australia</td>
<td>5 16 9</td>
<td>8 8 4</td>
</tr>
</tbody>
</table>

In New Zealand there were in 1900-1901 212,436 post office depositors with an amount standing to their credit of £6, 359,013 and in 1905-1906 275,666 depositors with deposits of £8,662,023. There are five savings banks in New Zealand not connected with the post office; in these the total amount standing to the credit of depositors in 1905-1906 was £1,111,931.

**Canada.** — In Canada post office savings banks were established in 1867, but government savings banks, under the management of the Finance Department, have been established in the last few years. The Canadian government is pursuing the policy of transferring the accounts from the savings banks under the control of the Finance Department to the Post Office Department, the transfer taking place as the position of superintendent of each place becomes vacant. In both kinds of savings banks a deposit must not be less than $1 or exceed $1000 in any one year; nor must the total amount in deposit exceed $3000. There are 991 branches of the post office savings bank and 23 offices of the government savings bank. The following table shows the number of depositors and amount of deposits:

<table>
<thead>
<tr>
<th>Year</th>
<th>Post Office</th>
<th>Government (other than Post Office)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depositors</td>
<td>Amount standing to Credit of Depositors</td>
</tr>
<tr>
<td>1895</td>
<td>120,628</td>
<td>8,602,472</td>
</tr>
<tr>
<td>1900</td>
<td>190,987</td>
<td>7,397,496</td>
</tr>
<tr>
<td>1905</td>
<td>165,518</td>
<td>45,367,761</td>
</tr>
</tbody>
</table>

In addition to the post office and government savings banks there are special savings banks, such as the Caisse d'épargne of Quebec and Montreal City and District Savings Banks. The chartered banks also have savings branches; but in India, the Straits Settlements, Orange River Colony, Transvaal, Gold Coast, Sierra Leone and the Bahamas the savings banks are under the post office; in Mauritius, Seychelles, Florida, Falkland Islands, Natal, St. Helena, Southern Nigeria, Newfoundland, St. Lucia, St. Vincent, Turks and Caicos Islands, Jamaica, Barbados, Grenada, St. Christopher, Nevis, Antigua, Montserrat, Dominica, Bermuda, British Honduras, Cyprus, Trinidad, Tobago, Gibraltar and Malta there are government savings banks; in Gambia, treasury savings banks; in Ceylon and British Guiana there are both government and post office savings banks, while in the Cape of Good Hope, in addition to the post office savings banks, there are private savings banks, but their business is small.

**France.** — In France the first savings bank was instituted in Paris by royal ordinance in 1818. It was subsequently regulated by the principal departments. Some of those so created were independent undertakings, but several were founded on the initiative of municipal councils, three (Nancy, Metz, Avignon) being attached to ments-de-pié. These communal savings banks are now the rule and private banks the exception. They are regulated by a law of 1835, amended in several particulars by later legislation. They are created by decree of the president on the advice of the council of state, and at the initiative of the municipal council. Their administration is in the hands of a council consisting of the mayor of the commune and its directors, none of whom receive remuneration for their services. The funds which these institutions collect, with the exception of a certain amount allowed to be retained for independent investment, handed over to the Caisse des dépôts et consignations (created in 1816 for the administration of the investment of private funds. Interest of 1½% is allowed by the Caisse des dépôts et consignations. If the savings banks retain from ½ to ¾% for administrative expenses and the providing of a reserve fund. Both in the private and the post office savings banks the maximum amount standing in the name of a depositor must not exceed £1000.

The following statement shows the progress of private savings banks since 1835:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Banks including Branches</th>
<th>Number of Depositors</th>
<th>Amount of Depositors</th>
<th>Per Head of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1840</td>
<td>430</td>
<td>351,308</td>
<td>7,595,337</td>
<td>7 s. 8 d</td>
</tr>
<tr>
<td>1850</td>
<td>956</td>
<td>365,995</td>
<td>5,399,600</td>
<td>7 s. 8 d</td>
</tr>
<tr>
<td>1860</td>
<td>649</td>
<td>1,218,122</td>
<td>15,090,889</td>
<td>7 s. 8 d</td>
</tr>
<tr>
<td>1870</td>
<td>1,165</td>
<td>2,079,141</td>
<td>25,289,617</td>
<td>7 s. 8 d</td>
</tr>
<tr>
<td>1880</td>
<td>1,406</td>
<td>3,841,120</td>
<td>51,208,107</td>
<td>7 s. 8 d</td>
</tr>
<tr>
<td>1890</td>
<td>1,599</td>
<td>5,761,408</td>
<td>116,468,894</td>
<td>6 s. 7 d</td>
</tr>
<tr>
<td>1900</td>
<td>1,845</td>
<td>7,116,462</td>
<td>130,559,773</td>
<td>7 s. 7 d</td>
</tr>
<tr>
<td>1905</td>
<td>2,042</td>
<td>7,557,133</td>
<td>135,061,740</td>
<td>7 s. 2 d</td>
</tr>
</tbody>
</table>

**Germany.** — In Germany the postal savings bank has not been adopted to any extent, but there is an elaborate system of state savings banks, which includes life, accident and life-pension insurance, with a certain extent even protection against involuntary idleness (see SAVINGS.)

1 For statistics of the post office savings banks see Statistics of the official publications of the various countries, and J. H. Hamilton, Savings and SAVINGS Institutions (New York, 1902).
UNITED STATES

There are in the United States four kinds of savings banks: (1) Mutual or Trustee Savings Banks; (2) Stock Savings Banks; (3) Postal Savings Banks; (4) School Savings Banks.

1. Mutual Savings Banks are organized under state laws, and are under the supervision of an officer usually appointed by the governor. They have no capital, and do a strictly investment business. All their earnings go to the depositors, either as dividends, or to a surplus fund, which, in the event of liquidation, also belongs to the depositors. Their management is vested in a board of trustees, a self-perpetuating body who serve without salary, and are paid nothing except such as may vest in their property. Executive officers and clerks are paid moderate salaries. The proportion of annual expense to each dollar of assets is sometimes less than .0025.

The rate of interest on deposits usually ranges from 3 to 4%. Depositors have no voice in the management, except as citizens of the state, through their representatives in the state legislature. Nearly all the states limit investments carefully, though a few permit considerable latitude; in New York the deposits in saving banks are considered next to government bonds as safe investments. In the states in which they are allowed to invest in stocks, they are exempt from taxation, but a franchise tax of 1% annually is imposed upon the surplus. In most other states the deposits are taxed for state purposes. The amount which each person may deposit in any year or half year is sometimes limited by the by-laws, and the total sum to be received from any one depositor is usually limited by state law. Depositors are in practice generally payable on demand, though the banks reserve the right to require notice, generally from sixty to ninety days, and sometimes enforce this right in times of panic. The first savings bank incorporated in the United States was the Providence Institution for Savings, incorporated in Boston in 1816. The oldest in New York is the Bank for Savings, of New York City, incorporated in 1819. The largest deposit of any bank of this kind in the United States, $108,720,523-82, was in 1910 that of the Bowery Savings Bank of New York. Mutual savings banks are confined chiefly to the states in the eastern portion of the country. The only mutual banks outside the northeasterly states were in 1910 three in Ohio, five in Indiana, fourteen in Minnesota, one in West Virginia, one in California and two in Wisconsin.

Though the laws governing mutual banks vary in the different states, the first law of the New York Savings Bank Law of 1875, re-enacted in 1892, and subsequently amended, gives the main principles on which they are organized. Mutual banks may incorporate a savings bank, two-thirds of whom shall be residents of the county where the proposed bank is to be situated. When the certificate of organization is filed with the superintendent of banks, who exercises supervision over all banks, it is the condition that if at any time the indebtedness of any bank is in fact needed in the community where it is to be organized, and to investigate the character and general fitness of the trustees. The present superintendent of banks requires that the incorporators of a savings bank shall defray personally the expenses of the institution until its earnings are sufficient to meet such expenses, and also return dividends at the rate of not less than 3%. The board of trustees have entire control of the management of the bank. They elect the president and other officers. A trustee who borrows any of the bank's funds, or who becomes a surety for any other borrower, forfeits his office. Bankruptcy or an unsatisfied judgment of ninety days' standing will also void his office. Trustees are not allowed to have any interest in the profits, or to borrow the deposits or funds.

The trustees of any savings bank may invest the moneys deposited therein and the income derived therefrom as follows: (1) In the stocks or bonds of interest-bearing notes or obligations of the United States, or those for which the faith of the United States is pledged, including the bonds of the District of Columbia. (2) In the stock or bonds of a railroad corporation, to the aggregate amount not exceeding in the aggregate amount of any of the United States and of any railroad company in the United States, which has not within ten years defaulted in the payment of any part of any debt authorized by its legislature. (3) In the stocks or bonds of a school district, in the aggregate amount not exceeding in the aggregate amount of any school district bonds issued, for school purposes, or in the interest-bearing obligations of any city or county of this state. (4) In the stocks or bonds of a number of specified cities without the state, unless the interests of the said cities, less its water debts and sinking fund, shall exceed 7% of its valuation for purposes of taxation, its bonds and stocks shall cease to be an authorized investment. (6) In bonds and mortgages on real and personal real property in the aggregate amount not exceeding 60% of the value of the property. Not more than 65% of the whole amount of deposits shall be so lent or invested. If the loan is on unimproved and unproductive real property, the amount lent thereon shall not be more than 50% of its actual value. No investment in any bond and mortgage shall be made by any savings bank, except upon the report of a committee of its trustees. (7) Also, by the first mortgage bonds of any railway corporation of this state, the bonds of any such railway corporation of an issue to retire all prior mortgage debt of such railway corporation, provided the bonds laterly to certain pecuniary conditions. Not more than 25% of the assets of any savings banks shall be loaned or invested in railroad bonds. There are other limitations of the amounts to be loaned or invested in the securities of any one railway. Street railway corporations shall not be considered railway corporations within the meaning of this section. An act passed in 1900 permits the investment of deposits in the bonds of certain railways situated in other states. These investments must conform to conditions assuring safety.

Savings banks in New York are preferred creditors of insolvent state banks and trust companies. In 1901 a law was passed providing for a tax of 1% on the surplus of savings banks, computed on the par value of their securities. On July 1, 1910, deposits in the savings banks amounted to $1,590,181,366-19, and their investments to $1,599,532,371, classified as follows:

<table>
<thead>
<tr>
<th>Type of Investment</th>
<th>Amount (in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States bonds</td>
<td>$33,333,576-12</td>
</tr>
<tr>
<td>State, county and municipal bonds</td>
<td>685,099,502-18</td>
</tr>
<tr>
<td>Railroad bonds</td>
<td>743,425,893-93</td>
</tr>
<tr>
<td>Other stocks and bonds, including railroad and bank stocks</td>
<td>137,653,399-71</td>
</tr>
</tbody>
</table>

These banks, on the date named, a surplus fund of $202,656,366-58, and $3,144,584,874 individual deposits. The Mutual Savings Banks hold more than 22% of the aggregate individual deposits of all the banks in the country.

2. Stock Savings Banks are found in the more purely agricultural parts of the country, the southern, Mississippi Valley and western states, where only a small proportion of people earn wages in manufactures and commerce; suitable investments are not numerous, the benefits of mutual saving banks are not familiar, and the people are unwilling to accept a low rate of interest. In some states having stock banks there are no laws regulating the banking business by which they regulate their business under the same laws as commercial banks. Several of the states restrict the investments of the stock savings banks. Prior to 1865, when the issue of circulating notes by state banks was suppressed by a prohibitory tax, there was a distinction between state banks and stock savings banks; the former could issue notes, while the latter, as a rule, could not. Stock savings banks are conducted frequently as adjuncts of state and national banks, occupying the same rooms and being under the same management. Many of the national banks chartered by the several governments of the several states have issued notes for stock savings banks, and the deposits received in these departments are on the same legal footing as other deposits and are not specially invested. Similar departments are also to be found in many trust companies and state banks of discount.

The law of the state of Iowa is typical of those states where stock banks are under public supervision. A savings bank may be organized with a capital of $10,000, or $20,000, or $50,000, or $500,000. The usual corporate powers are granted. The amount of deposits is limited to twenty times the capital and surplus. The usual provisions for re-payments of deposits are made, and in addition the savings banks are given the privilege of requiring sixty days' notice for the withdrawal of savings deposits.

Stockers are not allowed to invest their funds in the following securities: (1) Stocks, bonds or interest-bearing notes of the United States. (2) Stocks, bonds or evidences of debt-bearing interest of the
SAVOIE—SAVONA

state of Iowa. (g) Stocks, bonds and warrants of any city, town, village, or school district, or drainage district, in the state regularly issued, but the investments of any savings bank should not consist of such bonds or warrants to a greater amount than 25 per cent. of the assets. In mortgaging deposits on unencumbered real estate within the state worth at least twice the amount lent. (g) It is lawful for such banks to discount, purchase, sell and make loans upon personal or public security, except shares of their own capital stock. Property acquired by foreclosure of mortgages, &c., may not be held more than ten years. The rate of interest to be paid is left to the discretion of the trustees, and the profits, after the payment of such interest and expenses, go to capital stock. Stockholders are liable to the creditors for double their stock, and such liability continues for six months after the transfer of any stock. Directors receive no compensation. Officers and directors of the bank are required to give an annual security in the form of either bonds or notes, and such loans can only be made by the board in the absence of the party applying. The savings banks are prohibited from lending to any individual or firm more than 20 per cent. of the capital stock. All savings banks are required to make a quarterly statement to the authorizing state, giving in detail the statement of condition upon a given day. This statement is made under oath of the officers, and is required to be published. The state auditor is given the power to examine any savings bank at any time, and must make an examination at least once a year; and should the conditions warrant, he is required to report to the attorney-general, who institutes proceedings under the statute to dissolve the corporation. Provision is made for increasing the capital stock by a two-thirds' vote of the existing shares. The corporate existence of the banks is placed at fifty years. Michigan affords a good example of banks doing a commercial and savings bank business under a single organization, but with the savings deposits entirely segregated from other deposits and separately invested. The system has worked successfully and factually. There has been much discussion among bankers throughout the country in the last few years of the possibility of enacting laws specifically providing (a) for the creation of savings departments in national banks, with the segregation of savings deposits, and (b) for the enactment of similar state laws to national savings banks and trust companies maintaining savings departments. Other proposals have been made for a government (or state) guaranty of deposits, and this plan has been adopted in a few of the states.

On April 28, 1909, there were 1661 stock savings banks reporting, with aggregate resources of $677,784,099-95. Their capital was $59,506,420, and surplus and undivided profits $38,112,716-60. Individual deposits subject to check: $100,708,410-57; savings deposits or deposits made in trust: $366,167,901-61; other deposits, including amount due banks and bankers, $109,911,893-91.

Number of Savings Banks in the United States, Number of Depositors, Amount of Savings Deposits, &c., 1900-1909.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Banks</th>
<th>Number of Depositors</th>
<th>Average Deposits per Depositor</th>
<th>Average per Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>1002</td>
<td>6,107,063</td>
<td>2,449,547,885</td>
<td>$401-10</td>
</tr>
<tr>
<td>1901</td>
<td>1007</td>
<td>6,358,723</td>
<td>2,597,944,580</td>
<td>408-30</td>
</tr>
<tr>
<td>1902</td>
<td>1036</td>
<td>6,666,672</td>
<td>2,760,177,290</td>
<td>412-53</td>
</tr>
<tr>
<td>1903</td>
<td>1076</td>
<td>7,050,443</td>
<td>2,882,540,538</td>
<td>417-70</td>
</tr>
<tr>
<td>1904</td>
<td>1157</td>
<td>7,305,443</td>
<td>2,968,678,111</td>
<td>418-89</td>
</tr>
<tr>
<td>1905</td>
<td>1237</td>
<td>7,696,229</td>
<td>3,261,236,119</td>
<td>423-74</td>
</tr>
<tr>
<td>1906</td>
<td>1319</td>
<td>8,047,192</td>
<td>3,362,145,198</td>
<td>427-49</td>
</tr>
<tr>
<td>1907</td>
<td>1435</td>
<td>8,588,811</td>
<td>3,596,060,435</td>
<td>429-70</td>
</tr>
<tr>
<td>1908</td>
<td>1455</td>
<td>8,705,846</td>
<td>3,660,553,945</td>
<td>420-47</td>
</tr>
<tr>
<td>1909</td>
<td>1703</td>
<td>8,831,863</td>
<td>3,713,405,710</td>
<td>420-45</td>
</tr>
</tbody>
</table>

1 Population estimated at 88,926,000, June 30, 1909.
2 Not including 339 state banks and trust companies of Illinois with $204,908,805 savings deposits credited to 641,634 savings depositors. Including Illinois savings deposits and the average due each depositor is $413-60 and average per capita $44-06.
3 On May 3, 1909, a statement was issued by Wm. Hanhart, Secretary of the Savings Bank Section of the American Bankers Association, showing "actual savings deposits in the savings banks, national banks, Trust Companies and private banks in United States," $4,560,000,000.
4 Postal Savings Banks.—By an act of the Federal Congress, approved June 25, 1910, Postal Savings Banks were first authorized in the United States. The management of these banks is vested in a board of trustees composed of the postmaster-general, secretary of the treasury, and attorney-general. The board of trustees shall designate such post-offices as it deems proper to be postal savings depository offices. Any person ten years or over may be a depositor; the minimum deposit is one dollar, and not more than $100 may be deposited by any one in any one month; the maximum balance to which the credit of any depositor (exclusive of interest) shall not exceed $500. Interest, 2 per cent. annually; deposits payable on demand without notice. The deposits in the postal savings depositories are to be deposited in banks subject to national or state supervision at not less than 2% interest; 65 per cent. of the deposits may be so redeposited in these banks; 30 per cent. invested in United States securities, and 5 per cent. held as a reserve in the United States treasury. But the 65 per cent. fund on deposit with the banks may be withdrawn for investment in bonds or other securities of the United States, or for the payment of the national debt. Only when, in his judgment, the general welfare and the interests of the United States so require. At the option of the depositor, deposits may be converted into United States government bonds. In making deposits of the funds in national or state banks, the Federal government requires that those banks secure in the form of public bonds or other securities as the board of trustees may prescribe. The faith of the United States is solemnly pledged to the payment of the deposits.

4. School Savings Banks were first established in the United States in 1885 by J. H. Thiry, at Long Island City, New York, Oct. 1, 1881. The first of the 1766 schools, distributed throughout 118 cities or villages. Out of 632,665 pupils' registered in these schools, 903,458 have saved $5,051,644-60, of which $4,180,948-59 have been withdrawn, leaving a balance of $870,666-01 due depositors. (B. R. *).

SAVOIE, a frontier district of France, formed in 1860 of the old provinces of Haute Savoie, Savoie, the Tarentaise and the Maurienne, which constituted the southern portion of the duchy of Savoy. It is bounded N. by the department of Haute Savoie, E. and S. by Italy, S.W. by the department of the Hautes Alpes, W. by those of the Isère and the Ain. Pop. (1901) 254,781; area 2224 sq. m. It is mainly made up of the basin of the Isère. The upper course of that river flows through the Tarentaise, receiving (right) the Arly and later (left) the Arc, which flows through the Maurienne, which is to a large extent traversed by the Mont Cenis railway. Probably the Isère formerly communicated with the Rhône past Chambéry and the Lac du Bourget. The sources of the Isère and of the Arc arc separated by the ridge of the Col du Mont Iséran (9065 ft.). The loftiest point in the department are the Grande Casse (13,615 ft.), the Mont Lachat (13,536 ft.), the Mont Pourri (12,425 ft.), the Pointe de Charbonnel (12,336 ft.), the Aiguille de la Grande Sassière (12,323 ft.), the Dent Parrachée (12,175 ft.), the Levanna (11,943 ft.) and the Aiguilles d'Arves (11,520 ft.). A small portion of the department (including both shores of the Lac du Bourget) is in the part of the duchy of Savoy neutralized in 1815. It is divided into 4 arrondissements (Chambéry, the chief town, Albertville, Moutiers-Tarentaise, and St Jean de Maurienne), 29 cantons and 329 communes. It forms the dioceses of Chambéry (an archbishopric), Moutiers and St Jean de Maurienne. The best place known to foreigners is Aix les Bains (q.v.), while others are delightful at Marlies and at Challes, those of Salins being saline, and those of Brides (the best known after Aix) alkaline.

See J. J. Vernier, Dictionnaire toponomastique de la Savoie (Chambéry, 1897).

SAVONA, a seaport and Episcopal see of Liguria, Italy, in the province of Genoa, 27 m. W.S.W. of Genoa by rail, 33 ft. above sea-level, and after Genoa and Nice the most important of the cities of the Riviera. Pop. (1906) 43,856 (town); 46,715 (commune). The greater part of the town is built on a rock, with green-leaved vines and luxuriant orange groves. On the Rock of St George stands the castle built by the Genoese in 1542, on the area of the old cathedral and now used as a military prison. The cathedral (1580-1604) is a late Renaissance building with a modern dome and early Renaissance choir-stalls, pulpit, &c. In the Cappella Sistina, to the north, stands the simple, finely carved tomb erected by Sixtus IV. to his parents. Facing the cathedral is the Delta Rovere palace erected by
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Cardinal Giulio della Rovere (Julius II), from the plans of Giuliano da Sangallo as a kind of university, and now occupied by the prefecture, the post-office and law-courts. S. Maria di Sestello has a large altarpiece by Foppa and Brea (of 1490). There is a municipal picture-gallery in the hospital of St Paul. The Teatro Chiabrera was erected in 1835 in honour of the lyric poet Chiabrera, who was born and buried in Savona. Four and a half miles W. is a pilgrimage church of the Madonna della Misericordia, founded in 1536. The modernized dates of 1815 were inscribed in the rock, 986 ft. long, 460 ft. wide and 23 ft. deep. Savona is one of the chief seats of the Italian iron industry, having iron-works and foundries, shipbuilding, railway workshops, engineering shops, brass foundry, tinplate works, sulphur mills and glass-works. It imports commodities to the value of nearly £4,000,000 yearly, half of which is coal, with petroleum, iron, cereals, &c. In 1906, 7,770,000 tons of shipping, of which about half was British, and most of the rest Italian, entered. There is a small export trade, chiefly in Iron sheets, chemicals, wood and candied fruits. The potteries export their earthenware to all parts of Italy. There is a railway through the mountains from Savona to Turin (91 m. N.N.W.).

Savona is the ancient Sare, a town of the Ingaei (see ALBENGA), where, according to Livy, Mago stored his booty in the Second Punic War. A buried Roman bridge lies near the stream, which now oncewas a port where women washed their clothes in summer. At the port of the 9th century, the traffic passing to Vada Sabatia (Vado), 4 m. to the W., which was a harbour, and the point to which the coast road from Rome was reconstructed in 109 B.C., and from which a road diverged across the inland plain to Placentia (of 109 B.C. it bought up the territorial claims of the marqueses Del Carretto. Its whole history is that of a long struggle against the preponderance of Genoa. As early as the 12th century the Savone built themselves a sufficient harbour; but in the 16th century the Genoese, fearing that Francois I. of France intended to make it a great seat of Mediterranean trade, rendered it useless by sinking at its mouth vessels filled with large stones. In 1460 it was captured by the king of Sardinia, but it was restored to Genoa by the treaty of Aix-la-Chapelle. Columbus, whose ancestors came from Savona, gave the name of the city to one of the first islands he discovered in the Antilles.

SAVONAROLA, GIROLAMO (1452-1498), Italian monk and martyr, was born at Ferrara on the 21st of September 1452, the third child of Michele Savonarola and his wife Elena Bonacossi of Mantua. His grandfather, Michele Savonarola, a Paduan physician of much repute and learning, had settled in Ferrara, and gained a large fortune there. The younger Michele was a mere courtier and spendthrift, but Elena seems to have been a woman of superior stamp. She was tenderly loved by her famous son, and his letters prove that she retained his fullest confidence through all the vicissitudes of his career.

Girolamo was a precocious child, with an early passion for learning. His first tutor was his grandfather, the physician; and, in the hope of restoring their fallen fortunes, his parents intended him for the same profession. Even as a boy he had intense pleasure in reading St Thomas Aquinas and the Arab commentators of Aristotle, was skilled in the subtleties of the schools, wrote verses, studied music and design, and, avoiding society, loved solitary rambles on the banks of the Po. Ferrara was then a gay and bustling town of 100,000 inhabitants, its prince Borso d’Este a most magnificient potentate. To the mystic young student all festivities were repulsive, and although reared in a courtier-household he early asserted his individuality by his contempt for the courtier life. At the age of nine he took the vow of poverty and took the name of Francesco. But he was not passionately in love with the daughter of a neighbour, a Strozzi exiled from Florence. His suit was repulsed with disdain; no Strozzi, he was told, might stoop to wed a Savonarola. This blow probably decided his career; but he endured two years of misery and mental conflict before resolving to abandon his medical studies and become a monk. He was full of doubt and self-distrust; disgust for the world did not seem to him a sufficient qualification for the religious life, and his daily prayer was, “Lord! teach me how I should walk.” But in 1474 his doubts were dispelled by a sermon heard at Faenza. He secretly stole away to Bologna, entered the monastery of St Domenico and then acquainted his father with his reasons for the step. The world’s wickedness was intolerable, he wrote; throughout Italy he beheld vice triumphant, virtue despised. Among the papers he had left behind at Ferrara was a treatise on “Contempt of the World,” inveighing against the prevalent corruption and predicting the speedy vengeance of Heaven. His novitiate was marked by a fervour of humility. He sought the most menial offices, and did penance for his sins, with a diet of bread and water, by the severest austerities. According to contemporary writers, he was born to a shadow. His gaunt features were beautified by an expression of singular force and benevolence. Luminous dark eyes sparkled and flamed beneath his thick, black brows, and his large mouth and prominent nether lips were as capable of gentle sweetness as of power and set resolve. He was of middling stature and dark complexion. His manners were simple, his speech unadorned and almost homely. His splendid oratorical power was as yet unrevealed; but his intellectual gifts being recognized his superiors charged him with the laborious toil of an instructor. He passed six quiet years in the convent, but his poems written during that period are expressive of burning indignation against the corruptions of the church and profoundest sorrow for the calamities of his country.

In 1482 he reluctantly accepted a mission to Ferrara, and, regarding earthly affections as snares of the evil one, tried to keep aloof from his family. His preachings attracted slight attention there, no one—as he later remarked—being a prophet in his own land. An outbreak of hostilities between Ferrara and Venice, fomented by Pope Sixtus IV., was composed at this time he returned to Florence. Thence he was despatched to St Mark’s in Florence. Lorenzo the Magnificent was then (1482) at the height of his power and popularity. At first Savonarola was enchanted with Florence. His cloister, sanctified by memories of St Antonine and adorned with the inspired paintings of Frà Angelico, seemed to him a fore-court of heaven. But his content speedily changed to horror. The Florence streets rang with Lorenzo’s ribald songs (“the canti carnascialeschi”); the smooth, cultured citizens were dead to all sense of religion or morality; and the spirit of the fashionable heathen philosophy had even infected the brotherhood of St Mark. In 1483 Savonarola was Lenten preacher in the church of St Lorenzo, but his plain, earnest exhortations attracted few hearers, while all the world thronged to Santo Spirito to enjoy the elegant rhetoric of Frà Mariano da Genazzano. Discouraged by this failure in the pulpit, Savonarola now devoted himself to teaching in the convent, but his zeal for the salvation of the apathetic townsfolk was soon to stir him to fresh efforts. Convincing of being divinely inspired, he had begun to see visions, and discovered in the Apocalypse symbols of the heavenly vengeance about to overtake this sin-laden people. In his vision his church was composed at this time he returned to his prophetic dismay. The papal chair was now filled by Innocent VIII., whose rule was even more infamous than that of his predecessor Sixtus IV.

Savonarola’s first success as a preacher was gained at St Gemignano (1483-1485), but it was only at Brescia in the following year that his power as an orator was fully revealed. In a sermon on the Apocalypse he shook men’s souls by his terrible threats of the wrath to come, and drew tears from their eyes by the tender pathos of his assurances of divine mercy. A Brescian friar relates that a halo of light was seen to flash round his head, and the citizens remembered his awful prophecies when in 1512 their town was put to the sack by Gaston de Foix. Soon, at a Dominican council at Reggio, Savonarola had occasion to display his theological learning and subtlety. The famous Pico della Miranda was particularly impressed by the friar’s attainments, and is said to have urged Lorenzo de’ Medici to recall him from Lombardy.

When Savonarola returned to Florence in 1490, his fame as an orator had gone there before him. The cloister garden was too small for the crowds attending his lectures, and on the 1st of August 1490 he gave his first sermon in the church of St Mark. To quote his own words, it was “a terrible sermon,” and legend
adds that he foretold he should preach for eight years. And now, for the better setting forth of his doctrines, to silence pedants, and confute malignant misinterpretation, he published a collection of his writings. These proved his knowledge of the ancient philosophers, the influence of new men, and showed that the latter and of the fathers caused him to seek inspiration from the Bible alone. The Triumph of the Cross is his principal work, but everything he wrote was animated by the ardent spirit of piety evidenced in his life. Savonarola's sole aim was to bring mankind nearer to God. 

In 1491 he was invited to preach in the cathedral, Sta Maria del Fiore, and his rule over Florence may be said to begin from that date. Lorenzo sent leading citizens to him to urge him to show more respect to the head of the state. Savonarola rejected their advice and foretold the impending deaths of Lorenzo, of the pope and of the king of Naples. In the July of the same year he was elected prior of St Mark's. As the convent had been rebuilt by Cosimo, and enriched by the bounty of the Medici, it was considered the duty of the new superior to present his homage to Lorenzo. Savonarola, however, refused to conform to the usage. His election was due to God, not Lorenzo; to God alone would he promise submission. Upon this the sovereign angrily exclaimed: "This stranger comes to dwell in my house, yet will not stoop to pay me a visit." Nevertheless, disclaiming to recognize the entire extent of Lorenzo's mark, he tried, but in vain, conciliatory measures. The Magnifico then sought to undermine his popularity, and Frà Mariano was employed to attack him from the pulpit. But the preacher's scandalous accusations missed their mark, and disgusted his hearers without hurting his rival. Savonarola took up the challenge; his eloquence prevailed, and Frà Mariano was silenced. But the latter, while feigning indifference, was henceforth his rancorous and determined foe.

In April 1492 Lorenzo de' Medici was on his death-bed at Careggi. Oppressed by the weight of his crimes, his reputation and his wealth, the unhappy friar saw his hopes of salvation rapidly diminishing. Savonarola, in a moment of exaltation, declared that in three days the manifestation of divine grace would make of him a saint. Lorenzo turned his face to the wall and made no reply. Savonarola waited a few moments and then went away. And shortly after his petition died unavailing.

Prophetic Visits. The same year witnessed the fulfilment of Savonarola's second prediction in the death of Innocent VIII. (July 1492); men's minds were full of anxiety, an anxiety increased by the scandalous election of Cardinal Borgia to the papal chair. The friar's utterances became more and more fervent and impassioned. It was during the delivery of one of his Advent sermons that he beheld the celebrated vision, recorded in contemporary medals and engravings, that is almost a symbol of his doctrines. A hand appeared to him bearing a flaming sword inscribed with the words: "Gladius Domini supra terram cito et velociter." He heard supernatural voices proclaiming mercy to the faithful, vengeance on the guilty, and mighty cries that the wrath of God was at hand. Then the sword bent towards the earth, the sky darkened, thunder pealed, lightning flashed, and the whole world was wasted by famine, bloodshed and pestilence. It was probably the noise of these sermons that caused the friar's temporary removal from Florence at the instance of Piero de' Medici. He was presently addressing enthusiastic congregations at Prato and Bologna. In the latter city he his courage in rebuking the wife of Bentivoglio, the reigning lord, for interrupting divine service by her noisy entrance nearly cost him his life. Assassins were sent to kill him in his cell; but awed, it is said, by Savonarola's words and demeanour they fled dismayed from his presence. At the close of his last sermon the undaunted friar publicly announced the day and hour of his departure from Bologna; and his lonely journey on foot over the Apennines was safely accomplished. He was rapturously welcomed by the community of St Mark's, and at once proceeded to cast out the <omitted word> of the "threatened" and to sweep away abuses. For this purpose he obtained, after much difficulty, a papal brief emancipating the Dominicans of St Mark from the rule of the Lombard vicars of that order. He thus became an independent authority, no longer at the command of distant superiors. He reestablished the brethren to a quieter retreat outside the city, only retaining in Florence those best fitted to aid in intellectual labour. To render the convent self-supporting, he opened schools for various branches of art, and promoted the study of Oriental languages. His efforts were successful; religion and learning made equal progress. St Mark's became the most popular monastery in Florence, and many citizens of noble birth flocked thither to take the vows.

Meanwhile Savonarola continued to denounce the abuses of the church and the guilt and corruption of mankind, and thundered forth predictions of heavenly wrath. In 1494 the duke of Milan demanded the aid of France, and King Charles VIII. brought an army across the Alps. Piero de' Medici, made alliance with the Neapolitan sovereign whose kingdom was claimed by Charles. Then, repenting this ill-judged step, he hurried in person to the French camp at Pietra Santa and humbled himself before the king. Not content with imposing on all the latter's demands, he further promised large sums of money and the surrender of the strongholds of Pisa and Leghorn. This news drove Florence to revolt. But even at this crisis Savonarola's influence was all-powerful, and a bloodless revolution was effected. Piero Capponi's declaration that "it was time to put an end to this baby government" was the sole weapon needed to depose Piero de' Medici. The resuscitated republic instantly sent a fresh embassy to the French king, to arrange the terms of his reception in Florence. Savonarola was one of the envoys, and went to the king in the disguise of an excommunicated friar who had so long predicted his coming and declared it to be divinely ordained. He was most respectfully received at the camp, but could obtain no definite pledges from the king, who was bent on first coming to Florence.

Returning full of hope from Pietra Santa, Savonarola might well have been dismayed by the distracted state of public affairs. Nevertheless, with the aid of Capponi, he guided the bewildered city safely through these critical days. Charles entered Florence on the 17th of November 1494, and the citizens' fears evaporated as they saw the majesty of the French leader. But the exorbitant demands soon showed that he came as a foe. Disturbances arose, and serious collision with the French troops seemed inevitable. The signory resolved to be rid of their dangerous guests; and, when Charles threatened to sound his trumpets unless the sums exacted were paid, Capponi tore up the treaty in his face and made the memorable reply: "Then we will ring our bells." The monarch was cowed, accepted moderate terms, and, yielding to Savonarola's remonstrances, left Florence on the 24th of November.

After seventy years' subjection to the Medici Florence had forgotten the art of self-government, and felt the need of a strong guiding hand. So the citizens turned to the patriot monk whose words had freed them of King Charles, and Savonarola became the lawgiver of Florence. The first thing done at his instance was to relieve the starving populace within and without the walls; shops were opened to give work to the unemployed; all taxes, especially those weighing on the lower classes, were reduced; the strictest administration of justice was enforced, and all men were exorted to place their trust in the Lord. And, after much debate, as to the constitution of the new republic, Savonarola's influence carried the day in favour of Soderini's proposal of a universal or general government, with a great council on the Venetian plan. The great council consisted of 3200 citizens of blameless reputation and over twenty-five years of age, a third of the number sitting for six months in turn in the hall of the Cinquecento expressly built for the purpose. There was also an
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upper council of eighty, which in conjunction with the signory decided all questions of too important and delicate a nature for discussion in the larger assembly. These institutions were approved by the people, and gave a fair promise of justice. Savonarola’s programme of the new government was comprised in the following formula:—(1) fear of God and purification of manners; (2) promotion of the public welfare in preference to private interests; (3) a general amnesty to political offenders; (4) a council on the Venetian model, but with no doge. At first the new machinery acted well; the public mind was tranquil, and the war with Pisa—not as yet of threatening proportions—was enough to occupy the Florentines and prevent intermecine feuds.

Without holding any official post in the commonwealth he had created, the prior of St Mark’s was the real head of the state, the dictator of Florence, and guarded the public weal with extraordinary political wisdom. At his instance the tyrannical system of arbitrary impost and so-called voluntary loans was abolished, and replaced by a tax of 10% (la decima) on all real property. The laws and eloquence of dissolute ages, and even the sayings of Savonarola’s sermons, and indeed his counsels were always given as addenda to the religious exhortations in which he denounced the sins of his country and the pollution of the church, and urged Florence to cast off iniquity and become a truly Christian city, a pattern not only to Rome but to the world at large. His eloquence was now at the flood. Day by day his impassioned words, filled with the spirit of the Old Testament, wrought upon the minds of the Florentines and strung them to a pitch of pious emotion never before—and never since—attained by them. Their fervour was only to be lasting, and Savonarola’s uncompromising spirit roused the hatred of political adversaries as well as of the degraded court of Rome. Even now, when his authority was at its highest, when his fame filled the land, and the vast cathedral and its precincts lacked space for the crowds flocking to hear him, his enemies were secretly preparing his downfall.

Pleasure-loving Florence was completely changed. Abjuring pomp and vanities, its citizens observed the ascetic régime of the cloister; half the year was devoted to abstinence and few dared to eat meat on the fasts ordained by Savonarola. Hymns and lauds rang in the streets that had so recently echoed with the costliest odes and songs like paraphrases of Savonarola’s sermons. Both sex dressed with Puritan plainness; husbands and wives quitted their homes for convents; marriage became an awful and scarcely permitted rite; mothers suckled their own babies; and persons of all ranks—nobles, scholars and artists—renounced the world to assume the Dominican robe. Still more wonderful was Savonarola’s influence over children, and their response to his appeals is a proof of the magnetic power of his goodness and purity. He organized the boys of Florence in a species of sacred militia, an inner republic, with its own magistrates and officials charged with the enforcement of his rules for the holy life. It was with the aid of these youthful enthusiasts that Savonarola arranged the religious carnival of 1496, when the citizens gave their costliest possessions in alms to the poor, and tonsured monks, crowned with flowers, sang lauds and performed wild dances for the glory of God. In the same spirit, and to point the doctrine of renunciation of worldly enjoyments, he celebrated the carnival of 1497 by the famous “burning of the vanities” (i.e. masks and other objects pertaining to the carnival festivities, indecent books and pictures, &c.) in the Piazza della Signoria. A Venetian merchant is known to have bid 22,000 gold florins for the doomed vanities, but the scandalized authorities not only rejected his offer but added his portrait to the pile. Nevertheless the artistic value of the objects consumed has been greatly exaggerated by some writers. There is no proof that any book or painting of real merit was sacrificed, and Savonarola was neither foe to art nor to learning. On the contrary, so great was his respect for both that, when there was a question of selling the Medici library to pay that family’s debts, he saved the collection at the expense of the convent purse.

Meanwhile events were taking a turn hostile to the prior. Alexander VI. had long regretted the enfranchisement of St Mark’s from the rule of the Lombard Dominicans, and now, having seen a transcript of one of Savonarola’s denunciations of his crimes, resolved to silence this daring preacher. Bribery was the first weapon employed, and a cardinal’s hat was held out as a bait. But Savonarola indignantly spurned the offer, replying to it from the pulpit with the prophetic words: “No hat will I have but that of a martyr, reddened with my own blood.” So long as King Charles remained in Italy Alexander’s concern for his own safety prevented vigorous measures against the friar. But no longer did he ever forget an enemy. He bided his time, and the transformation of sceptical Florence into an austere Gallican republic claiming the Saviour as its head only increased his resolve to crush the man who had wrought this marvel. The potent duke of Milan, Ludovico Sforza, and other foes were labouring for the same end, and already in July 1495 a papal brief had courteously summoned Savonarola to Rome. In terms of equal courtesy the prior declined the invitation, nor did he obey a second, less softly worded, in September. Then came a third, threatening Florence with an interdict in case of renewed refusal. Saw that his renegaded command, but went to preach for a while in other Tuscan cities. But in Lent his celebrated sermons upon Amos were delivered in the duomo, and again he urged the necessity of reforming the church, striving by ingenious arguments to reconcile rebellion against Alexander with unalterable fidelity to the Holy See. All Italy recognized that Savonarola’s voice was arousing a storm that might shake even the power of Rome. Alive to the danger, the pope knew that his foe must be crushed, and the religious carnival of 1496 afforded a good pretext for stronger proceedings against him. The threat of Southern Italy did not deter, but a brief uniting St Mark’s to a new Tuscan branch of the Dominicans now deprived Savonarola of his independent power. However, in the beginning of 1497 the Piagnoni were again in office, with the prior’s staunch friend, Francesco Valori, at their head. In March the aspect of affairs changed. The Arrabbiati and the Medicean faction merged political differences in their common hatred to Savonarola. Piero de’ Medici’s fresh attempt to re-enter Florence failed; nevertheless his followers continued their intrigues, and party spirit increased in virulence. The citizens were growing weary of the monastic austerities imposed on them, and Alexander foreboded the fall. A signy openly hostile to Savonarola took office in May, and on Ascension Day his enemies ventured on active insult. His pulpit in the duomo was defiled, an ass’s skin spread over the cushion, and sharp nails fixed in the board on which he would strike his hand. The outrage was discovered and remedied before the service began; and, although the Arrabbiati half filled the church and even sought to attack his life, Savonarola kept his composure and delivered an impressive sermon. But the signy, in feigned anxiety for the public peace, besought him to suspend his discourses. Shortly afterwards the threatened bull of excommunication was launched against him, and Frà Mariano was in Rome stimulating the pope’s wrath. Savonarola remained undaunted. The sentence was null and void, he said. His mission was divinely inspired; and Alexander, elected sinonically and laden with crimes, was no true pope. Nevertheless the reading of the bull in the duomo with the appropriate, terrifying ceremonial made a deep impression on the Florentines. And now, the Arrabbiati signy putting no check on the Compagnacci, the city returned to the wanton excesses of Lorenzo’s reign. But in July Savonarola’s friends were again in power and did their best to have his excommunication removed. Meanwhile party strife was stilled by an outbreak of the plague. During this time Rome was horor-struck by the mysterious murder of the young duke of Gandia, and the bereaved pope mourned his son with the wildest grief. Savonarola addressed to the pontiff a letter of condolence, boldly urging him to bow to the will of Heaven and repent while there was yet time.

The plague ended. Florence was plunged in fresh troubles from Medicean intrigues, and a conspiracy for the restoration of
of Piero was discovered. Among the five leading citizens concerned in the plot was Bernardo del Nero, a very aged man of lofty talents and position. The gonfalonier, Francesco Valori, used his strongest influence to obtain their condemnation, and all five were put to death. It is said that at least Bernardo del Nero would have been spared had Savonarola raised his voice, but, although restraining from any active part against the prisoners, the prior would not ask mercy for them. This silence proved fatal to his popularity with moderate men, gave new adherents to the Arrabbiati, and whetted the fury of the people, Storza and all potentates well disposed to the Medici faction. He was now interdicted from preaching even in his own convent and again summoned to Rome. As before, the mandate was disobeyed. He refrained from public preaching, but held conferences in St Mark's with large gatherings of his disciples, and defied the interdict on Christmas Day by publicly celebrating mass and heading a procession through the cloisters.

The year 1498, in which Savonarola was to die a martyr's death, opened amid seemingly favourable auspices. The Piagnoni were again at the head of the state, and by their request the prior resumed his sermons in the duomo, while his dearest disciple, Frá Domenico Buonvicini, filled the pulpit of St Lorenzo. For the last time the carnival was again kept with strange religious festivities, and some valuable books and works of art were sacrificed in a second bonfire of "vanities." But menacing briefs poured in from Rome; the pope had heard of one of his rivals who, having returned from the East, was threatening to amuse the city itself was threatened with interdict, and the Florentine ambassador could barely obtain a short delay. Now too the Piagnoni quitted office; the new signory was less friendly, and the prior was persuaded by his adherents to retire to St Mark's. There he continued to preach with unabated zeal; and, since the women of Florence deplored the loss of his teachings, one day in the week was set apart for them. The signory tried to conciliate the pope by relating the wonderful spiritual effects of their preacher's words, but Alexander was obdurate. The Florentines must either silence the man themselves, or send him to be judged by a Roman tribunal.

Undismayed by personal danger, Savonarola resolved to appeal to all Christendom against the unrighteous pontiff, and despatched letters to the rulers of Europe adorning them to assemble a council to condemn this antipope. The council of Constance, and the deposition of John XXIII., were satisfactory precedents still remembered by the world. One of these letters being intercepted and sent to Rome by the duke of Milan (it is said) proved fatal to the friar. The papal threats were too urgent to be disregarded, and the crowed signory tried to entice Savonarola to put an end to his sermons. He reluctantly obeyed, and concluded his last discourse with the tenderest and most touching farewell.

The government now hoped that Alexander would be appeased and Florence allowed to breathe freely. But although silenced the prophet was doomed, and the folly of his disciples precipitated his fate. A creature of the Arrabbiati, a Franciscan friar named Francesco di Pugglia, challenged Savonarola to prove the truth of his doctrines by the ordeal of fire. At first the prior treated the provocation with merited contempt, but his too zealous disciple Frá Domenico accepted the challenge. And, when the Franciscan declared that he would enter the fire with Savonarola alone, Frá Domenico protested his willingness to enter it with any one in defence of his master's cause. As Savonarola desolutely declined the trial, the Franciscan deputed a convert, one Giuliano del Rondinelli, to go through the ordeal with Frá Domenico. There were long preliminary disputes. Savonarola, perceiving that a trap was being laid for him, discomfited the "experiment" until his calmer judgment was at last overborne by the fanaticism of his followers. Alarmed by the signory, which was playing into the hands of Rome, the Arrabbiati and Compagnacci pressed the matter on, and the way was now clear for Savonarola's destruction.

On the 7th of April 1498 an immense throng gathered in the Piazza della Signoria to enjoy the barbarous sight. Two thick banks of combustibles 40 yds. long, with a narrow space between, had been erected in front of the palace, and five hundred soldiers kept a wide circle clear of the crowd. Some writers aver that the piles were charged with gunpowder. The Dominicans from one side, the Franciscans from the other, pressed in solemn procession to the Loggia del Lanzi, which had been divided by a hoarding into two separate compartments. The Dominicans were led by Savonarola carrying the host, which he reverently deposited on an altar prepared in his portion of the loggia. The magistrates signalled to the two champions to advance. Frá Domenico stepped forward, but neither Rondinelli nor Frá Francesco appeared. The Franciscans began to urge fanatical objections, and, when Savonarola insisted that his champion should bear the host, they cried out against the sacrilege of excommunication of the Redemptorist fathers. But the presiding judge was turmoiled and confused, the crowd frantic. And, although Rondinelli had not come, the signory sent angry messages to ask why the Dominicans delayed the trial. It was now late in the day, and a storm shower gave the authorities a pretext for declaring that heaven was against the ordeal. The Franciscans slipped away unobserved, but Savonarola raising the host attempted to lead his monks across the piazza in the same solemn order as before. On this the popular fury burst forth. Defrauded of their bloody diversion, the people were wild with rage. Frá Girolamo's house was surrounded. The Florentines rushed in, and would have lived to reach St Mark's but for the devoted help of Salvati and his men. Against the real culprits, the Franciscans, no anger was felt; the zealous prior, the prophet and lawyer of Florence, was made the popular scapegoat. Notwithstanding the anguish that must have filled his heart, the fallen man preserved his dignity and calm. Mounting his own pulpit in St Mark's he quietly related the events of the day to the faithful assembled in the church, and then withdrew to his cell, while the mob on the square outside was clamouring for his blood.

The next morning, the signory having decreed the prior's banishment, Francesco Valori and other leading Piagnoni hurried to him to concert measures for his safety. Meanwhile the government decided on his arrest, and no sooner was this made public than the populace rushed to the attack of the convent. The doors of St Mark's were hastily secured, and Savonarola discovered that his adherents had secretly prepared arms and munitions and were ready to stand a siege. The signory sent to order all laymen to quit the cloister, and a special summons to Valori. After some hesitation the latter obeyed, hoping to arrest the friar. He rode to the convent, and, frightened, was permitted to enter. But he was murdered in the street, and his palace sacked by the mob. The monks and their few remaining friends made a most desperate defence. In vain Savonarola besought them to lay down their arms. When the church was finally stormed Savonarola was seen praying at the altar, and Frá Domenico, armed with an enormous candlestick, guarding him from the blows of the mob. A few disciples dragged their beloved master to the inner library and urged him to escape by the window. He hesitated, seemed about to consent, when a cowardly monk, one Malatesta Sacchinelli, cried out that the shepherd should lay down his life for his flock. Thereupon Savonarola turned, bade farewell to the brethren, and, accompanied by the faithful Domenico, quietly surrendered to his enemies. Later, betrayed by the same Malatesta, Frá Silvestro was also seized. The prisoners were conveyed to the Palazzo Vecchio, and Savonarola was lodged in the tower cell which had once harbourd Cosimo de' Medici.

Now came an exultant brief from the pope. His well-beloved Florentines were true sons of the church, but must crown their good deeds by dispatching the criminals to Rome. Sforza was equally rejoiced by the news, and the only potentate who could have perhaps saved Savonarola's life, Charles of France, had died on the day of the ordeal by fire. Thus another of the friar's prophecies was verified, and its fulfilment cost him his sole protector. The signory refused to send their prisoners to Rome,
but they did Rome's behests. Savonarola's judges were chosen from his bitterest foes. Day after day he was tortured, and in his agony, with a frame weakened by constant austerity and the mental strain of the past months, he made every admission demanded by his tormentors. But directly he was released from the rack he always withdrew the confessions uttered in the delirium of pain. These being too incoherent to serve for a legal report, a false account of the friar's avowals was drawn up and published.

Though physically unable to resist torture, Savonarola's clearness of mind returned whenever he was at peace in his cell. So long as writing materials were allowed him he employed himself in making a commentary on the Psalms, in which he resolutely ignored Alexander's axioms. It was frantically easier to see his enemy die in Rome. But the signory insisted that the false prophet should suffer death before the Florentines whom he had so long led astray. The matter was finally compromised. A second mock trial was held by two apostolic commissioners specially appointed by the pope. One of the new judges was a Venetian general of the Dominicans, the other a Spaniard. Meanwhile the trial of Brothers Domenico and Silvestro was still in progress. The former remained faithful to his master and himself. No extremity of torture could make him recant or extend his condemnations. The latter, Catherine of Siena, who had reasserted his belief in the divinity of the prior's mission, Frà Silvestro, on the contrary gave way at mere sight of the rack, and this ser of heavenly visions owned himself and his master guilty of every crime laid to their charge.

The two commissioners soon ended their task. They had the pope's orders that Savonarola was to die "even were he a second John the Baptist." On three successive days they "examined" the prior with worse tortures than before. But he now resisted pain better, and, although more than once a promise to recant was extorted from him, he reasserted his innocence where he stood bound, crying out, "My God, I denied Thee for fear of pain." On the evening of the 22nd of May sentence of death was pronounced on him and his two disciples. Savonarola listened unmoved to the awful words, and then quietly resumed his interrupted devotions. Frà Domenico exulted in the thought of dying by his master's side; Frà Silvestro, on the contrary, raved with despair.

The only favour Savonarola craved before death was a short interview with his fellow victims. This the signory unwillingly granted. The memorable meeting took place in the hall of the Scaletta during their forty days of confinement, and each one had been told that the others had recanted, and the false report of Savonarola's confession had been shown to the two monks. The three were now face to face for the first time. Frà Domenico's loyalty had never wavered, and the weak Silvestro's enthusiasm rekindled at sight of his chief. Savonarola prayed with the two men, gave them his blessing, and exhorted them by the memory of their Saviour's crucifixion to submit meekly to their fate. Midnight was long past when Savonarola was led back to his cell. Jacopo Niccolini, one of a religious fraternity dedicated to consoling the last hours of condemned men, remained with him. Spent with weakness and fatigue he asked leave to rest his head on his companion's lap, and quickly fell into a quiet sleep. As Niccolini tells us, the martyr's face became serene and smiling as a child's. On awaking he addressed kind words to the compassionate brother, and then prophesied that dire calamities would befall Florence during the reign of a pope named Clement. The carefully recorded prediction was verified by the siege of 1529.

The execution took place the next morning. A scaffold, connected by a wooden bridge with the magistrates' rostrum, had been erected on the spot where the piles of the ordeal had stood. At one end of the platform was a huge cross with faggots heaped at its base. As the prisoners, clad in penitential haircloth, were led across the bridge, wanton boys thrust sharp sticks between the planks to wound their feet. First came the ceremonial of degradation. Sacerdotal robes were thrown over the victims, and then roughly stripped off by two Dominicans, the bishop of Vasona and the prior of Sta Maria Novella. To the bishop's formula, "I separate thee from the church militant and the church triumphant," Savonarola replied in firm tones, "Not from the church triumphant that is beyond thy power." By a refinement of cruelty Savonarola was then, "Savonarola," ordered. His disciples' bodies already dangled from the arms of the cross before the anus, the centre beam. Then the pile was piled. For a moment the wind blew the flames aside, leaving the corpses untouched. "A miracle," cried the weeping Piagnoni; but then the fire leapt up and ferocious yells of triumph rang from the mob. At dusk the martyrs' remains were collected in a cart and thrown into the Arno.

Savonarola's party was apparently annihilated by his death, but when in 1530 Florence was exposed to the horrors predicted by him, the most heroic defenders of his beloved if ungrateful city were Piagnoni who ruled their lives by his precepts and revered his memory as that of a saint.

Savonarola's writings may be classified in three categories:-(1) numerous sermons, collected mainly by Lorenzo Voli, one of his most enthusiastic hearers; (2) an immense number of devotional writings and meditations as Sei giorni e notti della Croce is the chief; (3) a few short poems and a political treatise on the government of Florence. Although his faith in the dogmas of the Church was unshaken, he was not without gross protests against papal corruptions, his reliance on the Bible as his supreme guide, and his intense moral earnestness undoubtedly connect Savonarola with the movement that heralded the Reformation.

SAVORY, SIR WILLIAM SOVEILL. BART. (1826-1895). British surgeon, was born on the 30th of November 1826, in London. He entered St Bartholomew's Hospital in 1844, becoming M.R.C.S. in 1847, and F.R.C.S. in 1852. From 1849 to 1859 he was demonstrator of anatomy and operative surgery at St Bartholomew's, and for many years curator of the museum, where he devoted himself to pathological and physiological work. In 1859 he succeeded Sir James Paget as lecturer on general anatomy and physiology. In 1861 he became assistant surgeon, and in 1867 surgeon, holding the latter post till 1891; and from 1896 to 1889 he was lecturer on surgery. In the College of Surgeons he was a man of the greatest influence, and was president for four successive years, 1885-1888. As Hunterian professor of comparative anatomy and physiology (1859-1861), he lectured on "General Physiology" and the "Physiology of Food." In 1884 he delivered the Bradshaw Lecture on the "Pathology of Cancer." In 1887 he delivered the Hunterian Oration. In 1879, at Cork, he had declared against "Listerism, at the meeting of the British Medical Association, "the鄙视." and said that he has "found the most important of all in the new methods of modern surgery." In 1887 he became surgeon-extraordinary to Queen Victoria, and in 1890 he was made a baronet. Savory, who was an able operator, but averse from exhibitions of brilliancy, was a powerful and authoritative man in his profession, his lucidity of expression being almost as valuable as his great knowledge of physiology and anatomy. He died in London on the 4th of March 1895.
SAVOY, HOUSE OF,

a dynasty which ruled over the territory of Savoy and Piedmont for nine centuries, and now reigns over the kingdom of Italy. The name of Savoy was known to the Romans during the decline of the empire. In the 5th century, the territory was conquered by the Burgundians, and formed part of their kingdom; nearly all of it passed to them. It was included in Charlemagne's empire and was divided by him into counties, which evolved there as elsewhere into hereditary fiefs; but after the break-up of Charlemagne's empire, the Burgundian kingdom revived and Savoy was again absorbed in it. After the collapse of that monarchy its territories passed to the German kings, and Savoy was divided between the counts of Provence, of Albon, of Gex, of Bresse, of the Genevois, of Maurienne, the lords of Habsburg, of Zähringen, &c., and several prelates.

The founder of the house of Savoy is Humbert Biancamano (Humbert the White-handed), a feudal lord of uncertain but probably Teutonic descent, who in 1003 was count of Salmourenc in the Viennois, in 1017 of Nyons on the Lake of Geneva, and in 1024 of the Val d'Aosta on the eastern slope of the Western Alps. In 1034 he obtained the counties of Savoy, Bella, part of the Tarantaise, and the Chablais. With these territories Umberto commanded three of the great Alpine passes, viz., the Mont Cenis and the two St. Bernard passes. In the meanwhile his son Oddone married Adelaide, eldest daughter and heiress of Odelerico Manfredi, marquis of Susa, a descendant of Arduino of Ivrea, king of Italy, who ruled over the counties of Turin, Auriate, Asti, Bredulo, Vercelli, &c., corresponding roughly to modern Piedmont and part of Liguria (1043). Umberto died some time after 1036 and was succeeded by his son, Amadeus I, at whose death the country passed to Oddone, the husband of the countess Adelaide. Oddone thus came to rule over territories on both sides of the Alps, a fact which was to dominate the policy of Savoy until 1566; its situation between powerful neighbours accounting for its vacillating attitude, whence arose the charges of duplicity levelled against many of its rulers, while its dominion over the Alpine passes brought many advantages. Oddone died in 1060, and was succeeded by his widow Adelaide; but before her death in 1091 his son, Peter I., became count, and subsequently the latter's brother, Amadeus II. Under Humbert II. (1080) occurred the first clash with the Piedmontese communes, but he and his successors, Amadeus III. (who died on his way home from the crusades), and Thomas I. (1180), adopted a moderate policy of conciliation towards them. Thomas I. reigned until 1222, was a Ghibelline in politics and greatly increased the importance of Savoy, for he was created Imperial Vicar and acquired important extensions of territory in the Bugey, Vaud and Romont to the west of the Alps, and Carignano, Pinerolo, Moncalieri and Vignole to the east; he also exercised sway over Geneva, Albenga, Savona and Saluzzo. At his death these territories were divided among his sons, Thomas II. obtaining Piedmont, Almone the Chablais, Peter and Philip other fiefs, and Amadeus IV., the eldest. Savoy and a general overlordship over his brothers' estates. Peter visited England several times, one of his nieces, Eleanor of Provence, being the wife of the English king Henry III., and another, Sancha, wife of Richard, earl of Cornwall. Henry conferred great honours on Peter, creating him earl of Richmond, and gave him a palace on the Thames, known as Savoy House. Count Peter also acquired fresh territories in Vaud, and defeated Rudolph of Habsburg at Chillon. Thomas's other sons received fiefs and bishoprics abroad, and one of them, Boniface, was made archbishop of Canterbury. Thomas II., after capturing several cities and castles in Piedmont, lost them again and was made prisoner by the citizens of Turin, but was afterwards liberated. He alone of the sons of Thomas I. left male heirs, and his son Amadeus V. (1285-1323) reunited the scattered dominions of his house. When Amadeus succeeded to the throne these were divided into the county of Savoy (his own territory), the princely of Piedmont ruled by his nephew Philip, prince of Achaia (a title acquired through his wife, Isabella of Villehardouin, heiress of Achaia and the Morea), and Vaud ruled by his brother Louis. But although this division was formally recognized in 1295, Amadeus succeeded in enforcing his own supremacy over all the counties less important to his son Louis. Nine years later, and by war, purchase or treaty he regained other fiefs which his predecessors had lost. He fought in many campaigns against the dauphins of Viennois, the counts of Genevois, the people of Sion and Geneva, the marquesses of Saluzzo and Montferrat, and the barons of Faucigny. He also acted as peacemaker between France and England, accompanied the emperor Henry VII. of Luxembourg on his expedition to Italy, reorganized the finances of the realm and reinforced the Salic law of succession. He was succeeded by his sons, Edward (1333-1350), known as the "Liberal," and count of Savona; and Almone, the Peaceful (1350-1343), who strove to repair the harm done to the state's exchequer by his predecessor and proved one of the best princes of his line. Amadeus VI. (1343-1383), son of the latter (known as the Conte Verde or Green Count because of the costume he habitually wore at tournaments), succeeded at the age of nine. He won a reputation as a bold knight in the fields of chivalry and in the crusades, and he inaugurated a new policy for his house by devoting more attention to his Italian possessions than to those on the French side of the Alps and in Switzerland. In 1356 he led an expedition to the East against the Turks, and he arbitrated between Milan and the house of Montferrat (1375), between the Scaligers and the Visconti, and between Venice and Genoa after the "War of Chioggia" (1381). Amadeus was the first sovereign to introduce a system of gratuitious legal assistance for the poor. He unfortunately espoused the cause of Louis, duke of Anjou, and while aiding that prince in his attempt to recover the kingdom of Naples he died of the plague, leaving his realm to his son, Amadeus VII., the Conte Rosso or "Red Count" (1353-1391); the latter added Nice (1388) and other territories to his domains. During the reign of Amadeus VIII. (1391-1440), Savoy prospered in every way. The count extended his territories both in Savoy itself and in Italy, and in 1416 was created duke by the emperor Sigismund. He was distinguished for his wisdom and justice, and in 1430 he promulgated a general statute of laws for the whole duchy, in spite of the opposition of the nobles and cities whose privileges were thereby curtailed. In 1434 he retired to the hermitage of Ripaille on the Lake of Geneva, but continued to direct the chief affairs of the state and to mediate between foreign Powers, during which period the truces of 1438, 1440, and 1442 were negotiated by him. In 1439 the council of Basel, which then met, deposed the Duke of Burgundy, and in 1443 the council of stabbing Amadeus, pope, in spite of his not being a priest, and deposed Eugenius IV. Amadeus accepted the dignity, assuming the style of Felix V., and abdicated the dukedom. For nine years he remained pope, although he never went to Rome and one-half of Christendom regarded him as an anti-pope. On the death of Eugenius (1447) Thomas of Sarzana was elected as Nicholas V., and in 1449 Amadeus abdicated and returned to his hermitage at Ripaille, where he died two years later (see Felix V.).

In 1480 Amadeus IX. was succeeded by his son Louis; for he was indolent, incapable, and entirely ruled by his wife, Anne of Lusignan, daughter of the king of Cyprus, an ambitious and intriguing woman; she induced him to fit out an expensive expedition to Cyprus, which brought him no advantage save the barren title of king of Cyprus, Jerusalem and Armenia. He neglected to make good the claims which he might have enforced to the duchy of Milan on the death of Filippo Maria, the last Visconti (1447). His latter years were troubled by conspiracies and dissensions on the part of the nobles and even of his own son, Philip, count of Bresse. He went to France to seek aid of King Louis XI., but died there in 1445. In spite of his incapacity he acquired the city of Freiburg and the homage of the lords of Monaco. He was succeeded by his son, Amadeus IX. (1455-1472), who, on account of ill-health left the duchy in the hands of his wife, Yolande, sister of Louis XI. This led to feuds and intrigues

Thomas I.
on the part of the French king and of Philip of Bresse, and Savoy would probably have been dismembered but for the patriotic action of the States General. On Amadeus’s death, his son Phillibert I. (1472–1482) succeeded, but as he was a minor the States General appointed his mother Yolande regent. Wars and civil commotions occupied the period of his minority and Savoy lost Freiburg and many other territories. Yolande died in 1472, and the regency was disputed by various claimants; Philip of Bresse having obtained it by force, he carried off Phillibert, who died in 1482 at Lyons. He was succeeded by his brother Charles I. (1482–1490), who, freed by Louis XI. from the dangerous protection of Philip of Bresse and by death from that of the French king, crushed the rebellious nobles and seized Saluzzo (1487). He did much to raise the fallen fortunes of his house, but died of the plague at the age of thirty-three. Under his successor Charles II. (1490–1496), an infant in arms, the duchy was again distracted by civil war and foreign invasions. Charles died at an early age, and, having no male heirs, the aged Philip of Bresse succeeded, but reigned only for one year. Phillibert II. (1497–1504) followed, but he was devoted only to pleasure and left the helm of state to his half-brother, Renato, and later to his wife, Margaret of Austria. He died without heirs and was succeeded by his brother, Charles III. During his reign Savoy abandoned its attitude of subserviency to France, adopting a policy of greater independence, and was left to deal more or less without foreign intervention. Under Charles III. (1504–1553), the duchy suffered a series of misfortunes. Although the duke strove after peace at almost any price, he was nearly always involved in war and lost many possessions, including Geneva and Vaud. At his death the whole country was overrun by the hostile armies of Francis I. of France and of the Emperor Charles V., while his son and successor, Emmanuel Phillibert (1553–1580), was serving in the Spanish armies. Emmanuel could not take possession of the duchy at once, but continued to serve the emperor as governor-general of the Low Countries. By the time of his son’s accession in 1580, France was in occupation of the whole kingdom. Emmanuel himself was one of the first generals of the day, and by the terms of the subsequent treaty of Cateau Cambresis he was reinstated in most of his hereditary possessions (1559). Under Emmanuel Phillibert Savoy lost all traces of constitutional government and became an absolute despotic of the type then predominating throughout the greater part of Europe. At the same time he raised his country from ruin and degradation into a prosperous and powerful monarchy. He induced both France and Spain to evacuate the fortresses which they still held in Piedmont, made a profitable exchange of territory with the Belgians and acquired an extension of seacoast by the purchase of Tenda and Oneglia (see Emmanuel Phillibert of Savoy). His son and successor, Charles Emmanuel I., surnamed the Great, strengthened the tendency of Savoy to become less of a French and more of an Italian Power. In 1588 he wrested Saluzzo from the French, but his expeditions to Provence and Switzerland were unsuccessful. In the war between France and Spain after the accession of Henry IV., he took the Spanish side, and at the peace of Lyons (1601), although he gave up all his territories beyond the Rhone, his possession of Saluzzo was confirmed. But he was driven from the Spanish post of Geneva by treachery (1620) failed, and although on the death of Francesco Gonzaga, duke of Mantua and Montferrat, he seized the latter city (1612) he was forced by Spain and her allies to relinquish it. The Spaniards invaded the duchy, but after several years of hard fighting the peace of 1618 left his territory almost intact. In 1628 he sided with Spain against France; the armies of the latter overran the duchy, and Charles Emmanuel died in 1630 (see Charles Emmanuel). His son, Victor Amadeus I. (1630–1657), succeeded to little more than a title, but by his alliance with France his wife Christina being a daughter of Henry IV.—he managed to regain most of his territories. He proved a wise and popular ruler, and his early death was much deplored. His eldest son, Francis Giacinto, a minor, lived only a year, and his second son, Charles Emmanuel II., also a minor, remained under the regency of his mother.

That princess, in spite of her French origin, resisted the attempts of France, then dominated by Cardinal Richelieu, to govern Savoy, but her quarrels with her brothers-in-law led to civil war, in which the latter obtained the help of Spain, and Christina took that of France. In the end the duchess succeeded in patching up these feuds and saving the dynasty, and in 1648 Charles Emanuel II. assumed the government. The war between France and Spain continued to rage, and Savoy, on whose territory much of the fighting took place, suffered severely in consequence. By the treaty of the Pyrenees (1660) the war came to an end and Savoy regained most of the towns occupied by France. Charles died in 1675 and was succeeded by his only son, Victor Amadeus II. (1675–1732). The latter’s minority was passed under the regency of his able but imperious mother, Jeanne of Savoy-Nemours. He married Anne of Orleans, daughter of Henrietta of England and niece of Louis XIV. of France. The French king treated Victor Amadeus almost as a vassal, and obliged him to persecute his Protestant (Waldensian) subjects. But the young duke, galled by Louis’s overbearing arrogance, eventually asserted his independence and joined the league of Austria, Spain and Venice against him in 1690. The campaign was carried on with varying success, but usually to the advantage of Louis, and the French victory at Marsiglia and the selfish conduct of the allies induced Victor to come terms with France, and, at the turn of the imperialists (1696). By the treaty of Ryswick (1697) the final peace was concluded. In the war of the Spanish Succession (1700) we find Victor at first on the French side, until, dissatisfied with the continued insolence of Louis XIV. and of Philip of Spain, he went over to the Austrians in 1704. The French invaded Piedmont, but were totally defeated at the siege of Turin by Victor Amadeus and Prince Eugene of Savoy (1706), and eventually driven from the country. By the treaty of Utrecht (1713) Victor received the long-contested Montferrat and was made king of Sicily; but in 1718 the powers obliged him to abdicate, the court of Turin was transferred to Austria, and Victor ascended the rulers of Savoy and Piedmont the title subsequently borne by them until they assumed that of kings of Italy. In 1730 he abdicated in favour of his son, Charles Emmanuel, retired to Chambéry, and married the countess of San Sebastian (afterwards Marchioness of Spigno). His wife’s ambitions induced him to try to regain the crown, but his son had him arrested, and he died in prison in 1732 (see Victor Amadeus II.).

Charles Emmanuel III. (1730–1773) was a born soldier and took part in the war of the Polish Succession on the side of France against Austria, and for his victory at GUSTALLA (1754) was awarded the duchy of Milan, which, however, he was forced to relinquish at the peace of VIENNA (1763), retaining only Novara and Torino. In the war of the Austrian Succession, which broke out on the death of the Emperor Charles VI., he took the side of Maria Theresa (1742). By the peace of AIX-IA-ChAPELLE in 1748, following on the defeat of the French, Savoy gained some further ascensions of territory in Piedmont. The reign of Charles’s son, Victor Amadeus III. (1773–1796), was a period of decadence; the king was incapable and extravagant, and he chose equally incapable ministers. On the outbreak of the French invasion he was in Milan, where he joined in the war, and in 1796 the country was laid waste. The king was forced to order the evacuation of the kingdom and the army was instructed to make common cause with the French, and give up the citadel of Turin to the French, which meant the end of his country’s independence. Realizing his folly he abdicated on the 6th of December 1796, and retired to Sardinia.
GEOYAL TABLE OF THE HOUSE OF SAVOY.

Humbert the Whitbanded (Umberto Biancamano) (d. after 1090).

| Humbert II. the Fat (d. 1103). |
| Amadeus II. (d. 1080). |
| Bertha = Emperor Henry IV. |
| Alice or Adelais = Louis VI. of France. |
| Humbert III., the Saint (d. 1156). |
| Thomas I. (d. 1122). |
| Amadeus III. (d. 1148-9/.1149). |
| Humbert II, earl of Richmond (d. 1103). |
| Philip I. (d. 1185). |
| Philip, archbishop of Canterbury (d. 1172). |
| Thomas II. (d. 1190). |
| Louis I. of Vaud (d. 1202). |
| Philip II. (d. 1285). |
| Louis, king of Cyprus (d. 1261). |
| Amadeus V. the Great (d. 1343). |
| Louis (d. 1483). |

Amadeus VIII., first duke of Savoy, afterwards Pepe Felix V. (d. 1251).

| Louis, king of Cyprus (d. 1261). |
| Louis (d. 1483). |
| Louis (d. 1483). |
| Amadeus VIII. (d. 1290). |
| Amadeus VIII. (d. 1290). |

| Louis, king of Cyprus (d. 1261). |
| Louis (d. 1483). |
| Louis (d. 1483). |
| Amadeus VIII. (d. 1290). |
| Amadeus VIII. (d. 1290). |

| Louis, king of Cyprus (d. 1261). |
| Louis (d. 1483). |
| Louis (d. 1483). |
| Amadeus VIII. (d. 1290). |
| Amadeus VIII. (d. 1290). |

| Louis, king of Cyprus (d. 1261). |
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| Amadeus VIII. (d. 1290). |
| Amadeus VIII. (d. 1290). |

| Louis, king of Cyprus (d. 1261). |
| Louis (d. 1483). |
| Louis (d. 1483). |
| Amadeus VIII. (d. 1290). |
| Amadeus VIII. (d. 1290). |
SAW—SAW-FLY

The Restoration.

while the French occupied the whole of Piedmont. After the defeat of the French by the Austro-Russian armies during Bonaparte's absence in Egypt, Charles Emmanuel landed at Leghorn, hoping to regain his kingdom; but Napoleon returned, and by his brilliant victory at Marengo he reaffirmed his position in Italy. The king retired to Naples, abdicated once more (1822), and entered the Society of Jesus; he died in Rome in 1831. Victor Emmanuel I. (1822–1831) was succeeded by his son, Victor Emmanuel II. (1828–1849), who, on the 18th of February 1861, was proclaimed king of Italy. Victor Emmanuel had married in 1842 Maria Adelaide, daughter of the archduke Rainer, who bore him several children, viz. Princess Clothilde (b. 1843), who married Prince Napoleon; Humbert, prince of Piedmont (1844); Amadeus, duke of Aosta (b. 1845); Oddone, duke of Montferrat (b. 1846); and Princess Maria Pia (b. 1847). Humbert, who in 1868 had married Princess Margherita of Savoy, daughter of Victor Emmanuel's brother, the duke of Genoa, became king of Italy on his father's death in 1878. In July 1860 he was assassinated by an anarchist at Monza. He was succeeded by his only son, Victor Emmanuel III., born in 1868, who during his father's lifetime had borne the title of prince of Naples. The new king had married Princess Elena of Montenegro in 1886, by whom he has had four children, viz. Princess Yolanda Margherita (b. 1901), Princess Malalda (b. 1902), Humbert, prince of Piedmont (b. 1903), and Princess Giovanna (b. 1907).

The second son of Victor Emmanuel II., Amadeus, duke of Aosta, was offered the crown of Spain by the Cortes in 1870, which he accepted, but finding that he was no popular idol, he voluntarily abdicated in 1873 rather than cause civil war. In 1887 he married Princess Maria Vittoria dal Pozzo della Cisterna, who bore him three sons, viz. Emmanuel Filibert, duke of Aosta (b. 1890), commanding an Italian army corps; Victor Emmanuel, count of Turin; and Louis Amadeus, duke of Abruzzi, an Italian naval officer and a distinguished traveller, explorer and man of science. Amadeus's first wife having died in 1876, he married Princess Maria Letizia Bonaparte in 1888, who bore him a son, Humbert, count of Salmi (b. in 1889).

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SAW, a tool for cutting wood or other material, consisting of a blade with the edge dentated or toothed and worked either by hand or by steam, water, electric or other power (see Tools). The word in O. Eng. is saga and appears, in such forms as Dutch saag, Dan. saag, Ger. Säge, in Teutonic languages. The root is sag-, to cut, which is seen in Lat. secare. It is also the base of such English words as scythe, sickle, &c. It must be distinguished from "saw," a maxim, proverb, which is etymologically and in meaning a "saying," from the Teutonic base sag-, to say; cf. "Sage," Ger. sagen.

SAWANTWARI, or Savantwadi, a native state of Bombay, India. Area, 925 sq. m. Pop. (1901) 217,732, showing an increase of 13½% during the preceding decade. The surface is broken and rugged, interspersed with densely-wooded hills; in the valleys are gardens and groves of cocoa-nut and betel-nut palms. Sawantwari has no considerable rivers; the chief streams are the Karli on the north and the Terakhel on the south, both navigable for small craft. The climate is humid and relaxing, with an average annual rainfall of 150 in. The estimated revenue is £28,000. The chief, whose title is sar desai, is a Maharatta of the Bhonsla family, who traces his descent to the 16th century. There are special manufactures of ornaments carved out of bison-horn, painted and inlaid lacquer-work, and gold and silver embroidery. The town of Sawantwari, or Vadi, is picturesquely situated on the bank of a large lake, 17 m. E. of the seaport of Vengurla. Pop. (1901) 10,213.

Before the establishment of Portuguese power Sawantwari was the highway of a great traffic between the coast and the Interior; but during the 16th and 17th centuries trade suffered much from the rivalry of the Portuguese, and in the disturbances of the 18th century it almost entirely disappeared. In consequence of piracy, the whole coast-line (including the port of Vengurla) was ceded to the British in 1812.

SAW-FLY, the name given to the members of a well-known subdivision (Symphyta) of the Hymenoptera characterized by possessing a sessile abdomen which hides the base of the posterior legs. The antennae vary in their structure and in the number of their joints. Two of the processes of the ovipositor are modified to form saws, which when at rest lie in a sheath formed of two other processes which are modified into protective structures or valves. The larvae are usually caterpillars, but may be distinguished from the caterpillars of Lepidoptera (moths and butterflies) by the greater number of their abdominal pro-legs; usually 6 to 8 pairs are present. When alarmed they roll themselves up in a spiral fashion; then discharge a thin fluid from lateral pores situated above the spiracles. The fly (magnified, with lines to left showing natural females place size), caterpillars, pupa and pupa-case, their eggs in small incisions made by means of their saws in the soft parts of leaves. Usually one egg is placed in each silt. Some species merely attach their eggs in strings to the exterior of the leaves. With each incision a drop of fluid is usually excreted, which serves to excite a flow of sap to the wounded part. The egg is said to absorb this sap, and so to increase in size. One genus (Nematus) alone forms gall cells. These occur in the young leaves of the willow, a tree which the true gall-flies do not attack. Nematus ventricosus resembles the bees and wasps in the fact that the parthenogenetic ova produce only males; as a rule in the animal kingdom the absence of fertilization results in the production of females.

The injury which the saw-flies inflict upon crops or young trees is almost entirely brought about by the voracious habits of the larvae. They possess well-developed mouth-appendages, by means of which they gnaw their way out of the leaf in which they have been hatched, and then eat it. In this way the turnip saw-fly (Athalia spinorum), not to be confused with the turnip "fly," a beetle (Phyllistleta nemorum), attacks the leaves of the turnup, often completely consuming the leafage of acres at a time. The pine saw-fly (Lophyris pini) causes great damage to plantations of young Scotch firs, devouring the buds, the leaves and even the bark of the young shoots. Other species infest currant and gooseberry bushes, consuming the soft parts of the leaves, and leaving only the tough veins. The only remedy in most cases is to collect and kill the larvae when they first appear or to spray the plants with some arsenical wash. The best known family of saw-flies is that of the Tenodredinidae, most of whose caterpillars feed on leaves. The larvae of other families—the Cepheidae and Striciidae—are internal feeders, boring in succulent...
or woody stems, and their limbs are in an extremely reduced condition.

Sawrey, William (d. 1401), English Lollard, was a priest at Lynn who was summoned before the bishop of Norwich for heresy in 1399. He does not appear at this time to have been seriously punished, and at the beginning of 1401 he is found in London, where his preaching against the war was listened to with the notice of the ecclesiastical authorities. The statute De haeresiaco comburendo had just been introduced for the purpose of stamping out heresy, but it had not become law when Sawrey was summoned to St Paul's and was charged with denying transubstantiation, with refusing to adore the cross except as a symbol, and with six other heresies. He defended himself ably against Archbishop Thomas Arundel, but in February he was condemned and was degraded from the priesthood. Being the first Lollard to be put to death was burned at St Paul's Cross in March 1401.

Sawyer, Sir Robert (1633-1692), English lawyer, a younger son of Sir Edmund Sawyer, auditor of the city of London, was educated at Magdalene College, Cambridge, where he distinguished himself in classical learning, being the first Craven Scholar in 1648. He acquired a good practice at the bar, and in 1673 he was elected to the House of Commons, where for a short time in 1678 he was speaker. He inclined to the side of the court in politics, but was a strong opponent of concession to the Roman Catholics, and was one of the draftsmen of the Exclusion Bill. About the same time he began to appear as counsel in important state trials; he prosecuted Sir George Villiers and Sir William Temple in the Popish plot in 1679; in 1681, having been in that year appointed attorney-general, he appeared for the crown in the prosecutions of Stephen College and Lord Shaftesbury; in the following year in the proceedings against the charter of the city of London; and in 1683 against Lord Russell and Algernon Sidney for complicity in the Rye House plot; and he conducted the case against Titus Oates for perjury in 1685. Although James II. retained him as attorney-general, he proved himself by no means a compliant instrument of the royal prerogative; he advised the king against the legality of the dispensing power, and objected to signing the patents appointing Roman Catholics to office from which they were excluded by law. He was dismissed as the attorney-general in 1687, and in the following year he appeared as leading counsel for the defence of the seven bishops, whose acquittal he secured. On the flight of James II., Sawyer maintained that the throne had thereby been abdicated, and took a prominent part in the debates on the constitutional questions then brought to the front. Owing to an attack upon him in 1690 in relation to his conduct in the case of Sir Thomas Armstrong in 1684, Sawyer was expelled from the House of Commons but two years later returned to the House of Commons, and the Cambridge University shortly afterwards. He died on the 30th of July 1692. Sawyer's only daughter married Thomas Herbert, 8th earl of Pembroke.


Sax, Antoine Joseph, known as ADELOPH (1814-1894), maker of musical instruments, was born at Dinant in Belgium on the 6th of November 1814 and died in Paris in 1894. In 1835 he perfected a bass clarinet superior to any that had preceded it. He came to Paris in 1842 and succeeded in interesting many eminent men, including Bertioz and Halévy. He set up a workshop in the Rue St Georges and studied acoustics, discovering a new principle in the manufacture of wind instruments, viz. that it is the proportions given to a column of air vibrating in a sonorous tube, and these alone, that determine the character of the timbre produced: the material of the walls of the tube is not of the slightest importance so long as it offers enough resistance. Together with his genius for mechanical invention Sax seems to have combined a knowledge of advertising, and his name was often prefixed to successful types of instrument for the invention of which he was not primarily responsible. In 1845 he patented his saxhorn and a family of cylinder instruments called saxotrombas. On the 22nd of June 1846 he registered the saxophone. He also effected various improvements in piston instruments, of which the most important was the substitution of a single ascending piston for a number of descending ones.

See J. P. Corretta, Histoire d'un inventeur (1860); C. Pillard, Les Inventions Sax (1886).

Saxe, John Godfrey (1816—1887), American poet, was born at Highgate, Vermont, on the 2nd of June 1816. He graduated at Middlebury College in 1839, and was admitted to the bar at St Albans, Vermont, in 1843. From 1850 to 1856 he edited the Burlington (Vermont) Sentinel, in 1859 and in 1860 was the candidate of the Democratic party for governor of Vermont, in 1860 removed to New York, and after 1872 edited the Evening Journal at Albany, New York, where he died on the 31st of March 1887. He was best known as a writer of humorous verse and a lecturer. His travesties and satires found many readers or listeners, and some of his love lyrics and other poems combine sparkle with real feeling. His "Rhyme of the Rain," "The Proud Miss McBride," "I'm Growing Old" and "Treasures in Heaven" were once very popular. Among his published collections are Humorous and Satirical Poems (1850), The Times, The Telegraph, and other Poems (1865), and Leisure Day Rhymes (1895).

Saxe, Maurice, Comte de (1666—1750), marshal of France, was the natural son of Augustus II. of Saxony and the countess Augusta, Königsmark, his mistress, and the richest man in Rye House plot; and, returning to the camp of the allies in the beginning of 1710, he displayed a courage so impetuous as to call forth from Eugène the friendly admonition not to confound rashness with valour. He next served under Peter the Great against the Swedes. After receiving in 1711 formal recognition from his father, with the rank of count, he accompanied him to Pomerania, and in 1712 he took part in the siege of Stralsund. In manhood he bore a strong resemblance to his father, both in person and character. His grasp was so brilliant that it would have been difficult for the count to find any fissures in the king's account from which the last energy and endurance were scarcely subdued by the illnesses resulting from his many excesses. In 1714 a marriage was arranged between him and one of the richest of his father's subjects, Johanna Victoria, Countess von Loeben, but he dissipated her fortune so rapidly that he was soon heavily in debt, and, having given her more serious grounds of complaint against him, he consented to an annulment of the marriage in 1721. Meantime, after serving in a campaign against the Turks in 1717, he had in 1719 gone to Paris to study mathematics, and in 1720 obtained a commission as maréchal de camp. In 1725 negotiations were entered into for his election as duke of Coucy, at the instance of the duchess Anna Ivanovna, who offered him her hand. He was chosen duke in 1726, but declining marriage with the duchess found it impossible to resist her opposition to his claims, although, with the assistance of £30,000 lent him by the French actress Adrienne Lecouvreur, whose story forms the subject of Scribe and Legouvé's tragedy, he raised a force by which he maintained his authority till 1727, when he withdrew and took up his residence in Paris. On the outbreak of the war in 1734 he served under Marshal Berwick, and in 1735 at Philippsburg was appointed colonel and given the command of the defences of the town and of the nearby castle, but was obliged to evacuate the last by the Austrians in May 1736. In the Austrian Succession War in 1741, he took command of a division of the army sent to invade Austria, and
on the 19th November surprised Prague during the night, and took it by assault before the garrison were aware of the presence of an enemy, a coup de main which made him famous throughout Europe. After capturing the strong fortress of Eger on the 19th April 1742, he received leave of absence, and went to Russia to push his claims on the duchy of Courland, but obtaining no success he returned to his command. His exploits had been the sole redeeming feature in an unsuccessful campaign, and on 20th March 1743 his merits were recognized by his promotion to be Field-Marshal. From that time onwards he became one of the first generals of the age. In 1744 he was chosen to command the expedition to England in behalf of the Pretender, which assembled at Dunkirk but did not proceed farther. After its abortive issue he received an independent command in the Netherlands, and by dexterous manoeuvring succeeded in continually harassing the superior forces of the enemy without risking a decisive battle. In the following year he besieged Tournaï and inflicted a severe defeat on the relieving army of the duke of Cumberland at Fontenoy (q.v.), a battle of which the issue was due entirely to his constancy and cool leadership. During the battle he was unable on account of dropsy to sit on horseback except for a few minutes, and was carried about in a wicker chariot. In recognition of his brilliant achievement the king conferred on him the castle of Chambord for life, and in April 1746 he was naturalized as a French subject. Thenceforward to the end of the war he continued to command in the Netherlands, always with success. Besides Fontenoy he added Rocouz (1746) and Lawfeldt or Val (1747) to the list of French victories, and it was under his orders that Marshal Lwendorf captured Bergen-op-Zoom. He himself won the last success of the war in capturing Maestricht in 1748.

In 1747 the title formerly held by Turenne, "Marshal general of the King's camps and armies," was revived for him. But on the 30th of November 1750 he died at Chambord "of a putrid fever." In 1748 there had been born to him a daughter, one of several illegitimate children, whose great-granddaughter was George Sand.

Saxe was the author of a remarkable work on the art of war, Mes Rêveries, which though described by Carlyle as "a strange military farrago, dictated, as I should think, under opium,” is in fact a classic. It was published posthumously in 1757 (ed. Paris, 1872). His Lettres et mémoires choisis appeared in 1794. His letters to his sister, the princess of Holstein, preserved at Strassburg, were destroyed on the destruction of that place in 1870; thirty copies had, however, been printed from the original. Many previous errors in former biographies were corrected and additional information supplied in Carl von Weber's Moritz, Graf von Sachsen, Marshall von der Werfft, nach einer Abhandlung, Saale (ed. Leipzig, 1863) and A. de La Chappelle's Maurice de Saxe, étude historique d'après les documents des archives de Dresde (1865) and C. F. Vitzthum's Maurice de Saxe (1869). See also the military histories of the period, especially Carlyle's Frederick the Great.

SAXE-ALtenburg (Ger. Sachsen-Altenburg), a duchy in Thuringia, forming an independent member of the German Empire and consisting of two detached and almost equal parts, separated from each other by a portion of Reuss, and bounded on the S. and W. by the grand duchy of Saxe-Weimar-Eisenach, on the N. by Prussia, and on the E. by the kingdom of Saxony. There are in addition twelve small exclaves. The total area is 511 sq. m., of which 254 are in the east, or Altenburg, division, and 257 in the west, or Saal-Eisenberg, division. The eastern district, traversed by the most westerly offshoots of the Erzgebirge and watered by the Pleisse and its tributaries, forms an undulating and fertile region, containing some of the richest agricultural soil in Germany. The western district, through which the Saale flows, is rendered hilly by the foothills of the Thuringian Forest, and in some measure makes up its fine woods for its comparatively poor soil. The mineral wealth of Saxe-Altenburg is scanty; lignite, the chief mineral, is worked mainly in the eastern district. Nearly 60% of the entire duchy is occupied by arable land, and about 26% by forests, mainly consisting of conifers. Oats, rye, wheat and potatoes are the chief crops. Cattle-raising and horse-breeding are of considerable importance. About 35% of the population are supported by agriculture. The manufactures of the duchy are varied, though none is of first-rate importance; woollen goods, gloves, hats, porcelain and earthenware, bricks, sewing-machines, paper, musical instruments, sausages and wooden articles are the chief products. Trade in these, and in horses, cattle and agricultural produce, is brisk. The chief seats of trade and manufacture are Altenburg the capital, Ronneburg, Schmolln, Gössnitz and Meuselwitz in the Altenburg division; and Eisenberg, Roda and Kahla in the Saal-Eisenburg division. Besides these there are the towns of Lucka, Orlamünde and Russdorf. The duchy is bounded by the Saale and the river Eibenstock and contains several inhabited districts in the Thuringian states. The population in 1905 was 206,608, of whom 206,511 were Protestants and 5449 Roman Catholics. In the west division the population is wholly Teutonic, but in the east there is a strong Wendish or Slavonic element, still to be traced in the peculiar manners and costume of the country-people, though these are gradually disappearing. The Altenburg peasants are industrious and prosperous; they are said to be avaricious, but to love pleasure, and to gamble for high stakes, especially at the card game of Skat (q.v.), which is a native offshoot of the game of Tric-Trac. Their holdings are rarely divided, and a common custom is the inheritance of landed property by the youngest son. They are decreasing in numbers.

Saxe-Altenburg is a limited hereditary monarchy, its constitution resting on a law of 1831, subsequently modified. The diet consists of 32 members, elected for 3 years, of whom 9 are returned by the highest taxpayers, 11 by the towns and 12 by the country districts. The franchise is enjoyed by all males over 25 years of age who pay taxes. The duke has considerable powers of initiative and veto. The executive is divided into four departments, justice, finance, the interior, and foreign and ecclesiastical affairs. The revenue consists of agricultural, industrial, trading, railway, and expropriation, with a total of about £230,000 each. There was a public debt in 1909 of £44,370. Saxe-Altenburg has one vote in the Reichstag and one in the Bundesrat (federal council).

History.—The district now forming the duchy of Saxe-Altenburg came into the possession of the margrave of Meissen about 1329, and later with Meissen formed part of the electorate of Saxony. On the division of the lands of the Wettins in 1485 it was assigned to the Albertine branch of the family, but in 1534 it passed by arrangement to the Ernestine branch. In 1669 Saxe-Altenburg was made into a separate duchy, but are only lasted until 1764, when the ruling family became extinct and the greater part of its lands was inherited by the duke of Saxe-Gotha. In 1825 the family ruling the duchy of Saxe-Gotha-Altenburg became extinct and another division of the Saxon lands was made. Frederick (d. 1834) exchanged the duchy of Saxe-Hildburghausen, which he had ruled since 1788, for Saxe-Altenburg, and was the founder of the present reigning house. In answer to popular demands a constitution was granted to Saxe-Altenburg in 1831, and greater concessions were extorted by the more threatening disturbances of 1848. In November of this year Duke Joseph abdicated and was succeeded by his brother George. Under George's son Ernest (1826-1908), who became duke in 1853, a period of reaction began and the result was that the constitution was made less liberal. In 1874 a long dispute over the public domains was settled, two-thirds of these being assigned to the duke in lieu of a civil list. In 1898 Ernest was succeeded by his nephew Ernest (b. 1871).

See Frommelt, Sachsen-Altenburgische Landeskunde (Leipzig, 1875); G. von Braun, Erinnerungen aus der Geschichte Altenburgs 1725-1826 (Altenburg, 1876); Mäuler, Die Landwirtschaft im Herzogthum Altenburg (Stuttgart, 1907); Albrecht, Das Staatwesen im Herzogthum Altenburg (Jena, 1905); and E. Löhe, Altenburgsca (Altenburg, 1878).

SAXE-COBURG-GOTHA (Ger. Sachsen-Coburg-Gotha), a sovereign duchy of Germany, in Thuringia, and a constituent member of the German Empire, consisting of the two formerly separate duchies of Coburg and Gotha, which lie at a distance of 14 m. from each other, and of eight small scattered exclaves, the most northerly of which is 70 m. from the most southerly. The total area is 764 sq. m., of which about 224 are in Coburg and 540 in Gotha. The duchy of Coburg is bounded on the S.E., S., and S.W. by Bavaria, and on the other sides by Saxe-
Meiningen, which, with part of Prussia, separates it from Gotha. The considerable exclave of Königberg in Bavaria, 10 m. south, belongs to Coburg. Lying on the south slope of the Thuringian Forest, and in the Franconian plain, the duchy of Coburg is undulating and fertile district. Roe (its highest point is in the Senichshöhe (1716 ft.) near Mirdorf. Its streams, the chief of which are the Itz, Biberach, Steinhach and Rodach, all find their way into the Main. The duchy of Gotha, more than twice the size of Coburg, stretches from the southern borders of Prussia along the northern slopes of the Thuringian Forest, the highest summits of which (Der grosse Beerberg, 3325 ft.; Schneekopf, 3710 ft.; and Inselsberg, 2937 ft.) rise within its borders. The more open and level district on the north is spoken of as the "open country" (das Land) in contrast to the wooded hills of the forest (der Wald). The Cera, Horsel, Unstrut and other streams of this duchy flow to the Werra, or to the Saale. The climate is that of the other central states of Germany, temperate in the valleys and plains and somewhat inclement in the hilly regions.

*Industries and Population.—* In both duchies the chief industry is agriculture, which employs about 30% of the entire population. According to the returns for 1905, about 50% of the area was occupied by arable land, 10% by meadow-land and pasture and 30% by forest. In the same year the chief crops were oats, barley; rye, wheat, potatoes, and hay. A small quantity of hemp and locally managed by ephories, twelve members of the united duchy is represented in the imperial diet. The members of the separate diets and meeting at Coburg and Gotha alternately, exercises authority. The members are elected for four years. The Coburg diet consists of eleven members and the Gotha diet of nineteen. The franchise is extended to all male taxpayers of twenty-five years of age and upwards. The franchise has special departments for each duchy, but is under a common president. 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SAXE-MEININGEN

(Ger. Sachsen-Meiningen), a duchy in Thuringia, forming an independent member of the German
empire and consisting chiefly of an irregular crescent-shaped territory, which, with an average breadth of 10 m., stretches for over 100 m. along the south-west slope of the Thuringian Forest. The convex side rests upon the duchy of Coburg and is in part bounded by Bavaria, while the concave side, turned towards the north, contains portions of four other Thuringian states and Prussia between its horns, which are 46 m. apart. The districts of Kranichfeld, 15 m. N.W., and Kamburg, 22 m. N. of the eastern horn, together with a number of smaller scattered exclaves, comprise 74 of the 935 sq. m. belonging to the duchy. The surface on the whole is hilly and is partly occupied by offshoots of the Thuringian Forest; the highest summits are found in the central part of the duchy, while the chief river rises in the Hoburg and the Blesberg 2835 ft. The chief streams are the Werra, which traverses the south and east of the duchy, and various tributaries of the Main and the Saale, so that Saxe-Meiningen belongs to the basins of the three great rivers Weser, Rhine and Elbe.

The soil is not very productive, although agriculture flourishes in the valleys and on the level ground; grain has to be imported to meet the demand. Only 41% of the total area is devoted to agriculture, while meadow-land and pasture occupy 11%. The chief grain crops are oats, rye and barley; and the most important of the principal towns, Hildburghausen, the Werra district, hogs and flux are also raised. The Werra valley and the other fertile valleys produce large quantities of fruit. The raising of cattle, pigs and sheep is a fairly important branch of industry throughout the duchy; horses are bred in Kamburg. The extensive and valuable forests, of which 75% consist of coniferous trees, occupy 42% of the entire area. About 42% of the forests belong to the state and about 33% to public bodies and institutions, leaving only 25% for private owners. The mineral wealth of the duchy is not inconsiderable. Iron, coal and salt, and the chief products, copper and cobalt may be added. There are salt-works at Salzungen and Neusulza, the former the most important in Thuringia; and the mineral water of Friedrichshall is well known. The manufacturing industry of Saxe-Meiningen is active, especially in the districts of Sonneberg, Gräfenthal and Saalfeld. Iron goods of various kinds, glass and pottery, school plates, pencils and marbles are produced; the abundant timber fosters the manufacture of all kinds of wooden articles, especially toys; and the textile industry and the manufacture of leather goods, paper mâché and sewing-machines are also carried on.

The capital of the duchy is Meiningen; the other principal towns are Salzungen, Hildburghausen, Eisleben, Sonneberg, Saalfeld, Pößneck and Kamburg. In 1905 the population was 268,916, of whom 30% live in communities of more than 1000. As in the other Saxon duchies the population is almost exclusively Protestant; in 1905, 262,243 belonged to the Lutheran confession, 4845 were Roman Catholics and 1256 Jews.

Saxe-Meiningen is a limited monarchy, its constitution testing on a law of 1829, subsequently modified. The diet, elected for six years, consists of 24 members, of whom 4 are elected by the largest landowners, 4 by those who pay tax on incomes of £150 or more, and 16 by the other electors. The franchise is enjoyed by all domiciled males over twenty-five years of age who pay taxes. The government is carried on by a ministry of five, with departments for the ducal house and foreign affairs, home affairs, justice, education and public worship and finance. The revenue, £190,000, of which is drawn from the state domains, stands at about £480,000 a year. The expenditure, including a civil list of £20,000, stands at £445,000. In 1909 the state had a debt of £302,170. Saxe-Meiningen has one vote in the General Federal council (Bundesrat) and sends two members to the Reichstag.

History.—The duchy of Saxe-Meiningen, or more correctly Saxe-Meiningen-Hildburghausen, was founded in 1681 by Bernard, the third son of Ernest the Pious, duke of Saxe-Gotha, and consisted originally of the western part of the present duchy, the district around Meiningen. Bernard was succeeded in 1706 by his three sons, Ernest Louis, Frederick William and Anton Ulrich, but after 1746 the only survivor was the youngest, Anton Ulrich, who resigned alone from this date until his death in 1783. By this time the duchy had increased considerably in extent, but petty wars with the other Saxon princes combined with the extravagance of the court and the desolation caused by the Seven Years’ War to plunge it into distress and bankruptcy. A happier time, however, was experienced under Charlotte Amalie, Anton’s widow, who ruled as regent for her sons, Charles (d. 1785) and George (d. 1806). Under the latter prince the country prospered greatly, and having introduced the principle of primogeniture, he died and was succeeded by his infant son, Bernard Ernest Freund (1800–1882), whose mother, Eleonora Maria Caroline, Countess of Meiningen, founded in 1680 by Ernest, the sixth son of Ernest the Pious, the duchy of Saxe-Saalfeld, founded by John Ernest, the seventh son of Ernest the Pious, which had been united with Saxe-Coburg in 1735; and the districts of Themar, Kranichfeld and Kamburg. In 1823 Bernard had granted a liberal constitution to his duchy, but these additions made further changes inevitable and a new constitution was granted in 1829. Saxe-Meiningen had entered the confederation of the Rhine in 1807, but had joined the allies in 1813 and became a member of the German confederation in 1815. In 1866, unlike the other Saxon duchies, Saxe-Meiningen remained neutral, and the war with Prussia; at once the land was occupied by Prussian troops, and in September 1866 Duke Bernard abdicated and was succeeded by his son George (b. 1826), who immediately made peace with Prussia and joined the North German Confederation, his land becoming a member of the new German empire in 1871. In 1871 the dispute which had been carried on since 1832 between the duke and the diet about the rights of each to the state domains was settled by a compromise, each party receiving a share of the revenues. The heir-apparent Prince Bernard (b. 1852) has no sons, so by a law of 1866 the state was settled upon the sons of his half-brother Prince Frederick (b. 1861).

See Statistik des Herzogtums Sachsen-Meiningen (Meiningen, 1892 fol.); Brückner, Landeskunde des Herzogtums Sachsen-Meiningen (Meiningen, 1853); Goeckel, Das Staatsrecht des Herzogtums Sachsen-Meiningen (Sonneberg, 1904); Anschütz, Industrie, Handel und Verkehr im Herzogtum Sachsen-Meiningen (Sonnewal, 1904); and the publications of the Verein für sachsen-meiningische Geschichte und Landeskunde (Hildburghausen, 1888 fol.).

SAXE-WEIMAR-EISENACH (Ger. Sachsen-Weimar-Eisenach), a grand duchy of Germany and a sovereign and constituent state of the German empire. It is the largest of the Thuringian states, and consists of the three chief detached districts of Weimar, Eisenach and Neustadt, and the sixty-five scattered exclave, of which Alstadt, Oldisleben and Ilmenau belonging to Weimar, and Ostheim belonging to Eisenach, are the chief. The first and last named of these exclave are 70 m. apart; and the most easterly of the other exclave is 100 m. from the most westerly. The total area of the grand-duchy is 1397 sq. m., of which 678 are in Weimar, 465 in Eisenach and 254 in Neustadt. The population in 1905 was 388,005 (189,422 males and 198,573 females), on an average 271 to the square mile, of whom the greatest bulk are Lutherans, the Roman Catholics only number about 12,000, and Jews and those of other confessions about 9000 in all. Of the population about 47% live in towns or communes exceeding 2000 inhabitants and about 53% are rural.

The district of Weimar, which is at once the largest division and the geographical and historical kernel of the grand-duchy, is a roughly circular territory, situated on the plateau to the
north-east of the Thuringian Forest. It is bounded on the N. and E. by Prussia, and on the S. and W. by Schwarzburg and detached portions of Saxe-Altenburg, and lies 23 m. east of the nearest part of Eisenach, and 7 m. north-west of the nearest part of Neustadt. The exclaves of Allstedt and Oldleisnien lie in Prussian territory 10 m. to the north and north-west respectively; Ilmenau as far to the south-west. The surface is undulating and destitute of any striking natural features, although the valleys of the Saale and Ilm are picturesque. The Kieselhahn (1825 ft.) and the Thuringberg (2621 ft.) rise in Ilmenau; but the Goethe-Kalm (1824 ft.) farther beyond the River Ilm to the extreme south, is the highest point in the main part of Weimar. The Saale flows through the east of the district and is joined by the Ilm, the Elster and the Unstrut. The chief towns are Weimar, the capital, on the Ilm; Jena, with the common university of the Thuringian states, on the Saale; Apolda, the "Manchester of Weimar," to the east; and Ilmenau, lying among the hills on the edge of the Thuringian Forest to the S.W. of Weimar.

Eisenach, the second district in size, and the first in point of natural beauty, stretches in a narrow strip from south to south on the extreme western boundary of Thuringia, and includes parts of the church lands of Fulda, of Hesse and of the former countship of Henneberg. It is bounded on the N. and W. by Prussia, on the S. by Bavaria (which also surrounds the exclave of Osheim) and on the E. by Saxe-Meiningen and Saxe-Gotha. The north is occupied by the rounded hills of the Thuringian Forest, while the Rhön mountains extend into the southern part. The chief summits of the former group, which is more remarkable for its fine forests and picturesque scenery than for its height, are the Gross-Kahl (1355 ft.), the north-western termination of the system, Otterwald (2103 ft.), the Wachstein (1900 ft.) and the Ringberg (2200 ft.). The chief river is the Werra, which flows across the centre of the district from east to west, and then bending suddenly northwards, re-enters from Prussia, and traverses the north-eastern parts in an irregular course. Its chief tributaries in Eisenach are the Höseld and the Ütler. Eisenach is the only town of importance in this division of the grand-duchy.

Neustadt, the third of the larger divisions, is distinguished neither by picturesque scenery nor historical interest. It forms an oblong territory, about 15 m. long by 16 b. wide, and belongs rather to the hilly district of the Vogtland than to Thuringia. It is bounded on the N. by the Reuss (junior line) and Saxe-Altenburg, on the W. by Saxe-Meiningen and a Prussian exclave, on the S. by the two Reuss principalities and on the E. by the kingdom of Saxony. The Kesselberg (1310 ft.), near the town of Neustadt, is the chief eminence. This district lies in the basin of the Saale, its chief streams being the White (Weiße) Elster, the Weida and the Orla. Neustadt, Auma and Weida are the principal towns.

Agriculture forms the chief occupation of the inhabitants in all parts of the district, though in Eisenach and around Ilmenau a large proportion of the area is covered with forests. According to the returns for 1900 about 55% of the entire area was occupied by arable land, 26% by forest and 9% by pasture and meadow-land. Only about 5% was unproductive soil or moorland. In 1900 the chief crops were oats, barley, rye, wheat, potatoes, hay, beet (for sugar), maize, especially at Ilmenau. The optical instruments of Jena and the scientific institutions of Ilmenau are well known. Leather, paper, glass, cork and tobacco are among the less prominent manufactures. There are numerous breweries in the district. The volume of trade is not very great, although a large part of the manufactured articles are exported all over Europe, and in some cases to other continents as well.

Constitution.—Saxe-Weimar-Eisenach is a limited hereditary monarchy, and was the first state in Germany to receive a liberal constitution. This was granted in 1816 by Charles Augustus, the patrician Goethe, and was revised in 1837 and again in 1906. The diet consists of one chamber only; three fifths of the members, of whom five are chosen by owners of land worth at least £50 a year, five by those who derive a similar income from other sources, five by the university of Jena and other public bodies, and twenty-three by the rest of the inhabitants. The deputies are elected for six years. The franchise is enjoyed by all domiciled citizens over twenty-one years of age. The government is carried on by a ministry of three, holding the portfolios of finance; of home and foreign affairs; and of religion, education and justice, with which is combined the ducal household. The duchy is represented by two votes in the Bundesrat and by two members in the Reichstag.

The Saxe-Weimar family is the oldest branch of the Ernestine line, and hence of the whole Saxon house. By a treaty with Prussia in 1867, which afterwards became the model for similar treaties between Prussia and other Thuringian states, the troops of the grand-duchy were incorporated with the Prussian army.

The budget is voted by the chamber for a period of three years. That from 1906 to 1910 estimated an annual income of £15,000,000 and a similar annual expenditure. A large income is derived from the state forests. The public debt amounted to £145,000 in 1908, but it is annually secured by real estate and invested funds. Justice is administered by two high courts (Landesgerichte), at Weimar and Eisenach respectively; the district of Neustadt falling under the jurisdiction of the Landesgericht at Gera; while the supreme court of appeal for the four Saxon dukedoms, Schwarzburg-Rudolstadt and Reuss, together with portions of Prussia, is the Oberlandesgericht at Jena.

History.—In early times Weimar with the surrounding district belonged to the counts of Thalma, and from the end of the 10th century until 1067 it was the seat of the counts of Weimar. In the 14th century it passed to the elector of Saxony, falling at the partition of 1485 to the Ernestine branch of the Wettin family. Although John Frederick the Magnanimous was deprived of the electorate in 1547 by his sons retained Weimar; and one of them, John William (d. 1573), may be regarded as the founder of the present ruling house, but it was not until 1641 that Saxe-Weimar emerged into an independent historical position. In this year, having just inherited Coburg and the line of the three brothers, William, Albert and Ernest founded the third princely house of Saxe-Weimar, with Saxe-Gotha. Eisenach fell to Saxe-Weimar in 1644, and although the enlarged principality of Saxe-Weimar-Eisenach was temporarily split up into the lines Saxe-Weimar, Saxe-Eisenach and Saxe-Jena, it was again united under Ernest Augustus, who began to reign in 1728, and the adoption of the principle of primogeniture about this time secured it against further divisions. Ernest Augustus II., who succeeded in 1748, died in 1758, and his young widow, Anna Amelia, was appointed regent of the country and guardian of her infant son Charles Alexander. The reign of this prince, who assumed the government in 1775, is the most brilliant epoch in the history of Saxe-Weimar. An intelligent patron of literature and art, he attracted to his court the leading scholars in Germany; Goethe, Schiller and Herder were members of this illustrious band, and the little state, hitherto obscure, attracted the eyes of all Europe.

The war between France and Prussia in 1806 was fraught with danger to the existence of the principality, and after the battle of Jena it was mainly the skillful conduct of the duchess Louise, the wife of Charles Augustus, that dissuaded Napoleon...

1 See Goethe's famous lines, Epigramme (35):

klein ist unter den Fürsten Germaniens reich der mein; Kurz und schmal ist mein Land, mächtig nur, was er vermag. Aber so wende nach innen, so wende nach aussen die Kräfte fieder: da wär e's ein Fest, Deutscher mit Deutschen zu sein."

2 Saxe-Gotha's famous lines, Epigramme (35):
from removing her husband from his place as a reigning prince. In 1807 Saxe-Weimar-Eisenach entered the Confederation of the Rhine and in the subsequent campaigns it suffered greatly. The Congress of Vienna in 1815 added about 660 sq. m. to its area and gave its ruler the title of grand-duke. Just after the conclusion of peace Charles Augustus gave a liberal constitution to his land, freedom of the press was also granted, but after the festival of the Warthurg on the 18th of October 1817 this was seriously curtailed. The next grand-duke, Charles Frederick, who succeeded in 1828, continued his father’s work, but his reforms were not thorough enough nor rapid enough to avert disturbances in 1848, when power was given to a popular ministry and numerous reforms were carried through. Reaction set in under Charles Alexander, who became grand-duke in 1853, and the union of the crown lands and the state lands was undone, although both remained under the same public management. In 1866 the grand-duchy joined Prussia against Austria, although its troops were then garrisoning towns in the interests of the latter power; afterwards it entered the North German Confederation and the new German empire. Charles Alexander died in January 1901 and was succeeded by his grandson William Ernest (b. 1876).

See C. Kronfeld, Landeskunde des Grossherzogtums Sachsen-Weimar-Eisenach (Weimar, 1878–1879); and the official Staats- handbuch für das Grossherzogtum Sachsen (Weimar, 1904).

SAXHORN, the generic name of a family of brass wind instruments (named horns but valve-bugles) with cup-shaped mouthpieces, invented by Adolphe Sax and in use chiefly in French and Belgian military bands and in small wind-bands. The saxhorns came into being in 1843, when Sax applied a modification of the valve system invented in Germany in 1815 to the keyed bugle. The saxhorn consists of a conical tube of a calibre greater than that of French horn and trumpet, but smaller than that of the tubas or bombardons, and capable therefore of producing by overblowing the members of the harmonic series from the 2nd to the 8th, in common with the cornets, bugles, valve-trumpets and the Wagner tubas. The saxhorns are furnished with three valves, by means of which the compass is rendered chromatic, and which act as in other valve instruments, lowering the pitch of the instrument when depressed, respectively 1 tone, a semitone and 1½ tones; and further, when used in combination, 2 tones, 2½ tones and 3 tones. The Flügelhorns, the euphonium, the bombard and the tubas are sometimes erroneously classed as saxhorns. The difference between saxhorns and bombardons or tubas consists in the calibre of the bore, in which the latter is sufficiently wide in proportion to the length to produce the fundamental note of the harmonic series an octave below the lowest note of the saxhorns. The consequence of this structural difference is important, for whereas the tube of the tubas is theoretically of the same length as an open organ pipe of the same pitch, the saxhorns require a tube twice that length to produce the same scale. For instance, a euphonium sounding 8 ft. C only needs a tube 8 ft. long, whereas the corresponding bass saxhorn requires one 16 ft. long. In Germany these structural differences have given rise to a classification of brass wind instruments as single valves or half-instruments (Grosse or Halbe), according to whether the whole or only the half of the length of tubing is of practical use. The members of the saxhorn family are the small saxhorn in E₃, the soprano in B₄, the alto in E₅, the tenor in B₅, the bass in B₆ (an octave lower), the low bass in E₆, the contra-bass in B₇, three octaves below the soprano. All the saxhorns are treated as transposing instruments. A similar family, constructed with rotary valves and conical tubes of larger calibre than the saxhorns, but having the same harmonic scale, is known in Germany as Flügelhorn. (K. S.)

1 See Dr Emil Schafhautl’s article on musical instruments in sect. iv. of Bericht der Beurteilungscommission bei der allg. deutschen Industrieausstellung, 1854 (Munich, 1855), pp. 160–170.


SAXIFRAGACEAE, in botany, a small natural order of Dicotyledons belonging to the sub-class Polypetalea and containing 27 genera with about 350 species distributed through the Arctic and north temperate zone, often alpine. It is repre-
has a very similar distribution. The North American genus *Heuchera* has sometimes sapelike flowers. *Aster* has 6 species in temperate Asia and north-eastern North America; *A. japonica* is commonly grown in the spring as a pot-plant, and often misnamed *Spiraea*.

The order is frequently much extended to include other groups of genera differing in habit and more or less in the general conformation from those to which the order is here confined, and which are therefore regarded as forming one of several tribes. Among these is the order *Bignoniaceae*; the single genus peculiar to it is the gooseberry (*R. Grossularia*) and currants of gardens. These are shrubs with racemes of flowers which have only one whorl of stamens (isosomos), an inferior unilocular ovary with two parietal placentae, and fruit a berry. Another is the Hydrangeaceae, to which belong *Hydrangea* (qv.), *Deutzia* and *Philadelphus*, all well-known garden plants; *P. coronarius* is the so-called Syringa or mock-orange. There are shrubs or trees with simple generic leaves, 5-merous flowers with epigynous stamens and a 3- to 5-locular ovary. *Escallonia*, which represents a small group of genera with leathery gland-dotted leaves, is also often included.

**SAXIFRAGE** (Saxifraga), a genus of plants which gives its name to the order of which it is a member. There are nearly 200 species distributed in the temperate and arctic parts of the northern hemisphere, frequently at considerable heights on the mountains, and also found on the Andes. They are mostly herbs with perennial rootstocks and less than 6 cm in stature. The flowers are white to greenish, sometimes striped. The arrangement of the flowers is various, as also are the size and colour of the flowers themselves. They have a flat or more or less cup-shaped receptacle, from the margin of which spring five sepals, five petals and ten (or rarely five) stamens. The pistil is often partly adherent to the receptacle, and is divided above into two styles; the ovules are numerous, attached to axile placentas; and the seed-vessel is capsular. Fifteen species are in cultivation, including the *Bergenia* or *Megasas* with their large fleshy leaves and copious panicles of rosy or pink flowers, the numerous alpine species, such as *S. pyramidalis*, *S. cotyledon*, &c., with tall panicles studded with white flowers, and many others, most of them adapted for rockwork.

**SAXO GRAMMATICO** (c. 1350–c. 1265), Danish historian and author, the son of his father and grandfather having served under Valdemar I, king of Denmark (d. 1185). Brought up for the clerical profession, Saxo entered the service of Archbishop Absalon about 1180, and remained in that capacity until the death of Absalon in 1201. It was at the archbishop's instigation that he began, about 1185, to write the history of the Danish Christian kings from the time of Sweyn Estridson (d. 1076), but later Absalon prevailed on him to write also the history of the earlier heathen times, and to combine both into a great work, *Gesta Danorum*, or *Historia Danica*. The archbishop died before the work was finished, and therefore the preface, written about 1208, dedicates the work to his successor Archbishop Andreas, and to King Valdemar II. Nothing else is known about Saxo's life and person; a chronicle of 1265 calls him "mirae et urbanae eloquentiae clerici"; and an epitome of his work from about 1340 describes him as "egregius grammaticus, origine Sialandicus." That he was a native of Zealand is probably correct, inasmuch as, whereas he often criticizes the Jutlanders and the Scandians, he frequently praises the Zealanders. The surname of "Grammaticus" is probably of later origin, since the act of composition of the history preceded the revival of the title of "provost of Rökilde," given him in the 16th century, is also probably incorrect, the historian being confounded with an older contemporary, the provost of the same name. Saxo, from his apprenticeship as the archbishop's secretary, had acquired a brilliant but somewhat euphemitic Latin style, and wrote fine Latin verses, but otherwise he does not seem to have had any very great learning or extensive reading. His models of style were Valerius Maximus, Justin and Martianus Capella, especially the last. Occasionally he mentions Bede, Dudo of St Quentin and Paulus Diaconus, but he does not seem to have studied them or any other historical works thoroughly. His sources are partly Danish traditions and songs, partly the statements of Archbishop Absalon, partly the accounts of Icelanders and, lastly, some few earlier sources, lists of Danish kings and short chronicles, which furnished him with some reliable chronological facts. He considered traditions as history, and therefore made it his chief business to recount and arrange these, and his work is a loosely connected series of biographies of Danish kings and heroes.

The first nine books of the *Gesta Danorum* comprise traditions of kings and heroes of the historical time up to about 950. Here Saxo's style is mostly simple, and his history is in frequent use by modern writers, especially Fredriksen's about Amleth (Hamlet) and Fenge, about Hrolfr Kraki, Hadding, the giant Starkather, Harald Hildetann and Ragnar Lodbrok. In this earlier history Saxo has also embodied myths of national gods who in tradition had become Danish kings, for instance, Balder and Hother, and of foreign heroes, likewise incorporated in Danish history, as the Gothic Jarunnrik (A.S. Eormenre), the Anglian Vermund (A.S. Gärmund) and Uffe (A.S. Offa), the German Hedin and Hild, and others. Frequently the narrative is interrupted by translations of poems, which Saxo has used as authentic sources, although they were written only a few generations older than himself. In the later books (x–xxvi) of his work he follows to a greater extent historical accounts, and the more he approaches his own time the fuller and the more trustworthy his relation becomes; especially brilliant is his treatment of the history of King Valdemar and of Absalon. But his patriotism often makes him partial to his countrymen, and his want of critical sense often blinds him to the historical truth.

Saxo's work was widely read during the middle ages, and several extracts of it were made for smaller chronicles. It was published for the first time, from a MS. afterwards lost, in Paris, 1534, by the Danish humanist Christians Pedersen; this edition was reprinted at Basel, 1534, and at Frankfort, 1576. Of later editions may be mentioned that of Stephen Stephunius (Séro, 1644), the second volume of which contains the little-known, but valuable, *Stephanii notae ubiores in histioriam Dannicum Saxonis Grammatici*, and which was reproduced, though without the notes, by C. A. Klotz (Leipzig, 1771); and that of P. E. Müller completed by J. M. Velschow (Copenhagen, 1839–1858). The last complete edition is that of Alfred Holder (Strassburg, 1886), which is based mainly on the text of the 19th century and the last MSS. of Cuxhaven, 1882, and also adds much historical material for the period after this. There are also many MSS. and printed versions of *Saxo*.

There are Danish translations by A. G. Vedel (Copenhagen, 1575, and again 1851), and by F. Winkel-Horn (1806–1808). There is an English translation by O. Elton and F. Y. Powell (London, 1894).

SAXONS, a Teutonic people mentioned for the first time by Ptolemy about the middle of the 2nd century. At that time they are said to have inhabited the neck of the Cimbrian peninsula, by which we have probably to understand the modern province of Schleswig, together with three islands lying off its western coast. We next hear of them in connexion with piratical expeditions in the North Sea about the year 266. These raids became more frequent during the 4th century, and at the beginning of the 5th century the part of the north-east coast of Britain which is known as *litera Saxonica*, owing either to their liability to the attacks of the Saxons or, as some think, to the establishment of Saxon colonies there. During the same period the Saxons appear to have conquered a considerable portion of north-west Germany. According to their own traditions they landed at Hadel in the neighbourhood of Cuxhaven and seized the surrounding districts from the Thuringians. It is clear that by the middle of the 4th century they had advanced
westwards into the basin of the Yssel, from whence they drove the Frankish Salii into Batavia. In the following centuries we find them in possession of the whole of the basin of the Ems, except the coast district, while that of the Weser with all its tributaries belonged to them as far south as the Diemel, where they bordered on the Hessian Franks, the ancient Chatti. The conquest of the Borcuturii who dwelt between the Lippe and the Ruhr marks the extent of their progress towards the south-west. This took place shortly before the end of the 1st century B.C. The Rhine tribes remained, after frequent warfare with the Franks and on several occasions had to submit to their supremacy, notably after their defeat by Clothaire I. in 553. No thorough conquest was, however, carried out until the time of Charlemagne, who, between the years 772 and 785, annexed the whole region as far as the Elbe, destroying in 772 the Irmisul, their great sanctuary, near Marsberg on the Diemel. Up to this time they had remained entirely heathen. In the 8th century and later we find the Saxons divided into three geographical districts known as Westphalai (a name preserved in Westphalia), Angrarri and Ostalde, each of which had in several respects special customs of its own. The Saxons were ruled by a number of independent princes, but it is said that they had a national council which met annually at a place called Marklo on the Weser. At the beginning of the following century Charles also conquered the Saxons known as Nordalbingi in western Holstein, a district which had perhaps been occupied by a southward movement from the original home of the tribe.

It is doubtful how far the Saxons who invaded Britain were really distinct from the Anglii, for all their affinities both in language and custom are with the latter and not with the Saxons (Old Saxons) of the continent. During the 6th century we hear also of Saxon settlements on the coasts of Gaul. The most important were those at the mouth of the Loire founded in the time of Childeric, Clovis's father, and at Bayeux, in a district which remained in their possession until towards the close of the 6th century. From the 6th century onwards, however, we hear practically nothing of the Saxons as a seafaring people. Almost all the southern coast of the North Sea had now come into the possession of the Frisians, and one can hardly help concluding that most of the maritime Saxons had either voluntarily or by conquest become incorporated in that kingdom.

See Ptolemy ii. 11; Eutropius ix. 12; Zosimus iii. 6; Ammianus Marcellinus xxvi. 4, 5, xxvii. 5, xxviii. 2, 12, 7, 8, xxx. 5, 1 and 4; Notitia ducum et regionum; Gregory of Tours, Historia Francorum; ii. 19; in the 'Itinerarium', ed. by F. W. de Hase; Hallstatt, 'Itin. regal.'; Ammianus Marcellinus, Translatio S. Alexandri; Huchbald, Vita S. Lebini; Widukind. Res Gestae Saxonicæ, i. 1 ff. (F. G. M. B.)

SAXONY, a kingdom of Germany, ranking among the constituent states of the empire, fifth in area, third in population and first in industrial population, bounded on the S. by the E. and N., the W. by Bavaria and the Thuringian states and on the W.-N. and E. by Prussia. Its frontiers have a circuit of 760 m. and, with the exception of the two small exclaves of Ziegleheim in Saxo-Altenburg and Liebschitz on the border of the principality of Reuss, it forms a compact whole of a triangular shape, its base extending from N.E. to S.W., and its apex pointing N.W. Its greatest length is 130 m.; its greatest breadth 93 m., and the total area is 5787 sq. m. Except in the south, towards Bohemia, where the Erzgebirge forms at once the limit of the kingdom and of the empire, the boundaries are entirely political.

Physical Features.—Saxony belongs almost entirely to the central mountain region of Germany, only the districts along the north and east border and around Leipzig descending into the great north-European plain. The average elevation of the country, however, is not great, and the whole region is drained by numerous small rivers. The chief mountain range is the Erzgebirge, stretching for 90 m. along the south border, and reaching in the Fichtelbergs (3979 ft. and 3853 ft.) and the Erzgebirge the highest points of Saxony. The southernmost part of Saxony is more or less occupied by the ramifications and subsidiary groups of one range, one of which is known from its position as the Central Saxony chain, and another lower group still further south as the Choritz group. The south-east angle of Saxony is occupied by the mountains of Upper Lusatia (highest summit 2660 ft.), which form the link between the Erzgebirge and Riesengebirge in the great Sudetic chain. North-west from this group, and along both banks of the Elbe, which divides it from the Erzgebirge,
where the manufacture of linen was at one time a flourishing
domestic industry. Saxony owes its unusual wealth in fruit partly to the care
of the land, which has been enriched without fruit seeds for distribution among the peasants and farmers. Enormous quantities of cherries, plums and apples are annually
borne by the trees round Leipzic, Dresden and Colditz. The cultiva-
tion of the vine, however, is comparatively new. The introduction of the
early one-half commercial varieties has been fostered by the state near Freiberg, where and the next, lead growing, on the lea
fostered where. Excellent vintages are found in the districts round Bautzen and Chemnitz. Paper is made chiefly in the west of the kingdom, but
does not keep pace with the demand. Machinery of all kinds is pro-
duced, from the sewing-machines of Dresden to the steam-locomotives
and vessels of Schwerin. The factories of Saxony are among the
most extensive of printing-presses in that city. In 1902-1903 Saxony contained
601 active breweries and 572 distilleries. The smelting and refining
of the ore of which the metal ores is also an important industry, by the
mining companies, which is estimated at 266 million pounds annually.

Saxony — Saxony is a constitutional monarchy and a member of the German empire, with four votes in the Bundesrat (federal council) and twenty-three in the Reichstag (imperial diet). The constitution rests on a law promulgated on the 4th of September 1831, and subsequently amended. The crown is hereditary in the Albertine line of the house of Wettin, with restoration to the Ernestine line, of which the duke of Saxo-Weimar is now the head. The king enjoys a civil list of 3,674,927 marks or about £185,000, while the appanages of the crown, including the payments to the other members of the royal house, amount to £59,544 more.

The legislature (Ständeversammlung) is bicameral—the constitution provides for co-ordinate chambers being finally settled by a law of 1868 amending the enactment of 1831. The first chamber consists of the adult princes of the blood, two representatives of the Lutheran and one of the Roman Catholic Church, a representative of Leipzig (appointed by the town) and two of the towns. In addition to these six, there is a proprietor of the mediated domains, two of Ständesherrschaften, one of those of four estates in fee, the superintendent at Leipzig, a deputy of the collegiate institution at Wurzen, 12 deputies elected by owners of noble estates, ten landed proprietors and five other members nominated by the king and the burgomasters of eight towns. The second chamber consists of 43 members from the towns and 48 from the country, elected for six years. All male citizens twenty-five years old and upwards who pay 3 marks per annum in taxes have the
suffrage; and all above thirty years of age who pay 30 marks in annual taxes are eligible as members of the lower house. With the exception of those nominated by the crown, who are elected by the first chamber, the members of the diet are entitled to an allowance for their daily expenses, as well as their travelling expenses. The executive consists of a responsible ministry (Gesamtministerium, comprising the chancellor, the minister of war, public worship and education, and foreign affairs. The minister of the royal household does not belong to the cabinet. The constitution provides for the formation of a kind of privy council (Staaterrat), consisting of the cabinet ministers and other members appointed by the king.

For administrative purposes Saxony is divided into five Kreishaupt-
mannschaften, or governmental departments, subdivided into
twenty-seven Amtshauptmannschaften. The cities of Dresden, Leipzig, Chemnitz, Plauen and Zwickau, form departments by themselves. The supreme court of law for both civil and criminal cases is the Oberlandessgericht at Dresden, subordinate to which are seven other courts in the other principal towns. The German imperial code was adopted by Saxony in 1879. Leipzig is the seat of the Reichskammergericht, the court of appeal for the German empire.

The Saxony army is modelled on that of Prussia. It forms the XLI. and XIX. army corps in the imperial German army, with head-
quarters at Dresden and Leipzig respectively.

Four-fifths of the inhabitants of Saxony are Protestants; about 12,500 are Jews, and about 4.7%, including the royal family, are
Roman Catholics. The Evangelical-Lutheran, or State, church has as its head the minister de evangelycis so long as the king is Roman Catholic, though, in the event of the death of the crown prince, his representative becomes the minister at Dresden. Its representative assembly consisting of 35 clergymen and 42 laymen is called a synod (Synode). The Reformed Church (French) is represented by the minister de prédication of the Lutheran Catholic Church has enjoyed the patronage of the reigning family since 1697, though it was only the peace of Posen in 1806 which placed it on a level with the Lutherans. By the peace of Prague, 1866, Saxony was converted to the Roman Catholic faith, and the church was made in favour of the Roman Catholics of that region, who are ecclesiastically in the jurisdiction of the cathedral chapter of St Peter at Bautzen, the dean of which has ex-officio a seat in the first chamber.
of the diat. The other districts are managed by an apostolic vicar at Dresden, under the direction of the minister of public worship. Two nunneries in Lusatia are the only conventual establishments in Saxony, and no others may be founded. Among the smaller religious sects the Pietists are the most numerous at Halle, but the most interesting is perhaps the independent religious confession.

Education.—Saxony is one of the most highly educated countries in Europe, and its foundations of schools and universities were among the earliest in Germany. Of the four universities founded by the Saxon electors at Leipzig, Jena, Wittenberg, later transferred to Halle, and Erfurt, now extinct, only the first is included in the present kingdom of Saxony. The endowed schools (Fürstenschulen) at Meissen and Grimma have long enjoyed a high reputation. There are over 4000 schools and education is compulsory in the public schools. On account of their teaching programs and the textile industries being especially fostered by numerous schools of weaving, embroidery and lace-making; but the mining academy at Freiberg and the school of forestry at Tharandt are probably the most widely known. The conservatory of music at Leipzig enjoys a world-wide reputation; not less the art collections at Dresden.

Finance.—The Saxon financial period embraces a space of two years. For 1908-1909 the ordinary budget showed an income of 1,175,382,833, balanced by the expenditure. The chief sources of income are taxes, state railways and public forests and domains. The chief expenditure was on the interest and sinking fund of the national debt. The national debt, incurred almost wholly in making and buying railways and telegraphs, and carrying out other public works, amounted to 748,648,000 in 1909.

See the annual Jahrbuch für Statistik des Königreichs Sachsen (Dresden); P. E. Richter, Literatur des Landes und Volkskunde des Königreichs Sachsen (Dresden, 1903); Zemminich, Landeskunde des Königreichs Sachsen (Leipzig, 1902); and Polz, Geologie des Königreichs Sachsen (Leipzig, 1904).

History.—The name of Saxony has been borne by two distinct blocks of territory. The first was the district in the north-west of Germany, inhabited originally by the Saxons, which became a duchy and attained its greatest size and prosperity under Henry the Lion in the 12th century. In 1180 it was broken up, and the name of Saxony disappeared from the greater part of it, remaining only with the districts around Lauenburg and Wittenberg. Five centuries later Lauenburg was incorporated with Hanover, and Wittenberg is the nucleus of modern Saxony, the name being thus transferred from the west to the east of Germany. In 1433 Meissen and Thuringia were united with Sax-Wittenberg under Frederick of Meissen, and gradually the name of Saxony spread over all the lands ruled by this prince and his descendants. Saxony and Saxony-Lauenburg were the principal land-holding fiefs of the Hohenzollerns, and the Saale on the east, the Elbe on the north and the Rhine on the west, with a fluctuating boundary on the south. During the 8th century it was inhabited by the Saxons (g.v.), and about this time was first called Saxonia, and afterwards Saxony.

For many years the Saxons had been troublesome to the Franks, their neighbours to the east and south, and the intermittent campaigns undertaken against them by Charles Martel and Pipin the Short had scarcely impaired their independence. This struggle was renewed by Charlemagne in 772, and a warfare of thirty-two years' duration was marked by the readiness of the Saxons to take advantage of the difficulties of Charles in other parts of Europe, and by the missionary character which the Frankish king imparted to the war. The subjugation of the Saxons, who were divided into four main branches, was rendered more difficult by the absence of any common ruler, and of a central power answerable for the allegiance of the separate tribes. Einhard, the friend and biographer of Charles, sums up this struggle as follows:—"It is hard to say how often the Saxons, conquered and humbled, submitted to the king, promised to fulfill his commands, delivered over the required hostages without delay, received the officials sent to them, and were often rendered so tame and pliable that they gave up the service of their heathen gods and agreed to accept Christianity. But just as quickly as they showed themselves ready to do this, did they also always break their promises, so that one could not really say which of these two courses may truly have been easier to them, and from the beginning of the war scarcely a year passed without bringing such change of mind."

In 772 the war was decided upon, and Charles marched from Worms into the land of the Engrians or Angrians. The frontier fortress of Eresburg which stood on the site of the modern Marburg was taken, the Irminisul was destroyed, and the treasures of gold and silver were seized. The Irminisul was a wooden pillar erected to represent the world-sustaining ash Yggdrasil, and was the centre of the worship of the whole Saxon people. Having received hostages Charles left the country; but in 774 while he was in Italy the Saxons retook Eresburg, and crossing the frontier attacked the church of St Boniface at Fritzlar and ravaged the land of the Franks. The king retaliated by sending troops of cavalry to devastate Saxony, and declared that any Saxon who remained in the land was an adherent of Christianity. In pursuance of this resolve he marched against them early in 775, captured the fortress of Sigiburg on the Ruhr, regained and rebuilt Eresburg and left Frankish garrisons in the land. The Engrians, together with the Eastphalians and the Westphalians who dwelt on either side of them, made a formal submission and many of them were baptized; but about the same time some Frankish troops met with a serious reverse at Lübecke near Minden. Charles thereupon again took the field, and after ravaging Saxony returned home under the impression that the king had been defeated. In 776, however, the Saxons were again in arms and retook Eresburg; but they failed to capture Sigiburg, and showed themselves penitent when the king appeared among them. Saxony was regarrisoned, a new fortress named Carlsburg was erected on the banks of the Lippe, and terms of peace were arranged. In 777 Charles held an assembly at Paderborn, henceforth his headquarters during this war, which was attended by most of the Saxon chiefs. Hostages were given, oaths of fealty renewed, while many accepted Christianity, and the rudiments of an ecclesiastical system were established. The peace did not last long. A certain Widukind, or Wittekind, who had doubtless taken part in the earlier struggle, returned from exile in Denmark, and under his leadership the Saxony revolt broke out afresh in 778. The valley of the Rhine from Coblenz to Deutz was ravaged, and the advance of winter prevented Charles from sending more than a flying column to drive back the Saxons. But in 779 he renewed the attack, and after an important Frankish victory at Bocholt the Westphalians again did homage. The civil and ecclesiastical organization of the country was improved, and in 782 the king held an assembly at the source of the Lippe and took further measures to extend the Frankish power into the Saxon lands. But although the Saxons were again in arms, they were, however, given to Saxon chiefs to administer, and it was probably on this occasion that the capitulatio de partibus Saxoniae was issued. This capitulary ordered the celebration of baptism and other Christian rites and ceremonies in addition to the payment of tithes, and forbade the observance of pagan customs on pain of death.

This attack on the religion and property of the Saxons aroused intense indignation, and provoked the rising of 783 which marks the beginning of the second period of the war. The work of devastation was renewed, the priests were driven out, and on the Sünelt mountains near Minden, the Frankish forces were almost annihilated. Charles collected a large army, and by his orders 4500 men who had surrendered were beheaded at Verden. This act made the Saxons more furious than ever, but in 783 Charles inflicted two defeats upon them at Detmold and on the river Hase, and ravaged their territory from the Weser to the Elbe. This work was continued during the following year by the king and his eldest son Charles, and the Christmas of 784 was spent by the royal family at Eresburg, whence Charles directed various plundering expeditions. The work of conversion was renewed, and an important event took place in 785 when Widukind, assured of his personal safety, surrendered and was baptized at Attigny together with many of his companions. Saxony at last seemed to be subdued, and Saxon warriors took service in the Frankish armies. But in 792 some Frankish troops were killed at the mouth of the Elbe, and a similar disaster in the following year was the signal for a renewal of the ravages with great violence, when churches were destroyed, priests killed, or driven away, and many of the people returned to
heathenism. These events compelled Charles to leave the Avar war and return to Saxony in 794; and until 799 each year had its Saxony campaign. At the same time in 794, as a fresh experiment in policy, every third man was transported; while the king was assisted in his work of conquest by the Abotrites who inhabited a district east of the Elbe. The resistance Charles met with was not serious, and these expeditions took the form of plundering, raids. Oaths and hostages were exacted; and many Saxony youths were educated in the land of the Franks as Christians, and sent back into Saxony to spread Christianity and Frankish influence. The southern part of the country was now only tranquil, and the later campaigns were directed mainly against the Nordalbingians, the branch of the Saxons living north of the Elbe, who suffered a severe reverse near Bornhöved in 798. Further transporting were carried out, and in 797 Charles issued another capitulary which mitigated the severe provisions of the capitulary of 782; and about 802 the Saxoun law was committed to writing. The Nordalbingians were still restless, and it is recorded that their land was devastated in 802. Two years later a fnal campaign was undertaken, when a large number of these people were transported into the country, and their places were occupied by Huns and Franks.

The conversion of the Saxons to Christianity, which during this time had been steadily progressing, was now completed in the reign of the emperor Louis I., the Pious, who, however, took very little interest in this part of his empire. Bishoprics were founded at Bremen, Münster, Verden, Minden, Paderborn, Osnabrück, Hildesheim and Hamburg, and one founded at Seligen- stadt was removed to Halberstadt. Some of these bishoprics were under the authority of the archiepiscopal see of Cologne, others under that of Mainz, and this arrangement was unaltered when in 834 Hamburg was raised to an archbishopric. In 843 the bishopric of Bremen was united with Hamburg, but the authority of this archbishopric extended mainly over the districts north and east of the Elbe. The abbey of Corvey, where rested the bones of St Vitus, the patron saint of Saxony, soon became a centre of learning for the country, and the Saxons undertook with the eagerness of converts the conversion of their heathen neighbours. After a period of tranquillity a reaction set in against Frankish influences, and in 840 the freemen and villeins separated themselves from the nobles, formed a league, or stüllings, and obtained a promise from the emperor Lothair I. that he would restore their ancient constitution. This rising, which was probably caused by the exaction of tithes and the oppression of Frankish officials, aimed also at restoring the heathen religion, and was put down in 842 by king Louis the German, who claimed authority over this part of the Carolingian empire.

The influences of civilization and the settlement of Frankish colonists in various parts of Saxony facilitated its incorporation with the Carolingian empire, with which its history is for some time identified. By the treaty of Verdun in 843 Saxony fell to Louis the German, but he paid little attention to the northern part of his kingdom which was harassed by the Normans and the Slavs. About 850, however, he appointed a margrave to defend the Limner Saxoniae, a narrow strip of land on the eastern frontier, and this office was given to one Liudolf who had large estates in Saxony, and who was probably descended from an Engrian noble named Bruno. Liudolf, who is sometimes called Duke of the East Saxons," carried on a vigorous warfare against the Slavs and extended his influence over other parts of Saxony. He died in 866, and was succeeded by his son Bruno, who was killed fighting the Normans in 880. Liudolf's second son, Otto the Illustrious, was seated as margrave, and his son Conrad I., and on the death of Burkhard, margrave of Thurgingia, in 908, obtained authority over that country also. He made himself practically independent in Saxony, played an important part in the affairs of the Empire, and is said to have refused the German throne in 911. He died in 912 and was succeeded by his son Henry I., the Fowler. Between this prince and Conrad I., who wished to curb the increasing power of the Saxony duke, a quarrel took place; but Henry not only retained his hold over Saxony and Thuringia, but on Conrad's death in 919 was elected German king. He extended the Saxon frontier almost to the Oder, improved the Saxon forces by training and equipment, established new marks, and erected forts on the frontiers for which he provided regular garrisons. Towns were walled, where it was decreed markets and assemblies should be held, churches and monasteries were founded, civilization was extended and learning encouraged. Henry's son, Otto the Great, was crowned emperor in 962, and his descendants held this dignity until the death of the emperor Otto III. in 1002. Otto retained Saxony in his own hands for a time, though in 938 he had some difficulty in suppressing a revolt led by his half-brother Thianmar. The Empire was driven by his domestic policy of Henry the Fowler was continued, the Saxons becoming a centre of learning visited by Italian scholars, and in 968 an archbishopric was founded at Magdeburg for the lands east of the Elbe. In 960 Otto gave to a trusted relative Hermann, afterwards called Billung, certain duties and privileges on the eastern frontier, and from time to time appointed him as his representative in Saxony. Hermann gradually extended his authority, and when he died in 973 was followed by his son Bernard I., who was undoubtedly duke of Saxony in 986. When Henry II. was attacked by his brother Henry the Quarrelsome near the Saxons at Merseburg, and on promising to observe their laws and pay a large sum for the sacred lance, thus entrusting Saxony to his care. Bernard was succeeded by his son Bernard II., who took up a hostile attitude towards the German kings, Conrad II. and Henry III. His son and successor Ordluf, who became duke in 1059, carried on a long and obstinate struggle with Adalbert, archbishop of Bremen, who was compelled to cede one-third of his possessions to Ordluf's son Magnus in 1066. The emperor Henry III. sought to win the allegiance of the Saxons by residing among them, and built a fortress at Goslar and the Harzburg; and the emperor Henry IV. also spent much time in Saxony.

In 1070 Otto of Nordheim, duke of Bavaria, who held large estates in this country, being accused of a plot to murder Henry, was placed under the ban, his possessions were declared forfeited and his estates plundered. Otto, in alliance with Magnus, won considerable support in Saxony, but after some fighting both submitted and were imprisoned; and Magnus was still in confinement when on his father's death in 1072 he became titular duke of Saxony. As he refused to give up his duchy he was kept in prison, while Henry confiscated the estates of powerful nobles. Magnus, however, was short-lived, as the peasants employed in pursuance of its terms in demolishing the forts, desecrated the churches and violated the ducale tombs. Henry, having obtained help from the princes of the Rhineland, attacked and defeated the Saxons at Hohen- burg near Langenalza, rebuilt the forts, and pardoned Otto, whom he appointed administrator of the country. The Saxons, however, were not quite subdued: risings took place from time to time, and the opponents of Henry IV. found considerable support in Saxony. During the century which followed the death of Henry, the Saxons had been in constant warfare with the Slavs, but although the emperors had often taken the field, the Saxons had been driven back to the Elbe, which was at this time their eastern boundary. In 1106 Magnus died, and the German king Henry V. bestowed the duchy upon Lothair, count of Supplinburg, whose wife Richenza inherited the Saxoun estates of her grandfather Otto of Nordheim, on the death of her brother Otto in 1116. Lothair quickly made himself independent, defeated Henry at Welfesholz in 1115, and prosecuted the war against the Slavs with vigour. In 1125 he became German...
king, and in 1357 gave Saxony to Henry the Proud, duke of Bavaria, who had married his daughter Gertrude, and whose mother Wulfhild was a daughter of Magnus Billung. The succeeding German king Conrad III., refused to allow Henry to hold two duchies, and gave Saxony to Albert the Bear, marquavate of Brandenburg, who like his rival was a grandson of Magnus Billung. Albert’s attempts to obtain possession failed, and after Henry’s death in 1319 he formally renounced Saxony in favour of Henry’s son, Henry the Lion (q.v.). The new duke improved its internal condition, increased its political importance, and pushed its eastern frontier towards the Oder. In 1180, however, he was placed under the imperial ban and Saxony was broken up. Henry retained Brunswick and Luneburg; Westphalia, as the western portion of the duchy was called, was given to Philip, archbishop of Cologne, and a large part of the land was divided among nine bishops and a number of counts who thus became immediate vassals of the emperor. The title ducal of Saxony was given to Bernard, the sixth son of Albert the Bear, together with the small territories of Lauenburg and Wittenberg, which were thus the only portions of the former duchy which now bore the name of Saxony. Bernard, whose paternal grandmother, Eilicke, was a daughter of Magnus Billung, took a prominent part in German affairs, but lost Lauenburg which was seized by Waldemar II., king of Denmark. Dying in 1218, Bernard was succeeded in Wittenberg by his younger son Albert I., in Lauenburg after the defeat of Waldemar at Bornhöved in 1227. Albert died in 1250, and soon after his death his two sons divided his territories, when the elder son John took Lauenburg which was sometimes called lower Saxony, and the younger, Albert II., took Wittenberg or upper Saxony. Both retained the ducal title and claimed the electoral privilege, a claim which the Lauenburg line refused to abandon when it was awarded to the Wittenberg line by the Golden Bull of 1356.

Saxe-Lauenburg was governed by John until his death in 1351. In 1346 he divided his dominions among his three sons John II., Albert III., and Eric I. As Albert had no sons the duchy was soon divided into two parts, until on the death of duke Eric III., a grandson of John II., in 1401, it was reunited by Eric IV., a grandson of Eric I. When Eric IV. died in 1412 he was succeeded by his son Eric V., who made strenuous but vain efforts to obtain the electoral duchy of Saxe-Wittenberg, which fell vacant on the death of the elector Albert III. in 1422. Eric died in 1436 and was followed by his brother Bernard IV., whose claim to exercise the electoral vote was quashed by the electors in 1438; and who was succeeded by his son John IV. in 1453. The next duke, John V., Magnus I., spent much time in struggles with the archbishop of Bremen and the bishop of Ratzeburg; he also assisted the progress of the Reformation in Lauenburg. Magnus, who was formally invested with the duchy by the emperor Charles V. in 1530, was the first duke to abandon the claim to the electoral privilege. After his death in 1543 his son Francis I. reigned for the succeeding twenty-eight years, and his grandsons, Magnus II. and Francis II., until 1619. Francis, who did something to improve the administration of his duchy, was succeeded in turn by his two sons and his two grandsons; but of these the younger of his grandsons, in 1689 the family became extinct.

Several claimants to Saxe-Lauenburg thereupon appeared, the most prominent of whom were George William, duke of Lüneburg-Celle, and John George III., elector of Saxony. George William based his claim upon a treaty of mutual succession made in 1360 between his ancestor Magnus II., duke of Brunswick, and the reigning dukes of Saxe-Lauenburg. John George had a double claim. Duke Magnus I. had promised that in case of the extinction of his family Lauenburg should pass to the family of Wettin, an arrangement which had been confirmed by the emperor Maximilian I. in 1507. Secondly, John George himself had concluded a similar treaty with Julius Francis in 1671. In 1689 the elector received the homage of the people of Lauenburg. George William, however, took Ratzeburg, and held it against the troops of a third claimant, Christian V., king of Denmakr; and in 1702 he bought off the claim of John George, his successor being invested with the duchy in 1728. Since that date its history has been identified with that of Hanover (?..).

In Saxe-Wittenberg Albert II. was succeeded in 1298 by his son Rudolph I., who in 1314 gave his vote to Frederick, duke of Austria, in the disputed election for the German throne between that prince and Louis of Bavaria, afterwards the emperor Louis IV.; and when the latter ignored his claims on the marquavate of Brandenburg Rudolph shared in the attempt to depose him, and to elect Charles of Luxemburg, afterwards the emperor Charles IV., as German king. Rudolph was followed in 1356 by his son Rudolph II., who had fought at the battle of Crécy; and who in turn was succeeded in 1370 by his half-brother a Wenceslaus. This prince succeeded after some hesitation in temporising obtaining the duchy of Lüneburg for his house; he took part in the election of Wenceslaus as German king in 1376; and was followed in 1388 by his eldest son Rudolph III. Lavish expenditure during the progress of the council of Constance reduced Rudolph to poverty, and on the death in 1422 of his brother Albert III., who succeeded him in 1410, this branch of the Ascanian family became extinct.

A new era in the history of Saxony dates from 1423, the year when the emperor Sigismund bestowed the vacant electoral duchy of Saxe-Wittenberg upon Frederick, marquavate of Meissen. Frederick was a member of the family of Wettin, which since his day has played a prominent part in the history of Europe, and he owed his new dignity to the money and other assistance which he had given to the emperor during the Hussite war. The new and more honourable title of elector of Saxony now superseded his other titles, and the name Saxony gradually spread over his other possessions, which included Meissen and Thuringia as well as Saxe-Wittenberg, and thus the earlier history of the electorate and kingdom of Saxony is the early history of the mark of Meissen, the name of which now lingers only in the customary term of the electoral Saxony.

Frederick’s new position as elector, combined with his personal qualities to make him one of the most powerful princes in Germany, and had the principle of primogeniture been established in his country, Saxony and not Prussia might have been the leading power to-day in the German empire. He died in 1428, just before his lands were ravaged by the Hussites in 1429 and 1430. The division of his territory between his two sons, the elector Frederick II. and William, occasioned a destructive internecine war, a kind of strife which had many precedents in the earlier history of Meissen and Thuringia. It was in 1455 during this war that the knight Kunz von Kaufungen carried into execution his daring plan of stealing the two sons of the elector Frederick, Ernest and Albert, but he was only momentarily successful, the princes soon escaping from his hands. These two sons succeeded to their father’s possessions in 1464, and for twenty years ruled together peaceably. The land prospered rapidly during this respite from the horrors of war. Encouraged by an improved coinage, trade made great advances, and other benefits also accrued from the discovery of silver on the Schneeberg. Several of the important ecclesiastical pricinicipalities of North Germany were about this time held by members of the Saxon ruling house, and the external influence of the electorate corresponded to its internal prosperity. But matters were not allowed to continue thus. The childless death of their uncle William in 1482 brought Thuringia to the two princes, and Albert insisted on a division of their common possessions.

The important partition of Leipzig accordingly took place in 1495, and resulted in the foundation of the two main lines of the Saxon house. The lands were never again united. Ernest, the elder brother, obtained Saxe-Wittenberg with the electoral dignity, Thuringia and the Saxon Vogtland; while Albert received Meissen, Osterland being divided between them. Something was still held in common, and the division was probably made intricate to render war difficult and dangerous. The elector Ernest was succeeded in 1486 by his son, Frederick the Wise, one of the most illustrious princes in German history.
Under him Saxony was perhaps the most influential state in the Empire, and became the cradle of the Reformation. He died in 1525 while the Peasants’ War was desolating his land, and was succeeded by his brother John, who was an enthusiastic supporter of the reformed faith and who shared with Philip, landgrave of Hesse, the leadership of the league of Schmalkalden. John’s son and successor, John Frederick the Magnanimous, who became elector in 1532, might with equal propriety have been summed the Unfortunate. He took part in the war of the league of Schmalkalden, but in 1547 he was captured at Mühlberg by the emperor Charles V. and was forced to sign the capitulation of Wittenberg. This deed transferred the electoral title and a large part of the electoral lands from the Ernestine to the Albertine branch of the house, whose astute representative, Maurice, had taken the imperial side during the war. Only a few scattered territories were reserved for John Frederick’s son, although these were increased by the treaty of Naumburg in 1554, and on them were founded the Ernestine dukedoms of Saxe-Gotha, Saxe-Weimar, Saxe-Coburg, Saxe-Meiningen and Saxe-Altenburg. For the second time in the history of the Saxon electorate the younger line secured the higher dignity, for the Wittenberg line was junior to the Launenburg line. The Albertine line is now the royal line of Saxony.

Maurice, who became elector of Saxony in consequence of the capitulation of Wittenberg, was a grandson of Albert, the founder of his line. His predecessors in ruling Albertine Saxony had been his father, Henry, who only reigned for two years, and securing his heir the latter, the last of the Roman Saxon electors, had vainly tried to stem the tide of the Reformation in his dominions; Henry, on the other hand, was an equally devoted Protestant. Maurice, who succeeded his father in 1544, was also a Protestant, but he did not allow his religious faith to blind him to his political interests. His ruling motive was ambition to increase both his own power and the importance of his country. He refused to join the other Protestant princes in the league of Schmalkalden, but made a secret treaty with Charles V. Then suddenly invading the Ernestine lands while the elector John Frederick was campaigning against the imperialists on the Danube, he forced that prince to return hastily to Saxony and thus weakened the forces opposed to the emperor. Although compelled to retreat, his fidelity to Charles V. was rewarded, as we have already seen, by the capitulation of Wittenberg. All the lands torn from John Frederick were not, however, assigned to Maurice; he was forced to acknowledge the sovereignty of Bohemia over the Vogtland and the Silesian duchy of Sagan. Moreover, Roman Catholic priests were reinstated in the bishoprics of Meissen, Merseburg and Naumburg-Zella. Recognizing now as Protestant prince that the most powerful alliance for securing his new possessions was not with the emperor, but with the other Protestant princes, Maurice began to withdraw from the former and to conciliate the latter. In 1552, suddenly marching against Charles of Janssbruck, he drove him to flight and then extorted from him the religious peace of Passau. Thus at the close of his life he came to be regarded as the champion of German national and religious freedom.

Amid the distractions of outward affairs, Maurice had not neglected the internal interests of Saxony. To its educational advantages, already conspicuous, he added the three Fürsten- schulen at Pforta, Grimma and Meissen, and for administrative purposes, especially for the collection of taxes, he divided the country into the four circles of the Electorate, Thuringia, Meissen and Leipzig. During his reign coal-mining began in Saxony. In another direction over two hundred religious houses were suppressed, the funds being partly applied to educational purposes. The country had four universities, those of Leipzig, Wittenberg, Jena and Erfurt; books began to increase rapidly, and, by virtue of Luther’s translation of the Bible, the Saxon dialect became the ruling dialect of Germany. Augustus I., brother and successor of Maurice, was one of the best domestic rulers that Saxony ever had. He increased the area of the country by the “circles” of Neustädt and the Vogtland, and by parts of Henneberg and the silver-yielding Mansfeld, and he devoted his long reign to the development of its resources. He visited all parts of the country himself, and personally encouraged agriculture; he introduced a more economical mode of mining and smelting silver; he favoured the importation of finer breeds of sheep and cattle; and he brought foreign weavers from abroad to teach the Saxons. Under him lace-making began on the Erzgebirge, and cloth-making flourished at Zwickau. With all his virility and moderation, Augustus was an intolerant Lutheran, and used very severe means to extirpate the Calvinists; in his electorate he is said to have expelled 111 Calvinist preachers in a single month. Under his son Christian I., who succeeded in 1586, the chief power was wielded by the chancellor Nikolaus Crell (q.v.), who strongly favoured Calvinism; but, when Christian II. came to the throne in 1591, Crell was sacrificed to the Lutheran nobles. The duke of Saxe-Weimar was made regent, and continued the persecution of crypto-Calvinism. Christian II. was succeeded in 1611 by his brother John George I., under whom the country was devastated by the Thirty Years’ War. John George was an amiable but weak prince, totally unfitted to direct the fortunes of a nation in time of danger. He refused the proffered crown of Bohemia, and, when the Bohemian Protestants elected a Calvinist prince, he assisted the emperor against them with men and money. The edict of restitution, however, in 1629, opened his eyes to the emperor’s projects, and he joined Gustavus Adolphus. Saxony now became the theatre of war. The first battle on Saxony soil was fought in 1631, on the road to the Rhine, for the flight of the Saxons. Wallenstein entered Saxony in 1633, and his lieutenants plundered, burned and murdered through the length and breadth of the land. After the death of Gustavus Adolphus at the battle of Lützen, not far from Leipzig, in 1632, the elector, who was at heart an imperialist, detached himself from the Swedish alliance, and in 1635 concluded the peace of Prague with the emperor. By this peace he was confirmed in the possession of Upper and Lower Lusatia, a district of 180 sq. m. and half a million inhabitants, which had already been pledged to him as a reward for his services against the Bohemians.

Saxony had now to suffer from the Swedes a repetition of the devastations of Wallenstein. No other country in Germany was so scourged by this terrible war. Immense tracts were rendered desolate, and whole villages vanished from the map; in eight years the population sank from three to one and a half millions. When the war was ended by the peace of Westphalia in 1648, Saxony found that its influence had begun to decline in Germany. Its alliance with the Catholic party deprived it of its place at the head of the Protestant German states, which was now taken by Brandenburg. The Swedes made the decline of the electorate even more inevitable by detaching from it the three dukedoms of Saxe-Weissenfels, Saxe-Merseburg and Saxe-Zeitz as appanages for his younger sons. By 1746, however, these lines were all extinct, and their possessions had returned to the main line. Saxe-Neustadt was a short-lived branch from Saxe-Zeitz, extinct in 1714. The next three electors, who each bore the name of John George, had uneventful reigns. The first made some efforts to heal the wounds of his country; the second wasted the lives of his people in foreign wars against the Turks; and the last was the last Protestant elector of Saxony. John George IV. was succeeded in 1694 by his brother Frederick Augustus I., or Augustus the Strong. This prince was elected king of Poland as Augustus II. in 1697, but any weight which the royal title might have given him in the Empire was more than counterbalanced by the fact that he became a Roman Catholic in order to qualify for the new dignity. The connexion with Poland was disastrous for Saxony. In order to defray the expenses of his wars with Charles XII. Augustus pawned and sold large districts of Saxon territory, while he drained the resources of both men and money. For a year before the peace of Altranstadt, it was the fate of Saxony to give up the crown of Poland. Saxony was occupied by a Swedish army, which had to be supported at an immense expense.
The wars and extravagance of the elector-king, who regained the Polish crown in 1709, are said to have cost Saxony a hundred million thalers. From this reign dates the privy council (Geheimes Kabinet), which lasted till 1830. The castle privileges of the estates (Stände) were increased by Augustus, a fact which tended to alienate him from other German states. To withstand their power, Johann Friedrich Böttger made his famous discovery in 1710, and the manufacture of porcelain was begun at Meissen, and in this reign the Moravian Brethren made their settlement at Herrnhut. Frederick Augustus II., who succeeded his father in the electorate in 1733, and was afterwards elected to the throne of Poland as Augustus III., was an indolent prince, wholly under the influence of Count Heinrich von Brühl (q.v.). Under his ill-omened auspices Saxony sided with Prussia in the First Silesian War, and with Austria in the other two. It gained nothing by the first, lost much in the second, and in the third, the Seven Years' War (1756-1763), suffered renewed miseries. The country was deserted by its king and his minister, who retired to Poland. By the end of the war it had lost 90,000 men and a hundred million thalers; its coinage was debased and its trade ruined; and the whole country was in a state of frantic disorder. The elector died seven months after his return from Poland; Brühl died twenty-three days later. The connexion with Poland was now at an end. The elector's son and successor, Frederick Christian, survived his father only two months, dying also in 1763, leaving a son, Frederick Augustus III., a boy of ten. By the king's uncle, was appointed guardian, and he set himself to the work of healing the wounds of the country. The foundation of the famous school of mining at Freiberg, and the improvement of the Saxony breed of sheep by the importation of merino sheep from Spain, were due to his care. Frederick assumed the government in 1768, and in his long and eventful reign, which saw the electorate elevated to the dignity of a kingdom, though deprived of more than half its area, he won the surname of the Just. As he was the first king of Saxony, he is usually styled Frederick Augustus I. The first ten years of his active reign passed in peace and quiet; agriculture, manufactures and industries were fostered, economical reforms instituted, and the heavy public debt of forty million thalers was steadily reduced. In 1770 torture was abolished. When the Bavarian succession fell open in 1777, Frederick Augustus joined Prussia in protesting against the absorption of Bavaria by Austria, and Saxony troops took part in the bloodless “potato-war.” The elector commuted his claims in right of his mother, the Bavarian princess Maria Antonia, for six million florins, which he spent chiefly in redeeming Saxony territory that had been pawned. He was invested in 1775 as prince-elector of Saxony, and became in 1785, the Elector of Saxony, and in 1786, the Grand Elector. His title was elevated in 1806 to that of king of Saxony, and he entered the Confederation of the Rhine as an independent sovereign, promising a contingent of 20,000 men to Napoleon.

No change followed in the internal affairs of the new kingdom, except that Roman Catholics were admitted to equal privileges with Protestants. Its foreign policy was dictated by the will of Napoleon, of whose irresistibility the king was too easily convinced. In 1807 his submission was rewarded with the duchy of Warsaw (to which Cracow and part of Galicia were added in 1809), and the title of Czarottus, though he had to surrender some of his former territory to the new kingdom of Westphalia. The king of Saxony's faith in Napoleon was shaken by the disasters of the Russian campaign, in which 21,000 Saxony troops had shared; when, however, the allies invaded Saxony in the spring of 1813, he refused to declare against Napoleon and fled to Prague, though he withdrew his contingent from the French army. Whatever misgivings he may have had were, however, removed by Napoleon's victory at Lützen (May 2, 1813), and the Saxon king and the Saxony army were once more at the disposal of the French. After the battle of Bautzen, Napoleon's headquarters were successively at Dresden and Leipzig. During the battle of Leipzig in October 1813, the popular Saxony feeling was displayed by the desertion of the Saxony troops to the side of the allies. Frederick was taken prisoner in Leipzig, and the government of his kingdom was assumed for a year by the Russians. Saxony was now regarded as a conquered country. Nothing but Austria's vehement desire to keep a powerful neighbour at a distance from her boundaries preserved it from being completely annexed by the Prussians, who had succeeded the Russians in the government. At the conclusion of Viena in 1815, the king of Prussia annexed the whole kingdom was supported by Russia, and opposed by Austria, France and Great Britain, the question all but leading to a complete break-up of the alliance (see VIEENA, CONGRESS OF). As it was, the congress assigned the northern portion, consisting of 7,800 sq. m., with 864,404 inhabitants, to Prussia, leaving 5,790 sq. m., with a population of 1,182,744, to Frederick, who was permitted to retain his royal title. On the 8th of June 1815 King Frederick joined the new German Confederation.

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While Saxony's political liberty was thus enlarged, its commerce and credit were stimulated by its adhesion to the Prussian Zollverein and by the construction of railways. Antony had died in 1856, and Frederick Augustus II. became sole king. Growing interest in politics produced dissatisfaction with the compromise of 1831, and the Liberal opposition grew in numbers and influence. The burning questions were the publicity of legal proceedings and the freedom of the press; and on these the government sustained its first crushing defeat in the lower chamber in 1842. In 1843 Lindenau was forced by the action of the aristocratic party to resign, and was replaced by Julius Traugotte von Königritz (1792-1860), a statesman of reactionary views. This increased the opposition of the Liberal middle classes to the government. Religious considerations arising out of the attitude of the government towards the "German Catholics," and a new constitution for the Protestant Church, began to mingle with purely political questions, and Prince John, as the supposed head of the Jesuit party, was insulted at a review of the communal guards at Leipzig in 1845. The military rashly interfered, and several innocent spectators were shot. The bitterness which this occurrence provoked was intensified by a political reaction which was initiated about the same time under Königritz. Warned by the sympathy excited in Saxony by the revolutionary events at Paris in 1848, the king dismissed his reactionary ministry, and a Liberal Cabinet took its place in March 1848. The disputed points were now conceded to the country. The privileges of the nobles were curtailed; the administration of justice was put on a better footing; the press was unshackled; publicity in legal proceedings was granted; trial by jury was introduced for some special cases; and the German Catholics were recognized. The feudal character of the first chamber was abolished, and its members were made mainly elective from among the highest tax-payers, while an almost universal suffrage was introduced for the second chamber. The franchise was established in accordance with the franchise law under this reform bill was that the king should accept the German constitution elaborated by the Frankfort parliament. Frederick, alleging the danger of acting without the concurrence of Prussia, refused, and dissolved the diet. A public demonstration at Dresden in favour of the Frankfort constitution was prohibited as illegal on the 2nd of May 1849. This at once awoke the popular fury. The mob seized the town and barricaded the streets; Dresden was almost destitute of troops; and the king fled to the Königstein. The rebels then proceeded to appoint a provisional government, consisting of Tischiner, Heubner and Todt, though the true leader of the insurrection was the Russian Bakunin. Meanwhile Prussian troops had arrived to aid the government, and after two days' fierce street fighting the rising was quelled. The bond with Prussia now became closer, and Frederick entered with Prussia and Hanover into the temporary "alliance of the three kings." He was not sincere, however, in desiring to exclude Austria, and in 1850 accepted the invitation of that power to send deputies to the restored federal diet at Frankfort. The first chamber immediately protested against this step, and refused to consider the question of a pressing loan. The king retorted by dissolving the diet and summoning the old estates abolished in 1838. When a quorum, with some difficulty, was obtained, another period of retrograde legislation set in. The king himself was carried away with the reactionary current, and the people remained for the time indifferent. Beust became minister for both home and foreign affairs in 1852, and under his guidance the policy of Saxony became more and more hostile to Prussia and friendly to Austria.

The son and successor of the king, by a fall from his carriage in Tirol in 1854, left the throne to his brother John, a learned and accomplished prince, whose name is known in German literature as a translator and annotator of Dante. His brother's ministers kept their portfolios, but their views gradually became somewhat liberalized with the spirit of the times. Beust, however, still retained his federalistic and philo-Austrian views. When war was declared between Prussia and Austria in 1866, Saxony declined the former's offer of neutrality, and, when a Prussian force crossed the border, the Saxon army under the king and the crown prince joined the Austrians in Bohemia. The entire kingdom, with the solitary exception of the Königstein, was occupied by the Prussians. On the accession of Prince John Saxony lost no territory, but had to pay a war indemnity of ten million thalers, and was compelled to enter the North German Confederation.

During the peace negotiations Beust had resigned and entered the Austrian service, and on the 15th of November the king in his speech from the throne announced his intention of being faithful to the new Confederation as he had been to the old. On the 7th of February 1867 a military convention was signed with Prussia, which, while leaving to Saxony a certain control in matters of administration, placed the army under the king of Prussia; from the 1st of July it formed the XII. army corps of the North German Confederation under the command of Crown-Prince Albert. The postal and telegraph systems were also placed under the control of Prussia, and the representation of the Saxon crown at foreign courts was merged in that of the Confederation. A new electoral law of the same year reformed the Saxon diet by abolishing the old distinction between the various "estates" and lowering the qualification for the franchise; the result was a Liberal majority in the Lower House and a period of civil and ecclesiastical reform. John was succeeded in 1873 by his elder son Albert (1832-1902) who had added to his military reputation during the war of 1870. Under this prince the course of politics in Saxony presented little of general interest, except perhaps the spread of the doctrines of Social Democracy, which was especially remarkable in Saxony. The number of Social Democratic delegates in a diet of 80 members rose from 3 in 1885 to 14 in 1895. So alarming did the growth appear, that the other parties combined, and on the 28th of March 1896 a new electoral law was passed, introducing a franchise and electoral law, in which the representation of each class was divided by the amount paid in direct taxation. This resulted in 1901 in the complete elimination of the Socialists from the diet. On the 7th of June 1902 King Albert died, and was succeeded by his brother as King George. The most conspicuous event of his reign was the flight in December 1902 of the crown-princess Louise with a M. Giron, who had been French tutor to her children, which resulted in a grave scandal and a divorce. More important, however, was the extraordinary situation created by the electoral law of 1866. This law had in effect secured the misrepresentation of the mass of the people in the diet, the representation of the country population at the expense of that of the towns, of the interests of agriculture as opposed to those of industry. A widespread agitation was the outcome, and the temper of the people, of what became known as the "Red Kingdom," was displayed in the elections of 1903 to the German imperial parliament, when, under the system of universal suffrage, of 23 members returned 22 were Social Democrats. This led to proposals for a slight modification in the franchise for the Saxon diet (1904), which were not accepted. In the elections of 1906, however, only 8 of the Social Democrats succeeded in retaining their seats. In 1907 the government announced their intention of modifying the electoral system in Saxony by the adding of representation for certain professions to that of the three classes of the electorate. This was, however, far from satisfying the parties of the extreme Left, and the strength of Social Democracy in Saxony was even more strikingly displayed in 1909 when, in spite of plural voting, under a complicated franchise, 25 Socialist members were returned to the Saxon diet.

King George died on the 15th of October 1913 and was succeeded by his son as King Frederick Augustus III.

The Saxon Duchies.—The political history of the parts of Saxony left by the capitulation of Wittenberg to the Ernestine line, which occupy the region now generally styled Thüringen (Thuringen), is mainly a recital of partitions, reunions, redictions and fresh combinations in a territory that was always variously divided. The principle of primogeniture was not introduced until the end of the 17th century, so that the Protestant Saxony dynasty, instead of
building up a single compact kingdom for itself, has split into four petty duchies, of no political influence whatever. In 1547 the ex- 
lector John Frederick the Magnanimous was allowed to retain 
Weimar, Jena, Eisenach, Gotha, Hesse-Hanau and Saalfeld. 
Altenburg and the southern territories which had been added to the 
treaty of Naumburg in 1534, and other additions were made from 
other sources. John Frederick, who had retained and transmitted 
to his descendants the title of duke of Saxony, forbade his sons 
to divide or sell these possessions but his wishes were respected only until 
after the death of his eldest son in 1565. The two survivors then 
-founded separate jurisdictions at Weimar and Coburg, though arrange-
ments for a common government were made in 1558. Saxe-Coburg gave off the branch Saxe-Eisenach; and in 1603 Saxe-
Weimar gave off Saxe-Altenburg, the elder Weimar line ending and 
the younger beginning with the latter date. By 1638 Weimar had absorbed both Coburg and Eisenach; Altenburg remained independent until 1739; when John, duke of Saxe-Weimar, who died in 1605, is regarded as the 
common ancestor of the present Ernestine lines. In 1640 his three 
-surviving sons ruled the dukedoms of Weimar, Eisenach and Gotha. 
Eisenach fell in 1644 and Altenburg in 1672, thus leaving the dukes of 
Saxe-Weimar and Saxe-Gotha to become the ancestors of the 
modern ruling houses. Saxe-Weimar was still repeatedly divided; 
in 1668 a Saxe-Markssuhl appears, and about 1672 a new Saxe-Eisenach. All these, however, were extinct by 1741, 
and their possessions returned to the main line, which had adopted 
the principle of primogeniture in 1719. 
Saxony was now divided; and the climax was 
reached about 1680, when Gotha, Coburg, Meiningen, Romhold, Eisenberg, Hildburghausen and Saalfeld were each the capital of a 
duchy. By the beginning of 1825 only the three of these and Hildburghausen remain, the others having been 
divided after much quarrelling. In that year the Gotha line expired and a general redistribution of the lands of the "Nexus Gothanus," 
which had comprised all of Saxony until 1789, was decided on in 
November 1826. The duke of Hildburghausen gave up his lands 
entirely for Altenburg and became duke of Saxe-Altenburg; the 
duke of Coburg exchanged Saalfeld for Gotha and became duke of 
Saxe-Coburg-Gotha; and the duke of Saxe-Meiningen received 
Hildburghausen, Saalfeld and some other territories, and added 
Hildburghausen to his title. The existing duchies are separately 
noticed.

The chief authority for the early history of Saxony is Widukind, 
whose Res gestae Saxoniae is printed, together with the works of 
other chroniclers, in the Monumenta Germaniae historic a, Scriptores 
Magdeburgenses. The history of Saxony was written by the von 
Königreichs Sachsen, new ed. by F. Thalhe (1867-1873); Sturmhöhl, Geschicht der sächsischen Lande und ihrer Herrscher (Chemnitz, 
1857-1868); and Tutzschmann, Atlas zur Geschichte der sächsischen 
Länder (Leipzig, 1852). Collections which may be consulted are: 
Codex diplomaticus Saxoniae regiae (Leipzig, 1862-1879); the Archiv für 
die sächsiche Geschichte, edited by K. von Weber (Leipzig, 1862-
1879); and the Bibliothek der sächsischen Geschichte und Landeskunde 
von G. Buchholz (Leipzig, 1893). See also Germany: Biblio-
graphy, and the articles on the various dukes, electors and kings of 
Saxony.

SAXONY (Circa Provincia Sachsen), one of the central provinces 
of the kingdom of Prussia, consists mainly of what was formerly 
the electorate part of the kingdom of Saxony, which was ceded to 
Prussia in 1815, but also comprises part of the duchy of Magde-
burg and other districts, the connexion of which with Prussia 
is of earlier date. The area of the province is 9751 sq. m. It is 
bounded W. by Hesse-Nassau, Hanover and Brunswick, N. by 
Hanover and Brandenburg, E. by Brandenburg and Silesia, and 
S. by the kingdom of Saxony and the small Thuringian states. 
It is, however, very irregular in form, entirely surrounding parts 
of Brunswick and the Thuringian states, and itself possessing 
several exclaves, whereas the northern portion is almost severed from 
the southern by the duchy of Anhalt.

The major part belongs to the great North-German plain, but the 
western and south-western districts include parts of the Harz, with 
the Brocken, its highest summit, and the Thuringian Forest. About 
ten-ninth of Prussian Saxony belongs to the basin of the Elbe, the 
chief feeders of which within the province are the Saale, which 
tributary the Unstrut, and the Mulde, but a small district on the 
west drains into the Weser.

Saxony is on the whole the most fertile province of Prussia and 
gives a good yield of rye and barley. The beetroot, however, has 
not the nature of its soil is very unequal. The best crop-produ-
cing districts lie near the base of the Harz Mountains, such as the " 
Magdeburger Börde" (between Magdeburg and the Saale) and the 
"Gotland Börde" (beneath Halle). The sandy plains of Saxony are 
the sandy plains of the Altmark, in the north part of the province, 
yield but a scanty return.

Of the agricultural land, about 90 per cent. is occupied by arable land, 8 percent by meadows and pastures and 21 percent by forests. Wheat and rye are exported in considerable quantities. The beetroot for sugar is grown chiefly in 
the district to the north of the Harz, as far as the Ohre, and on 
the banks of the Saale; and the amount of sugar produced is nearly as 
much as that of all the rest of Prussia together. Flax, hops and oil-
seeds are also cultivated, and large quantities of excellent fruit are 
grown in the district to the west of the Harz and in the valleys of the Unstrut and 
the Saale. The market-gardening of Erfurt and Quedlinburg is well 
known throughout Germany. The province is comparatively poor in 
timber; though there are some fine forests in the Harz and other hilly 
districts, the state has been less concerned with success in the timber 
trade, and more goats are met with here than in any other part of Prussia.

The principal underground wealth of Prussian Saxony consists of 
its own and its brown coal, of both of which it possesses larger stores than any other part of the German empire. The chief rock-salt 
mines and brine springs are at Stassfurt, Schönbeck and Halle. 
The brown coal region extends from Oschersleben by Kalbe to 
Wittenberg, and is comprised entirely in the district of Bitterfeld 
and Wittenberg. Prussian Saxony also possesses three-
fortis of the wealth of Germany in copper. The copper mines 
are found chiefly in the Harz district. The other mineral resources 
include fever (the third of the total German yield), pit-coal, pyrites, 
slate, plaster of Paris, sulphur, alabaster and several varieties of 
good building-stone. Numerous mineral springs occur in the Harz. 
In addition to the production of sugar the most important 
industries are the manufacture of cloth, leather, iron and reed wares, 
chiefly at Erfurt, Suhl and Sömmerda; spirits at Nordhausen, 
chemicals at Stassfurt and Schönbeck, and starch. Beer is also 
brewed extensively. Slate is manufactured by (of the great waterway of 
the Elbe as well as by a complete system of railways. The chief 
articles are wool, grain, sugar, salt, lignite and the manifold 
manufactured products named above.

The population of the province of Saxony in 1905 was 9,979,221, 
an average of 305 persons to the square mile; they were almost 
equally divided between urban population and rural. There were 
2,739,008 Protestants, 230,860 Roman Catholics and 875,298 Jews. 
The bulk of the inhabitants are of unmixed German stock, but many of those in the east part have Wendish blood 
in their veins.

Prussian Saxony is divided into the three government 
districts of Magdeburg, Merseburg and Erfurt. The principal 
towns are Magdeburg, Halle, Erfurt, Halberstadt, Nordhausen, 
Mühlhausen, Aschersleben, Weissenfels and Zehlitz. Magdeburg 
is the headquarters of an army corps. The provincial chambers 
meet at Merseburg. The province sends twenty members to the 
Reichstag and thirty-eight to the Prussian Abgeordnetenhaus 
(house of representatives). Magdeburg is the seat of an 
Evangelical consistory; the Roman Catholics belong to the 
diocese of Paderborn. The university of Halle holds a high rank among 
German seats of learning.

See the Handbuch der Provinz Sachsen (Magdeburg, 1900); and 
Jacobs, Geschichte der in der preussischen Provinz Sachsen vereinigten 
Gebiete (Gotha, 1884).

SAXOPHONE (Ger. Saxophon, Ital. sassofono), a modern 
hybrid musical instrument invented by Adolphe Sax, having 
the clarinet mouthpiece with single reed applied to a conical 
bronze tube. In general appearance the saxophone resembles the 
bass clarinet, but the tube of the latter is cylindrical and of wood; 
both instruments are doubled up near the bell, which is shaped 
somewhat like the flower of the glockina. The mouthpiece in 
both is fixed to a serpentine tube at right angles to the main 
tube. On the saxophone, owing to its conical bore, the produc-
tion of harmonics in this tube is impossible. The saxophone 
resembles that of the oboe. The reed mouthpiece in combination 
with a conical tube allows the performer to give the ordinary 
harmonic series unbroken, which means in practice that the 
 octave or second member of the harmonic series is first overblown 
when the pressure of the breath and the tension of the lips on 
the reed are proportionally increased. The saxophone is there-
fore one of the class known as octave instruments. The funda-
mental note given out by the tube when the lateral holes are 
closed is that of an open organ pipe of the same length, whereas 
the main note, when the clarinet mouthpiece is combined 
with a cylindrical bore, the tube behaves as though it were 
closed at one end, and its notes are an octave lower in pitch. 
Hence the bass clarinet to give the same note as a bass saxophone 
would need to be only half as long. The closed pipe, moreover, 
can only overblow the uneven numbers of the harmonic series, 
and therefore first gives the 12th instead of the octave, which
necessitates an entirely different arrangement of holes and keys and a different scheme of fingering.

The bore of the saxophone is large, and there are from 18 to 20 keys covering holes of large diameter to produce the fundamental scale. The first 15 semitones are obtained by opening successive keys, the rest of the compass by means of octave keys enabling the performer to sound the harmonic octave of the fundamental scale. The compass of the various saxophones extends over 2 octaves and a fifth with chromatic intervals, being limited to one octave less than the clarinet. The complete family consists of five members.

The treble clef is used in notation, and all saxophones are transposing instruments, the music being written in a higher key, according to the difference in pitch between the fundamental note of the instrument and the standard C of the notation. The keys given above are of the orchestral saxophones; the instruments used in military bands are a tone lower. The quality of tone of this family of instruments is inferior to that of the clarinets and has affinities with that of the harmonium.

According to Bertioz it has vague analogies with the timbre of 'cello, clarinet and cor anglais, with, however, a brazen tinge. To a clockmaker of Lisieux named Desfontenelles, who made a clarinet with a conical bore and an upturned bell in 1807, is due the combination of single reed mouthpiece with a conical tube. In 1840 Adolphe Sax, in trying to produce a clarinet that would overblow an octave like the flute and oboe, invented the saxophone, which at once leapt into popularity in France and Belgium, where the alto, tenor and baryton have superseded the bassoon in all the military bands. Many modern French composers, Meyerbeer, Massenet, Ambroise Thomas and others, have scored for it in their operas. Kastner introduced it into the orchestra in Paris in 1844 in Le Dernier Roi de Jude. The saxophone has been adopted in England at the Royal Military School of Music at Kneller Hall.

SAY, JEAN BAPTISTE (1757-1832), French economist, was born at Lyons on the 5th of January 1757. His father, Jean Étienne Say, was of a Protestant family which had originally belonged to Nîmes, but had removed to Geneva for some time in consequence of the revocation of the edict of Nantes. Young Say was intended to follow a commercial career, and was sent, with his brother Horace, to England, and lived first at Croydon, in the house of a merchant, to whom he acted as clerk, and afterwards in London, where he was in the service of another employer. When, on the death of the latter, he returned to France, he was employed in the office of a life assurance company directed by E. Clavière, afterwards known in politics. Clavière called his attention to the Wealth of Nations, and the study of that work revealed to him his vocation. His first literary attempt was a pamphlet on the liberty of the press, published in 1780. He worked under Mirabeau on the Courrier de Provence. In 1792 he took part as a volunteer in the campaign of Champagne; in 1793 he assumed, in conformity with the Revolutionary fashion, the pre-name of Aticus, and became secretary to Clavière, then finance minister. He married in 1793 Mlle Deloche, daughter of a former avocat au conseil; the young pair were greatly straitened in means in consequence of the depredation of the assignats. From 1794 to 1800 Say edited a periodical entitled La Décade philosophique, littéraire, et politique, in which he expounded the doctrines of Adam Smith. He had by this time established his reputation as a publicist, and, when the consular government was established in the year VIII (1799), he was selected as one of the hundred members of the tribunate, and resigned, in consequence, the direction of the Décade. He published in 1808 Obie, ou essai sur les moyens de réformer les mœurs d'une nation.

In 1803 appeared his principal work, the Traité d'économie politique. In 1804, having shown his unwillingness to sacrifice his convictions for the purpose of furthering the designs of Napoleon, he was removed from the office of tribune, being at the same time nominated to a lucrative professorship. Moreover, he thought it his duty to resign. He then turned to industrial pursuits, and, having made himself acquainted with the processes of the cotton manufacture, founded at Auchy, in the Pas de Calais, a spinning-mill which employed four or five hundred persons, principally women and children. He devoted his leisure to the improvement of his economic treatise, which had for some time been out of print, but which the censorship did not permit him to republish; and in 1814 he availed himself (to use his own words) of the same of liberty arising from the entrance of the allied powers into France to obtain a second edition of the work, dedicated to the emperor Alexander, who had professed himself his pupil. In the same year the French government sent him to study the economic condition of Great Britain. The results of his observations during his journey through England and Scotland appeared in a tract De l'Angleterre et des Anglais; and his conversations with distinguished men in those countries contributed to greater correctness in the exposition of principles in the third edition of the Traité, which appeared in 1817. A chair of industrial economy was founded for him in 1819 at the Conservatoire des Arts et Métiers. In 1831 he was made professor of political economy at the Collège de France. He published in 1828-1830 his Cours complet d'économie politique pratique, which is in the main an expansion of the Traité, with practical applications. In his later years he became subject to attacks of nervous apoplexy. He lost his wife in January 1830; and from that time his health constantly declined. When the revolution of that year broke out, he was named a member of the council-general of the department of the Seine, but found it necessary to resign. He died at Paris on the 10th of November 1832.

Say was essentially a propagandist, not an originator. His great service to mankind lay in the fact that he disseminated throughout Europe by means of the French language, and popularized by his own style, the economic doctrines of Adam Smith. It is true that his French panegyrist (and he is the only one from censure on this score) are unjust in their estimate of Smith as an expositor and extol too highly the merits of Say. On the side of the philosophy of science his observations are usually commonplace or superficial. Thus he accepts the shallow dictum of Condillac that toute science se réduit à une langue bien faite. He recognizes political economy and statistics as alike sciences, and represents the distinction between them as having never been made before him, though he quotes what Smith had said of political arithmetic. While deserving the praise of honesty, sincerity and independence, he is inferior to his predecessor in breadth of view, on moral and political questions. In his general conception of human affairs there is a tendency to regard too exclusively the material side of things, which made him pre-eminently the economist of the French liberal bourgeoisie. He is inspired with the dislike and jealousy of governments so often felt and expressed by thinkers formed in the social atmosphere of the 18th century. Soldiers are for him not merely unproductive labourers, as Smith called them; they are rather "destructive labourers." Taxes are uncompensated payments; they may be described as of the nature of robbery.

Say is considered to have brought out the importance of capital as a factor in production greater than that of the English economists, who unduly emphasized labour. The special division of objects the most commonly mentioned as due to him are—(1) that of "immaterial products," and (2) what is called his "théorie des débouchés." Observe that M. Say is the first to recognize the distinction between productive and unproductive labour, he maintains that, production consisting in the creation or addition of a utility, all useful labour is productive and none of it, and that he thus led to recognize immaterial products, whose characteristic quality is that they are consumed immediately and are incapable of accumulation; under this head are to be ranged the services rendered either by a person, a capital or a portion of
SAY, LéON

land, as, e.g., the advantages derived from medical attendance, or from a hired house or from a beautiful view. But in working out the consequences of this view Say is not free from obscurities and inconsistencies. His theory of international commerce is based on the assumption that the value of commodities is proportional to their cost of production, the number, or rather value, of other commodities produced with which it could be purchased. Another proposition on which Say insists is that every value is consumed and is created only to be consumed. Value is, he maintains, accumulated in the course or, as often happens, by the very act of consumption; hence his distinction between reproductive and unproductive consumption. We find in him other corrections or new points of view not previously accepted, and some useful suggestions for the improvement of nomenclature.

Say's writings occupy vols. ix.-xii. of Guillaumin's Collection des principaux économistes. Among them are, in addition to those already mentioned, Cécéchisme d'économie politique (1815); Petit Volume contenant quelques opéreus des hommes et de la société, lettres à Mathias sur différents sujets d'économie politique (1820); des principes de l'économie politique (1831). A volume of Mélanges et correspondance was published posthumously by Charles Comte, author of the Traité de législation, who was his son-in-law. To this volume was added an edition or his works' Cécéchisme politique, which Say published in 1853 without Storch's authorisation, with notes embodying a "critique amère et virulente," a proceeding which Storch justly resented.

Cécéchisme d'économie politique which appeared during the life of the author was the 5th (1826); the 6th, with the author's final corrections, was edited by the eldest son, Horace Émile Say, himself known as an economist, in 1845. The work was translated into English from the 4th edition of the French by R. Prinsep (1821), into German by Ludwig Heinrich von Jakob (1807) and by C. Ed. Morstadt (1818 and 1830), and, as Say himself informs us, into Spanish by José Queypo. The Cours d'économie politique pratique, from which Morstadt had given extracts, was translated into German by Max Stirner (1845). The Cécéchisme and the Petit Volume have also been translated into several European languages. An English translation of the Cécéchisme politique was made by E. Clément in 1852, and a French translation by Lamartine and the Pamphleteer (1821). See also Jean Baptiste Say, by A. Liessie (Paris, 1901).

SAY, [JEAN BAPTISTE] LéON (1826-1896), French statesman and economist, was born in Paris on the 6th of June 1826. The family was a most remarkable one. His grandfather Jean Baptiste Say (q.v.) was a well-known economist. His brother Louis Auguste Say (1774-1840), director of a sugar refinery at Nantes, wrote several books against his theories. His son Horace Émile Say (1794-1860), the father of Léon Say, was educated at Genova, and had travelled in America before establishing himself in business in Paris, where he became president of the Chamber of Commerce in 1838. His careful investigations into the condition of industry at Paris gained for him a seat in the Academy of political and moral sciences, 1837.

Léon Say thus inherited zeal for economic studies, of which he gave proof by publishing at the age of twenty-two a brief Histoire de la caisse d'épargne. He was at first destined for the law, next entered a bank, and finally obtained a post in the administration of the Chemin de fer du Nord. Meanwhile he became a regular contributor to the Journal des débats, where he established his reputation by a series of brilliant attacks on the financial administration of the prefect of the Seine, Haussmann. He displayed talent for interesting popular audiences in economic questions. His sympathies, like those of his family, were with Britain, and his admiration for Adam Smith. He was, indeed, the hereditary defender of free-trade principles in France. He had, moreover, an intimate acquaintance with the English language and institutions, and translated into French Goschen's Theory of Foreign Exchanges. He was one of the pioneers of the co-operative movement in France. Elected to the Assembly of 1871 by the departments of Seine and Seine-et-Oise, he adopted the former, and took his seat among the Moderate Liberals, to whose principles he adhered throughout his life. He was immediately chosen as reporter of the commission on the state of the national finances, and in this capacity prepared two elaborate statements. Thiers, though opposing their publication on grounds of public expediency, was much struck by the ability displayed in them, and on the 5th of June appointed Say prefect of the Seine. The fall of the empire, the siege of Paris, and the Commune had reduced the administration of the capital to chaos, and the task of reconstruction severely tried the new prefect's power of organization. This was, however, a gift with which he was pre-eminently endowed; said a prophetess of the day, "et il est de plus, il est un vrai père de l'État, et il est le premier ministre—un ministre de la finance—a remarkable tribute to his abilities from Thiers, who himself held strongly protectionist views.

In all other respects Say regarded himself as the disciple of Thiers, who, in his last public utterance, designated Say as one of the younger men who would carry on his work. He fell from office with Thiers on the 24th of May 1873, and was elected president of the Left Centre group, as whose candidate he unsuccessfully contested the presidency of the Chamber with Buffet. In spite of their divergence of views, he consented, at the urgent request of President MacMahon, to take office in March 1875 in the buffet Cabinet; but the reactionary policy of the premier led to a dispute between him and Say both in the press and in the constituencies, and brought about Buffet's resignation.

Say continued to hold the ministry of finance under Dufaure and Jules Simon, and again in the Dufaure ministry of December 1877, and its successor, the Waddington ministry, till December 1879. During this long period, in which he was practically the autocratic ruler of the French finances, he had first to complete the payment of the war indemnity—an operation which, thanks largely to his consummate knowledge of foreign exchanges, was effected long before the prescribed time. He was, at a later date, assistant to M. Fradin, who had been minister of finance, in the Thiers ministry, 1881, and was appointed minister of finance by Thiers on the 12th of February 1885, which he held till May 1886, when he was dismissed by Thiers, and again on the 12th of May 1889, when his ministry was dissolved. Say was, however, re-appointed minister on the 28th of October 1890. His able administration of the finances was not without its defects, but it was with some hesitation that his successors succeeded in overhauling his department.
SAY, a town on the right bank of the river Niger in 13° 4' N. and 2° 30' E., in the French colony of Upper Senegal and Niger. In the agreement of 1890 between Great Britain and France for the delimitation of their respective spheres of influence in West Africa, Say was taken as the western end of an imaginary line which ran eastward to Barrua on Lake Chad. To the north the "light soil" of the Sahara—a phrase used by Lord Salisbury in explaining the nature of the position in the House of Lords—was recognized as French; to the south the Sokoto empire (northern Nigeria) fell to Great Britain. By the convention of 1898 Say, however, and a considerable tract of territory south and east of the town were ceded to France. (See AfRICA, § 5.)

SAYAD, a descendant of Ali, the son-in-law of Mahomet, by Fatima, Mahomet's daughter. Many of the Pathan tribes in the North-West Frontier Province of India, such as the Bangash of Kohat and the Mishwans of the Hazara border, claim Sayad origin. The 20th century conquest of the Pathans to Islam were called Sayads if they came from the west, and Sheikhs if they came from the east; hence doubtless many false claims to Sayad origin. In Afghanistan the Sayads have much of the commerce in their hands, as their holy character allows them to pass unharmed where other Pathans would be murdered. The Sayads gave a short-lived dynasty to India, which reigned at Delhi during the first half of the 15th century. Their name again figures in Indian history at the break up of the Mogul empire, when two Sayad brothers created and dethroned emperors at their will (1714-1720). In 1903 the total number of Sayads in all India was returned at 1,339,734. They include many well-known and influential families. The first Mahomedan appointed to the Council of India and the first appointed to the Privy Council were both Sayads.

SAYAN MOUNTAINS, a range of Asia, forming the eastern continuation of the Salkhughem or Altai range, stretching from 83° E. to 106° E. Geographically they are the North-ridge-order of the plateau of N.W. Mongolia, and separate that region from Siberia. The geology is imperfectly known. While the general elevation is 7000 to 9000 ft., the individual peaks, consisting largely of granites and metamorphic slates, reach altitudes of 10,000 ft. and 11,450 ft., e.g. in Munko Sardykh; while the principal passes lie 6000 to 7500 ft. above the sea, e.g. Mustagh 7480 ft., Mongol 6950 ft., Tenghuy 7480 ft. and Obo-sarym 6100 ft. In 92° E. the system is pierced by the Bel-kem or upper Yenisel, and in 106°, at its eastern extremity, it terminates above the depression of the Selenga-Orkhon valley. From the Mongolian plateau the ascent is on the whole gentle, but from the plains of Siberia it is much steeper, despite the fact that the range is masked by a broad belt of subsidiary ranges of an Alpine character, e.g. the Usinsk, Oya, Tunka, Kitoi and Byelaya ranges. Between the breach of the Yenisel and the Kosso-gol (lake) in 100° 30' E. the system bears also the name of Yerghik-taiga. The flora is on the whole poor, although the higher regions carry good forests of larch, pitch pine, cedar, birch and alder, with rhododendrons and species of Berberis and Ribes. Lichens and mosses cover many of the boulders that are scattered over the upper slopes.

SAY BROOK, a township of Middlesex county, Connecticut, U.S.A., at the mouth and on the W. bank of the Connecticut river, about 100 m. N.E.N. of New York City and about 40 m. S. of Hartford. Pop. (1900) 1634; (1910) 1907. The post office of the township is named Deep River. Mainly confined to Saybrook Point, jutting out into the river, is the town of Old Saybrook (pop. in 1910, 1510), separated from the township of Saybrook in 1752, but actually the mother colony; its post village is called Saybrook. It is served by the New York, New Haven & Hartford railway, the Valley branch of which here separates from the Shore Line branch. It is a beautiful place, with several old buildings, notably the Hart mansion built about 1783 by Captain Elisha Hart, whose seven daughters here entertained Washington Irving, J. R. Drake and Fitz-Greene Halleck. Com. Isaac Hull and his nephew Joseph Bartine Hull married two of the daughters, and the younger of these in 1824 left the house to the township of Old Saybrook, which refused the gift. Fenwick (pop. in 1910, 34), the smallest borough in the state, is a part of Old Saybrook township, in which there are summer residences. The first settlement was made on Saybrook Point late in 1635 by John Winthrop, commissioned governor for one year by the company of which the principal shareholders were the earl of Say and Sele, the Groose, Sir Richard Saltonstall, John Pym and John Hampden, and which was founded from the earl of Warwick. The English settlers forestalled the Dutch, who attempted to land here in November. A palisade was built across the narrowest part of the neck of the point by Lyon Gardiner, who built a fort (burned in 1647) and planned a settlement, to which for a time it was thought Lord Saye and Sele, Lord Brooke, John Hampden, Oliver Cromwell, and other independents would immigrate. Gardiner called the place Saybrook from the names of its principal proprietors. He had purchased the control in 1610 from the Groose and others by George Fenwick (d. 1617), whose wife, called Lady Fenwick (she was the widow of Sir John Botetel), died here in 1646, and who in 1644 sold 1 to Connecticut the proprietors' rights.

In 1646 the First Church of Christ was organized; a church building was erected in 1647, and in 1680-1681 another, in which in September 1708, at the call of the General Assembly, met a Congregationalist convention of 150 ministers which reaffirmed the Savoy Articles which reformed the Savoyards who reasserted the profession of Faith and the Heads of Agreement adopted in England in 1691 by Congregationalists and Presbyterians, and drew up the New Covenant. The form of government was explained by the modification of harmony and order, the regular introduction of candidates into the ministry and the establishment of associations and consociations, the latter being tribunals with final and appellate jurisdiction. This establishment was approved by the General Assembly, and the churches organized under it were declared to be established by law. This establishment continued in full force until 1784. A granite boulder (1901) marks the site of the first home of Yale University, established here in 1701 as the Collegiate School of Connecticut; until 1716 when it was removed to New Haven, most of the school's commencements were held here and all its exercises after 1707-1708, before which time most of the actual teaching was done in Killingworth. In 1783 Clinton, Connecticut. Saybrook was the home of David Bushnell (1742-1824), who devised in 1776 a submarine torpedo and a tortoise-shaped diving boat, the "American Turtle," which were successful against the British in the War of American Independence.

The original township of Saybrook contained the present townships of Old Saybrook, Westbrook (1840), Essex (1854), taken from Old Saybrook, Saybrook, Saybrook Center (1871), and portions of the rivers, parts of the present Lyme (1865), Old Lyme (1855, from Lyme), and East Lyme (1839, from Lyme and Waterford).

SAYCE, ARCHIBALD HENRY (1846-1907), British Orientalist, was born at Shirehampton on the 25th of September 1846, son of the Rev. H. S. Sayce, vicar of Caldicot. He was educated at Bath, and at Queen's College, Oxford, of which he became fellow in 1869. In 1891 he was elected professor of Assyriology at Oxford. He threw his whole energies into the study of biblical and other Oriental subjects, and though his conclusions have in a number of cases been considerably modified (e.g. in chronology and translocation) by the work of other scholars (see, e.g. BABYLONIA and ASSYRIA) it is impossible to overestimate his services to Oriental scholarship. He travelled widely in the East and continued in later life annual trips up the Nile. An interesting example of the importance of his pioneer work is the fact that there has been a strong tendency to revert to the views which he advanced on the question of the Hittites in his early Oxford lectures. He was a member of the Old Testament Revision Company in 1874-1884; deputy professor of comparative philology in Oxford 1876-1890; Hibbert Lecturer 1887; Gifford Lecturer 1900-1902.

1 The sale was probably illegal as it was never confirmed; and it does not appear that the earl of Warwick had ever title to the land as such. The correction by the General Assembly of a previous conjectural explanation of the history of the Warwick patent see Forrest Morgan, "The Solution of an Old Historic Mystery," in the Magazine of History for July, August, September and October 1899.
Of his numerous publications the following are of special importance—Assyrian Grammar for Comparative Purposes (1872); Principles of Comparative Philology (1874); Babylonian Literature (1877); Introduction to the Language (1879); Monuments of the Hittites (1881); Herodotus i.–iii. (1883); Ancient Empires of the East (1884); Introduction to Ezra, Nehemiah and Esther (1885); A Road in the River; or Nineveh and Babylon (1887); The Hittites (1889); Races of the Old Testament (1891); Higher Criticism and the Verdict of the Monuments (1894); Patriarchal Palestine (1895); The Egypt of the Hebrews and Herodotus (1895); Eastern History before the Christian Era (1896); The Hieroglyphic Cartoons (1897); The Oriental Nations (1898); Babylonians and Assyrians (1900); Egyptian and Babylonian Religion (1903); Archaeology of the Cuneiform Inscription (1907). He also contributed important articles to the 9th, 10th and 11th editions of the Encyclopaedia Britannica and edited a number of Oriental works.

**SAYE, WILLIAM FIENNES, 1st Viscount (1582–1662),** was the only son of Richard Fiennes, 7th Baron Saye and Sele, and was descended from James Fiennes, Lord Saye and Sele, who was lord chamberlain and lord treasurer under Henry VI. and was beheaded by the rebels under Jack Cade on the 4th of July 1450. Born on the 26th of May 1582 Fiennes, like many of his family, was educated at New College, Oxford, and was appointed to his father's barony in 1613, and in parliament opposed the policy of James I., undergoing a brief imprisonment for objecting to a benevolence in 1662; and he showed great animus towards Lord Bacon. In 1624, owing probably to his temporary friendship with the duke of Buckingham, he was advanced to the rank of a viscount, but notwithstanding this he remained during the early parliaments of Charles I. champion of the popular cause, and was in Clarendon's words "the oracle of those who were called Puritans in the worst sense, and steered all their counsels and proceedings in support of his own opinions, in helping to colonize Providence Island, and in interesting himself in other and similar enterprises in America. Although Saye resisted the levy of ship-money, he accompanied Charles on his march against the Scots in 1639; but, with only one other peer, he refused to take the oath binding him to fight for the king to "the utmost of my power and hazard of my life." Then Charles I. sought to win his favour by making him a privy councillor and master of the court of wards. When the Civil War broke out, however, Saye was on the committee of safety, was made lord-lieutenant of Gloucestershire, Oxfordshire and Cheshire, and raising a regiment occupied Oxford. He was a member of the committee of both kingdoms; was mainly responsible for passing the self-denying ordinance through the House of Lords; and in 1647 stood up for the army in its struggle with the parliament. In 1648, both at the treaty of Newport and elsewhere, Saye was anxious that Charles should come to terms, and he retired into private life after the execution of the king, becoming a privy councillor again upon the restoration of Charles II. He died at his residence, Broughton Castle near Banbury, on the 14th of April 1662. On several occasions Saye outwitted the advisers of Charles II. by his strict compliance with legal forms. He was a thorough aristocrat, and his ideas for the government of America included the establishment of an hereditary aristocracy. His eldest son James (c. 1603–1674) succeeded him as 2nd viscount; other sons were the parliamentarians Nathaniel Fiennes (q.v.) and John Fiennes. The viscountcy of Saye and Sele became extinct in 1781, and the barony is now held by the descendants of John Twisleton (d. 1682) and his wife Elizabeth (d. 1674), a daughter of the 2nd viscount. Saybrook (q.v.) in Connecticut is named after Viscount Saye and Lord Brooke.

**Sayer (or Sayers), JAMES (1748–1823), English caricaturist, was a native of Yarmouth, and son of a merchant captain. He began as clerk in an attorney's office, and was for a time a member of the borough council. In 1780 the death of his father put him in possession of a small fortune, and he came to London. As a political caricaturist he was a supporter of William Pitt. His plate of "Carlo Khan's triumphal entry into Leadenhall Street" was allowed by C. J. Fox, against whom it was directed, to have damaged him severely in public opinion. Indeed Sayer was always at his best when attacking Fox, whose strongly marked features he rendered with remarkable power, and always so as to make them convey expressions of defiant impudence or of anger. Pitt, who showed no wish to help literature or art in any other case, provided Sayer with a place as marshal of the Exchequer court. He died in Curzon Street, Mayfair, on the 20th of April 1833. Sayer's "Carlo Khan" has been frequently reproduced. But he can only be judged with confidence after examining the collection in the British Museum, or other public libraries. His drawings, more originally with pencil on oiled paper, were etched for him by the Bretherton's. They were then sold in collections of the size of a large volume. Sayer was a friend of Thomas Rowlandson and Mr. Gillray, and his work has a more substantial value than either, and nearer the truth.**

**Sayers, Tom (1826–1865),** English pugilist, was born at Brighton on the 25th of May 1826. By trade a bricklayer, he began his career as a prize fighter in 1840 and won battle after battle, his single defeat being at the hands of Nat Langham in October 1853. In 1857 he gained the championship. His fight with the American, John C. Heenan, the Benicia Boy, a much longer fight than Langham's, is perhaps the most famous in the history of the English prize ring. It took place at Farnborough on the 17th of April 1860 and lasted two hours and six minutes, thirty-seven rounds being fought. After Sayer's right arm had been injured the crowd pressed into the ring and the fight was declared a draw. £500 was raised by public subscription for Sayers, who withdrew from the ring and died on the 8th of November 1865. The champion was 3 ft. 8½ in. in height and his fighting weight was under 11 stone. An account of the fight between Sayers and Heenan is given by Frederick Locker-Lampson in My Confessions (1856).

**Sayre, a borough of Bradford county, Pennsylvania, U.S.A., on the North Branch of the Susquehanna river, about 95 m. (by rail) N.N.W. of Wilkes-Barre, and just S. of the New York state boundary. Pop. (1900) 5243 (337 foreign-born); (1910) 6426. Sayre is served by the main line and by a branch of the Lehigh Valley railway, and is connected by electric railway with Waverly, New York, and with the adjacent borough of Athens, Pennsylvania (pop. in 1910, 3769), which manufactures furniture, carriages and wagons. Sayre, Athens, South Waverly and Waverly form virtually one industrial community. But its industrial importance is due primarily to the locomotive and car shops of the Lehigh Valley railway. It was named in honour of Robert Heysham Sayre (1824–1907), long chief engineer of this railway. Sayre was settled in 1880 and was incorporated as a borough in 1891.**

**Sayyid Ahmad Khan, Sir (1817–1878), Mahommmedan educationist and reformer, was born at Delhi, India, in 1817. He belonged to a family which had come to India with the Mahommmedan conquest, and had held important offices under the Mogul emperors. Although his imperfect acquaintance with English prevented his attainment of higher office than that of a judge of a small cause court, he earned the title of the recognized leader of the Mahommmedan community. To the British he rendered loyal service, and when the mutiny reached Bijnor in Rohilkand in May 1857 the British residents owed their lives to his courage and tact. His faithfulness to his religion was pronounced, and in 1876 he defended the cause of Islam in A Series of Essays on Mahommed, written in London. He can only be judged with confidence after examining the Mahommmedans and their rulers, and to rouse his co-religionists to a sense of the benefits of modern education. The task was no light one; for during the first half of the 19th century the Mahommmedans had kept themselves aloof from English education, and therefore from taking their proper part in the British administration, being content to study Persian and Arabic in their own mosques. Sayyid Ahmad set himself to alter their resolution. He established a translation society, which became the Scientific Society of Aligarh. He wrote letters from England to draw the hearts of the East to the West. In 1873 he founded...**
the Mahommedan Anglo-Oriental College at Aligarh, and raised funds for the buildings of which Lord Lytton laid the foundation-stone. He stimulated a similar movement elsewhere, and among other cities Karachi, Bombay and Hyderabad caught the infection of his spirit. Thus he effected a revolution in the titles of the Madrassas towards modern education. He was made K.C.S.I., and became a member of the legislative councils of India and Allahabad, and of the education commission. He died at Aligarh on the 2nd of March 1898.


SBEITLA (anc. Sufetula), a ruined city of Tunisia, 60 m. S.W. of Kairawan. Long buried beneath the sand, this is the most perfect of the early examples of the Roman cities in the cities. It stands at the foot of a hill by a river, here perennial, but at a short distance beyond lost in the sands. The chief ruin is a rectangular walled enclosure, 238 ft. by 198 ft., known as the Hieron, having three small and one large entrance. The great gateway is a fine monumental arch in fair preservation, with an inscription to Antoninus Pius. Facing the arch, within the Hieron, their rear walls forming one side of the enclosure, are three temples, connected with one another by arches, and forming one design. The length of the entire façade is 170 ft. The characteristic of the central temple, which is of the Composite order, is 44 ft. long; those of the side temples, in the Corinthian style, are smaller. The walls of the middle temple are ornamented with engaged columns; those of the other buildings with pilasters. The porticos have fallen, and their broken monolithic columns, with fragments of cornices and other masonry, lie piled within the enclosure, which is still partly paved. (In 1901 a violent storm further damaged the temples and forced the gateway out of the perpendicular.) The other ruins include a triumphal arch of Constantine, a still serviceable bridge and a square keep or tower of late date.

The early history of Sufetula is preserved only in certain inscriptions. Under Antoninus and Marcus Aurelius it appears to have been a flourishing city, the district, now desolate, being then very fertile and covered with forests of olives. It was partly rebuilt during the Byzantine occupation and became a centre of Christianity. At the time of the Arab invasion it was the capital of the exarch Gregorius, and outside its walls the battle was fought in which he was slain; his daughter, who is said by the Arab historians to have fought by the side of her father, became the wife of one of the Arab leaders. The invaders besieged, captured and sacked Sufetula, and it is not afterwards mentioned in history. It was not until the close of the 10th century that the ruins were thoroughly examined by French savants.


SCABBARD, the sheath of a sword. The early forms of the word are scabbard in the Plautus, scæbærum in the Horace, scæburt, scaburt or scabuer. The termination is certainly from the Teutonic bergen, to protect, as seen in “hauberk,” “hawberk” (i.e. halsberg), literally a protection for the neck and shoulders, hence the “long tunic of mail” of the 17th century (see Arms and Armour). The first part is doubtful; Skeat takes it as representing the O. Fr. escâle, mod. écaille, shell. Ger. Schale; the word would therefore mean an outer sheath or shell that covers or protects.

SCABBLING, or SCAPPING, in building, the process of reducing a stone to a rough square by the axe or hammer; in Kent the confusion with scabbarding calls this knobbling (see Masonry).

SCABIES, or ITCH, a skin disease due to an animal parasite, the Sarcoptes scabei (see Mite), which burrows under the epidermis at any part of the body, but hardly ever in the face or scalp of adults; it usually begins at the clefts of the fingers, where its presence may be inferred from several scattered pimples, which will probably have been torn at their summits by the scratching of the patient, or have been otherwise converted into vesicles or pustules. The remedy is soap and water, and sulphur ointment.

SCEAEVOLA, the name of a famous family of ancient Rome, the most important members of which were:

1. Gaits Mucius Sceaevola, a legendary hero, who volunteered to assassinate Lars Porsena when he was besieging Rome. Making his way through the enemy’s lines to the royal tent, but not knowing Porsena by sight, he slew his secretary by mistake. Before the royal tribunal Mucius declared that he was one of 500 noble youths who had sworn to take the king’s life, and that he had been chosen by lot to make the attempt first. Thwarted with death or torture, Mucius thrust his right hand into the fire blazing upon an altar, and held it there until it was consumed. The king, deeply impressed and dreading a further attempt upon his life, ordered Mucius to be liberated, made peace with the Romans and withdrew his forces. Mucius was rewarded with a grant of land beyond the Tiber, known as the "Mucia Prata" in the time of Dionysius of Halicarnassus, and received the name of Sceaevola ("left-handed"). Dionysius says nothing of the incident of the fire, under which stand the words of Mucius to his complicity and the name of the fire-robbers in an ambuscade. The story is presumably an attempt to explain the name Sceaevola, coloured by national and family vanity (Livy lii. 12; Dion. Halic. v. 27-30). The Mucius of the legend is described as a patrician; the following were undoubtedly plebeians.

2. Publius Mucius Sceaevola, Roman orator and jurist, consul 133 B.C. during the time of the Gracchan disturbances. He was not opposed to moderate reforms, and refused to use violence against Tiberius Gracchus, although called upon in the senate "to protect the state and put down the tyrant." He opposed murder of the satirist Lucullus (Persius i. 115, Juvenal i. 154). In 130 he succeeded his brother Mucianus as pontifex maximus. During his tenure of office he published a digest in 80 books of the official annals kept by himself and his predecessors, which were afterwards discontinued as unnecessary, their place being taken by the works of private annalists. He was chiefly distinguished for his knowledge of law, which he held to be indispensable to a successful pontifex. Cicero frequently mentions him as a lawyer of repute, and he was a member of the jurists whose works were used in the compilation of the Digest. He was also a famous player at ball and the game called Duodecim Scripta; after he had lost a game, he was able to recall the moves and throws in their order. 3. See A. H. J. Greenidge, History of Rome.

3. Quintus Mucius Sceaevola, son of (2), usually called "Pontifex Maximus," to distinguish him from (3), consul in 95 B.C. with his friend L. Licinius Crassus the orator. He and his colleague brought forward the lex Licinia Mucia de civibus regendis, whereby any non-burgesses who was convicted of having usurped the rights of citizenship was to be expelled from Rome, and the memory of the Greeks of Asia set aside a day for the celebration of festivities and games called Mucia. He was subsequently appointed Pontifex Maximus, and, in accordance with a custom that had prevailed since the first plebeian appointment to that office (about 150 years before), was always ready to give gratuitous legal advice. His aedileship was thronged, and even the chief men of the state and such distinguished orators as Servius Sulpicius consulted him. He kept a firm hand over the priestly colleges and insisted upon the strict observance of definite regulations, although he was by no means bigoted in his views. He held that there were no tyrants of religion, philosophical and traditional. The senate and was to be preferred for the sake of the unreasonable multitude, who ought to be taught to set a higher

1 Some authorities hold that Quintillian (Inst. Orat. xi. 2, 38) refers to Sceaevola (3).
Quintus Mucius Scaevola (c. 159–88 B.C., uncle of (3), from whom he is distinguished by the appellation of “Augur,” He was instructed in law by his father, and in philosophy by the famous Stoic Panætius of Rhodes. In 121 he was governor of Asia. Accused of extortion on his return, he defended himself and, though no orator, secured his acquittal by his legal knowledge and common sense. In 117 he was consul. He did not take a prominent part in the Senate, but his brief, unpolished remarks sometimes made a great impression. He was a great friend of Cicero, and lived in an apartment near him. He gave advice to Scaevola to Cicero and Atticus. He had a high appreciation of Marius, and when Sulla assembled the senate, to obtain it a declaration that Marius was the enemy of his country, Scaevola refused his assent. He married Lelia (the daughter of Gaius Lelius, the friend of the younger Scipio), by whom he had a son and two daughters, one of whom became the wife of Licinius Crassus the orator. Scaevola is one of the interlocutors in Cicero’s De oratore, De amicitia and De republica.

For the legal importance of the Scaevolae, see A. Schneider, Die drei Scaevola Ciceres (Munich, 1879), with full references to ancient and modern authorities.

SCAFFEL (pronounced and sometimes written Scaw Fell), a mountain of Cumberland, England, in the Lake District. The name is specially applied to the southern portion (3162 ft. in height) of a certain range or mass, but Scafell Pike, separated from Scafell by the steep narrow ridge of Mickledore, is the highest point in England (3210 ft.). The ridge continues N.E. to Great End (3204 ft.), which falls abruptly to a flat terrace, on which are the settlements of Scafell and Seathwaite. It is a well known and popular ascent, the path between Sty Head Pass (3600 ft.) and Esk Hause (2900 ft.) being well defined. The ascent may be made from either end of the ridge, by a path of grass and heather, the ridge being of moderate height and easily traversed, the descent being more difficult. The range thus defined may be termed the Scafell mass. North-west from the Pike the lesser height of Lingmell (2649 ft.) is thrown out like a bastion, and the steep flank of the range, scored with the deep gully of Piers Gill, sweeps down to the head of Wasdale. On the east an even steeper wall, with splendid crags, falls to Easdale. Above Mickledore ridge Scafell rises nearly sheer, the rock scored with bold crests; here are some of the ascents most in favour with the mountaineers. Some of the other ascents of the Scafell are among the utmost; and the mountain has been the scene of several accidents.

SCAFFOLD, SCAFFOLDING (from the O. Fr. escaufl, originally escafoi, modern échafaud, a corruption of the Italian or Spanish catafalco, a platform, especially a canopy over a bier, a catafalque; this word is composed of O. Span. cataer, O. Ital. catar, to view, Lat. capere, to watch, observe, and balco, balcony), properly a platform or stage, particularly one of a temporary character erected for viewing or displaying some spectacle, and hence applied to the raised structure on which the execution of a criminal or condemned person is carried out. (See Capital Punishment, etc.) The word “scaffold” or “scaffolding” is used in a technical sense of an obstruction formed in a blast furnace by the fitting together of lumps which form a comparatively solid skeleton mass inside the furnace, preventing the charge from descending properly. The most general modern application of the word, however, is, in building, to the temporary structure of platforms erected or suspended at convenient heights to afford workmen easy access to their work. Such scaffolds may be divided into four principal classes—bricklayers’ scaffolds, masons’ scaffolds, gantres and derrick towers or staging. The first two are constructed with upright and horizontal poles lashed together. Gantres and derricks are built of squared timber, and the different members are connected by iron bolts and dogs.

The bricklayers’ scaffold is constructed of standards, ledgers and putlogs, and the connections are made with lashings of rope, though wire ropes or chains are sometimes used. The standards are a series of upright fir poles 30 to 50 ft. in length, either (1) sunk about 2 ft. into the ground, (2) fixed in barrels filled with earth lightly rammed, or (3) placed upon a “sole plate” of timber with a square formed of small fillets of wood round the base to prevent movement. The standards are placed 6 to 9 ft. apart, and about 5 ft. away from the building. At every 5 ft. ledgers are tied to the standards to support the putlogs, which in turn support the platform of planks. The ledgers are poles lashed horizontally to the standards; upon these, putlogs, usually of birch wood 3 in. square in section, are laid about 3 or 4 ft. apart, with one end resting on the ledger and the other in a recess in the wall. The outer end should be lashed to the ledger. Boards are then laid upon these putlogs parallel with the face of the wall. Two thicknesses of boards are used, the inner one being made about the thickness of the scaffold erected in an exposed position or is more than 30 ft. high, it should be stiffened by cross braces of poles running diagonally across the face of the structure and firmly lashed to all the main timbers touched. Ties should also be taken back from the face of the scaffold through apertures in the walls of the building and firmly secured. These ties should be connected with every fourth standard and start at a height between 20 and 30 ft. from the ground. Instead of, or in addition to, these ties light shires may be taken from the face of the scaffold outward to the building, and as the work is carried up the boarding and many of the putlogs are removed, the scaffold is supported by the two putlogs, however, being left tied to the lower ledgers to stiffen the scaffold. In the case of thick walls a scaffold is required inside as well as outside the building, and when this is the case the two structures are tied together and stiffened by short connecting poles through the window and door openings.

The mason requires an independent scaffold. He cannot rest the inner ends of his putlogs in the wall as the bricklayer does, for this would disfigure the stonework, so he erects another and parallel framework of standards and ledgers. They are placed between the inner and outer poles. These are made of fir, or other hardwood and are connected with one to support the other. The two portions are tied together with cross braces, and the whole of the timbering is made capable of taking heavier weights than are required in the case of the bricklayer.

Scaffolding poles are of Northern pine obtained chiefly from the Baltic ports. They consist of small trees up to 30 to 40 ft. long and of not more than 9 in. in diameter. They are sold with the bark on, but this should be removed before use. Materials. Such material forms the standards and ledgers. The putlogs are usually made from fir poles of moderate strength and about 4 ft. long. In order to have the fibres uncurt they should be split, not sawn. Scaffolding boards are made in 8-to-12 ft. lengths, 7 or 9 in. wide, and 14 in. or 2 in. thick. They should be of yellow deal, but they are more often cut from spruce. The corners are cut off and the ends bound with stout hoop-iron to prevent splitting. The cords used for lashing are made of jute and hemp fibre. The best and strongest cords are those of white Manila hemp. The fibres for scaffold cords are made by bonding them together for a few inches before being made up into rope. The ropes generally used by the scaffolders are either "shroud lad," having three strands of fibres wound tightly around a core, or "three strands" and only one shroud. Erection. Erection of scaffolding demands nerve and physical strength, as well as skill and discretion. The timbers near the ground are fixed by hand labour alone; the higher poles are raised by the use of hoists. The putlogs, rods, and battens are driven between the pole and the rope. They should be of oak or other hard wood, about 12 in. long and semicircular in cross section, and should taper off from one end to the other. Practically the only tool used by the scaffold is his hatchet, made with a
hammer-head for driving spikes and wedges; the wooden handle he often uses as a lever to tighten knots and cords. Scaffolds should not be too heavily loaded, and the weight of materials should be distributed as much as possible. This applies especially to bricklayers' scaffolds, for heavy concentrated loads, even if not sufficient to cause the scaffold to fail, tend to injure the brickwork.

In Scotland and the north of England much work is done from inside by means of platforms of boards placed upon the floor joists. When the work gets so advanced that it cannot be reached from the floor, treeties and platforms are used. For executing special external features, such as stone carving or plaster moulding, a scaffold will be thrown out on cantilevers projecting through openings in the wall and tied down inside the building. The materials are usually hoisted by derrick cranes.

"Gantry" is the term applied to a staging of squared timber used for the easy transmission of heavy material. The name, however, come to be used generally for strong stagings of squared timber whether used for moving loads or not.

Taking the general meaning of the term, gantries may be divided into three classes: (1) Gantries supporting a traveller; (2) Travelling gantries, in which the whole stage moves along rails placed on the ground; (3) Elevated platforms which serve as a base upon which to erect pole scaffolding.

A gantry to support a traveller (fig. 1) consists of two sets of framing placed at a convenient distance apart, say 8 ft. or more, and standing independently of each other. These frames consist of standards or uprights standing upon a sleeper or sill resting in a continuous line upon the ground. The tops of the standards are levelled to receive the head or runner. Struts are taken from cleats fixed at a convenient point in the sides of the standards, and meet in pairs under the middle of the head; sometimes a straining-piece is introduced between them. Struts are also taken outwards from the uprights and bedded on foot-blocks or bolted to small piles driven into the ground. The space between the two frames must be kept free from struts and ties of any description so as to leave a free passage for the material while being lifted and moved. The different members are connected by iron dogs and bolts; dogs are used wherever possible, as they form a strong connexion and do not spoil the wood for other purposes as bolt-holes do. They should be placed on both sides of the timbers to be connected. The size of the timbers varies according to the height of the structure and the weight intended to be carried. The standards may be from 6 to 12 in. squared in section, and the heads and sills are of similar size; the struts and braces are usually somewhat smaller.

The traveller consists usually of two wood girders trussed with iron rods and mounted on flanged wheels so as to run along the rails fixed to the head-piece. Along each girder also, a rail is provided upon which moves the hoisting gear; this is worked either by hand or steam power. The ends of the rails are turned up to form a stop for the traveller or crab.

A travelling gantry (fig. 2) runs along rails placed on the ground, and consists of two strong trusses braced and bolted together and supporting the two trussed girders which take the crab-winch. The latter is mounted on wheels, and by simple gearing is caused to run along the rails fixed on the upper side of the girders. This is a most useful form of gantry, and requires a very small amount of timber for its construction. The travelling frame is, however, very heavy, and such an apparatus is usually fitted with a steam winch, the power from which, besides lifting the materials, can also be applied to move the traveller. Gantry built on this principle have been used successfully in building or repairing lofty and wide-spanned steel or other roofs. After the collapse of the steel "bow-string" roof of Charing Cross station (London) in December 1905, huge travelling gantries running along rails laid upon the station platforms were employed, and these provided an efficient and economical means of access to the damaged portions; as section by section the work was removed the gantries were shifted along to the next bay. These gantries were 60 ft. in height. One, used to strip and remove the coverings of the roof, was 32 ft. deep, weighed 200 tons and moved upon 24 steel flanged wheels; the other, 40 ft. deep and with 32 wheels, weighed 250 tons and was used to take down the structural steel work of the roof. Four cranes were erected upon the staging to lower the material as it was removed. The amount of timber used in these gantries was 24,000 cubic ft.

In the erection of the Williamsburg Bridge over the East river, New York, for which 19,000 tons of steel were used, " framed timber falsework " was built up of squared timber to a height of 100 ft. and 90 ft. wide at the top. The span was 555 ft. The timbering was in three storeys or stages, and each " bent " had 8 vertical and 4 battening posts. The bents were 20 ft. apart and were connected...
at the top by 10 lines of 12-in. by 14-in. stringers, and the lower
strings were 8 by 10 in. and 6 by 12 in. The vertical standards or posts rested on sills, and under each
one also at its base was a timber foundation 4 ft. square. Two
travelling gantry towers, 22 ft. by 25 ft. and 40 ft. high, mounted on
double-flanged wheels, ran on rails which were laid on the top of the framework and
were connected by pulleys for raising the materials
necessary for the bridge. Beside the cranes they carried cars with
the timber and baulks, water tanks, and air compressor and
apparatus for the pneumatic riveting hammers.

"Elevated platforms" are generally used in conducting building
operations in towns where the importance of the traffic renders it
necessary to keep the footway clear. They consist of two sets of
standards, sill and head, one set being erected close to the building
and the other about 8 or 10 ft. away. These stages are formed of
square timber, framed and braced in a similar manner to gantries
designed to support a traveller, but, instead of external shores or
braces the uprights are braced across to each other, care being taken
to fix the braces at such a height as to allow free passage beneath
them. Joints are placed across from.

Derrick "gantries" or "towers" (fig. 3) are skeleton towers of
timber erected in a central position on a site to support
a platform at such a height as to enable an electric
Derrick

or steam power derrick crane placed upon it to clear
the highest portions of the building. The crane
revolves upon a base through nearly three parts of the circum-
ference of a circle, and in addition to this the jib of the crane is
able of an "up and down" motion which enables it to
command any spot within a radius of three-quarters of the length
of the crane. For a single crane, a derrick tower with three legs
built, and the crane is placed over one of these, stayed back to
the other two and then counterbalanced by heavy weights.
Each leg is usually from 6 ft. to 10 ft. square on plan, the "king"
leg (that is, the leg supporting the crane) being larger than the
"queen" legs. The three legs are placed from 20 to 30 ft. apart
in the form of an equilateral or isosceles triangle. When two
were used, as is the case when important operations are to
be conducted over the entire area of a circle, a four-legged square
derrick tower is constructed, and a crane is set upon a platform
over the centres of one and the other ground plan on which
the jib is proposed to erect the towers must be well chosen for its solidity
and often requires to be well rammed. The foundation usually
consists of a platform of 9-in. by 3-in. deals under each leg. The
corner posts may be of three 9-in. by 3-in. deals bolted together,
but those for the king leg may advantageously be larger.
They are connected at every 8 or 10 ft. of their height by means
of cross pieces or transoms from 9 by 3 in. to 9 by 6 in. in size,
and each bay thus formed is filled in on all four sides with diagonal
bracing of the same or slightly smaller timber. Up the centre
of the king leg, from the bottom to the top, is carried an extra
standard of timber to take the weight of the crane. The crane
is raised by a balk of whole timber, 12 or 14 in. square, or may consist of
deals bolted together up to 16 in. square. This central standard must
be well braced and struttered from the four corners to prevent any
tendency to bending.

When the towers have reached the desired height the king leg is
connected to each of the queen legs by a "trussing girders," the two
queen legs may be connected with each other either by a similar
trussing girders or by a single balk of timber which can be supported
by struts if the span is considerable. For the connecting girders a
balk of timber reaching from king to queen legs is placed over each of
the two topmost transoms, which may be from 4 to 8 ft. apart, the
depth of the top bays often being modified to the required depth of
the connecting beams. Upright struts are fixed at intervals of about 5 ft.
in the two bays, which are also connected by long iron or wood
bolts and cross braces filled into each bay. The top bays project
6 or 10 ft. beyond the king leg and form the support for a working
platform at the heads. Struts are thrown out from the sides of the leg
to support the ends of the balks. Upon the platform are laid two
"sleepers" of balk timber extending from beneath the bed of the
crane and passing over the centre of each queen leg. The "mast,"
a vertical member composed of either of a single timber or two pieces
strutted and braced, is erected upon the revolving crane bed, and the
"jib," which is similar in construction to the mast, is attached to
the base of the latter by a pivoted hinge. The jib is raised and
lowered by a rope fixed near the end of the jib and running to the
engine by way of a pulley wheel at the top of the mast. The rope or
chain used for lifting the materials passes over a pulley at the end
of the jib and thence to the winch over a pulley at the top of the
mast.

In the operation of lifting it is obvious that a great strain is
put upon the mast and a considerable overturning force is
exerted by the leverage of the weight lifted at the end of the jib. To counter-
balance this, two timber "stays" or "guys" are taken from the
mast head, one to the centre of each queen leg, and there secured.
From these points two heavy chains are taken down the centre of

FIG. 3.
the ballast necessary for the crane tower the weight of the engine should be considered. Access to the platform is obtained by ladders fixed either inside or outside one of the queen legs. Together with the exception of the boards forming the working platform, which are usually spiked down, the timbers of a tower gantry should all be connected by screw bolts and nuts.

Swinging scaffolds are useful for executing light repairs to a building. Perhaps the simplest form of swinging scaffold is the "ladder boat," so called from its being chiefly used for the painting or examination of the sides of ships, but it is dangerous to work from and a light wind will cause it to swing to and fro, and owing to the extremely awkward position occupied by the workman there is difficulty in doing good work from it. A better, safer and more comfortable arrangement, the "painter's boat" (fig. 4), is suspended by blocks and falls from two cantilever "jibs" fixed in the upper part of the building. The positions of the jibs are altered as required. The ends of the suspension ropes are fastened securely to the cradle, and by altering their length the workmen can adjust it to the proper height for working. These boats are usually constructed with a framework of iron and fitted with edge boards and guard rails all round. Like the "boatswain's boat" they swing considerably in the wind.

An improved form of cradle has been patented which is swung on block runners working along a tight wire cable stretched between two jibs. Block tackle is used to raise or lower the cradle, and horizontal movement also is obtained by light guy lines working over pulleys at the jibs and secured to the tops of the suspension ropes. All adjustments can be made from the cradle with perfect safety. The guy lines steady the boat to some extent and prevent it from swinging in the wind.

Tall chimney shafts may be erected by internal scaffolding only, or by a combination of external and internal staging. The latter method is often adopted when the lower part of the shaft is designed with ornamental brickwork, string courses, panels, &c., and it is important that this work should be carefully finished. An external scaffold is therefore carried up until plain work not more than 2 or 3 bricks thick is reached, when the remainder can be completed by "overhand work" from an internal scaffold. The offsets made in the brickwork on the inside are used to support the timbering. For the repair of tall chimneys, light ladders are erected one above the other by a steeplejack and his assistants, each being lashed to the one below it and secured to the brickwork by dog-hooks driven in the joints. When the top of the chimney is reached balk timbers are raised by pulleys and laid across the top. From these are swung cradles from which the defective work is made good. If the work be weather-demand a more stable scaffold, a light but strong framework of putlogs held together with iron bolts is fixed on each side of the shaft with iron holldasts, and a platform of boards is laid upon them. For circular chimneys pieces of timber cut to a curve to fit the brickwork are clamped with iron to the putlogs to prevent them from bending when the bolts connecting the two frames are screwed up.

In England, the Factory and Workshop Act of 1901 empowers the secretary of state to make regulations respecting any dangerous "machinery, plant, process, or description of manual labour." No regulations affecting the building trade have been made, however, but a memorandum was issued in 1902 by the Home Office with the following suggestions for the prevention of scaffold accidents:

1. All working platforms above the height of 10 ft., taken from the adjacent ground level, should, before employment takes place thereon, be provided throughout their entire length, on the outside and at the ends.

2. A guard rail fixed at a height of 3 ft. 6 in. above the scaffold boards. Openings may be left for workmen to land from the ladders and for the landing of materials;

3. With boards fixed so that their bottom edges are resting on which the scaffold boards. The boards should rise above the working platform not less than 7 ins. Openings may be left for the landing of the workmen from the ladders.

4. All "horns" or similar means of communication between different portions of a scaffold or building should be not less than 18 in. wide. If composed of two or more boards they should be fastened together in such a manner as to prevent unequal sagging. The ends of boards forming the back of a girder should be be supported at each end by a putlog, and should not project more than 6 in. beyond it unless lapped by another board, which should rest upon the same putlog and rarily upon putlogs other than those upon which the supported board rests.

5. In places where the scaffold has been sublet to a contractor, the employer shall satisfy himself, before allowing work to proceed thereon, that the foregoing suggestions have been complied with, and that the material used in the construction of the scaffold is sound.

J. F. Hurst, Tredgold's Carpenter; A. G. H. Thatcher, Scaffolding.

SCALA NUOVA (Turk. Kush-Adaasi), also known as New Ephesus, a well-protected harbour on the west coast of Asia Minor in the vilayet of Aidin, opposite Samos. The site of the ancient Marathesium is close by on the S. It is connected with the railway station of Ayassoluk by a diligence service. Before the opening of the Smyrna-Aidin railway its roadstead was frequented by vessels trading with the Anatolian coast, and it has often been proposed to connect it with the railway system by a branch line, and thus enable it to compete with Smyrna. In the absence of this the town is rapidly on the decline. The population is not over 7000. The trade is of merely local interest.

(D. G. H.)

SCALD, an ancient Scandinavian bard who recited or sang at feasts compositions in honour of chiefs and famous men and their deeds. This word represents the Icel. skald, Dan. skald, Swed. skjold, the regular term for a poet. Authorities differ as to its derivation. It seems certain that the word was originally derogatory in sense; some connect it with skilda, a pole, on which libels were cut. Others, e.g. Skeat, refer it to Swed. skalla, Icel. skylla, to make a loud noise or clatter, and take the original sense to have been a "loud talker." This would link the word with "scold," to rail at, find fault with, which is formed from Dutch schold, past tense of schelten, cf. Ger. schelten, in the same sense.

Of different origin is the verb "scald," to burn or injure the skin or flesh by hot liquid or steam (see Burns and Scales); also to cleanse an object, or to remove hair, bristles, feathers &c., from an animal, by exposure to moist heat, such as boiling water, steam, &c. This word is derived from the O. Fr. escaldar, eschaunder, mod. echouard, Lat. escalare, to wash with hot water (calidus, calidus, hot).

SCALE (1) A small thin flake, plate or shell. The word in O. Eng. is seale, so bean-seale, the husk or pod of a bean; cognate forms are found in Ger. Schale, O.H.G. Schale, from which is Fr. escale, modern scale, is borrowed. The ultimate root is seen in the closely allied "shell," and also in skull, scalp, shalke and skill, and means to peel off, separate, divide. The word is used specifically (1) in botany, of the rudimentary flake-like leaf forming the covering of the leaf-buds of deciduous trees and of the bracts of the cone in conifers; (2) in zoology, of the flat, hard structures of the epidermis or exoskeleton in fishes, reptiles. Thus in ichthyology the various types of scales are classed as cycloid (Gr. κυκλος, circle), where the growth is in layers, equally from the anterior and posterior edges; ctenoid (Gr. κτενος, comb), where the posterior edge is notched; ganoid (Gr. γανος, shining), with a hard enamelled surface and usually rhomboidal in shape, and placoid (Gr. πλακος, tablet), as in the ossified papillae of the cutis of the shark. In reptiles the term is applied to the structures which form the covering of the true reptiles, snakes and lizards. In entomology the downy covering
of the wings of lepidoptera consists of minute scales, really modifications of hairs, covered with fine lines, giving the bright colours. Another form in O, Eng. scale is found glossing the Lat. lanx, flat bowl or dish, and is thus used of the dishes or cups of a balance (bilans), the instrument itself being also called "scales."

2. Properly a ladder, flight of steps, now only used in the derived "escal" (scaling"") ladder." The word is derived from the Lat. scala (originally scaldare, from scando to climb). There are many transferred senses of the word, e.g. the distinguishing marks for purposes of measurement on a rule or other measuring instrument; hence a graduated measure or a system of proportional measurement or numeration, and particularly, in music, a series of tones at definite standard intervals (see Harmony, Musical Notation).

SCALE INSECT, a name given to insects belonging to the family Coccidae of the homopterous division of the Hemiptera and deriving their name from the formation by the females of a wax secretion which often hardens into a protective scale beneath which the insects live. The males, substance is also secreted by some members of the family. The females are always wingless, but are provided with antennae, legs and well-developed mouth-parts. In some cases these organs are retained, in some they are lost in the encysted condition. The males, on the contrary, although sometimes wingless, are, as a rule, provided with a pair of forewings and greatly reduced hindwings; their antennae and legs are longer than in the other sex, but the mouth-parts are reduced and functionless (see Economic Entomology).

SCALIGER, the Latinized name of the great Della Scala family (see Verona). It has also been borne by two scholars of extraordinary eminence.

1. Julius Caesar Scaliger (1484-1558), so distinguished by his learning and talents that, according to A. de Thou, no one of the ancients could be placed above him and the age in which he lived could not show his equal, was, according to his own account, a scion of the house of La Scala, for a hundred and fifty years princes of Verona, and was born in 1484 at the castle of La Rocca on the Lago de Garda. At the age of twelve this kinsman the emperor Maximilian placed him among his pages. He remained for seventeen years in the service of the emperor, distinguishing himself as a soldier and as a captain. But he was unmindful neither of letters, in which he had the most eminent scholars of the day as his instructors, nor of art, which he studied with considerable success under Albrecht Dürer. In 1512 at the battle of Ravenna, where his father and elder brother were killed, he displayed prodigies of valour, and received the highest honours of chivalry from his imperial cousin, who conferred upon him with his own hands the spurs, the collar and the eagle of gold. But this was the only reward he obtained. He left the service of Maximilian, and after a brief employment by another kinsman, the duke of Ferrara, he decided to quit the military life, and in 1514 entered as a student at the university of Bologna. He determined to take holy orders, in the expectation that he would become cardinal, and then pope, when he would wrest from the Venetians his principality of Verona, of which the republic had despoiled his ancestors. But, though he soon gave up this design, he remained at the university until 1519. The next six years he passed at the castle of Vico Nuovo, in Piedmont, as a guest of the family of La Rovère, at first dividing his time between military expeditions in the summer, and study, chiefly of medicine and natural history. In the winter, until an attack of rheumatic gout brought his military career to a close, Henceforth his life was wholly devoted to study. In 1525 he accompanied M. A. de la Rovère, bishop of Agen, to that city as his physician. Such is the outline of his own account of his early life. It was not until some time after his death that the enemies of his son first alleged that he was not of the family of La Scala, but was the son of Benedetto Bordone, an illuminator or school-master of Verona; that he was educated at Padua, where he took the degree of M.D.; and that his story of his life and adventures before arriving at Agen was a tissue of fables. It certainly is supported by no other evidence than his own statements, some of which are inconsistent with well-ascertained facts (see below ad fin.).

The remaining thirty-two years of his life were passed almost wholly at Agen, in the full light of contemporary history. They were without adventure, almost without incident, but it was in them that he achieved so much distinction that at his death in 1558 he had the highest scientific and literary reputation of any man in France. A few days after his arrival at Agen he fell in love with a charming orphan of thirteen, Andiette de Roques Lobejac. Her friends objected to her marriage with an unknown adventurer, but in 1528 he had obtained so much success as a physician that the objections of her family were overcome, and at forty-five he married Andiette, who was then sixteen. The marriage proved a complete success; it was followed by twenty-nine years of almost uninterrupted happiness, and by the birth of fifteen children.

A charge of heresy in 1538, of which he was acquitted by his friendly judges, one of whom was his friend Arnaud Le Ferron, a master of science, was caused in part to write a second oration, more violent, more abusive, with more self-glorification, but with less real regard than the first. The orations were followed by a prodigious quantity of Latin verse, which appeared in successive volumes in 1533, 1534, 1539, 1546 and 1547; of these, a friendly critic, Mark Pattison, is obliged to approve the judgment of Huet, who says, "par ses poésies brutes et informes Scaliger a dés-honoré le Parnasse"; yet their numerous editions show that they commended themselves not only to his contemporaries, but to succeeding scholars. A brief tract on comic metres (De comici dimensionibus) and a work De causis linguæ Latinae—the earliest Latin grammar on scientific principles and following these, scientific—were his only other purely literary works published in his lifetime. His Poëtica appeared in 1561 after his death. With many paradoxes, with many criticisms which are below contempt, and many indelent displays of personal animosity especially in his reference to Étiéenne Dolet, over whose death he gloated with brutal malignity—it yet contains acute criticism, and showed for the first time what such a treatise ought to be, and how it ought to be written.

But it is as a philosopher and a man of science that J. C. Scaliger ought to be judged. Classical studies he regarded as an agreeable relaxation from severer pursuits. Whatever the truth or fable of the first forty years of his life, he had certainly been a close and accurate observer, and had made himself acquainted with many curious and little-known phenomena, which he had stored up in a most tenacious memory. His scientific writings are all in the form of commentaries, and it was not until his seventieth year that (with the exception of a brief tract on the De insomniis of Hippocrates) he felt that any of them were sufficiently complete to be given to the world. In 1536 he printed his Dialogue on the De plantis attributed to Aristotle, and in 1546 his Exercitationes on the work of Jerome Cardan, De subtilitate. His other scientific works, Commentaries on Theophrastus' De causis plantarum and Aristotle's History of Animals, he left in a more or less unfinished state, and they were not printed until after his death. They are all marked by arrogant dogmatism, violence of language, a constant tendency to self-glorification, strangely combined with extensive real knowledge, with acute reasoning, with an observation of facts and details almost unparalleled. But he is only the naturalist of his own time. That he anticipated in any manner the inductive philosophy cannot be contended; his botanical studies did not lead him, like his contemporary Konrad von Geson, to any idea of
natural system of classification, and he rejected with the utmost arrogance and violence of language the discoveries of Copernicus. In metaphysics and in natural history Aristotle was a law to him, and in medicine Galen, but he was not a slave to the text or the details of either. He has thoroughly mastered their principles, and is able to see when his masters are not true to themselves. He corrects Aristotle by himself. He is in that stage of learning when the attempt is made to harmonize the written word with the actual facts of nature, and the result is that his works have no real scientific value. Their interest is only historical. His Exercitationes upon the De subtilitate duorum naturalium (1555) is the book by which Scaliger is best known as a philosopher. Its numerous editions bear witness to its popularity, and until the final fall of Aristotle's physics it continued a popular textbook. We are astonished at the encyclopaedic wealth of knowledge which the Exercitationes display, at the vigour of the author's style, at the accuracy of his observations, but are obliged to agree with G. Naudé that he has committed more faults than he has discovered in Cardan, and with Charles Nisard that his object seems to be to deny all that Cardan affirms and to affirm all that Cardan denies. Yet Leibniz and Sir William Hamilton consider him as the best modern exponent of the physics and metaphysics of Aristotle. He died at Agen on the 21st of October 1558.

2. JOSEPH JUSTUS SCALIGER (1540-1609), the greatest scholar of modern times, was the tenth child and third son of Julius Caesar Scaliger and Andiètte de Roques Lobetak. Born at Agen in 1540, he was sent when twelve years of age, with two younger brothers, to the college of Guienne at Bordeaux, then under the direction of Jean Gelida. An outbreak of the plague in 1555 caused the boys to return home, and for the next few years Joseph was his father's constant companion and amanuensis. The composition of Latin verse was the chief amusement of Julius in his later years, and he daily dictated to his son from eighty to a hundred lines, and sometimes more. Joseph was also required each day to write a Latin theme or declamation, though in other respects he seems to have been left to his own devices. But the companionship of his father was worth more to Joseph than any mere instruction. He learned from him to be not a mere scholar, but something more—an acute observer, never losing sight of the actual world, and aiming not so much at correcting texts as at laying the foundation of a science of historical criticism.

After his father's death, he spent four years at the university of Paris, where he began the study of Greek under Turnebus. But after two months he found he was not in a position to profit by the lectures of the greatest Greek scholar of the time. He determined to teach himself. He read Homer in twenty-one days, and then went through all the other Greek poets, orators and historians, forming a grammar for himself as he went along. From Greek, at the suggestion of G. Postel, he proceeded to attack Hebrew, and then Arabic; of both he acquired a respectable knowledge, though not the critical mastery which he possessed in Latin and Greek. The name of Jean Dorat then stood as high as that of Turnebus as a Greek scholar, and far higher as a professor. As a teacher he was able not only to impart knowledge, but to kindle enthusiasm. It was to Dorat that Scaliger owed the home which he found for the next thirty years of his life. In 1563 the professor recommended him to Louis de Chastaigner, the young lord of La Roche Pozay, as a companion in his travels. A close friendship sprang up between the two young men, which remained unbroken till the death of Louis in 1593. The travellers first went to Rome. Here they found Marc Antoine Muretus, who, when at Bordeaux and Toulouse, had been a great favourite and occasional visitor of Julius Caesar at Agen. Muretus soon recognized Scaliger's merits, and introduced him to all the men that were worth knowing. After visiting a large part of Italy, the travellers passed to England and Scotland, taking as it would seem La Roche Pozay on their way, for Scaliger's preface to his first book, the Conjectae in Varronem, is dated there in December 1564. Scaliger formed an unfavourable opinion of the English. Their inhuman disposition, and inhospitable treatment of foreigners, especially impressed him. He was also disappointed in finding few Greek manuscripts and few learned men. It was not until a much later period that he became intimate with Richard Thompson and other Englishmen. In the course of his travels he had become a Protestant. On his return to France he spent three years with the Chastaigners, accompanying them to their different châteaux in Poitou, as the calls of the civil war required. In 1570 he accepted the invitation of Cujas, and proceeded to Valence to study jurisprudence under the greatest living jurist. Here he remained three years, preparing scholars possessed—learnt by the library of Cujas, which filled no fewer than seven or eight rooms and included five hundred manuscripts.

The massacre of St Bartholomew—occurring as he was about to accompany the bishop of Valence on an embassy to Poland—induced him with other Huguenots to retire to Geneva, where he was received with open arms, and was appointed a professor in the academy. He lectured on the Organum of Aristotle and the De finibus of Cicero with much satisfaction to the students but with little to himself. He hated lecturing, and was bored with the importunities of the fanatical preachers; and in 1574 returned to France, and made his home for the rest of his years with Chastaigner. Of his life during this period we have interesting details and notices in the Lettres françaises intiédées de Joseph Scaliger, edited by M Tamizy de Larroque (Agen, 1881). Constantly moving through Poitou and the Limousin, as the exigencies of the civil war required, occasionally taking his turn as a guard, at least on one occasion trailing a pike on an expedition against the Leaguers, with no access to libraries, and frequently separated even from his own books, his life during this period seems most unsuited to study. He had, however, what so few contemporaries possessed—leisure and freedom from pecuniary cares. It was during this period of his life that he composed and published the books which showed that with him a new school of historical criticism had arisen.

His editions of the Catalaucta (1575), of Festus (1575), of Catullus, Tibullus and Propertius (1577), are the work of a man who not only writes books of instruction for learners, but is determined himself to discover the real meaning and force of his author. He was the first to lay down and apply sound rules of criticism and emendation, and to change textual criticism from a series of haphazard guesses into a "rational procedure subject to fixed laws" (Patton). But these works, while proving Scaliger's right to the foremost place among his contemporaries as Latin scholar and critic, did not go beyond mere scholarship. It was reserved for his edition of Manilius (1579), and his De emendatione temporum (1583), to revolutionize all the received ideas of ancient chronology—to show that ancient history is not confined to that of the Greeks and Romans, but also comprises that of the Persians, the Babylonians and the Egyptians, hitherto neglected as absolutely worthless, and that of the Jews, hitherto treated as a thing apart, and that the historical narratives and fragments of each of these, and their several systems of chronology, must be critically compared, if any true and general conclusions are to be reached. It is this which places Scaliger on so immeasurably higher an eminence than any of his contemporaries. Yet, while the scholars of his time admitted his pre-eminenue, neither they nor those who immediately followed seem to have appreciated his real merit, but to have considered his emendatory criticism, and his skill in Greek, as constituting his claim to special greatness. His commentary on Manilius is really a treatise on the astronomy of the ancients, and it forms an introduction to the De emendatione temporum, in which he examines by the light of modern and Copernican science the ancient system as applied to epochs, calendars and computations of time, showing upon what principles they were based.

In the remaining twenty-four years of his life he at once corrected and enlarged the basis which he had laid in the De emendatione. With incredible patience, sometimes with a happy audacity of conjecture which itself is almost genius, he succeeded in reconstructing the lost Chronicle of Eusebius—one of the most precious remains of antiquity, and of the highest value for ancient chronology. This he printed in 1606 in his
Thesaurus temporum, in which he collected, restored and arranged several chronological relia extant in Greek or Latin. When in 1590 Lipsius retired from Leiden, the university and its protectors, the states-general of Holland and the prince of Orange, resolved to obtain Scaliger as his successor. He declined their offer. He hated courtiers, and their wiles, sometimes his friends who erroneously believed that with the success of Henry IV. learning would flourish, and Protestantism be no bar to advancement. The invitation was renewed in the most flattering manner a year later. Scaliger would not be required to lecture. The university only wished for his presence. He would be in all respects the master of his time. This offer Scaliger provisionally accepted. About the middle of 1593 he started for Holland, where he passed the remaining thirteen years of his life, never returning to France. His reception at Leiden was that of esteem. A handsome income was assured to him. He was treated with the highest consideration. His rank as a prince of Verona was recognized. Placed midway between The Hague and Amsterdam, he was able to obtain, besides the learned circle of Leiden, the advantages of the best society of both these capitals. For Scaliger no hermit buried among his books; he was fond of social intercourse and was himself a good talker.

For the first seven years of his residence at Leiden his reputation was at its highest point. His literary dictatorship was unquestioned. From his throne at Leiden he ruled the learned world; a word from him could make or mar a rising reputation; and he was surrounded by young men eager to listen to and profit by his conversation. He encouraged Grotius when only a youth of sixteen to edit Capella; the early death of the younger Douza he wept as that of a beloved son; Daniel Heinsius, from being his favourite pupil, became his most intimate friend. But Scaliger had made numerous enemies. He hated ignorance, but he hated still more half-learning, and most of all dishonesty in argument or in quotation. Himself the soul of honour and truthfulness, he had no tolerance for the disingenuous arguments and the mingled facts of those who wrote to support a theory or to defend an unsound cause. His punging satire were soon carried to the persons of whom they were uttered, and his pen was not less bitter than his tongue. He resembles his father in his arrogant tone towards those whom he despises and those whom he hates, and he despises and hates all who differ from him. He is conscious of his power, and not always sufficiently cautious or sufficiently gentle in its exercise. Nor was he always right. He trusted much to his memory, which was occasionally treacherous. His emendations, if frequently happy, were sometimes absurd. In laying the foundations of a science of ancient chronology he fell sometimes into the most ridiculous absurdities; even upon absurd hypotheses, frequently upon an imperfect induction of facts. Sometimes he misunderstood the astronomical science of the ancients, sometimes that of Copernicus and Tycho Brahe. And he was no mathematician. But his enemies were not merely those whose errors he had exposed and whose hostility he had excited by the violence of his language. The results of his system of historical criticism had been adverse to the Catholic controversialists and to the authenticity of many of the documents upon which they had been accustomed to rely. The Jesuits, who aspired to be the source of all scholarship and criticism, perceived that the writings and authority of Scaliger were the most formidable barrier to their claims. It was the day of conversions. Muretus in the latter part of his life professed the strictest orthodoxy; J. Lipsius had been reconciled to the Church of Rome; Casaubon was supposed to be wavering; but Scaliger was known to be hopeless, and as long as his supremacy was unquestioned the Protestants had the victory in learning and scholarship. A determined attempt must be made, if not to answer his criticisms, or to disprove his statements, yet to attack him as a man, and to destroy his reputation. This was no easy task, for his moral character was absolutely spotless.

After several scurrilous attacks by the Jesuit party, in which coarseness and violence were more conspicuous than ability, in 1607 a new and more successful attempt was made. Scaliger's weak point was his pride. In 1594, in an evil hour for his happiness and his reputation, he published his Epistola de vetustate et splendore gentis Scaligerae et J. C. Scaligeri vita. In 1607 Gaspari Scippios, then in the service of the Jesuits, whom he afterwards so bitterly libelled, published his Scaliger Hypotheseis ("The Supposititious Scaliger"), a quarto volume of more than four hundred pages, written with consummate ability, in an admirable and incisive style, with the entire disregard for truth which Scippios always displayed, and with all the power of his accomplished sarcasm. Every piece of scandal which could be raked together respecting Scaliger or his family is to be found there. The author professes to point out five hundred lies in the Epistola de vetustate et splendore Scaligeri, but the main argument of the book is to show the falsity of his pretensions to be of the family of La Scala, and of the narrative of his father's early life. "No stronger proof," says Mark Pattison, "can be given of the impressions produced by this powerful philippic, dedicated to the defamation of an individual, than that it has been the source from which the biography of Scaliger, as it now stands in our biographical collections, has mainly flowed."

To Scaliger the blow was crushing. Whatever the case as to Julius, Joseph had undoubtedly believed himself a prince of Verona, and in his Epistola he put forth with the most perfect good faith, and without inquiry, all that he had heard from his father. He immediately wrote a reply to Scippios, entitled the Confutatio, which, though not entirely successful, was written with unusual moderation and good taste, the only reason had not the success which its author wished and even expected. In the opinion of the highest authority, Mark Pattison, "as a refutation of Scippios it is most complete;" but there are certainly grounds for dissenting, though with diffidence, from this judgment. Scaliger undoubtedly shows that Scippios committed more blunders than he corrected, that his book literally bristles with pure lies and baseless calumnies; but he does not succeed in adding a single proof either of his father's descent from the La Scala family, or of any single event narrated as having happened to himself or any member of this family prior to his arrival at Agen. Nor does he ever attempt a refutation of the crucial point, which Scippios had proved, as far as a negative can be proved—namely, that William, the last prince of Verona, had no son Nicholas, the alleged grandfather of Julius, nor indeed any son who could have been such grandfather. But whether complete or not, the Confutatio had no success; the attack of the Jesuits was successful, far more so than they could possibly have hoped. Scippios was wont to boast that his book had killed Scaliger. It certainly embittered the few remaining months of his life, and it is improbable that the vanity which may have shorted his days. The Confutatio was his last work. Five months after it appeared, "on the 21st of January 1609, at four in the morning, he fell asleep in Heinsius's arms. The aspiring spirit ascended before the Infinite. The most richly stored intellect which had ever spent itself in acquiring knowledge was in the presence of the Omniscient" (Pattison).

Of Joseph Scaliger the only biography in any way adequate is that of Jacob Bernays (Berlin, 1855). It was reviewed by Mark Pattison. The life of Joseph Scaliger is narrated both by himself, in the Essays, i. (1886), 132-195. Pattison had made many manuscript collections for a life of Joseph Scaliger on a much more extensive scale, which he left unfinished. Writing the above article, Professor Christie had access to and made much use of these MSS., which include a life of Julius Caesar Scaliger. The fragments of the life of Joseph Scaliger have been printed in the Essays, i. 196-243. For the life of the father, Joseph Scaliger, the student, the son, those subsequently published. In 1830 the President of Maussac, the Scaligeriana, and his own writings, which are full of autobiographical matter, are the chief authorities. M. de Bonneville's Life of Lafcadio, Président sur l'Ile de Lacroix Ceux de Lescade (Agen, 1860) and M. Magen's Documents sur la famille de Scaliger (Agen, 1873) add important details for the lives of both father and son. The lives by Charles Nisard—that of Julius in Les Gladiateurs de la république des lettres, and that of Joseph in
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Le Triunvirat littéraire au seizième siècle—are equally unworthy of their author and their subjects. Julius is simply held up to ridicule, while the life of Joseph is almost wholly based on the book of Scipio and the Scipicannes. A complete list of the works of Joseph will be found in his life by Bernays. See also J. E. Sandsy's, History of Classical Scholarship, ii. (1908), 199-204. (R. C. C.; J. E. S.)

SCALP (O. Dutch schelpe, a shell), in anatomy, the whole covering of the top of the head from the skin to the bone. Five layers are recognized in the scalp, and these, from without inward, are: (1) skin, (2) superficial fascia, (3) aponeurosis or epicranium, (4) lymph space, (5) peristeum or pericranium.

The skin of the scalp is thick and remarkable for the large number of hair follicles contained in it. The superficial fascia consists of dense bundles of fibrous tissue which pass from the skin to the third layer or aponeurosis and bind the two structures together so closely that when one of them is moved the other must needs be moved too. The fibrous bundles are separated by pulp of fat, and it is in this second layer that the vessels and nerves of the scalp are found. Here, as elsewhere, the vessels are arteries, veins and lymphatics, and the arteries are specially remarkable, firstly, for their tortuosity, which is an adaptation to so movable a part; secondly, for their anastomosing across the middle line with their fellows of the opposite side, an arrangement which is not usual in the body; and, thirdly, for the fact that, when cut, their ends are held open by the dense fibrous tissue already spoken of, so that bleeding is more free in the scalp than it is from arteries of the same size elsewhere in the body.

The veins do not follow the twists of the arteries but run a straight course; for this reason there is often a considerable distance between an artery and its companion vein. Accompanying the veins are the larger lymphatic vessels, though there are no lymphatic glands actually in the scalp. From the forehead region the lymphatics accompany the facial vein down the side of the face and usually reach their first gland in the submaxillary region, so that in the case of a poisoned wound of the forehead sympathetic swelling or suppuration would take place below the jaw. From the region of the temple the lymphatics drain into a small gland lying just in front of the ear, while those from the region behind the ear drain into some glands lying close to the mastoid process. In the occipital region a small gland (or glands) is found at the edge of the scalp close to the point at which the occipital artery reaches it, that is to say about a third of the distance from the external occipital protuberance to the tip of the mastoid process (see SKULL).

The nerve supply of the scalp in its anterior part is from the fifth cranial or trigeminal nerve (see NERVES, CRANIAL); in the forehead region the supratrochlear and supraorbital branches come out of the first two from the division of the ophthalmic nerve, while from the fifth, while farther back, in the anterior part of the temporal region, the temporal branch of the second or maxillary division of the same nerve is found. Farther back still, in front of the ear, is the area of the auriculo-temporal nerve, a branch of the third or mandibular division of the fifth cranial.

Behind the ear the scalp is supplied with sensation by two branches of the cervical plexus of nerves, the great auricular and the small occipital (see NERVES, SPINAL), while behind these, and reaching as far as the mid line posteriorly, the great occipital, derived from the posterior primary division of the second cervical nerve, is distributed. Sometimes the posterior primary division of the third cervical nerve reaches the scalp still nearer the middle line behind.

The second layer of the scalp or epicranium is formed by the two fleshy bellies of the occipito-frontalis muscle and the flattened tendon or aponeurosis between them. Of these two bellies the anterior (frontalis) is the larger, and, when it acts, throws the skin of the forehead into those transverse puckers which are characteristic of a puffed frame of mind. The much smaller (occipitalis or posterior) belly usually merely fixes the aponeurosis of the frontalis to act, though some people have the power of alternately contracting the two muscles and so wagging their scalps backward and forward as monkeys do. Both fleshy bellies of the occipito-frontalis are innervated by the seventh or facial nerve which supplies all the muscles of expression.

Deep to the occipito-frontalis and its aponeurosis or epicranium is the fourth layer, which consists of very lax areolar tissue constituting what is now known in anatomy as a lymph space. The length and laxity of this tissue allow great freedom of movement to the more superficial layers, and it is this layer which is torn through when a Red Indian scalps his foe. So lax is the integument and connective tissue that at times even bits of brain are torn off with the scalp. The areolar tissue is distributed throughout its whole area, and, owing to the absence of tension as well as of nerves, very little pain accompanies any such effusion.

The fifth and deepest layer of the scalp is the pericranium or the external peristeum of the skull bones. This, until the sutures of the skull close in middle life, is continuous with the dura mater which forms the internal peristeum, and for this reason any subperiostal effusion is localized to the area of the skull bone over which it happens to lie. Moreover, any suppurative process may extend through the sutures to the meninges of the brain.

Surgery of the Scalp.—In connexion with the treatment of surgical and other wounds of the scalp, it used to be thought that it was dangerous to treat them by suturing, because of the risk of the spread of septic organisms. Although it is recognized that wounds, however, that these two conditions are dependent upon the presence of septic micro-organisms, the surgeon deals with the scalp as with other parts of the body, cleansing the surface before performing an operation, and using antiseptic practices. The open incision is therefore made in position and secured by stitches.

As the result of septic infection by an accidental wound, abscess is likely to form beneath the scalp, and if it is left to increase in size may become large and may demand operation. Sometimes the abscess lies on the parietal region, and, therefore, as it is thought that matter is forming beneath the scalp, an incision should be made down to the bone, and provision taken for insuring free drainage.

Nerves of the scalp are best treated by electrolysis or by removal by dissection. If they are supplied by large blood-vessels, each artery should be under-pinned or tied before the removal by dissection is undertaken.

Sebaceous cysts of the scalp should be removed by incision under the ether-spray whilst they are still small, the whole of the cyst-wall being torn out, for unless the cyst is entirely removed, the recurrence is likely to be found. If the sebaceous cyst should cause a thinning of the overlying skin and, effecting its own discharge, may become the source of chronic suppuration. In some cases the chronic abscess of a sebaceous cyst becomes the starting-point of a malignant disease.

SCALPING, the custom of removing the skin of the skull, with hair attached. Though generally associated with the North American Indians, the practice has been common in Europe, Asia and Africa. The underlying idea, as of similar mutilations of those slain in battle, is the warrior's wish to preserve a portable proof or trophy of his prowess. Scalping was the usual form of mutilation from the earliest times. Herodotus (iv. 64) describes the practice among the Scythians. The Abbé Emmanuel H. D. Domenenw (Seven Years' Residence in the Great Desert of North America, ch. 39) quotes the descubre of the ancient Germans, the capillos et cutum detrahare of the code of the Visigoths, and the swords of Flandroald, to prove that the Anglo-Saxons and the Franks still scalped about A.D. 870. In Africa it was, and doubtless is, as prevalent as are all barbarous mutilations.

Among the North American Indians scalping was always in the nature of a rite. It was common to those tribes east of the Rocky Mountains, in the south-west and upper Columbia; but unknown apparently among the Eskimo, along the north-west coast, and on the Pacific coast west of the Cascade range and the Sierras, except among some few Californian tribes, or here and there in Mexico and southward. Properly the scalp could only be taken after a fair fight; in more recent times, there seems to have been no such restriction. To facilitate the operation the braves wore long ear-locks or scalping-tufts, as an
implied challenge. These locks were braided with bright ribbons or ornamented with a feather. After the successful warrior’s return the scalp or scalps captured were dried, mounted, and consecrated by a solemn dance. Some tribes hung the scalps to their bridle, others to their shirt, while some ornamented with it the image of their legging. This practice was sometimes adopted by the whites in their wars with the Redskins, and bounties have been offered for scalps several times in American history.

SCAMILLI IMPARES (‘unequal steps,’ Fr. escabeaux ingâles; Ger. Schuststege), in architecture, a term quoted by Vitruvius when referring to the rise given to the stylobate in the front and sides of a Greek temple. His explanation is not clear; he states (III. 4) that, if set out level, the stylobate would have an appearance of being sunk in the centre, so that it is necessary that there should be an addition by means of small steps (scamilli impares). In book v. chap. 9, he again refers to the addition on the stylobate. The interpretation of his meaning by Penrose and other authorities is generally assumed to be the addition which it was necessary to leave on the lower frust of the Doric column, or on the lower portion of the base of the Ionic column, so as to give them a proper bearing on the curved surface of the stylobate; when levelling ground, however, it is sometimes the custom to fix at intervals small bricks or tiles which are piled up, long before the problem of beading the columns on the curve had arisen.

SCAMMONY, a plant, Convolvulus scammonia (Gr. σκαμμωνία), native to the countries of the eastern part of the Mediterranean basin; it grows in bushy waste places, from Syria in the south to the Crimea in the north, its range extending westward to the Greek islands, but not to northern Africa or Italy. It is a twining perennial, bearing flowers like those of Convolvulus arvensis, and having irregularly arrow-shaped leaves and a thick fleshy root. The dried juice, 'virgin scammony,' obtained by incision of the living root, has been used in medicine until the 18th century, but the variable quality of the drug has led to the employment of scammoniae resina, which is obtained from the dried root by digestion with alcohol.

The active principle is the glucoside scammonia or jalapin, C14H14O6. The dose of scammonium is 5 to 10 grains, of scammonia resina 1 to 5 grains. Like certain other resins, scammony is inert until it has passed from the stomach into the duodenum, where it meets the bile, a chemical reaction occurring between it and the taurocholate and glycocholate of sodium, whereby it is converted into a powerful purgative. Its action is essentially that of a hydrogogue, and is exercised upon practically the entire length of the alimentary canal. The drug is not a cholagogue, nor does it markedly affect the muscular coat of the bowel, but it causes a great increase of secretion from the intestinal glands. It acts in about four hours. In large doses it is, of course, a violent gastro-intestinal irritant. In consonance with the statement that scammony acts only after contact with the bile, is the fact that hypodermic or intravenous injection of the drug produces no purgation, or indeed any other result. The drug frequently kills both the round and flat worms, especially the former, and is therefore an anthelmintic. It is not largely used, but is very effective in the treatment of severe constipation, especially in children.

SCAMP, an idle, worthless rascal; in earlier (18th cent.) usage especially applied as a cant term for a highway robber, a foot-pad, later of one who incurs debts and debets without paying them. The word appears to be derived from a shortened form of scamper," to run away, decamp, to move quickly or nimbly; which is generally taken to be a military slang word in allusion to the manner in which the juice exudes from the incised root. Adapted from Dutch schampen, to escape; O.Fr. escamper; Ital. scampare; Lat. ex, out, of, campus, field of battle, hence a vagabond deserter. This word must be distinguished from "scamp," to do work in a hasty, careless manner, which is apparently a variant of "skimp," "skimpy," and is to be referred to the root seen in O. Nor. skammar, short; Eng. "scant."

SCANDAL, disgrace, discredit, shame, caused by the report or knowledge of wrongdoing, hence defamation or gossip, especially malicious or idle; or such action as causes public offence or disrepute. (For the law relating to scandal, more generally termed "defamation" see Libel and Slander.) The Greek word ἀκαθάρτω, stumbling-block, cause of offence or temptation, is used in the Septuagint and the New Testament. Classical Greek had the word ἀκαθάρτηθαι only, properly the spring of a baited trap; the origin probably being the root seen in Latin scamere, to climb, get up. While the Latin scamur was given such direct derivatives as Spanish and Portuguese escandal, Dutch schandaal, Eng. "scandal," &c., it is also the source of the synonymous "slander," Middle Eng. sclandre, O.Fr. esclandre, escondire.

A particular form of defamation was scandalam magnatum, "slander of great men," words, that is, spoken defaming a peer specifically. The modern French expression is scandale des rois, for such defamation under the statutes of 3 Edw. I. c. 34, 2 Rich. II. c. 5, and 12 Rich. II. c. 11 whereby damages could be recovered, whenever it appeared in cases where no action would lie, if the defamation were of an ordinary subject, and that without proof of special damage. These statutes, though long obsolete, were only abolished in 1887 (Statute Law Revision Act).

SCANDERBEG, or ISKENDER BEY (1403-1457), also known also as "the Dragon of Albania," the national hero of the Albanians, was the son of John (Giovanni) Castriota, lord of Kroia and of the Mirdite country in northern Albania, and of a Servian princess named Valsava. His actual name was George (Giorgio) Castriota, and he came of the line of Iskender Bey (Prince Alexander) was given to him by the Turkish sultan as a decoration. His life was one of the Great. In 1423, when Murad II. invaded Epirus, George Castriota, with his three brothers, was handed over as a hostage to the Turks and sent to be trained in the service of the seraglio. His brilliant qualities of mind and body at once gained him the favour of the sultan; he became a Mussulman, was promoted to high military command and, though barely nineteen years of age, to the government of a sanjak. He remained in the Ottoman service for twenty years, dissembling his resentment when, on the death of his father, his principalcy was annexed and his brothers imprisoned. In 1443, however, his opportunity came with Janos Hunyadi’s victory at Nish. He seized Kroia by stratagem, proclaimed himself a Christian, and gathered the wild Albanian clansmen about him. In the inaccessible fastnesses of Albania he maintained a guerilla warfare against the Turks during nearly twenty-five years, easily routing the armies sent against him, and is said to have slain three thousand Turks with his own hand. In 1461 Murad’s successor Mahomed II. acknowledged him by a temporary truce as lord of Albania and Epirus. He died in 1467 at Alessio, and his tomb was long the object of a superstitious veneration on the part of the Turks.

Scanderbeg’s resistance to the Turks was a valuable asset to the cause of Christianity, but the union which he had maintained in Albania did not survive him. He was succeeded in Kroia by his son, Giovanni Castriota, who in 1474 sold the principality to the Venetians, by whom four years later it was re-sold to the Turks.

See Georgs T. Petzovitch, Scander-beg (Georgs Castriota): Essai de leur vie et de leur rôle (Paris, 1896); Jeffes, Sur le Scander-beg écrits en langues française, anglaise, allemande, latine, italienne, &c. (Paris, 1881); Pisko, Skanderbeg, historische Studie (Vienna, 1893).

SCANDINAVIAN CIVILIZATION. The date of man’s first appearance in Scandinavia is still an open question. But for all practical purposes Scandinavian archaeology only begins with the Neolithic or Later Stone Age, since the country must have been covered with ice during the preceding period, the Palaeolithic or Early Stone Age. When the Scandinavian part of Europe were already inhabited. Thus the expressions Earlier and Later Stone Age in Scandinavian archaeology merely refer to subdivisions.
of the Neolithic Period. Men have left traces of their occupation of Denmark from the time when fires were still the prevailing trees in that country, and a few tools of elk and reindeer horn appear to belong to an even earlier period. Sweden and Norway were probably not inhabited until later, though it seems that a few rock-carvings and other relics of a freshwater lake. The dates assigned to this period vary greatly: S. Müller suggests before 3000 B.C., while O. Montelius places it at 8000 years before our era. Besides the elk- and reindeer-horn tools mentioned above, a few rough flint implements seem to be the earliest traces of man in Scandinavia. In Norway and Sweden these are only found in the extreme south. The fjökkemisödinger or skaldynger, variously called in English kitchen-middens, refuse-heaps, or shell-mounds, are characteristic of Denmark in the next period. In these we find remains of primitively shellfishes, consisting chiefly of oyster, mussel and other shells, and the bones of various fish, birds and animals, including deer, wild boar, seals, wolves and aurochs. It appears that the race which left these relics must have lived by hunting and fishing, and that they were probably semi-nomadic. They were evidently unacquainted with agriculture and had no domestic animals other than the dog. These refuse heaps are almost always found by the sea-shore or close to a lake. Some of them extend over an area of as much as 700 yds. by 20 yds. width, but their depth is usually not more than 3 to 10 ft. There are frequent traces of fire and hearth places, so that we may conclude that the inhabitants of both Austria and Denmark lived by hunting and fishing. The flint implements consist of flakes or knives, awls and axes of various kinds, all made by a process of rough chipping. These are supplemented by articles of bone, horn and clay, including arrow or spear points, axes of horn, and bone combs. Earthenware vessels must have been much used, but only fragments have been found, made, of course, without the use of the wheel. Rare attempts at decoration consist of a few cuts or impressions round the top. The only ornaments found are the pierced teeth of animals and shells. In Norway and Sweden implements similar to those of the Danish shell-mounds have been found, but usually without the organic remains, except at Viste, near Stavanger, excavated in 1907. The first Swedish shell-mound was discovered in the north of Bohuslän in 1905, and is of a later type than the Danish. The remains at Nösvet in the Christiania fjord show traces of a considerable population. Ground slate implements are found scattered along the coasts of Norway and Sweden, and are attributed to a nomadic people, whose artistic culture persisted much longer in these countries than in the much earlier flint civilization of the Kitchen-middens in Denmark. To this race that the mound at Jutland appears to have been thickly inhabited during the Later Stone Age. In Sweden the southernmost part, Skåne and Bohuslän, were probably the first to be inhabited: and then Västergötland and Dal. Skåne has yielded more than three-fourths of all the Later Stone Age objects found in Sweden. Norway is not, as might be supposed from the absence of graves, entirely deficient in the objects of this period, but they are comparatively few in number, though quite on a par in technique with those of Sweden. As already indicated, the greatest concentrations of burial were, however, found in a mound near the Baltic sea coast. The Later Stone Age is the method of disposing of the dead. The dead of the former period, it is assumed, were placed in simple graves in the earth, while characteristic of the latter period are the megalithic graves found in profusion in Denmark and Sweden.

The earliest form, and that most common in Denmark, is the four-sided dolmen, formed by four or six large upright stones on which rests a huge rock, the whole probably partly of filling fires in the grave chambers. The chambers are often full of remains up to within a foot of the roof, and in some cases parts of as many as a hundred skeletons have been found.

In the mounds surrounding the tombs animal bones and shells are frequently found, indicating feasts and sacrifices. It is variously supposed, but as in many of the graves in Sweden, had at some time been considered as places for sacrifice, to judge by the saucerlike hollows constantly found on the upper side of the covering stones. The finds of tools, weapons, ornaments and pottery contribute greatly to our knowledge of the period, but probably the best specimens were not placed in graves, as we find the finest work elsewhere. The pottery is of good material and form, though still made without the aid of the potter's wheel. The indentations of the pattern are frequently filled in with a white chalklike substance. Many of the vessels are rounded at the bottom, and perforated or handles show that they are meant to hang. The vessels were not used much, but it is only by a fortunate chance that wooden vessels and a wooden spoon have been preserved to us in Denmark. It is probable that wool was used as well as skins for clothing, but if so it must be supposed that the spinning and weaving implements were of too perishable a material to have come down to us. Awls are constantly found, but not needles. Bone pins were used for fastening the clothes. The ornaments were chiefly pierced teeth of various wild animals, and objects of amber and bone, many of them in the form of aurochs. Some of the finds are characteristic of the Northern Stone Age, and show how much weight was laid on ornamental appearance, since wooden handles would have been equally effective and far less troublesome to make. The battle-axes are of many forms, perfectly symmetrical and beautifully ground and polished. Those of other stone than flint have holes bored through them for the shaft. Wooden shafts were usually attached at right angles to the flint axes. Of these the latter, once a central axe is the most characteristic. The distribution of flint implements reveals a considerable trading activity, as flint-bearing areas only occur in certain parts of Denmark and in Skåne. Furthermore, it must have been distributed over the whole of Southern Sweden through the channels of commerce. Considerable commercial activity must also have prevailed between the Scandinavians and their southern neighbours.
SCANDINAVIAN CIVILIZATION

PLATE I.

1. STONE AXE. Later Stone Age, Sweden.

2. WOMEN'S ORNAMENTS. Early Bronze Age.

3. BELT ORNAMENT. Latter part of earlier Bronze Age.

4. SUN CHARIOT. Older Bronze Age, Denmark.

5. SWORD. Second period of earlier Bronze Age.

6. TOP OF A SMALL BRONZE CASKET. Latter part of earlier Bronze Age.

7. FIBULA. Earlier and later forms, Bronze Age, Norway.

8. BRONZE KNIVES OR RAZORS. Later Bronze Age, earlier and later forms.

9. PART OF A ROCK CARVING, showing man ploughing.

10. PART OF A ROCK CARVING. Sweden, Later Bronze Age.

11. ROCK CARVINGS. Sweden, Later Bronze Age.

12. BRONZE CLASP. Later Bronze Age, Norway.

Fig. 1 from O. Montelius, Civilisation of Sweden; Figs. 2-6, 10, 11 from S. Müller, Vor Altertum und Ursprünge Europa; Figs. 7, 8, 12 from G. Gustafson, Norges Oldtid.
PLATE II.  SCANDINAVIAN CIVILIZATION

1. BRONZE TRUMPET. Denmark, Later Bronze Age.

2. BRONZE HANGING VESSEL. Later Bronze Age.

3. TORQUE. Denmark, Later Bronze Age.

4. FIBULA. Roman Period.

5. FIBULÆ. Period of National Migrations, Denmark.

6. IRON PINS. Pre-Roman Period, Denmark.

7. GOLD COLLAR. First period of Later Iron Age.

8. BROOCH. Post-Roman Period, Denmark.

9. BROOCH SET WITH GARNETS. Post-Roman Period, Denmark.


11. BRONZE PLATE FOR A BELT, showing Animal Figures. Post-Roman Period.

12. GOLD BRACTEATE, "barbarian" imitation of a Roman Coin. First period of Later Iron Age, Sweden.

Figs. 1, 3-6, 8, 9, 11 from S. Müller, Vor Oldtid; Figs. 2, 7, 12 from O. Montelius, Cir. Sweden; Fig. 10 from G. Gustafson, Norges Oldtid.
Traces of dwelling-houses with hearth-places show that the usual form was a round or slightly oval hut, constructed of wattles, plastered inside and out with clay. The floor was usually partly or entirely paved.

The Bronze Age.—Towards the close of the Later Stone Age a few objects of copper are found in the North. Copper is, however, soon superseded by bronze, which was probably imported ready alloyed into Scandinavia, though the special Scandinavian forms, as well as a large number of moulds, conclusively prove that the casting of the metal was done in the North. It is supposed that the Bronze Age, which can be divided into two main periods, began in Scandinavia about 2000-1750 B.C. The earliest implements are clearly copies of the Stone Age work, betraying the ignorance of the makers as to the adaptability of the new material. Some bronze axes are exactly the shape of stone axes, but gradually we see the blade grow wider, the neck narrower, the outer sides of the haft turn back over the wooden shaft, which is still cleft, and finally before the end of the earlier period we have the "socadoax" which has disappeared and the wooden shaft is fixed in a cylinder of bronze, with a metal loop at the side through which the fastening passed. The unsocketed celt has also undergone modifications. By the end of the earlier period swords have been evolved from daggers, and brooches and clasps, besides beautiful vases and hanging vessels, are made of the metal. Gold is also known and used. Fine linear decoration, usually in spirals or zig-zags, is applied. The forms are extremely artistic, and the technique higher than in almost any other European country. Perhaps the most magnificent relic of this earlier period is the bronze "sun-mark" from Trelleborg in Seeland. The disk supposed to represent the sun is overlaid with gold and beautifully decorated with spiral designs. The later period is clearly marked off from the earlier by the method of disposing of the dead, since in the earlier period the dead were still buried unburned, often in stone cists or oak coffins, while in the later period cremation was practised, and the remains placed in small stone or wooden boxes, or in plain earthenware urns. Some of these urns are clearly imitations of the house of the period, and show that it was still round in form. The graves are covered by a cairn or mound. "Miniature weapons," so often found in the urns, but the objects placed in or beside the urn reveal little care in their selection: it is obvious that a few gifts were deposited with the dead, rather than the complete outfit of necessaries which are found in earlier periods. During this period decoration becomes more complicated: the spirals are often fringed with tangential lines, and the ends of knives, rings, etc., are frequently rolled up into spiral volutes. Bands of wavy lines are a common form of ornament. Amber and a dark-brown resinous matter are often interlaced. Ornaments show a tendency to exaggeration of size, as is seen in the massive neck and arm-rings, the brooches, pins and clasps.

We are fortunate in knowing more about the Scandinavian Bronze Age than the mere remains, plentiful though they are, could tell us. In some parts of Sweden and Norway rude carvings on bare granite rocks, executed in a stiff and conventional style, have been identified as belonging to this period, and from these, in combination with the finds, we can deduce a considerable fund of information. Horses were used for riding, driving and ploughing. From the great wealth of ironwork, we may infer that the women were fashioning the women's clothing but for some unique finds in Denmark, where the oak coffins of the earlier period have preserved hair and clothing for over 3000 years. The clothes were a tunic and a long coat, a man consisted of a thick glossy cap, replaced by a helmet in time of war, a woollen tunic which left the shoulders bare, a cloak and leather shoes fastened on by strips of cloth crossed up the ankle. A buckle on the belt, pins for the cloak, and one brooch were his only ornaments. From the small bronze knife and the tweezers found in men's graves it has been deduced that shaving was usual, and that a combed instrument also found in the graves is regarded as evidence for tatting. The hair was usually long and straight. A curiously clumsily-cut bodice with sleeves to the elbow, and a long skirt gathered round the waist by a belt with a large ornament in front. A heavy necklace, two bracelets and a dagger appear to have been usual. The people were tall and had light hair. With regard to the distribution of Bronze Age finds, it may be said that Gotland, Scania and the South German districts were fertile lands, where agriculture had been started early, while in Norway the mass of finds are in the Christiania and the Stavanger districts. A notable feature of the period is the number of finds made in bogs. Many were clearly buried for safe keeping, but others are usually explained as votive offerings.

Iron Age.—The approximate date for the first beginnings of this period in the North is still a matter of controversy; Montelius placing it at about 500 B.C., while Sophus Müller, of Denmark, would put it at least a century and a half later. It has been divided into four main subdivisions, of which the first, lasting till about the beginning of our era, is usually called the Pre-Roman Period. The beginnings of this age are most clearly traced on the island of Bornholm, where cemeteries are found containing from 10 to 1000 graves. These graves, called Brandplätter, are closely similar to the common variatory graves on the Continent, and consist of burnt bones embedded in charcoal and black mould. In this are found iron brooches (of the safety-pin type), buckles and a few fragments of pottery. More typically Northern cemeteries show small mounds covering each grave, in which an urn contains the burnt bones. These graves also yield but few remains, and the wealth of objects from this period come from bog and field finds, as for instance some magnificent chariots, overlaid with decorated bronze plates, from a bog near Ringkjøbing, Denmark. Ornaments were usually of massive bronze or occasionally of iron, and gold seems to have been comparatively scarce. This period, therefore, is the Iron Age of Europe. All but the very beginning of the period shows the influence of the La-Tène (g.r.) civilization. The succeeding Roman period begins in the 1st century A.D. and extends, according to Swedish and Norwegian archaeologists, to about 400. In Denmark the latter half of the period is termed that of "National Migrations." A number of Roman objects are found—coins, glass and bronze vessels, &c. From the fact that Skåne, Bornholm, Öland and Gotland are the chief finding-places, it appears that most of the objects must have been brought, through war or trade, from the south-east, by way of the trade-route along the Vistula. Gotland alone has yielded nearly four thousand Roman coins, while Bornholm equals the whole of the rest of Denmark with 500, and Norway has only yielded three. A certain number of Roman objects seem, however, to have reached Denmark from the Rhine Provinces. The graves show a variety new to Scandinavia: in some parts cremation continues to be practised, in other localities, notably in Jutland and Seeland, inhumation reappears. Characteristic of both forms of burial is the practice of placing a number of vessels containing food and drink in the grave. Weapons are seldom found, however, but a considerable number of iron helmets, by such finds as that at Thorshöj in Schleswig and Vimose in Fünen, the latter yielding no less than 3500 objects to the National Museum. These are the debris of great battlefields from about the 4th century, and it is usually supposed that the victors dedicated the spoils to some god, as everything was left almost untouched.

From this ample evidence we learn that the spear or lance was the most common weapon, and after that the sword, used now for thrusting, but also for chopping. Shields were made of wood, and leather and iron were used for protection. The shield is sometimes surmounted by a covering of hide, and the latter is often covered with gold. The shield is generally long and of a semicircular or ovoid shape. It is often simply fibbed, frequently with silver, which is now much used. Coats of mail are found. Helmets and shields are extraordinarily thin, almost flimsy, possibly in imitation of the inferior Roman goods of the period, possibly in the case of the shields, at any rate, because they were only intended to protect from arrows or spears flung from a distance, or because dependence was placed on the strength of the divided state of central Europe. The latter is supported by the number of coins and other fragments of harbour prove the use of harbours in the Iron Age.

A similar find at Nydam in Schleswig yielded two of the oldest boats that have come down to us: one of oak, 75 ft. long, built for 28 persons, the other of pine. The timber is often fixed with iron nails, but some early boats from Norway and Sweden show a more primitive method of attaching the timbers with fastenings of basketwork.}

On the deserted battlefields, the more usual type of votive offering is found, such as the silver cauldron from Gudestrup, or the two magnificent gold horns, one more than 2 ft. in length, discovered at Gallehus in Schleswig. Further indications of religious
customs are afforded by a curious find, in Jutland, where between 20 and 30 earthenware vessels each contained a slaughtered lamb. With these were found remains of rude altars.

Of domestic arts, weaving and dyeing seem to have been carried to a high degree of perfection. The art of pottery has also advanced, especially in Jutland, where we find a multiplicity of forms, with decoration in bands of slanting lines. It was during this period that the Scandinavians acquired the runic alphabet from the southern Germanic tribes. The inscriptions do not appear till later. Inscriptions from this period, cut into stone monuments, are found in Norway and Sweden.

The next period (the first of the Later Stone Age), called in Denmark the Post-Roman, and in Sweden and Norway the "Iron Age" and "Viking Age" respectively, is from A.D. 400 to about 700. In Denmark these centuries are very obscure, owing to the fact that the graves there are usually difficult to find, being without mounds and unfinished with goods. Bornholm, where inhumation is greatly on the increase, is again the chief centre for grave-finds. Some few graves contain the personal equipment of the dead: sword, spear, axe, shield, knife, and whetstone, and occasionally the skeletons of horse and dog. The vessels for food and drink are no longer found. At Old Upsala, Vendel and Ulluno, all in Upland, great interest attaches to grave-finds. The most noteworthy among these is a grave of a hunter, the 19th century, that is, is not uncommon. The so-called ship-graves are fairly frequent in Sweden, and even in Finland, but only one grave containing remains of a boat has so far been found in Denmark. The details of the earlier Swedish ship-graves are somewhat obscure for us because the ship and all its contents have been burnt, but we can see that in these the dead man sits at the stern, as if about to set forth on a journey, while in later graves of the Viking Period, both burnt and unburnt, the corpse seems to have been laid on a bed in a chamber built amidships for the purpose. All the larger ship-graves are remarkable for the large number of animal-bones found, including those of horses, oxen, pigs, sheep and fowls.

The gold ornaments of the period are its chief glory: indeed the wealth of gold, especially in Sweden, has suggested the title "Golden Age" for these centuries. The favourite ornaments of the period were the so-called bracteates, worn as pendants, and imitated from Roman coins, but often stamped on one side only and decorated in the Northern style. Magnificent brooches of engraved or filigree work, some with a plate at the hinge end at right angles to the pin, others oval, often representing an animal seen from above, are among the finest productions of the time. The decoration of conventionalized animal forms is a marked feature, and, though characteristic of all the Germanic races at this time, in the case of the Scandinavians, as is inevitable in the Northern climate, their limbs become more and more attenuated and snake-like, or, on the other hand, when engraved, show less and less connexion with each other, but the limbs and the animal's body are still retained. Even though there is a certain barbaric absence of restraint in design.

In the Viking Age, from about 800 to the introduction of Christianity in the 10th and 11th centuries, Norway, hitherto the poorest in antiquities, springs into prominence. A wealth of objects is found in the graves, and especially in some of the larger ship-graves, such as those of Gokstad, Tune, Myklebostad and Oseberg (also in the Norwegian ship-grave at Grox, Britanny). Fortunately a number of these ships are unburnt, and in view of the importance of seafaring in the Viking Age, it is worth noting that a mast with square sail of wooden material is common. One ten-oared vessel from this period is of exactly the same build as those used to this day in the district where it was excavated. The number of shield-bosses is often found in the vessels, and it is clear that shields were hung round the bulwarks exactly as Icelandic sources describe. The prow and stern-post are often beautifully carved. Sometimes the remains of as many as 12 horses are found in one of these graves, besides those of a number of dogs. The presence of anvils, pincers and other tools, as well as weapons and ornaments, is noteworthy, indicating the extent to which the working capacity of the art of craftsmanship was developed among chiefs, as indeed is known from literary sources. During this period, moreover, iron ore was extracted, smelted and worked in Scandinavia. The weapons found are swords, knives, sickles, battle-axes, spears and arrows. The sword is two-edged, with a wooden hilt often beautifully decorated with silver. The axe is very broad-bladed, and evidently of great importance, being too often the only weapon found in graves. Helmets and coats of mail are not found in Norway, but are comparatively common in Sweden.

We owe much of our knowledge of this period to the unburnt burials which were fortunately usual. In Denmark grave-chambers of wood, such as those at Jellinge, stand nearest to the ship-graves. In Sweden the great number of graves surrounding the ancient town of Birka, which was founded in the 8th century, have been excavated. Birch or oak coffins were used. Sometimes a round, oblong or triangular howe raised over them. A feature of the period are the tall, rudely-hewn basta-stones, set up over graves containing burnt bones, or sometimes merely to the memory of the dead. The remains of the sarcophagus are often enclosed in an upright slab of stone, or in the shape of a circle, or in the shape of a ship, with pointed bow and stern. It is noticeable that the graves are often in close proximity to the modern farms. In some places, for instance in Magesund, there is a boat or ship, as in the case of one of the finest ship-graves, that at Oseberg. Women's graves often contain splendid ornaments, though gold and silver are rare in grave-finds, and the large oval- or trefoil-shaped ingots found are usually of bronze, while in other finds silver ornaments are common. Silver is also characteristic of this period as gold of the silver find, Demark alone yielding no less than 25 important silver finds, some of them consisting of necklaces of very fine filigree work, or of dexterously woven silver wires. The style of decoration is the same as the preceding period, but bolder, less refined and often heavier. Ornaments are often set with garnets. The influence of Irish art is discernible, as in the spirals which terminate the limbs of the animal forms, and in the frequent interlacing designs; and we are not surprised to find a number of objects of Irish manufacture in Viking graves in Denmark. On the other hand, the Carolingian and Carlingian models appear to have served for certain grotesque forms, such as dragons, winged lions, &c. Sweden shows the same development, though with a different aim, for whom, while with the eastern Baltic countries, and with the Scandinavian kingdom of Novgorod. "Cufic" coins, struck in Persia and Turkestan, are found together with those of Germany and England. It is clear that the trade and the commercial importance that it is still the richest treasure-ground in this respect, even for English coins. Evidence for the eastern communications of Sweden is afforded by Runic inscriptions, some of which state that the chief whom the stone comes from belonged to a potent family in Persia or Turkestan. The later, entirely Northern alphabet is now common all over Scandinavia. The stones, especially the later Swedish ones, are often carved in imitation of the Rhodian and animal style, but examples of ornaments such as the adventures of Sigurd Fafniskane, depicted on a stone from Sodermannland. The houses of this period were usually built of wood, and consisted, as we know from literary evidence, of a large hall with various outbuildings. The descriptions in Icelandic sagas of tapestry hangings are borne out by the discovery of traces of hangings in grave-chambers, especially those at Jellinge in Denmark. Some fragments of cloth, showing designs in various colours, testify to the importance of weaving in the period. The remains of humbler dwellings have been found, some of them resembling a type of cottage still to be seen in southern Sweden, built of wattle, plastered inside and out. The remains of great earthworks, many of them standing to this day, such as the famous Danevirke, stretching right across Schleswig, the work of Queen Thyra, who lies in one of the greatest barrows, are mentioned.

AUTHORITIES.—O. Montelius, Kulturgeschichte Schweens von den ältesten Zeiten (Leipzig, 1906). An earlier Swedish edition of this book has been translated into English by F. H. Woods: Civilization of Sweden in Heathen Times (London, 1888); S. Müller, Nordische Alterthumskunde; Deutsche Ausgabe, von O. L. Jiriczek (Strassburg, 1897), and Ordnung von Danmarks Oldsager, Systematischer Versuch, die alterste Zeiten des Skandinavischen Raumes, und die vornehmen Kulturdenkmäler, von Christian Worsaae, The Industrial Arts of Denmark (London, 1882); C. Gustafson, Norges Oldtid (Christiania, 1906); O. Rygh, Norges Historia (Christiania, 1896); C. H. Blytt and C. N. Christiana, 1880; A. Hansen, Landmark i Norge (Christiania, 1904); E. Vedel, Bornholmsholdetidminder (Copenhagen, 1886); J. Undset, Das erste Auftreten des Eisens in nord-Euroopa; J. Mestorf, Urenfrih selne Schleswig-Holstein (Hamburg, 1888); W. J. Runtz-Wild, Die photographischen und artschichtlichen Befunde zu Ebeltoft-Bergen Museums Aarbog (Bergen), Aarbereineringer fra Foreningen til norske Forfattermenneskerets Bevaring (Christiania), Aarbog for Sveriges Historisk-Filosofiska Akademien (Stockholm), Aarbuket for Sverige (Stockholm), The Munsbjudal of the Kgl. Vitterhets Historie och Antiktets Akademie (Stockholm), Formaeniren, published since 1906 by the same society, Svenska Foraminiforendens Tidskrift (Stockholm), and Aarbuket for Sverige (Stockholm). The guide to the Stockholm Museum of Art is of great value. Some of them can be obtained in English. The importance of the Kiel Museum, with its
SCANDINAVIAN CIVILIZATION

PLATE III.

1. AXE INLAID WITH SILVER. Viking Age, Denmark.

2. TYPICAL MOTIF, ANIMAL FORM AND SNAKE, from bronze clasp. Viking Age, Denmark.


4. OAK CARVING FROM THE GOKSTAD SHIP. Viking Age, Norway.

5. GOLD SPUR. Viking Age, Norway.

6. BONE GILT BRONZE KNOB FOR PLAYING PIECE. Viking Age, Norway.

7. SCENES FROM THE LIFE OF SIGURD AND RUNIC INSCRIPTION. Viking Age, Sweden.

8. RUNIC STONE, from Jellinge, Jutland, showing Christian influence.

9. SILVER "THOR'S HAMMER." Viking Age, Sweden.

10. BROOCH. Viking Age, Norway.

Figs. 1, 2, 3, from S. Møller, Vær Oldtid; Figs. 4, 5, 6, 10 from G. Gustafson, Norges Oldtid; Figs. 7, 9 from O. Montelius, Civ. Sved.

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guide by J. Mestorf, Vorgeschichtliche Alterthümer aus Schleswig-
Holstein, should not be overlooked. The Saga Book of the Viking
Club (London) contains excellent articles, chiefly by H. Schelpic and
H. Kjer.

SCANDINAVIAN LANGUAGES. By this expression we understand
the closely allied languages which are and have been
spoken by the Teutonic population in Scandinavia,
and by the inhabitants of the countries that have been
wholly or partially peopled from it. The territory of these
languages embraces: Sweden, except the most northerly part
(chiefly Lapland and inland parts of Vesterbotten, where Finnish
and Lappish exclusively or chiefly prevail); certain islands and
districts on the west coast of northern Finland, as well as
Åland; a small tract on the coast of Estonia, where Finnish
is spoken, as it is also to some extent in the Estonian islands of
Dagö, Nargö, Nukküi, Odenholm, Ormöö and Räög; Gammal-
svensksby ("Galsvenskby") in southern Russia (government of
Kherson), a village colonized from Dagö; the Livonian island of
Runö, where Swedish is spoken, as it formerly was on the
islands of Kynö, Mamö, Moon and Ösel; Norway, except
certain regions, especially in the northern part of the country,
peopled by Finns and Lapps (mainly in the diocese of Tromsö);
Denmark, including the Faeroes; Iceland and Greenland, where,
however, Danish is only spoken by the Danish or Danish-
originated population; the northern half of Schleswig; and, finally,
several Scandinavian colonies in the United States of North America
(especially in Minnesota and Illinois). Scandinavian dialects
have besides been spoken for varying periods in the following places:
Norwegian in certain parts of Ireland (A.D. 800–1250)
and northern Scotland, in the Isle of Man (800–1450), the Hebrides
(800–1400), the Shetland Islands (800–1800) and the Orkneys
(800–1800); Danish in the whole of Schleswig, in the north-
eastern part of England (the Danelagh, q.v., 875–1175), and in
Normandy (900–1300, or a little longer); Swedish in Russia
(862–1300, or a little longer).\(^2\) Icelandic in Greenland (985–
about 1450).

At what epoch the Teutonic population settled in Scandinavia
we cannot as yet even approximately decide. It is quite certain,
however, that it already existed there before the
Christian era—most probably as early as the beginning
of the so-called Later Stone Age (3000 B.C., but see SCANDINAVIAN
CIVILIZATION), if not still earlier. If this view be correct, the
Scandinavian languages have had an existence of seven thousand
years, say, at least. But it is only in recent times that the beginning of the
Christian era that we can get any information concerning the language of
the old Scandinavians, which seems by that time not only to have
spread over Denmark and great parts of southern and middle Sweden and of Norway, but also to have
reached Finland (at least Nyland) and Estonia. In
spite of its extension over this considerable geographical area, the language appears to have been fairly homog-
eneous throughout the whole territory. Consequently, it may
be regarded as a uniform language, the mother of the younger
Scandinavian tongues, and accordingly has been named the
primitive Scandinavian (urnordisk) language. The oldest sources
of our knowledge of this tongue are the words which were
borrowed during the first centuries of the Christian era by the
Lapps from the inhabitants of central Sweden and Norway, and by
the Finns from their neighbours in Finland and Estonia
(partly, it is true, also from their Gothic neighbours in Russia
and the Baltic provinces), and which have been preserved in
Finnish and Lappish down to our own days.\(^3\) These borrowed
words, denoting chiefly utensils belonging to a fairly advanced stage of culture, amount to several hundreds, with a phonetic
form of a very simple stamp; as Finn. torm (O. Swed. "torn")
(Ger. "fert"), tar; airo (O. Swed. "ar"), oar; kansa (O.H.G. "kans")

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1 For details see A. Noreen, "Geschichte der nordischen
Sprach" (Grundriss der germanischen Philologie, 2nd ed., 1897).

2 W. Thomsen, The Relations between Ancient Russia and Scandina-
via (1897).

3 W. Thomsen, Über den Einfluss der Germ. Sprachen auf die
Finnisch-Lappischen (1870); E. N. Setälä, "Zur Herkunft und
Chronologie der älteren germanischen Lexwörter" in Journal de
la Société Finno-Suédoise, xxviii (1906).

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The Primitive
Scandinavian
language.

The most essential point of correspondence between the Gothic and
Scandinavian branches is the insertion in certain cases of *g* before *w*
and *ug* in Gothic word-stems, as in Finn. *ugga* (O.H.G. "ugga")

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4 See the plate in G. Stephenson's Handbuck of Old Northern Runic
Monuments (1884), and S. Bugge's Norges Indschrifter med adlige
Ranner I. (1891–1903).

5 For the interpretations we are principally indebted to Prof. S.
Bugge's ingenious investigations, who, in 1865 satisfactorily succeeded
in the only the inscription of the golden horn, and by this means
found a fixed starting-point for further researches. A short review
of their most important results is given by A. Noreen, Alltalandische
Grammatik (3rd ed., 1903), appendix.
SCANDINAVIAN LANGUAGES

trigge. However, even in the primitive Scandinavian age the difference between Gothic and Scandinavian is more clearly marked than the resemblance; thus, for example—just to hint only at some of the oldest and most essential differences—Goth. nom. sing. ending -s corresponds, or primitive Scandinavian—i.e. ending -i, which according to Scand. krogpiinn, shrunken; avokia, W. Scand. ekka, widow; bauti, W. Scand. but, he bound; (q) in E. Scand. the dative of the definite plural ends in -unim instead of W. Scand. -onom, as in handummin, homonomun, (to) the hands; (g) in E. Scand. the simplification of the verbal inflectional endings is far further advanced, and the passive ends in -s(s) for -skk, as in kallas(s), W. Scand. kalask, to be called. In several of these points, and indeed generally speaking, the Western Scandinavian languages have preserved the more primitive forms, while the Eastern Scandinavian, in the course of the centuries, has assimilated more and more to the runic inscriptions, dating from a period before the beginning of the literature, as well as in many modern Eastern Scandinavian dialects. For, having regard to the Scandinavian dialects generally, we must adopt quite a different classification from that indicated by the dialects which are the subject of the literature. We now pass on to review the latter and their history.

I. ICELANDIC. In ancient times Icelandic was by far the most important of the Scandinavian languages, in form as well as in literature. To avoid ambiguity, the language before the Reformata (about 1250) is often called Old Icelandic.

1. Old Icelandic was spoken not only in Iceland, but also in Greenland and the Faroe Islands, where the descendants of the early colonists lived for a lengthened period. Our knowledge of its character is almost exclusively derived from the remarkably voluminous literature, dating from the first half of the 13th century, and written in the Latin alphabet, adapted to the special requirements of this language. No traces are found of any older runic literature. Indeed, Old Icelandic possesses only very few runic inscriptions, which give no authentic information from a philological point of view. The oldest, the inscriptions on the church door of Valpjonstæur, and that of a tombstone at Hjarðarholt, date from the beginning of the 13th century, and they are written in runes read from right to left, and nearly all in the Latin alphabet, some of which are as old as the last half of the 12th century. A small fragment (Cod. AM. 237, fol.) of a Book of Homilies (of which a short specimen is given below) is considered the oldest of all. About contemporary with this is the oldest part of an inventory entitled Reykhjollits mældagí. From the end of the 12th century we possess a fragment (Cod. Reg. old. sig. 1812) of the only existing Old Icelandic glossary, and from the first years of the 13th century the Stockholm Book of Homilies (Cod. Holm. 15, 410), which provides a philological point of view is of the greatest importance, chiefly on account of its very accurate orthography, which is especially important to philologists. This first fragment is written in the Latin alphabet, apparently in the Gothic way, and the Old Icelandic script is partly based upon a lost work of the first grammarian of Iceland, Póródur Ránasteinari (who flourished at the beginning of the 12th century), partly and chiefly upon Priscian and Donatus.1

1 A complete catalogue of the literature edited hitherto is given by Th. Mühls, Catalogus Librorum Islandicorum et Norwegicorum Antiquiorum Mediae (1856), and Verzeichnis der alltäglichen und wissenschaftlichen älteren Isländischen Schriften (vol. 1 to 1855). Cf. Iceland.

2 An account of the oldest Icelandic manuscripts (to about 1250) is given by J. Haffner in the Göt. Gelehr. Mitt., 1881, and The MS. of the Old Icelandic Script, a study (with the cooperation of the Annals Regii (Cod. Reg. 2087) from the beginning of the 14th century, orthographically of great value; the rich manuscript collections of manuscripts and of the A. the Anew. Min. of which is written with Haukur Eriandsson's (d. 1334) own hand; and, above all, three short essays, in which some Icelanders have tried to write a grammatical and orthographical treatise on their own mother-tongue, all three appearing as an appendix to the manuscripts of the Prose Edda. The oldest and most important of these essays (preserved in the Cod. Worm. from the last half of the 14th century) is by an unknown author of about 1140, the second (the oldest known manuscript of which is preserved in the Cod. Ups., c. 1300) is by an unknown author of about 1250; the third (the oldest manuscript in Cod. AM. 748, 406.) of the beginning of the 13th century is by an unknown author. The old author of the first two (Cod. Ups. 1250 and 1230) is based partly upon the lost work of the first grammarian of Iceland, Póródur Ránasteinari (who flourished at the beginning of the 12th century), partly and chiefly upon Priscian and Donatus.4

3 Among the manuscript collections of manuscripts and of the Alt. Min. iv of which is written with Haukur Eriandsson's (d. 1334) own hand; and
The oldest form of the Icelandic language is, however, not preserved in the above-mentioned earliest manuscripts of the later half of the 12th century, which are written in Old Norse. One of the earliest texts from the 13th century, which contain poems by the oldest Icelandic poets, such as the renowned Egill Skallagrímsson (about 950) and the unknown Óláfr Efremsson (about 1050), and is the oldest written record of the language. The metrical form has been the means of preserving a good deal of the ancient language. But, as already remarked, during the 10th and 11th centuries this dialect differs but little from Norwegian, though in the 12th this is no longer the case.

We may here contrast a specimen of the above-mentioned earliest Icelandic manuscript with an almost contemporary Norwegian one. (The following was dictated by G. A. F. Munch.)

Norw.—En jet ur vitanda, at all ma andlega merkia oc fylla oc jet or til kirkio bunings eja bionost barf at haua, ef vei lium svra hreinaleg at vter sem verðir at kallace göps mustere.

Engl.—And that is to be known that all that is needed for the decoration of the church or the service may, spiritually, be found and imagined within us, if we live so cleanly that we are worthy to be called God’s temple.

Apart from the fact that the language is, generally speaking, archaic, we find that the dialects on both sides have a number of characteristics of Icelandic as opposed to Norwegian, viz. the more complete vowel assimilation (pionost, pionost; cf. also, e.g. lecl, knar, nage, ng, ngj, etc.) and an inflection before r (hreinaleg, rainleg), l and n. Other differences, some of which are common to this period, others a little later, are—(1) in lecl; lengthening of a, o, u before if, ig, ik, im and ip (as in lecl. kldrfr, norm. kldrfr); diphthongs a:u before ng and nk; lecl. dr and ey for older i and y (as in lecl. dýma, dýra, Norm. and oldest lecl. dýma, to deem, hýgra, to hear); (2) lecl. termination of 2nd plur. of verbs in -ð (or -i), but Norm. in -r (as lecl. fórð, fordr, norm. fórð, dórð, för
SCANDINAVIAN LANGUAGES

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edited in 1814 by Rask. Cleasbymentioned above also pays some attention
A really convenient Modern Icelandic
to the modern language.
dictionary is still wanting, the desideratum being only partly supplied
iii.
by J. Thorkelsson's excellent Supplement til islandske ordbpger,

Biorn Haldorsen

(d.

1794),

Vigfiisson's dictionary

(1890-1894).
II.

NORWEGIAN OR NORSE.

The Old Norwegian language

the Reformation) was not, like the modern language, confined to Norway and the Faeroes, but was, as already
and
stated, for some time spoken in parts of Ireland
the north of Scotland, the Isle of Man, the Hebrides,
Shetland and Orkney (in the last two groups of islands it con(till

tinued to survive down to the end of the i8th century), and
also in certain parts of western Sweden as at present denned
(Bohuslan, Sarna in Dalarna, Jamtland and Harjedalen).
Our knowledge of it is due only in a small measure to runic infew in number (about 150),
scriptions, for these are comparatively
and of trifling importance from a philological point of view, especially
as they almost wholly belong to the period between 1050 and 1350,'
and consequently are contemporary with or at least not much earlier
than the earliest literature. The most important are the detailed one
of Karlevi on Oland, wherein a Norwegian poet (towards 1000) in
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"
metre celebrates a Danish chief buried there,
drottkuaett
so-called
and that of Froso in Jamtland, which (about 1050) mentions the
The whole literature preserved is
christianizing of the province.
written in the Latin alphabet. The earliest manuscripts are not much
later than the oldest Old Icelandic ones, and of the greatest interest.

On the whole,

however, the earliest Norwegian literature is in quality
as well as in quantity incomparably inferior to the Icelandic. It
amounts merely to about a score of different works, and of these but
few are of any literary value. A small fragment (Cod. AM. 655. 410,
Fragm. ix., A, B, c), a collection of legends, no doubt written a little
before 1200, is regarded as the earliest extant manuscript. From the
very beginning of the I3th century we have the Norwegian Book of
Homilies (Cod. AM. 619, 410) and several fragments of law-books
and the older EiSsivabingslaw). Of
(e.g. the older Gulafringslaw
later manuscripts the so-called legendary Olafssaga (Cod. Delag. 8,
The chief manuscript
foL). from about 1250, deserves mention.
(Cod. AM. 243 B., fol.) of the principal work in Old Norwegian
literature, the Speculum regale or Konungsskuggsid (" Mirror for
Kings,") is again a little later. The masses of charters which
occurring throughout the whole middle age of Norway from the
beginning of the I3th century afford much information, especiajly
concerning the dialectical differences of the language, are likewise
of great philological importance.
As in Old Icelandic so in Old Norwegian we do not find the most
to us; for
primitive forms in the oldest MSS. that have come down
that purpose we must recur to somewhat later ones, containing old poems from times as remote as the days of
It has
the gth century).
porbiorn Hornklofi (end of
already been stated that the language at this epoch differed
so little from other Scandinavian dialects that it could scarcely yet
be called by a distinctive name, and also that, as Icelandic separated
itself from the Norwegian mother-tongue (about 900), the difference
between the two languages was at first infinitely small as far, of
From the I3th
course, as the literary language is concerned.
century, however, they exhibit more marked differences; for, while
Icelandic develops to a great extent independently, Norwegian, owing
to geographical and political circumstances, is considerably influenced by the Eastern Scandinavian languages. The most important
differences between Icelandic and Norwegian at the epoch of the
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MSS. (about 1200) have already been noted. The tendency in
Norwegian to reduce the use of the so-called u-Umlaut has already
been mentioned. On the other hand, there appears in Norwegian in

oldest

the IJth century another kind of vowel-assimilation, almost unto Icelandic, the vowel in terminations being in some degree
influenced by the vowel of the preceding syllable. Thus, for instance,
we find in some manuscripts (as the above-mentioned legendary
followed in
Olafisaga) that the vowels e, o, $ and long a, tt are
terminations by e, o; i, u, y, and short a, ce, on the other hand, by
as in btfner, prayers, honor, women; but tiCir, times, tungur,
i, u
tongues. The same fact occurs in certain Old Swedish manuscripts.
When Norway had been united later with Sweden under one crown
'1319) we meet pure Suecisms in the Norwegian literary language.
_n addition to this, the I4th century exhibits several differences
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from the old language: rl, rn are sometimes assimilated into //,
nn as kail (elder karl), man, konn (korn), corn, prestanner (prestas hyrftir (hirSir),
arnir), the priests; i passes into y before r, I
shepherd, lykyl (lykill), key; final -r after a consonant is changed
as hester
into -or, -er, -ir, -or, -ur or -<zr, sometimes only -a, -e, -a,
(hestr), horse, btfker (btfkr), books, the names \wlleifcer (\>orleifr),
GuKl(eifai (GuSleifr). About the beginning of the Ijjth century initial
kv occurs for old hv (not, however, in pronouns, which take kv only in

known

1
The latest rune-stones are from the end of the I4th century.
Owing to influence of the learned, such stones appear again in the

1

7th century,

e.g. in

Telemarken.

western Norway), as the local name QviteseiS (hvitr, white). During
the I5th century, Norway being united with Denmark, and at
intervals also with Sweden, a great many Danisms and a few Suecisms
As Suecisms we may mention the
are imported into the language.
termination -in of the 2nd pers. plur. instead of -ir, -tS (as vilin, you
The most important Danisms are the following: b, d and g
will).
are substituted for p, t and k as in the local names Nabfi (earlier
Napa), Tvedce sogn (fyveita sokn); -a in terminations passes into
as h&re (hfiyra) to hear, sfighe (sfikia), to seek; single Danish
-e
words are introduced as iek (ek), I, se (sid), to see; spfirge (spyria),
to ask,-&c. Towards the end of the middle ages the Danish influence
shows an immense increase, which marks the gradual decline of
Norwegian literature, until at last Norwegian as a literary language is
completely supplanted by Danish. During the I5th century Norway
has hardly any literature except charters, and as early as the end of
that century by far the greatest number of these are written in almost
In the l6th century, again, charters written in
pure Danish.
Norwegian occur only as rare exceptions, and from the Reformation
onward, when the Bible and the old laws were translated into Danish,
not into Norwegian, Danish was not only the undisputed literary
language of Norway, but also the colloquial language of dwellers in
towns and of those who had learned to read.
Dialectical differences, as above hinted, occur in great number
in the Norwegian charters of the I3th, I4th and 15th centuries.
Especially marked is the difference between the language
Difjfdt
of western Norway, which, in many respects, shows a
of
and
the
to
that
of
Icelandic,
language
development parallel
eastern Norway, which exhibits still more striking correspondences
with contemporary Old Swedish. The most remarkable characteristics of the eastern dialects of this epoch are the following:
a is changed into o: in the pronouns bcenn, this, $cet, that, and the
there (the latter as early as the I3th century), and
particle beer,
later on (in the I4th century) also in terminations after a long root
as sendee, to send, h<t>yrce, to hear (but gera, to do, vita,
syllable
to know) ia passes (as in Old Swedish and Old Danish) into ice
as hicerta (Icel. hiarta), heart; y sometimes passes into iu before r,
I
as Murder, shepherd, lykiul, key, instead of hyrfiir, lykyl (older
often
still, hirCir, lykill; see above); final -r after a consonant
as prestar (prestr),
passes into -or, -oar, sometimes only into -a, -<
priest; bpkar (btfkr), books; dat. sing. brfiSa (brtfttr), (to a) brother;
as lisla (litla), (the) little, the name Atsle, Asle
tl passes into tsl, si
(A tie); rs gives a "thick" s-sound (written Is) as Bcerdols,
;

genitive of the name Bergborr; nd, Id are assimilated into nn, U
as bann (band), band, the local name Vest/oil (Vestfold); and (as
far back as the I3th century) traces occur of the vowel assimilation,
"
that is so highly characteristic of the modern Nortiljaevning,"
wegian dialects as vuko, vuku, for vaku (Icel. vqko, -u), accusative
On the other
singular of vaka, wake, mykyll for mykill, much.
hand, as characteristics of the western dialects may be noted the
following: final -r after a consonant passes into -ur, -or, or -ir,
as velur (velr), winter, rettur (rettr), right, aftor (aftr), again;
-er
as sytla (sysla), charge; hw is changed into kw
si passes into U
also in pronouns as kuer (huerr), who. kuassu (huersu), how.
This splitting of the language into dialects seems to have continued
to gain ground, probably with greater rapidity as a Norwegian
literary language no longer existed. Thus it is very likely that the

present dialectical division was in all essentials accomplished about
the year 1600; for, judging from the first work on Norwegian
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the S0ndfjord (Western Norway) dialect at least
dialectology,
possessed at that time most of its present features. A little clogcalendar of the year 1644 seems to prove the same regarding the
Valders (Southern Norway) dialect. How far the Old Norwegian
dialects on the Faeroes, in Ireland and Scotland, on the Scottish
islands, and on the Isle of Man differed from the mother-tongue it
is impossible to decide, on account of the few remnants of these
dialects which exist apart from local names, viz. some charters
(from the beginning of the 1 5th century onward) from the Faeroes,
Shetland and the Orkneys, and a few runic inscriptions from the
Orkneys 1(thirty in number), and the Isle of Man (about thirty in
These runic inscriptions, however, on account of their
number).
imperfect orthography, throw but little light on the subject. Of the
Orkney dialect we know at least that initial hi, hn, hr still preserved
h in the I3th century that is, at least two hundred years longer

than in Norway.

Old Norwegian grammar has hitherto always been taken up in
connexion with Old Icelandic, and confined to notes and appendices

works on Icelandic grammar. A systematic fl
Old Norwegian grammar is still wanting, with matlcat
the exception of a short work by the Danish scholar .
N. M. Petersen (d. 1862), which, although brief and
inserted- in
treatise on

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in
decidedly antiquated, deserves all praise. Among those who
recent days have above all deserved well for the investigation of the
Old Norwegian may be mentioned, as to the grammar, the Swede E;
Wadstein and the Norwegian M. Haegstad; as to the lexicography,
the Norwegian E. Hertzberg, for the law terms, and O. Rygh (d.
1899), for the local names, while the personal names are collected
by the Swede E. H. Lind. A most valuable collection of materials
2
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C. Jensen's Norsk dictionarium eller glosebog (1646).
See P. M. C. Kermode, Manx Crosses (1907)-


Scandinavian Languages

Old Swedish, during its earliest pre-literary period (800-1225), retains quite as original a character as contemporary Old Icelandic. The first part of the inscription of the Röksteone running thus:

AFT UAMUP STAFTA RUNAK BAR / I UARIN FAJPA FAJP AFP FOTAIK SUNUP,1

and probably pronounced:

aft Wämöö standa runak jáar; en Uarinn fádi fálik aft fejgíjí sunup.

I would, no doubt, have had a somewhat different form in contemporary Icelandic, except the last word, which would probably have had the less original form sun. The formal changes of the Swedish language during this period are, generally speaking, such as appear about the same time in all the Germanic branches, the great -bi into common r (the Rök-steone runar, later runar, runes; this appears earliest after dental consonants, later after an accented vowel), and the change of ą into á (in the 10th century räfte, later rafri; raised); or they are, at least, common to it with Norwegian—as the dropping of b before l, n and r (in the 10th century brutm, younger, ryp, carin), and the changing of nasal vowels (the long ones latter) in non-nasalized words. This change is altogether different during what we may call the classical period of Old Swedish (1225-1375), the time of the later runic inscriptions and the oldest literature. During this period the language is already distinctly separated from the (literary) Icelandic-Norwegian (though not very much from Danish). The words of the Older Västgötalaw—

FALDER KLOCKE NIDER I HOJOFU MANNI, BOTTI SOPCN MACHURN JIRIM, RUUNAB AK TALKH JIRIM,2

would be in contemporary Icelandic be—

fell klukka niðr í hófuðu mauni, bæti sókn mrgókn jirin, en hann fær bana af.

These few words exhibit two of the most important of the following innovations in Swedish: á is inserted between ll (nn) and a following r (as b between l and n, r, and between m and n, t as hambrur, icl. hamnr, hammers, sampl, icl. samli, together with); an auxiliary vowel is inserted between final r and a preceding consonant (as the change of r into ā (nearly r) in the case of which we find as early as the 12th century); h has passed into á (as knm, icl. kné, knees); ia into ia, as in Eastern Norwegian (as biario, icl. biario, heart); ia into ār after, and a consonant (as bil, icl. bí, a), as in the forms of the three persons singular of verbs have assimilated (except in the so-called strong preterite); the 2nd person plural ends in -ir or -ir, -ur. The transition to the 14th century is marked by important changes—short y, e, passed into o in many positions (as dyw for dyo, door, &c.); there appeared a so-called law of vowel balance, according to which the vowels i and u are always found in terminations after a short root syllable, and a, e, o, u in terminations after a long root syllable; there was a remarkable reform, developing at the same time to a "riksrík," a uniform language, common to a certain degree to the whole country. The chief characteristics of this later Old Swedish (1375-1596) are the following: the long á has passed into ã (that is, an open o), and iə (except before k, rdh, rt) into iː (as sís, see, lake), g and k (sk) before palatal vowels are softened into dj and tj (sj); k and t in unaccented syllables often pass into gh, dh (as Swartbo for Swarbo, Sverd, Skr. Skalle, for Skalle, and a, the initials he-; kin), the, and (a little later) en, a, come into use; the dual pronouns vanish; the relative or, that, is changed with sumi; the present passive is formed with the -i ending (as gangand, gangand), a historical passive. A little later the following changes appear:—a short vowel is inserted before a single consonant, first when the consonant belongs to the same syllable (as hat, hate), afterwards also when it belongs to another syllable (as lidhe, liehe; a second short vowel is inserted between i or n and a preceding consonant (as gætsi, gable, sken, desert); short t often passes into e (as leca, to live); ih passes into i; a new conjugation is formed which has no infinitive termination (as pota, potte, to dwell, dwelle). Owing to the political and commercial state of the country the language at this period is deluged with borrowed words of Latin, whereas the number of the great number of verbs in -ir (e.g. handlra, to handle)

1 In memory of Wämdö these runes stand; and Warinn, his father, wrote them in memory of his son (by destiny) condemned to death.

2 If the bell fall down on anybody's head, the parish pays a fine of three marks should he die from it.
2. Modern Swedish.—The first complete translation of the Bible, edited in 1541 by the brothers Olaus and Laurentius Petri, and generally called the Bible of Gustavus I, may be regarded as the most important achievement in religious and political circumstances. It is not until the middle of the 17th century that Swedish literature adequately exemplifies the language, for at that period literature first began to be cultivated as a fine art, and its principal representatives were the poets as Stiernheim and Arvid Hjelm, who were not slow to use the first to study it as a means of expression and to develop its resources. Amongst the authors of the 18th century we have the expression of the individuality and the form of the prose style of that epoch; while of the end of the century Kellgren and Bellman are the most noteworthy examples, representing the higher and the more familiar style of poetry respectively. The language of the 19th century, on account of their enormous circulation, have had a greater influence than those of any other authors. As to the language itself the earliest Modern Swedish texts, as Gustavus I's Bible, differ considerably from the latest Old Swedish ones. We find a decided tendency to externate the plural endings, but the result gives less uniformity of forms. At the same time there appear several traces of a later state of the language: all genitives (singular and plural) end in -s, which in earlier times was the proper ending of the humorous Latin and of the Germanic; and it is the life of Christ in a series of pictures and words; on the other hand a literature has been preserved consisting of a runic calendar from 1328, the law of the island (the oldest manuscript is from about 1325); and of the church is distinguished from the Old Swedish of the mainland especially by the following characteristics:—the old diphthongs are preserved (e.g. var, and), the personal pronouns pluperfect tense, and the genitive singular of feminines in -s ends in -sr for -ur (as kirur, of the church). Owing to the entire absence of documentary evidence it is impossible to determine how far the dialects of the Baltic, which no doubt had a separate individuality, differed from the mother-tongue.

The first to pay attention to the study of Old Swedish was the Swedish savant J. Bureeus (d. 1652), who by several works (from 1599 onwards) called attention to and excited a lively interest in the runic monograms, and, by his edition (1654) of the excellent Old Swedish work Um Styrise Fighte (Acrid pitcher) which is a real attempt in modern times at a grammatical treatment of any Old Germanic language. The study of runes was very popular in the 17th century; M. Celsius (d. 1679) deciphered the "staffless" runes and the "tusked" runes, and the former, who also had knowledge of Old Swedish texts, published, by J. Göransson as Bastio (1750). During the 18th century, again, Old Swedish was almost completely neglected; but in the 19th century the study of runes was well represented by the collection (Runurkunder, 1833) of the Swede Liljeqren (d. 1837) and by the Norwegian S. Bugge's ingenious interpretation and grammatical treatment of some of the most remarkable inscriptions, especially that of Rök. Old Swedish literature has also been made the object of grammatical researches. A first outline of a history of the Swedish language is to be found in the work of N. M. Peterson (1830), and a good account of the grammatical development of Swedish in the swenskans och Formornskans språkbyggnad (1869); but Old Swedish grammar was never treated as an independent branch of science until the appearance of J. E. Rydqvist's grundläggande (1881), in which the language was dealt with from the 8th to the 16th century, while later work was published by K. Hyltén-Carls- son under the title språk i Sverige: Utomlandsfödd, talent, charmant, charming, &c. In the 19th century, especially about the middle of it, we again meet with conscious and earnest efforts to make the language fit for a new function in the formation of new words and in the adoption of words from the old language (ii, diligence, mäla, to speak, fisking, battle-array, &c.), and from the dialects (kliga, to gaze, flis, flake, skrabbig, bad, &c.). Consequently the present vocabulary differs to a very great extent from that of the literature of the 17th century. As for the sounds and grammatical forms, on the other hand, comparatively few changes have taken place during the last two centuries. In the 19th century, however, comparatively few changes have taken place during the last two centuries. In the 19th century, however, comparatively few changes have taken place during the last two centuries. In the 19th century, however, comparatively few changes have taken place during the last two centuries. In the 19th century, however, comparatively few changes have taken place during the last two centuries. In the 19th century, however, comparatively few changes have taken place during the last two centuries.
SCANDINAVIAN LANGUAGES

The study of Modern Swedish dates from Sweden's
Dialects.

The form of the language.

d, n, s, and i), while the singular of the verbs is gradually supplanting
the plural.

The Modern and the Old, as the word is usually understood, namely during all periods of the Swedish language, is the
throwing back of the principal accent to the beginning of the word in cases where previously it stood nearer the end, a tendency that is characteristic of modern Swedish and especially of Swedish. In the primitive Scandinavian age the accent was removed in most simple words; the originally accented syllable, however, preserved a musically high pitch and stress. Thus, around the 13th century, the one, with unaccented final syllable, as in Icel. strígr (Gr. οριζειν, thou goest, the comparative bein (cf. Gr. ὑπάρχω from -άρχειν), better, the other, within the words), was changed to the short, pret. plural. hano (Svens. bubdhus), we bade, part., pret. inten (Svens. bhinda), bitten. The same change afterwards took place in those compound words that had the principal accent on the second element, so that the original separation of the Swedish grammatical structure brought into conformity with the former accentuation. At the present day it is quite exceptionally (and chiefly in borrowed words of later date) that the principal accent in Swedish is on any other syllable than the first, as in lek, lekken, body, leken, to bless.

The scientific study of Modern Swedish dates from Sweden's

1684, three centuries before the Reformation. As these</((
SCANDINAVIA—SCANTLING

The first Modern Danish grammar is by E. Pontoppidan, 1668, but in Latin; the first in Danish is by the famous Peder Søv, 1669. The early works of J. Pedersen (‘Skriftet’), J. F. Hesselman (‘Accentueret og rasiønerret grammatica’, 1747) possess great merit, and are of especial importance as regards accent and syntax. The earlier part of the 19th century gave us Kask’s grammar (1841). As a matter of fact, a vocabulary of Danish existed; the most detailed is by K. Mikkelsen (1894). The vocabulary of the 16th and 17th centuries is collected in Kalkar’s Ordbog, mentioned above, and in the 18th century by the well-known Vorstevnerns Dictionaire of Vidskernes Selskab (1793-1805), and in C. M. Holbech’s Dansk Ordbog (2nd ed., 1859); that of our days in B. T. Dahl’s and H. Hammer’s Dansk Ordbog for folket (1903 seq.).

Dano-Norwegian. Though Danish was the language of the literary and educated classes of Norway and remained so for three hundred years, although it cannot be denied that many Norwegian authors even during this period adhered to it, it has been supplanted by Norwegian, a language differing from Danish in its vocabulary, having adopted very many Norwegian provincial words (more than 7000), less in its inflections, but to a very great extent in its pronunciation. The most striking differences exist in the following points: Norwegian c, e, and palatal vowels answer Norwegian fj, jr (point-trill, not back-trill as in Danish) is assimilated in some way with following l (d), h, m, and j into so-called supradental sounds; both the primitive Scandinavian accentuations are preserved; and Norwegian has a musical point of view, in opposition to the monotonous Danish. There are several other characteristics, nearly all of which are points of correspondence with Swedish.

Dano-Norwegian is in our days grammar for two dialects, Norwegian and Danish.

Norwegian—Norwegian.

Language. Old Norwegian, the eminent philologist J. Aaen (d. 1896) was led to undertake the bold project of con

struing the literature of this period, but the material is vast, and the task is in part already accomplished by his pupil H. A. Heggard (e.g. Etymologisk Ordbog, 1903, 1906).

Form of the language. The middle of the 19th century, however, far more advanced pretensions were urged to an independent Norwegian language. By the study of the Modern Norwegian dialects and their mother language, Old Norwegian, the eminent philologist J. Aaen (d. 1896) was led to undertake the bold project of con

struing the literature of this period, but the material is vast, and the task is in part already accomplished by his pupil H. A. Heggard (e.g. Etymologisk Ordbog, 1903, 1906).

The local names of Norway are treated in the large work Norske grammatik, by O. Rygh (1897 seq.).

SCANDINAVIAN DIALECTS. As above remarked, the Scandinavian dialects are not grouped, so far as their relationship is concerned, as might be expected judging from the literary languages. The modern Norwegian dialects are the Faeroe, each of which constitutes a separate group, the remainder may be thus classified:

1. West Norwegian Dialects—spoken on the western coast of Norway between Bergen and Molde.

2. North Scandinavian—the remaining Norwegian and the Swedish dialects of Uppland, Västmanland, Dalarna, Norrland, Finland and Russia.

3. The dialects on the island of Gotland.

4. Middle Swedish—spoken in the rest of Sweden, except the southernmost parts (No. 3).

5. The dialects spoken in the greater part of Småland and Halland, the whole of Skåne, Blekinge and Denmark, and the Danish-speaking part of Schleswig.

This group is distinctly divided into three smaller groups—the dialects of southern Sweden (with the island of Bornholm), of the Danish islands and of Jutland (and Schleswig).

The study of the modern Scandinavian dialects has been very unevenly prosecuted. Hardly anything has been done towards the investigation of the Icelandic dialects, while those of the Faeroes have been studied chiefly by V. U. Hammershaim, J. Jakobsen, and O. E. Pedersen. The Faeroes have been admirably treated by J. H. Christensen. The common language of the Faeroes has been examined, first by Aaen, whose works give a general account of them; then by J. Storm, who has displayed an unwearying activity, especially in the field of folk songs. The best account published is to which Aasen had paid but scant attention; in our own days by H. Ross and A. B. Larsen. For the study of Danish dialects there has been nothing. Moberg’s Dialect-Lexicon of 1841 is very deficient. The Scandinavian dialects have been thoroughly treated by H. Hof (1854), K. J. Lyngby (1858) and others. H. F. Filberg’s great dictionary (1886 seq.) of the dialect of Jutland is in every respect an excellent work. A dialect map on a large scale, and containing the whole of Denmark, is by H. Lind. Møller and J. A. Kristensen. Finally, several dialect monographs by P. K. Thorsen may be mentioned as being especially valuable. A phonetic alphabet for the purpose of dialectal investigations is worked out by J. Jessper and published in the journal Dania, vol. l. (1890). There is, however, no country in which the dialects have been and are studied with greater zeal and more fruitful results than in Sweden during the last hundred and fifty years. Archbishop E. Bengelius the younger (d. 1743) made collections of dialect words, and on his work is based the dialectical dictionary of 1746. An excellent work considering its age is C. Molberg’s Veströgödics (1772), and the Dialekstavlingar of J. B. Feilberg (1876) complete, the dialects of Gotland and Dalarna) are given by the famous dialects of Upsala, Lund and Helsing-}

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SCAPHOPODA

The phylum Scaphopoda includes marine species, typically known as tusk shells, characterized by their elongated, cylindrical shells. This class is divided into three orders: Phylum Scaphopoda, with the species known for their use in medical applications, and Mollusca, which includes gastropods, bivalves, and cephalopods.

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SCAPOLITE

After Kowalewsky, in Lancaster’s Treatise on Zoology. 

Fig. 3.—Larva of Dentalium, aged one and a half days; ventral aspect. 

I. Foot. 
II. Anterior. 
III. Mantle. 
IV. Habitat forming a sort of test. 


Siphonodentalia. 

Fam. 2. Siphonodentidae. 

Foot extended distally into a symmetrical disk with a crenate edge or simple and Vermiform without well-developed lateral processes; shell often contracted towards the anterior aperture. Siphonodontidens: foot ending in a medium disk without a median appendage. Calamodes. Plesiolum: terminal disk of foot with a median appendage. Enaliodes. Coelom. 

Beiträge zur Anatomie und Histologie von Dentalium, Jenaische Zeitschr. xxxviii. (1904); Paul Pelseneer, Mollusca, Lancaster’s Treatise on Zoology, pt. v. (1906). (J. T. C.) 

SCAPOLITE (Gr. σκαπόλης, rod, λίθος, stone), a group of rock-forming minerals composed of aluminium, calcium and sodium silicate with chlorine. The variations in composition of the different members of the group may be expressed by the isomorphous mixture of the molecules CaAlSiO₄ and NaAlSiO₄Cl, which are referred to as the meionite (Me) and marialite (Ma) molecules respectively, since they predominate in these two end-members of the series. Werneckeite, Scapolite (M₆M₆₄ to Me₆Ma₆₄) and Marialite (Me₆Ma₆₄ to Me₆Ma₆₄) are intermediate members. The tetragonal crystals are hedral with parallel faces (like scheelite), and usually have the form of square columns, sometimes of considerable size. There are distinct cleavages parallel to the prism-faces. Crystals are usually white or greyish-white and opaque, though meionite is found as colourless glassy crystals in the ejected limestone blocks of Monte Somma, Vesuvius. The hardness is 5-6, which is the specific gravity varies with the chemical composition between 2-74 (meionite) and 2-56 (marialite). The scapolites are especially liable to alteration by weathering processes, with the development of mica, kaolin, &c., and this is the cause of the usual opacity of the crystals. Owing to this alteration, and to the variations in composition, numerous varieties have been distinguished by special names. Scapolite is commonly a mineral of metamorphic origin, occurring usually in crystalline limestones, but also with pyroxene in schists and gneisses. The long slender prisms abundant in the crystalline limestones and schists in the Pyrenees are known as "dipyr" or "couzeiranite." Large crystals of common scapolite (wernerrite) are found in the apatite deposits in the neighbourhood of Bamle near Brevik in Norway, and have resulted from the alteration of the plagioclase felspar of a gabbro. (L. J. S.) 

Scapolite Rocks.

According to their genesis the scapolite rocks fall naturally into four groups.

1. The scapolite limestones and contact rocks. As silicates rich in lime, it is to be expected that these minerals will be found where impure limestones have been metamorphosed by contact with an igneous magma. Even meionite (the variety richest in soda) occurs in this association, being principally obtained in small crystals lining cavities in ejected blocks of crystalline limestone at the contact of scapolite with granite in Germany. Scapolite and meionite are far more common at the contacts of limestone with intrusive masses. The minerals which accompany them are calcite, epidote, vesuvianite, garnet, wollastonite, dolomite, and epidote. They are colourless, flesh-coloured, grey or greenish; occasionally they are nearly black from the presence of very small enclosures of graphic material. They are not in very perfect crystals, though sometimes incomplete. Crystals of the volcanic or intrusive series are visible; the tectonic cleavage, strong double refraction and uniaxial interference figure distinguish them readily from other minerals. Commonly they weather to micaceous aggregates, and are often hard to distinguish. Scapolite is rare and has been replaced by calcite. Scapolite occurs in a great number of places, both in the limestones and in the calcareous shales which accompany them. In some of these rocks large crystals of scapolite occur, as octagonal prisms with imperfect terminations. In others the mineral is found in small irregular grains. It is sometimes clear, but often crowded with minute enclaves, such as diopside and biotite. The scapolite is not a black variety well known, filled with minute graphic enclosures, often exceedingly small and rendering the mineral almost transparent. The scapolite, however, is a more satisfactory replacement to this kind of scapolite. Apparently the presence of chlorine in small quantities, which may often be detected in limestones, to some extent determines the formation of the mineral. Many instances of scapolitization have been described from the ophites (diabases) of the Pyrenees. In the unaltered state these are ophtic and consist of pyroxene enclosing lath-shaped plagioclase felspar; the pyroxene is often changed to scapolite, and the felspar is replaced by scapolite the new mineral is fresh and clear, enclosing often small grains of hornblende. Extensive recrystallisation often goes on, and the ultimate product is a mixture of scapolite with some hornblende, the assemblage resembling the scapolitized ophites of the Pyrenees. It has been suggested that the conversion of their original felspar (for there can be no doubt that they were once gabbros, consisting of plagioclase and pyroxene) into scapolite is due to the percolation of chloride solutions along lines of weakness, or planes of solubility, filling cavities etched in the substance of the mineral. Subsequently the chlorides were absorbed, and fari facies are found in scapolite. In some of these gabbros there are veins of a chloride-bearing apatite, which must have been deposited by gases or fluids ascending from below. This suggests that a pneumatolytic process has been at work, similar to that by which, around intrusions of granite, veins rich in tourmaline have been
“May thy name endure and a son be born thee.” Such are of the New Kingdom or later. Names and titles of officials appear, most commonly in the Middle Kingdom.

Historically the most valuable class is of those which bear royal arms, ranging from Cheops of the IIVth dynasty to the end of the XXVIth dynasty. Certain great kings are commemorated on scarabs of periods long subsequent to them. Thus Cheops (Khufu) may appear on an example of the latest Pharaonic age, and Tethmosis III. is found at all times after the XVIIIth dynasty. But as a rule the royal names are of contemporary workmanship, and the differences of style and pattern make it possible to group unknown kings with those who are known historically. Typically, the name of the Workmen in the Alaska Museum has been preserved, particularly from collections of scarab-seals. Scarab-shaped seals are traceable as far back as about the VIth dynasty. They became abundant under the XIIth and continued until almost the end of the native rule. As seals they took the place of the earlier cylinders. Considering the life-history of the scarabaeus and its meaning as a hieroglyph, it may well be that the scarab impressing the clay had a specific significance; however that may be, the oval form was well adapted for seal-stones and for the bezels of finger rings. In this situation the scarabs were treated with a cold in gold goss around the edge. Rings of stone, glass or metal, with engraved bezels of the same material, and eventually Greek gems rings, gradually displaced them.

A series of exceptionally large scarabs was engraved in the reign of Amenophis III., c. 1450 B.C., all being inscribed with his name together with that of Queen Tia and her parentage. At present five varieties are known. The simplest commemorates his queen and the north and south limits of his empire; another dated in the first year, a great battle of wild cattle; the third, the arrival of the princess Gulshipsa of Mittanni in the tenth year; the fourth, (many specimens), the number of lions slain by the king down to his tenth year; the last, the cutting of the lake of Zaruhe in the eleventh year. Egyptian scarabs were carried by trade to most of the islands and all of the eastern Mediterranean, and to Mesopotamia. The Greeks, especially in their Egyptian colony of Naukratis (q.v.),imitated them in soft paste. The finest Etruscan gems of the 6th and 5th centuries B.C. are in the form of scarabs, perhaps suggested by the Egyptian. The forgers of antiques have carried on a brisk trade in scarabs for more than a century.

See F. E. Newberry, Scarab (London, 1906); also art. Gem, esp. c. har-late-scarabaeoid gems. (F. L. G.)

SCARAMOUCHE, properly a buffoon, used later colloquially for a ne'er-do-well. The name was that of a stock character in 17th-century Italian farce, Scaramuccia (i.e. literally "skirmish"), who, attired usually in a black Spanish dress, burlesquing a "don," was beaten by Harlequin for his boasting and cowardice. The part was played in London in 1673 by a well-known Italian actor, Tiberio Fiurilli, and became popular. There are many instances of the use of the word in the New English Dictionary.

SCARBOROUGH, a municipal and parliamentary borough and fashionable seaside resort in the North Riding of Yorkshire, England, 231 m. N. of London, on the North-Eastern railway. Pop. (1891) 33,776; (1901) 38,161. From the bold and picturesque coast, afinger-ridge peninsula (285 ft.) projects, separating North Bay from South Bay, and the modern extension of the town fringes both of these. The peninsula is crowned by a 12th-century castle, though this naturally strong position was probably occupied earlier. There is a moat (Castle Dyke) on the landward side, and a wall with towers also protects the castle in this direction. The keep, a lofty ruined tower, is of Norman date. The peninsula is much exposed to encroachment by the sea. In 1190 the plateau forming the castle yard was stated by William of Newburgh to be 60 acres in extent; it is now about 17. The list of the governors of the castle covers the period from the 13th to 1832. Near the landward side of the dike is the church of St. Mary, finely situated, occupying the site of a Cistercian monastery of 1198. It is transitional Norman and Early English, with later additions. The choir was occupied by the Roundheads during the Commonwealth, and was wrecked by the castle guns. The tower fell later, and was in part rebuilt in the 17th century.

The development of Scarborough as a watering-place dates from the discovery in 1626 by Mrs Farren, a resident of mineral...
springs. These springs, of which there are two, occur near
the shore of the South Bay, and a handsome Spa House in
pleasant gardens contains them. The south spring is aperient,
while the north or chalybeate spring is more tonic in its properties.
They are still in use, though of less importance than formerly in comparison with the other
attractions of the town. The sea-bathing is very good, both
bays having a sandy foreshore. Well-plantcd gardens fringe
the steep slope down to the North Bay, in which there is a
promenade pier; the South Cliff is similarly adorned. It is
approached by a broad avenue, its use having been abandoned to
the enjoyment of which lies a pleasant park. The southern part
of the town is the more fashionable portion. The principal
buildings of entertainment are the aquarium (also used as
a concert hall); the museum, a rotunda in Doric style, containing
excellent antiquarian and natural history collections; two
theatres, and the assembly rooms attaching to the Spa House.
The promenades and drives are extensive, and there is an in-
clined tramway leading from summit to foot of the South Cliff.
A great marine drive, 4200 ft. long, was opened in 1908.
The neighbouring country is exceedingly picturesque, with
highly picturesque houses, and well-kept villages. The
hydrography of the district is remarkable, the Derwent, which
flows S.W. to the Ouse and so to the Humber, having one of
its sources near Scarborough within 2 m. of the sea. The climate
is healthy and temperate; average temperature, 50° F. in
July, and in January, 37°.

The chief buildings of Scarborough apart from those already
considered are the town hall, market hall and public hall,
several modern churches and chapels, and charitable and
benevolent institutions. The harbour, enclosed by piers and
divided into two basins, lies on the south side of the mouth of
the River Esk, the chief river of the town. It is dry at low tide,
but is accessible at spring tides to vessels of 15 ft. draught. It
is largely used by fishing
boats. The parliamentary borough, falling within the
Whitby division of the county, returned two members until 1885,
and since that date. The town is governed by a mayor,
6 aldermen
and 18 councillors. Area, 2373 acres.

Although there is no mention of Scarborough (Scarbode, Escarde-
bur, Scardeburg, Scardeburg, Scaribur, Scarbyburgh, in the Domes-
day Survey the remains of Roman roads leading to the town indicate
that it was in early times a place of importance. The castle was
built during the 12th century by William le Gros, earl of Albemarle,
who gave a large area of land to the See of York in exchange for
the castle, which had been captured by the Danes in 1066. Henry II.
added greatly to its strength. From this time it was in the
hands of a line of distinguished nobles appointed by the king.
Scarborough is a borough by prescription. Its first charter of
1181 granted it town privileges, but the town was not elevated to
the rank of a county town until 1833, when Henry III.
confirmed with various alterations and extensions by most of
the succeeding monarchs. Henry III. in 1253 granted that a court
of pleas should be held at Scarborough by the justices who went to
hold common pleas at York; he also gave the corporation a gild
merchant. Edward II. caused the town to be taken away from
the burgesses "for certain causes," but it was restored to them by
Edward III. in 1337. The charter of Edward I. in 1314
confirmed and confirmed the privileges of the borough. Richard III.
by his charter of 1485 appointed that the town should be governed by
a mayor, sheriff and twelve aldermen, and also granted amongst other
extensive privileges the freedom to hold fairs and two markets a week.
The town should be a county of itself. On the death of Richard III.
the charter took no effect, and the corporation returned to its
ancient mode of government. In 1664 a mayor, 12 aldermen
and 31 common councillors were nominated as governors. Scarborough
returned two members to parliament from 1295 to 1885. It is
said that Henry II. held a market here which he granted to the burgesses,
but of this there is no mention. A subsidy roll of 1393 lists
53 Henry III., granted a yearly fair lasting from the Assumption of
St Mary to the following Michaelmas. This fair was originally held
on the sands. Jet was formerly an important manufacture.

Thomas Hickey, History of Scarborough (1832); J. B. Baker, History of Scarborough (London, 1882).

SCARF, a narrow wrap for the neck or shoulders; the term
is a wide one, ranging from a light band of silk, muslin or other
material worn by women as a decorative part of their costume
to a warm knitted muffler of wool to protect the throat from
cold. The O. Eng. scarf meant a piece or fragment of any-
thing, and is to be referred ultimately to the root skar-, to cut;
seen in Dutch skerf, shred, Ger. Scherbe, potsherd, "scrap," a
piece or fragment; "scrip," a piece of leather, hence a pouch
or wallet. The particular meanings in English are to be referred
to Fr. escharpe, pilgrim’s wallet, also scarf. The ecclesiastical
"scarf" was originally a loose wrap or muffler (bend) to be worn
round the neck out of doors. In the English Church, in
post-Reformation times, the minister wore over the surplice the
"scarf," which was a broad band of black silk with fringed
ends arranged like the stole round the neck, but falling nearly
straight down the back. Its use was removed entirely by that
of the stole (p.p.), with which it has sometimes been wrongly
confused.

Ultimately from the same root, but directly adapted from the
Scandinavian, cf. Swed. skarf, joint, is the use of the word
"scarf," in carpentry and joinery, for a joint by which two
timbers are fastened together longitudinally so as to form a
continuous piece (see JOINERY).

SCARLETTI, ALESSANDRO (1659-1725), Italian musical
composer, was born in Sicily, either at Trapani or Palermo, in
1659. He was generally known as "Paolo Alessandri" or "Paolo
Alessandro" in Rome, and there is reason to suppose that he had some
connection with northern Italy, since his early works show the
influence of Stradella and Legrenzi. The production at Rome of
his opera GlE Equisoci nell amor (1709) gained him the
protection of Queen Christina of Sweden, and he became her
Maestro di Cappella. In February 1683 he became Maestro
di Cappella to the viceroy of Naples, through the intrigues of
his sister, an opera singer, who was the mistress of an influential
noble in that city. Here he produced a long series of operas,
remarkable chiefly for their fluency, as well as for the
harmonic and dramatic invention. In 1702 he moved to Naples and did not return until the
Spanish domination had been superseded by that of the
Austrians. In the interval he enjoyed the patronage of
Ferdinand III. of Tuscany, for whose private theatre near
Florence he composed operas, and of Cardinal Ottoboni, who
made him his Maestro di Cappella, and procured him a similar
post at the church of S Maria Maggiore in Rome (1703).
After visiting Venice and Urbino in 1707, he took up his duties at
Naples again in 1708, and remained there until 1717. By this
time Naples seems to have become tired of his music; the
Romans, however, and others down to Carafa of the
Cappella in Rome who that he produced some of his finest operas
(Tedemaco, 1718; Marco Attilio Regolo, 1719; Griselda, 1721),
as well as some noble specimens of church music, including
a mass for chorus and orchestra, composed in honour of St
Cecilia for Cardinal Acquaviva in 1721. His last work on a
large scale appears to have been the unfinished serenata for
the marriage of the prince of Stigliano (1723); he died at Naples
on the 24th of October 1725.

Scarlatti's music forms the most important link between the
tentative "new music" of the 17th century and the classical school
of the 18th, which culminated in Mozart. His early operas (GlE Equisoci nel sembraente (1679); L'Honest' negli amor (1680);
Pompeo (1683), containing the well-known airs "O cesso di
fanda" and "Togligetemi la vita amor," and others down to
about 1685) retain the older cadences in their recitatives, and a
considerable variety of neatly constructed forms in their charming
little arias, accompanied sometimes by the string quartet, treated
with careful elaboration, sometimes by the harpsichord alone.
By 1686 he had definitely established the "Italian overture" form
(second edition of Dal male ti bene), and had abandoned the ground
bass and the binary air in two stanzas in favour of the ternary or
da capo type of air. His best operas of this period are La Rosaura
(1690, printed by the Gesellschaft für Musikforschung), and Pirro e
Demetrio (1694), in which occur the songs "Rugiade e desolore,"
or "Tiranno, e perderei il cor mio (La mia vita e deh far
decempi)," influenced partly perhaps by the style of Bononcini
and probably more by the taste of the viceroyal court, his opera
becomes more conventional and common in method; while the
scoring is hard and crude, yet not without brilliancy (Eraclea, 1700),
the oboes and trumpets being frequently used, and
the violins often playing in unison. The operas composed for
Ferdinand de Medici are lost; they would probably have had
a more favourable idea of his style, his correspondence with
the prince showing that they were composed with a very sincere
sense of inspiration. Mitridate Eupatore, composed for Venice in
1707,
SCARLET—SCARLET FEVER

SCARLET, a vivid, bright red colour, somewhat inclined to orange. The word appears in most European languages; cf. Ger. Scharlach, Swed. skarlatan, Ital. scarlatto, &c.; the English form is an adaptation of the O. Fr. escarlate, mod. écarlate. The origin of these is to be found in the Persian sogan, meaning "broad-cloth." There are various forms, sagulat, sagülat, sagüé; this cloth was chiefly used for dresses, flags, large tents and trappings; hence the word is applied to its colour, and hence its name was applied to the colour.

SCARLET FEVER, or SCARLATINA, names applied indifferently to an acute infectious disease, characterized by high fever, accompanied with sore throat and a diffuse red rash upon the skin (see PARASITIC DISEASES). This fever appears to have been first accurately described by Sydenham in 1766, before which period it had evidently been confounded with smallpox and measles. Klein in 1885 isolated a streptococcus which he termed the streptococcus scarlatineae. The scarlatina is the chief habitat of the organism, though it has been found both by Klein and other observers in the discharges from the ears of scarlet fever patients. Mervyn Gordon also isolated from cases the streptococcus conglomeratus. It is possible that septic cases of scarlet fever are the result of a mixed infection.

The serum of patients has been found to contain agglutins to streptococci from cases of erysipelas, septicemia and puerperal fever, as well as to the streptococci scarlatineae. F. B. Mallory in 1904 published his discovery of "protozoonlike" bodies in the cells of the epidermis. Other pathological findings have not succeeded in failing to find them in the living. The contagion of scarlet fever takes place from a previous case either by the skin during the early stages of the disease or by the nasal or aural discharges of a patient. It may be conveyed by any article of clothing or furniture, or by any person that has been in contact with a scarlet fever patient. Infectivity may also take place through a contaminated milk supply, as in the Marylebone epidemic, 1885. Klein here found disorder in cows which he considers analogous to scarlatina and communicable to man.

The period of incubation in scarlet fever may be as short as one or two days, but in most instances it is probably less than a week. The invasion of this fever is generally sudden and sharp, consisting in rigor, vomiting and sore throat, together with a rapid rise of temperature and increase in the pulse. Occasionally, especially in young children, the attack is ushered in by convulsions. These premonitory symptoms usually continue for about twenty-four hours, when the characteristic eruption makes its appearance. It is the general rule that about the second day the redness, when once it appears all over the body, although it is not distinctly marked on the face. This rash consists of minute thickly-set red spots, which coalesce to form a general diffuse redness, in appearance not unlike that produced by a prostration of the skin. In some instances the redness is accompanied with small vesicles containing fluid. In ordinary cases the rash comes out completely in about two days, and it is then said to have "taken." In some cases the eruption is usually gone. The severity of a case is in some degree measured by the copiousness and brilliancy of the rash, except in the malignant varieties, where there may be little or no eruption. The tongue, which at first was furred, becomes about the fourth or fifth day denuded of its epithelium and acquires the peculiar "strawberry" appearance characteristic of this fever. The interior of the throat is red and somewhat swollen, especially the uvula, soft palate and tonsils, and a considerable amount of secretion exudes from the inflamed surface. There is also tenderness and slight swelling of the glands under the jaw. In favourable cases the fever departs with the appearance of the rash, but in many instances the rash proceeds to the commencement of the process of "desquamation" or peeling of the cuticle, which first shows itself about the neck, and proceeds slowly over the whole surface of the body. Where the skin is thin the desquamation is in the form of fine branny scales; but where it is thicker, as about the hands and feet, it comes off in large pieces, which sometimes assume the form of casts of the fingers or toes. The duration of this process is variable, but it is rarely complete before the third week, and is not infrequently gone on for several weeks beyond that period. It is during this stage that complications are apt to appear.

Scarlet fever shows itself in certain well-marked varieties, of which the following are the chief—

1. **Scarlatina Simplex** is the most common form in which this symptom occurs, and both Latin and English names, and the condition usually runs a favourable course. In some rare instances it would seem that the evidences of the disease are so slight, as regards both fever and rash, that they escape observation and only become known by the
patient subsequently suffering from some of the complications associated with it. In such cases the name latent scarlet fever (scarlatina) is properly applicable.

2. Septic Scarlatina or Scarlatina Anginosus is a more severe form of the fever, particularly as regards the throat symptoms. The rash may be well marked or not, but it is often slow in developing and in some instances may be entirely absent. The tongue is thickened and covered with a thick white coating, the uvula and soft palate being swollen and ulcerated, or having upon them membranous patches not unlike those of diphtheria, while exudations, which become tinged in the course of the disease with a slight yellowish or greenish tinge, and not unfrequently become the seat of abscesses. There is difficulty in opening the mouth; an acrid discharge exudes from the nostrils and excoriates the lips; and the countenance is pale and wax-like. The edges of the teeth are also affected, and the gradual development of the symptoms of acute septicemia, with sweating, albuminuria, delirium and septic rigor.

3. Toxic or ataxic scarlatina (scarlatina maligna). In this form the general symptoms are similar to those of the acute form, and the patient may even die therewith before the typical symptoms of the disease have had time to manifest themselves.

The typically malignant forms are those in which the attack sets in with great violence and the patient sinks from the very first. In such instances the rash either does not come out at all or is of the slightest amount and of livid rather than scarlet appearance, while the throat symptoms are often not prominent. A further example of a malignant form is occasionally observed in cases where the rash, which had previously been well developed, suddenly recedes, and consequently the fever persists, with the death of the patient from septicemia.

The complications and effects of scarlet fever are amongst its most important features in this disease, although their occurrence is exceptional. The most common and serious of these is inflammation of the membranes of the ears (otitis media). This disease is frequently associated with the infection of the ears in the scarlet fever, but is specially apt to appear in the convalescence, when desquamation is in progress. Its onset is sometimes announced by a return of feverish symptoms, accompanied with vomiting and pain in the joints; but in a large number of instances it occurs without these, and comes on insidiously. One of the most prominent symptoms is slight swelling of the face, particularly of the eyelids, which is rarely absent. If the eyelids are arranged in the form of pouches, the presence of a liquid containing blood, epithelium, &c., testifies to a condition of acute inflammation of the kidney (glomerular and tubal nephritis). Occasionally this condition does not wholly pass off, and consequently lai the death from the direct effect of the disease.

Muco-purulent minnorrhoea and also rheumatism are others of the more common complications or results of scarlet fever, while suppuration of the ears is due to the extension of the inflammatory process from the throat along the Eustachian tube into the middle ear. This not unfrequently leads to permanent ear-discharge, with deafness from the disease attacking the inner ear and temporal bone, a condition implying a degree of rick pulling and internal derangement that is fatal. The lungs, heart, kidneys, placenta, vulva, and the lymphatic glands in the breasts, neck, axilla, jaws, heart, lungs, pleura, &c., occasionally arise in connexion with scarlet fever, but they are of less common occurrence than those previously mentioned.

In the treatment of scarlet fever, one of the first requirements is the isolation of the case, with the view of preventing the spread of the disease. In the convalescence, with the view of preventing the treatment of an acute form of the disease. In the convalescence, with the view of preventing the treatment of an acute form of the disease.

As to general management during the progress of the fever, in favourable cases little is required beyond careful nursing and feeding. The diet all through the fever and convalescence should be of light character, consisting mainly of milk food. Soups and broths should be avoided as far as possible, as they increase the frequency of nephritis. During the febrile stage a useful drink may be made by a weak solution of chlorate of potash in water (1 drachm to the pint), and of this the patient may partake freely. This solution should be persisted in every day, according to a weak solution, and sucking ice often relieves local discomfort. Should the lymphatic glands be enlarged and tender, they should be&&.

If we now consider the sites of the other considerations, we may see that the patient had conceived the idea of the Roman comique, the first part of which was printed in 1641. In 1645 was performed the comedy of Jodelet, ou le maître valet, the name of which was derived from the actor who took the principal part. Jodelet was the first of many French plays in which the humour depends on the valet who takes the part of master, an idea that Scarlott borrowed from the Spanish. After a short visit to Le Mans in 1646, he returned to Paris, and worked hard for the bookseller Quinet, calling his works his "marquisat de Quinet." He had
also a pension from Fouquet, and one from the queen, which was withdrawn because he was suspected of Frondent sentiments. When Mazarin received the dedication of Typhon coldly, Scarron changed it to a burlesque on the minister. In 1651 he definitely took the side of the Fronda in a Mazarinade, a violent pamphlet. He now had no resources but his "marquisat."

In his early years he had been something of a libertine. In 1649 a penniless lady of good family, Céleste Palaisseau, kept his house in the Rue d'Enfer, and tried to reform the gay company which assembled there. But in 1652, sixteen years after he had been discovered among the ranks of the Sabran, the barefoot girl without beauty and no fortune, Françoise d'Aubigné, after-wards famous as Madame de Maintenon (q.v.), Scarron had long been able to endure life only by the aid of constant doses of opium, and he died on the 6th of October 1666.

Scarron's work is very abundant and very unequal. The piece most famous in his own day, his Virgile transiis (1648-1653), is now thought a somewhat ignoble waste of singular powers for burlesque. But the Roman comique (1654-1657) is a work of the merit of which is denied by no competent judge. Unfinished, and a little desultory, this history of a troop of strolling actors is almost the first French novel, in point of date, which shows real power of painting manners and character, and is singularly vivid. It is in the style of the Spanish picaresque romance, and furnished Théophile Gautier with the word of which he speaks of the spirit of Don Quixote. Scarron also wrote some shorter novels: La Précéadre insuline, which inspired Sedaine's Gageure impropre; Les Hypocrites, to which the English translation is the origin of the word hypocrite. Of his playe Jodelle (1648) and Don Japhet d'Arménie (1653) are the better.

The most complete edition of his works is by La Martinière, 1737 (10 vols., Amsterdam). The Roman comique and the Enéide imitée were over 500 years later restored by Alphonse de Gérando. In 112 he was one of the contemporary notices of Scarron, which contained in the Historiettes of Tallemant des Réaux is the most accurate. The most important modern works on the subject are Scarron et le genre burlesque by Paul Scarron, and the French translation by J. J. Jussierand in English, prefixed to his edition of The Comical Romance and other tales by Paul Scarron, done into English by Tom Brown of Shifnal, John Roberts, and John Scauro, published in 1837, while the edition of A. d'Aubigné d'après documents nouveaux (1894) by A. de Boislaire is the best.

SCAP, the wild-fowler's ordinary abbreviation of SCAP-DUCK, meaning a duck so called "because she feeds upon Scap, i.e. broken shell-fish," as may be seen in F. Willughby's Ornithology (p. 365); but it would be more proper to say that the name comes from the "mussel-scaps," or "mussel-scalsps," the beds of rock or sand on which mussels are aggregated. It is the Anas marila of Linnaeus and Fulgula marila of modern systematic writers. At the same time he has a third around the coasts of most parts of the northern hemisphere, repairing inland in spring for the purpose of reproduction, though so far as is positively known hardly but in northern districts, as Iceland, Lapland, Siberia, and the fur-countries of America. The scap-duck has considerable likeness to the pochard (q.v.), both in habits and appearance; but it much more generally affects salt-water, and the head of the male is black, glossed with green; hence the name of "Black-head," by which it is commonly known in North America, where, however, a second species or race, smaller than the ordinary one, is also found, the Fuligula affinis. The female scap-duck can be readily distinguished from the dun-female pochard by her broad white face.

SCAURUS, MARCUS AEMILIUS (c. 165-88 B.C.), Roman statesman, was a member of a great patrician family which had sunk into obscurity. His father had been a coal-dealer, and he himself had thought of becoming a money-changer, but finally decided in favour of a political career. Having served in the army in Spain and Sardinia, he became curule aedile, praetor and (after an unsuccessful attempt in 117) consul in 115. During his consilium he celebrated a triumph for his father, who was a very abundant land around the coasts of most parts of the commission senters to Africa to arrange the dispute between Jugurtha and Adherbal. When a special committee was appointed to examine the charges of venality in their dealings with Jugurtha brought against the Roman representatives, Scaurus, who was equally guilty with the rest, was especially active in promoting the establishment of the committee, and even managed to get himself put at the head of it. He thus saved himself, but his intercession on behalf of the other offenders was of no avail. In 109 Scaurus was censor, and constructed the Via Aemilia and restored the Mulvian bridge. In 104 he superseded Saturninus (q.v.) in the management of the corn supply at Ostia.

During all his life Scaurus was a firm adherent of the moderate aristocratical party, which frequently involved him in quarrels with theardeur and the orators. The Venalities of Dionysius of Hanno, for instance, caused him much trouble. Though not a great orator, his speeches were weighty and impressive. His wife was Caecilia Metella, who after his death married Quintus Sulla. His daughter Aemilia was the wife of Manius Claudius Glabrio, and subsequently of Pompey, the triumvir.

See Sallust, Jugurtha; Orelli's Onomastikon Tullianum; Asconius, in Scaurus; Aurelius Victor, De viris illustribus, 72; A. H. J. Grote, History of Greece, 1. 296; and M. G. Bloch, Mélanges d'histoire ancienne, i. (1906).

MARCUS AEMILIUS SCAURUS, his son, served during the third Mithradatic War (74-61 B.C.) as quaestor to Pompey, by whom he was sent to Judaea to settle the quarrel between Hyrcanus and Aristobulus. Scaurus decided in favour of the latter, who was able to offer more money. On his arrival in Syria, Pompey reversed the decision, but, ignoring the charge of bribery brought against Scaurus, left him in command of the district. An incidental campaign against Aretas, king of the Nabataeans, was ended by the capture of the town of Shihab, and the payment of 30,000 talents by Aretas to secure his possessions. This agreement is represented on coins of Scaurus—Aretas kneeling by the side of a camel, and holding out an olive branch in an attitude of supplication. As curule aedile in 58, Scaurus celebrated the public games on a scale of magnificence never seen before. Animals, hitherto unknown to the Romans, were exhibited in the circus, and an artificial lake (euxiprus) was made for the reception of crocodiles and hippopotamuses. One of the greatest curiosities was a huge skeleton brought from Joppa, said to be that of the monster to which Andromeda had been exposed. A wooden theatre was erected on the occasion, capable of holding 80,000 spectators.

In 56 Scaurus was praetor, and in the following year governor of Sardinia. On his return to Rome (54) he was accused of extortion in his province. Cicero and five others (amongst them the famous Q. Hortensius) undertook his defence, and, although there was no doubt of his guilt, he was acquitted. During the same year, however (according to some, two years later, under Pompey's new law), Scaurus was condemned on a charge of illegal practices when a candidate for the consulship. He went into exile, and nothing further is heard of him.

SCAURUS, QUINTUS TERENTIUS, Latin grammerian, flourished during the reign of Hadrian (Aulus Gellius xi. 13). He was the author of an Ars grammatica and commentaries on Plautus, Virgil's Aeneid and probably Horace. Under his name two fragments are extant—the longer from his work on orthography (De orthographia), the shorter (chiefly on the use of prepositions) from another grammatical work.

SCAVENGER, now one who cleans the streets, removes refuse, generally a workman employed by the local public health authority (see Public Health). The name is properly "scaverger" or "scaverger" (the n being intrusive as in "passenger" and "messageer"), an official who was concerned with the receipt of custom duties and the inspection (scavage) of imported goods. The "scavagers" are found with such officials of the City of London as almoners, beadle, &c., in the Liber Almoniarius, which contains the Aemilia Gildk Calderons Londonensis, ed. Riley). These officials seem to have been charged also with the cleaning of the streets, and the name superseded the older raker or for those who performed this duty. Skeat takes "scavage" to be a Low French corruption of "showage," spelled variously as scawage, sceage, &c., and, therefore, to be derived from "show," to exhibit for inspection.

1 The view that he was consul again in 108 is disproved by Bloch (see biblio).
SCAVENGER'S DAUGHTER—SCEPTICISM

SCAVENGER'S DAUGHTER (corruption of Skevington's or Skeffington's Daughter), an instrument of torture in use during the 16th century in England. It was invented by Sir W. Skevington, lieutenant of the Tower in the reign of Henry VIII. It consisted of a wide iron hoop which by means of screws was tightened round the victim's body until the blood was forced from the nose and ears, and sometimes even from the hands and feet.

SCENE (Fr. scène, Lat. scena, Gr. σκηνή, a tent or booth, a stage or scene), a word of which the various applications, figurative or otherwise, are derived from its original meaning of the stage or platform in the Greek or Roman theatre together with the structure that formed the background. Thus "scene" was formerly used, as "stage" is to-day, of the actor's profession or of dramatic art; and of the actual performance or representation on the stage, still surviving in such phrases as "the scene opens" or "closes." It is also applied, actually and figuratively, to the place where the action of a play or any series of events take place, and so of any episode or situation in a novel or other narrative or description of events; from this the transition to an excited or violent exhibition of feeling between two or more persons is easy.

Of the specific applications of the word to the drama the main examples are (1) to a division of the play, marked by the fall of the curtain, the "scene" being a subdivision of an act," where the play is thus divided, or where there are no acts, of the divisions themselves; (2) to the material which forms the view of the place where the acts of the play are supposed to be performed, used in the painted cloths, slides and other apparatus, known as the "scenery," a word which has thus been transferred to a view generally, the appearance of the feature of a natural landscape. Allied words are "scena," used only in music, and "scenical," signifying a dramatic system of accompaniment, forming part of an opera or as an individual composition; and "scenario," a full outline of a play or opera, giving details of the acts, scenes, actors, situations, stage-business, &c.

SCENT, an odour or smell, particularly a fragrant liquid distilled from flowers, &c., used as a perfume (see Perfumery). The word should be properly spelled "sent," and is derived from the Mid. Eng. verb senden, to scent, to perceive by the sense of smell, Fr. sentir, Lat. sentire, to perceive by the sense. The intrusive c appears in the 17th century, and is paralleled by the same in "scythe" for sythe. For the physical causes of the sensation caused by a scent see Smell, and for the anatomy of the organs concerned see Olfactory System.

SCEPTICISM (σεπτικός, I consider, reflect, hesitate, doubt), a term signifying etymologically a state of doubt or indecision in the face of mutually conflicting statements. It is implied, moreover, that this doubt is not merely a stage in the road to true knowledge, but rather the last result of investigation, the conclusion that truth or real knowledge is unattainable by man, and that critical systems, the intrusion of the senses, and the appliance of the sense of smell are, as it were, the food of scepticism. Accordingly, we find that sceptical thought did not make its appearance till a succession of mutually inconsistent theories as to the nature of the real had suggested the possibility that they might all alike be false.

The Sophists. The Sophistic epoch of Greek philosophy was, in great part, such a negative reaction against the self-confident assertion of the nature-philosophies of the preceding age. Though scepticism as a definite school may be said to date only from the time of Pyrrho (q.v.) of Elis, the main currents of Sophistic thought were sceptical in the wider sense of that term. The Sophists (q.v.) were the first in Greece to dissolve knowledge into individual and momentary opinion (Protagoras), or dialectically to deny the possibility of knowledge (Gorgias). In these two examples we see how the weapons forged by the dogmatic philosophers, to assist in the establishment of their own theses are sceptically turned against philosophy in general. As every attempt to rationalize nature implies a certain process of criticism and interpretation to which the data of sense are subjected, and in which they are, as it were, transcended, the antithesis of reason and sense is formulated early in the history of the Sophists. The Sophists do not reject it as absolute, but they impose the imprecation of the veracity of the senses in the interest of the rational truth proclaimed by the philosophers in question. Among the pre-Socratic nature-philosophers of Greece, Heraclitus and the Eleatics are the chief representatives of this polemic. The diametrical opposition of the grounds on which the veracity of the senses is impugned by the two philosophies (see Heraclitus, Parmenides, Eleatic School) was in itself suggestive of sceptical reflection. Moreover, the arguments by which Heraclitus supported this theory of the unverifiability of his propositions, was employed by Protagoras to undermine the possibility of objective truth, by dissolving all knowledge into the momentary sensation or persuasion of the individual. The idea of an objective flux, or law of change constituting the reality of things, is abandoned, and subjective points of sense alone remain—which is tantamount to eliminating the real from human knowledge.

Still more unequivocal was the sceptical nihilism expressed by Gorgias (q.v.)—(1) nothing exists; (2) if anything existed, it would be beyond our knowledge; (3) it would be impossible to communicate. His arguments were drawn from the dialectic which the Eleatics had directed against the existence of the phenomenal world. But they are no longer used as indubitable proofs of the non-existence of the phenomena, but are the obiter dicta given by most of the Sophists to rhetoric, their cultivation of a subjective readiness as the essential equipment for life, their substitution of persuasion for conviction, all mark the sceptical undertone of their teaching. This attitude of indifference to real knowledge passed in the younger and less reputable generation into a corroding moral scepticism which recognized no good but pleasure and no right but might.

The scientific impulse communicated by Socrates was sufficient to drive scepticism into the background during the great age of Greek philosophy (i.e. the hundred years preceding Aristotle). But the Megarian school (q.v.) was indeed in some cases closely related to sceptical results. The school had been considered with some truth to form a connecting link with the later scepticism, just as the contemporary Cynicism and Cyrenaicism may be held to be imperfect preludes to Stoicism and Epicureanism. The extreme nominalism of some of the Cynics also, who denied the possibility of any but identical judgments, must be similarly regarded as a solvent of knowledge. But with these insignificant exceptions it holds true that, after the sceptical wave marked by the Sophists, the happiness or satisfaction of life was to be found in activity and the observance of the Socratic impulse in Aristotle.

Scepticism, as a distinct school, begins with Pyrrho of Elis, who maintained that knowledge of things is impossible and that we must assume an attitude of reserve (ἐρωτευόμενος). The Pyrrhonists were certainly sufficient to extend their distrust even to their own principle of doubt. They thus attempted to make their scepticism universal, and escape the reproach of basing it upon a fresh dogmatism. Mental imperturbability (άραξαρξ) was the result to be attained by cultivating such a tranquil state of mind. The happiness or satisfaction of life was the end which dominated this scepticism as well as the contemporary systems of Stoicism and Epicureanism, and all three philosophies place it in tranquillity or self-centred indifference. It is men's opinions or unwarranted judgments about things, say the sceptics, which betray them into desire, and painful effort and disappointment. From all this a man is delivered who abides from judging one state to be preferable to another. But, as complete inactivity would have been synonymous with death, it appears to have been admitted that the sceptic, while retaining his consciousness of the complete uncertainty enveloping every step, might follow custom in the ordinary affairs of life.

The scepticism of the New Academy (more strictly of the Middle Academy, under Arcesilaus and Carneades) differed very little from that of the Pyrrhonists. The differences
asserted by later writers are not borne out on investigation. But the attitude maintained by the Academicians was chiefly that of a negative criticism of the views of others, in particular of the somewhat crude and imperious dogmatism of the Stoics. They also, in the absence of certainty, allowed a large scope to probability as a motive to action, and defended their doctrine on this point with greater care and skill. The whole position was stated with more urbanity and culture, and was supported, by Carneades in particular, by argumentation at once more copious and more acute. It seems also true that the Academicians were less overborne than the Pyrrhonians by the practical issue of their doubts (imperturbability); their interest was more purely intellectual, and they had something of the old delight in mental exertion for its own sake (see ARCESILAS, CARNEADES, Aenesidemus, AGRIPP and SEXTUS EMPRICUS).

Both Zeller and Hegel remark upon the difference between the calm of ancient scepticism and the perturbed state of mind evinced by many modern sceptics. Universal doubt was the instrument which the sceptics of antiquity recommended for the attainment of complete peace of mind. By the moderns, on the other hand, doubt is adopted, and the objection is made that it is not only impractical but painful. Even Hume, in various passages of his Treatise, speaks of himself as recovering cheerfulness and mental tone only by forgetfulness of his own arguments. His state of universal doubt he describes as a "malady" or as "philosophical melancholy and delirium." The difference might easily be interpreted either as a sign of sentimental weakness on the part of the moderns or as a proof of the limitation of the ancient sceptics which rendered them more easily satisfied in the absence of truth. It seems to prove, at all events, that the ancient sceptics were more thoroughly convinced than their modern successors of the reasonableness of their own attitude.

It may be doubted whether the thoroughgoing philosophical scepticism of antiquity has any exact parallel in modern times, with the single exception possibly of Hume's Treatise on Human Nature. It is true we find many thinkers who deny the competency of reason when it ventures in any way beyond the sphere of experience, and such men are not uncommonly called sceptics. This is the sense in which Kant often uses the term, and the usage is adopted by others—for example, in the following definition from Ueberweg's History of Philosophy: "The principle of principle for the most part, a state of doubt with regard to the validity of all judgments respecting that which lies beyond the range of experience." The last characteristic, however, is not enough to constitute scepticism in the ancient sense. Scepticism, to be complete, must hold that even within experience we do not rationally conclude but are irrationally induced to believe. "In all the incidents of life," as Hume puts it, "we ought still to preserve our scepticism. If we believe that fire warms, or water refreshes, "it only because it costs us too much pains to think otherwise" (Treatise, bk. i. iv. 7). This tone, which fairly represents the attitude of ancient sceptics, is rare among the moderns, at least among those who are professed philosophers. It is more easily matched in the unscientific utterances of a man of the world like Montaigne.

2. One form of scepticism, however, may be claimed as an exclusively modern growth, namely, philosophical scepticism in the interests of theological faith. These sceptics are primarily Apologists. Their scepticism is simply a means to the attainment of a further end. They find that the dogmas of their church have often been attacked in the name of reason, and it may be that some of the objections urged have proved hard to rebut. Accordingly, in an access of practical rage, as it were, they turn upon reason to rend her. They endeavour to show that she is in contradiction with herself, even on matters non-theological. Thus the "imbecility" of reason becomes their warrant for the reception by another organ—i.e., faith—of that to which reason had raised objections. The Greeks had no temptation to divide man in two in this fashion. Their scepticism was an end in itself. But this line of argument was latent in Christian thought from the time when St. Paul spoke of the "foolishness" of preaching. So Tertullian: "Crucifixus est Dei filius; non pudet, quia pudendum est. Et mortuus est Dei filius; prorsus credibile est, quia ineptum est. Et sepultus resurrexit; certum est, quia impossibile est." But, as Christianity became firmly established, Christian writers became more tolerant of speculation, and laboured to reduce the doctrines of the church to a rational system. This was the long task essayed by Scholasticism; and, though the great Schoolmen of the 13th century refrained from attempting to rationalize such doctrines as the Trinity and the Incarnation, they were far from considering them as essentially opposed to reason. It was not till the Enlightenment towards the close of the middle ages that a sense of conflict between reason and revelation became widely prevalent and took shape in the essentially sceptical theory of the twofold nature of truth. Philosophical truth, as deduced from the teaching of Aristotle, it was said, directly contradicts the teaching of the church, which determines truth in theology; but the contradiction leaves the authority of the latter unimpaired in its own sphere. It is difficult to believe that this doctrine was ever put forward sincerely; in the most of the cases, perhaps, it was only a prelude to that intolerance by which they sought to cover their heterodoxy and evade its consequences. Rightly divining as much, the church condemned the doctrine as early as 1276. Nevertheless, it was openly professed during the period of the break up of Scholastic Aristotelianism (see POMPONAZZI).

The typical and by far the greatest example of the Christian sceptic is Pascal (1623-1662). The form of the Pensées forbids the attempt to evolve from their detached utterances a completely coherent system. For, though he declares at times "Le pyrrhonisme est le vrai," "Se moquer de la philosophie c'est vraiment philosopher," or, again, "Humiliez-vous, raison impuissante, taisez-vous, nature imbécile," other passages might be quoted in which he avers the refusal of reason within its own sphere. But what he everywhere emphatically denies is the possibility of reaching by the unassisted reason a satisfactory theory of things. Man is a hopeless enigma to himself, till he sees himself in the light of revelation as a fallen creature. The fall alone explains at once the nobleness and the meaness of humanity; Jesus Christ is the only solution in which the baffled reason can rest. These are the two points on which he insists. Faustus, if ever he could be made, was, in the judgment upon the mysteries of the faith, reason is unable to solve its own contradictions without aid from a higher source. In a somewhat similar fashion, Lamennais (in the first stage of his speculations, represented by the Essai sur l'indifférence en matière religieuse, 1817-1821) endeavoured to destroy all rational certitude in order to establish the principle of authority; and the same profound distrust of the power of the natural reason to arrive at truth is exemplified (though the allegation has been denied by the author) in Cardinal Newman. In a different direction and on a larger scale, Hamilton's philosophy of the conditioned may be quoted as an example of the same religious scepticism (see HAMILTON, SIR WILLIAM). The theological application and development of Hamilton's arguments in Mansel's Bampton Lectures On the Limits of Religious Thought marked a still more determined attack, in the interests of theology, upon the competency of reason.

Passing from this particular vein of sceptical or semi-sceptical thought, we find, as we should expect, that the downfall of Scholasticism and the conflict of philosophical theories and the religious confessions which ensued, gave a decided impetus to sceptical reflection. One of the earliest instances of this spirit is afforded by the book of Agrippa of Nettesheim (1487-1535). De incertitudine et vanitate scientiarum. This turn of thought is not confined, however, to Christian thinkers. In the late 17th century, e.g., in his Taháfat al-Filázhá ("The Collapse of the Philosophers") is the advocate of complete philosophical scepticism in the interests of orthodox Mahometanism—an orthodoxy which passed, however, in his own case into a species of mysticism. He did his work of destruction so thoroughly that Arabian philosophy died out after his time in the land of its birth.
Scepticism

Sceptical reflection rather than systematic scepticism is what meets us in the treatise of La Motte (1653). Kantian analysis, though the elaborate presentation of sceptical and relativistic arguments in his "Apologie de Raimond-Sebon" (Essai, ii. 12), and the emblem he recommends—a balance with the legend, "Que scez-vous?"—might allow us to adduce his native state of helplessness and inertia, he doubtedly his own habitual frame of mind is better represented in his celebrated saying—"How soft and healthful a pillower are ignorance and insensibility, . . . for a well-ordered head." More inclined that Montaigne than Protagoras, in his reflection, his friend Pierre Charron (1541-1603), who in his book De la sagesse systematized in somewhat scholastic fashion the train of thought which we find in the Exeget. François Sanchex (1652-1653), professor of medicine and philosophy in Toulouse, combated the Aristotelianism of the schools with much bitterness, and was the author of a book with the title Quod nihil situr. Of more or less isolated thinkers may be mentioned François de la Mothe le Vayer (1688-1762), whose Cinq Dialogues appeared after his death under the pseudonym of Orosius Tubero; Samuel Sorbière (1615-1670), who translated into Latin Pyrrhoneus, Ctenius Empiricus; Simon Foucher (1644-1696), canon of Dijon, who wrote a De l'Academic, and combated Descartes and Malebranche from a sceptical standpoint. The work of Hieronymus Hynthal of Prague (1617-1686) and Pierre Antoine Regis Dijon, called Censura scientiarum, or typho non sanx, was written in the interests of revelation. This is still more the case with the bitter polemic of Daniel Huet (1621-1671), Censura philosophiae Cartesianae, and his later work, Traite de l'idole. The first work of Joseph Glanvill (q.v.), which is set forth in his two works The Vanity of Dogmatizing (1662) and Scepticus scientiae (1666), has more interest for Englishmen than for sceptics. It is celebrated than any of the above was Pierre Bayle (1647-1706), whose sceptical inclination more in his keen negative criticism of all systems and doctrines which came before him as literary historian than in any theoretic views of his own as to the possibility of knowledge. Bayle also parodied the opposition between reason and revelation; but the argument in his hands is a double-edged weapon, and when he extols the merits of subsatisfaction his sincerity is at least questionable.

3. Hume is the most illustrious and indeed the typical sceptic of modern times. His scepticism is sometimes placed, as we have seen it is, by Kant, in his distrust of our ability and right to pass beyond the empirical sphere. But it is essential to the sceptical position that reason be dethroned within experience as well as beyond it, and this is undoubtedly the result at which Hume finally arrives. The Treatise is a reductio ad absurdum of the principles of Lockianism, inasmuch as these principles, when consistently applied, leave the structure of experience entirely "loosened" (to use Hume's own expression), or cemented together only by the irrational force of custom. Hume, if consistent, and he really rises from his thoroughly empiricist standpoint, with "sceptical" ideas left in by the senses, he never advances beyond these "distinct existences." Each of them exists on its own account; it is what it is, but it contains no reference to anything beyond itself. The very notion of objectivity and truth therefore disappears. Hume's analysis of the conceptions of a permanent world and a permanent self reduces us to the sensationalistic relativism of Pyrrhonas. He expressly puts this forward in various passages as the conclusion to which reason conducts us. The fact that the conclusion is in "direct and total opposition" to the assumptions of the senses is a fresh justification of philosophical scepticism. For, indeed, scepticism regarded to the senses is considered in the Inquiry to be sufficiently justified by the fact that they lead us to suppose "an external universe which depends not on our perception," whereas "this universal and primary opinion of all men is soon destroyed by the slightest philosophy." Scepticism with regard to reason, on the other hand, depends on an insight into the irrational character of the relation which we chiefly employ, viz. that of cause and effect. It is not a real relation in objects, but rather a mere attribute of the mind, suggested by frequent repetition or custom. This point of view is applied in the following words: All real connexion or relation, therefore, and with it all possibility of an objective system, disappears; it is, in fact, excluded by Hume ab initio, for "the mind never perceives any real connexion among distinct existences." Belief, however, just because it rests, has as been said, on custom and the influence of the imagination, survives such demonstrations. "Nature," as Hume delights to reiterate, "is always too strong for principle." "Nature, by an absolute and uncontrollable necessity, has determined us to judge as well as to believe; and this true philosopher, therefore, is not the Pyrrhonist, trying to maintain an impossible equilibrium or suspense of judgment, but the Academic, yielding gracefully to the impressions or maxims which he finds, as matter of fact, to have most sway over himself.

The system of Kant, or rather that part of his system expounded in the Critique of Pure Reason, though expressly distinguished by its author from scepticism, has been included by many writers in their survey of sceptical theories. The difference between Kant, with his system of pure scepticism, and any of the thinkers we have passed in review is obvious; and his limitation of reason to the sphere of experience suggests itself in the title of agnostic or positivist rather than that of sceptic. Yet, if we go a little deeper, there is substantial justification for the view which treats agnosticism of the Kantian type as essentially sceptical in its foundations and in its results. For criticism not only limits our knowledge to a certain sphere, but denies that our knowledge within that sphere is real; we know things as they actually are, but only as they appear to us. But this doctrine of relativity really involves a condemnation of our knowledge (and of all knowledge), that it is false to realize an impossible and self-contradictory ideal. The man who impeaches the knowing faculties because of the fact of relation which they involve is pursuing the phantom of an apprehension which, as Lotze expresses it, does not apprehend things, but is itself things; he is desiring not to know but to be the things themselves. If this dream or prejudice be exploded, then the scepticism originating in it—and a large proportion of the sceptical thought does so originate—loses its raison d'être. The prejudice, however, which meets us in Kant, is in a somewhat different form, the same prejudice which is found in the tropes of antiquity—what Lotze calls the "inaudible relation of the word of ideas to a foreign world of objects." For, as he rightly points out, whether we suppose idealism or realism to be true, in neither case do the things themselves pass into our knowledge. No standpoint is possible from which we could compare the world of knowledge with such an independent world of things, in order to judge of the conformity of the one to the other. To ask an abstract doubt "whether all things may not be quite other than they really are" involves the rejection of our thought they necessarily appear is a scepticism which, though admittedly irreparable, is as certainly groundless. No arguments can be brought against it, simply because the scepticism rests on nothing more than the empty possibility of doubting. This holds true, even if we admit the "independent" existence of such a world of things. But the independence of things may with much greater reason be regarded as itself a fiction or prejudice. The real "objective" to which our thoughts must show conformity is not a world of things in themselves, but the system of this world (if it has one) which scepticism is deprived of its persistent argument if it is seen that, while clear individual experiences are to be judged by their coherence with the context of experience in general, experience as a whole does not admit of being judged by reference to anything beyond itself.

To the attack upon the possibility of demonstration, inasmuch as every proof requires itself a fresh proof, it may quite fairly be retorted that the contradiction really lies in the demand

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* Much the same conclusion is reached in what is perhaps the ablest English exposition of pure philinological scepticism since Hume—A. J. Balfour's Defence of Philosophical Doubt (1879). It may be as well to add that the sceptical side of Kantianism is mainly confined to the Critique of Pure Reason; but this side of Kantian thought has been most widely influential. The remarks above would not apply to the coherent system of Idealism which may be evolved from Kant's writings, and which many would consider alone to deserve the name of Kantianism or Criticism.
for proof of the self-evident, on which all proof must ultimately depend. It is of course always possible that in any particular case we may be deceived; we may be assuming as self-evidently true what is in reality not so. But such incidental lapses are found to correct themselves by the consequences in which they involve us, and they have no power to shake our trust in the general validity of reason. It may, however, be granted that the possibility of lapse throws us open to the objections, ingenious or disingenuous, of the sceptic; and we must remain exposed to them so long as we deal with our first principles as to many isolated axioms or intuitions. But the process of self-correction referred to points to another proof—the only ultimately satisfactory proof of which first principles admit. Their evidence lies in their mutual interdependence and in the coherence of the system which they jointly constitute.

Of a scepticism which professes to doubt the validity of every reasoning process and every operation of all our faculties it is, of course, as impossible as it would be absurd to offer any refutation. This absolute scepticism, indeed, can hardly be regarded as more than an empiric position which they would indicate is not one which has ever existed. In any case, such scepticism is at all times sufficiently refuted by the imperishable and justifiable trust of reason in itself. The real function of scepticism in the history of philosophy is relative to the dogmatism which it criticizes. And, as a matter of fact, it has been seen that many so-called sceptics were rather critics of the effect systems which they found cumbering the ground than actual doubters of the possibility of knowledge in general. And even when a thinker puts forward his doubts as absolute, his scepticism is as bound to regard it in the same light. The progress of thought may show it to be, in truth, relative, as when the nerve of Hume’s scepticism is shown to be his thoroughgoing empiricism, or when the scepticism of the Critique of Pure Reason is traced to the unwarrantable assumption of things-in-themselves. When the assumptions on which it rests are proved to be baseless, the particular scepticism is also overcome. In like manner, the apparent antinomies on which such a scepticism builds will be found to resolve themselves for a system based on a deeper insight into the nature of things. The serious thinker will always repeat the words of Kant that, in itself, scepticism is “not a permanent resting-place for human reason.” Its justification is relative, and its function transitory.

AUTHORITIES.—Ancient scepticism is fully treated in the relative parts of Zeller’s Philosophie der Griechen. See also works quoted in the following pages.

SCEPTRE. A rod or staff has always been regarded as a token of authority. Among the early Greeks the sceptre (σκέπτωρ) was a long staff used by aged men (II. xviii. 416, Herod. 1. 160), and came to be used by judges, military leaders, priests and others. It is represented on painted vases as a long staff tipped with a metal ornament, and is borne by some of the gods. Among the Etruscans, however, it was a staff with a cross, and was used by kings and upper orders of the priesthood, and many representations of such sceptres occur on the walls of the painted tombs of Etruria. The British Museum, the Vatican and the Louvre possess Etruscan sceptres of gold, most elaborately and minutely ornamented. The Roman sceptre was probably derived from the Etruscan. Under the Republic an ivory sceptre (sceptrum dornseum) was a mark of consulary rank. It was also used by victorious generals who received the title of imperator, and it may be said to survive in the marshal’s baton. Under the empire the sceptrum Augusti was specially used by the emperors, and was often of ivory tipped with a golden eagle. It is frequently shown on medallions of the later empire, which have on the obverse a half-length figure of the emperor, holding in one hand the sceptrum Augusti, and in the other the orb surmounted by a small figure of Victory.

With the advent of Christianity the sceptre was often tipped with a cross, and thus it continued to the middle ages the finials on the top of the sceptre varied considerably. In England from a very early period two sceptres have been concurrently used, and from the time of Richard II. they have been consecrated with a cross and a dove respectively. In France the royal sceptre was tipped with a fleur de lys, and the other, known as the main de justice, had an open hand of benediction on the top. Sometimes the sceptre was designed on a small scale as were the sceptres of the emperors, viz. on royal seals, as on the great seal of Edward III., where the king, enthroned, bears such a sceptre, but it was an unusual form; and it is of interest to note that one of the sceptres of Scotland, preserved in Edinburgh Castle, has such a hand above the orb. The sceptres of St. Andrew and St James in it. This sceptre was, it is believed, made in France about 1536, for James V. Great seals usually represent the sovereign enthroned, holding a sceptre (often the second in dignity) in the right hand, and the orb and cross in the left. Harold is so depicted on the Bayeux tapestry.

The earliest coronation form of the 9th century mentions a sceptre (sceptrum), and a staff (bacillum). In the so-called coronation form of Ethelred II. a sceptre (sceptrum), and a rod (virga) are named, and this is also the case with a coronation form of the 12th century. In a contemporary account of Richard I.’s coronation the royal sceptre is described as having a gold cross, and the gold rod (virga) with a gold dove on top, are mentioned for the first time. About 1450 Sporley, a monk of Westminster, compiled a list of the relics there. Among these he described the sceptre of St. Edward the Confessor, and left by him for the coronations of his successors. A golden sceptre, a wooden staff and an iron rod are named. These survived till the Commonwealth, and are minutely described in the Register of the regalia drawn up in 1649, when everything was destroyed.

For the coronation of Charles II. new sceptres were made, and though slightly altered, are still in use. They are a sceptre with a cross and orb, and the Edwardian cross, or sceptre, or staff with a cross of gold on the top called St Edward’s staff. To these, two sceptres for the queen, one with a cross, and the other a gold staff, have been subsequently added.

See Cyril Davenson, The English Regalia (London, 1875); Lechard Wickham-Legg, English Coronation Records; The Ancestor, Nos. 1 and 2 (1902); Menin, The Form, Etc., of Coronations (English translation, 1797).

SCÉVE, MAURICE (c. 1500-1564), French poet, was born at Lyons, where his father practised law. Besides following his father’s profession he was a painter, architect, musician and poet. He was the centre of the Lyonnais coterie that elaborated the theory of spiritual love, derived partly from Plato and partly from Petrarch, which was enunciated in Antoine Heroët’s Parfaite Ame.

Scève’s chief works are Délle, objet de plus hailli vertu (1544); two elegoes, Arion (1536) and La Sausaye (1547); and Le Microscope, a poem in 350 lines, written in 1545. The Délle consists of 450 divinities and about 50 other poems in praise of his mistress. These poems, now little read, were even in Scève’s own day so obscure that his enthusiastic admirer Étienne Dolet confesses he could not understand them. Scève was a musician as well as a poet, and cared very much for the musical value of the words he used. In this and in his erudition he forms a link between the school of Marot and the Pléiade. Délle (an anagram for l’âme) set the fashion of a series of poems addressed to a mistress real or imaginary, followed by Ronsard in Cassandra and by Du Bellay in Ôïsile, the Lyonnese school of which Scève was the leader included many of the leading names of that school and movement. See Jeanne Gaillarde—placed by Marot on an equality with Christine de Pisan—Pernette du Guillet, Clémence de Bourges and the poet’s sisters, Claudine and Sibylle Scève. Scève died in 1564. See also LABI, LOUISA.


SCHACK, ADOLF FRIEDRICH, GRAF von (1815-1864), German poet and historian of literature, was born at Brüswitz near Schwerin on the 2nd of August 1815. Having studied jurisprudence (1834-1838) at the universities of Bonn, Heidelberg and Berlin, he entered the Mecklenburg State service and was subsequently attached to the “Kammergericht” in Berlin. Tiring of official work, he resigned his appointment, and after travelling in Italy, Egypt and Spain, was attached to the court.
of the grand duke of Oldenburg, whom he accompanied on a journey to the East. On his return he entered the Oldenburg government service, and in 1849 was sent as envoy to Berlin. In 1852 he retired from his diplomatic post, resided for a while on his estates in Mecklenburg and then travelled in Spain, where he studied Moorish history. In 1855, he settled at Munich, where he was made member of the academy of sciences, and here collected a splendid gallery of pictures, containing masterpieces of German, French, Schwinté, Schinkel, Böcklin, Lenbach, &c. and which, though bequeathed by him to the Emperor William II., still remains at Munich and is one of the noted galleries in that city.

He died at Rome on the 14th of April 1894.

Schack was a most productive author; he wrote lyric poems (Gedichte, 1807, 6th ed. 1888); novels in verse, Durch alle Wetter (1813), 3rd ed. (1854); Geschichten von Edelgängern der Eisenbahn (1817); the tragedies Die Pianer (1872) and Wolfsburg und Der Johanniter (1887); and the political comedies, Der Kasserboke and Cacana (1873).

In 1845-1846, he published Geschichte der dramatischen Literatur und Kunst in Spanien (3 vols. 1845-1846, 2nd ed. 1854), Poesie und Kunst der Araber in Spanien und Sicilien (1865, 2nd ed. 1877), which are valuable contributions to literary history. He also produced some excellent translations, e.g. Spanisches Theater (1845); Heldensagen des Freuds (1851) and Stimmen vom Ganger (1857, 2nd ed. 1877). He also compiled the catalogue and history of his own picture gallery, Meine Gemälde und andere Kunstdenkmäler (1864), and published his Werke, were published in six volumes (1883, 3rd ed. in 10 vols. 1897-1899). Nachgelassene Dichtungen were edited by G. Winkler (1890). In 1851, his Nachfahren, Ein kurzer text zur Geschichte der Ausfischungen (3 vols. 1887, 3rd ed. 1894). Cf. further the accounts of Schack by F. W. Rogge (1883), E. Zabel (1884), E. Brenning (1885), W. J. Maassen (from the Dutch, 1889), and also L. Schadow, a distinguished name in the annals of German art.

I. JOHANN GOTTFRIED SCHADOW (1764-1850), sculptor, was born and died in Berlin, where his father was a poor tailor. His first teacher was an inferior sculptor, Tassaert, patronized by Frederick the Great; the master offered his daughter in marriage, but the pupil preferred to elope with a girl to Vienna, and the father-in-law not only condoned the offence but furnished money wherewith to visit Italy. Three years' study and R., he published Geschichte der dramatischen Literatur und Kunst in Spanien (3 vols. 1845-1846, 2nd ed. 1854), Poesie und Kunst der Araber in Spanien und Sicilien (1865, 2nd ed. 1877), which are valuable contributions to literary history. He also produced some excellent translations, e.g. Spanisches Theater (1845); Heldensagen des Freuds (1851) and Stimmen vom Ganger (1857, 2nd ed. 1877). He also compiled the catalogue and history of his own picture gallery, Meine Gemälde und andere Kunstdenkmäler (1864), and published his Werke, were published in six volumes (1883, 3rd ed. in 10 vols. 1897-1899). Nachgelassene Dichtungen were edited by G. Winkler (1890). In 1851, his Nachfahren, Ein kurzer text zur Geschichte der Ausfischungen (3 vols. 1887, 3rd ed. 1894). Cf. further the accounts of Schack by F. W. Rogge (1883), E. Zabel (1884), E. Brenning (1885), W. J. Maassen (from the Dutch, 1889), and also L. Schadow, a distinguished name in the annals of German art.

II. His eldest son, RUDOLPH SCHADOW (1786-1822), sculptor, was born in Rome, and had his father at Berlin for his first master. In 1810 he went to Rome and received kindly help from Canova and Thorvaldsen. His talents were versatile; his first independent work was a figure of Paris, and it had for its companion a spinning girl.

Embracing the Roman Catholic faith, he produced statues of John the Baptist and of the Virgin and Child. In England he became known by bas-reliefs executed for the duke of Devonshire and for the marquis of Lansdowne. His last composition, commissioned by the Duke of Devonshire, the life-sized figure of Achilles with the Body of Penthesilea; the model, universally admired for its antique character and the largeness of its style, had not been carried out in marble when in 1822 the artist died in Rome.

III. FRIEDRICH WILHELM SCHADOW (1789-1862), painter, was the second son of Johann Gottfried Schadow. In 1805-1807, he was in his uncle brother Rudolph to Rome. He became one of the leaders among the German pre-Raphaelites. Following the example of Overbeck and others, he joined the Roman Catholic Church, and held that an artist must believe and live out the truths he essays to paint. The sequel showed that Schadow was qualified to shine less as a painter than as a teacher and director.

The Prussian consul, General Bartholdi, befriended his young countryman, and invited him to give his first paintings a room in his house on the Pincian Hill. The artists engaged were Schadow, Cornelius, Overbeck and Veit; the subject selected was the story of Joseph and his brethren, and two scenes, the Bloody Coat and Joseph in Prison, fell to the lot of each. Schadow had in 1819 appointed professor in the Berlin Academy, and his ability and thorough training gained devoted disciples. To this period belong his Ein treuer Freund and Christus am Ölberg. In 1826 the professor was made a member of the Düsseldorf Academy. The high and sacred art matured in Rome Schadow transplanted to Düsseldorf; he re-organized the Academy, which in a few years grew famous as a village of northern Hungary, where his father was a Protestant clergyman. His first production was a volume of poems in Czech entitled The Muse of Tatra with a Slavonic Lyric (Levoca, 1814). In 1815 he began a course of study at the university of Jena, and while there translated into Czech the Clouds of Aristophanes and the Maria Stuart of Schiller. In 1817 he removed to Prague and joined the literary circle of which Dobrovsky, Jungmann and Hanka were members. From 1829 to 1833 he was master of the head school at Neusatz in the south of Hungary. There he studied Servian literature and antiquities and acquired many rare books and manuscripts, and published a collection of Servian folk-songs in collaboration with Kollar and others (1832-1827). In 1826 his Geschichte der slawischen Sprache und Literatur nach allen Mandurten appeared at Budapest (2nd ed., 1860). This book was the first attempt to give anything like a systematic account of the Slavonic languages as a whole. In 1833 he returned to Prague, where he spent the remainder of his life. There he published his Serbische Leserkörner oder historisch-kritisiche Beleuchtung der Serbischen Mundart, and in 1837 his great work Slawische Sprachen und Literaturen. "The Slavonic "languages" have been translated into Polish, Russian and German; a second edition (1863) was edited by J. Jireček. In 1840 he published in conjunction with Palacký Die ältesten Denkmäler der böhmischen Sprache. In 1837 poverty compelled him to accept the unofficial office of censor of Czech publications, which he abandoned in 1847 on becoming custodian of the Prague public library. In 1842 he published his Slovácký Národopis, in which he sought to give a complete account of Slavonic ethnology. He was also for some time conductor of the "Slovo", a "society for the advancement of all Slavonic "literatures" (-poukry) for the culture of Slavic "literature". In 1848 he was made professor of Slavonic philology in the university of Prague, but resigned in 1849. He was then made keeper of the university library. In 1857 he published Glagolitische Fragmente in collaboration with Hůber; but in the same year, as a result of overwork, ill health and family anxieties, he became insane. He was nevertheless continued in his appointment until his death. His collection of Slavonic books, Sebrání spisů, were published at Prague. 1862-1865; his Geschichte der südslawischen Literatur was edited by Jireček in 3 vols. (1864-1865).
SCHAFF—SCHAFFHAUSEN

SCHAFF, PHILIP (1810-1893), American theologian and church historian, was born in Chur, Switzerland, on the 1st of January 1810. He was educated at the gymnasium of Stuttgart, and at the universities of Tübingen, Halle and Berlin, where he was successively influenced by Baur and Schmid, by Tholuck and Julius Müller, by Strauss and, above all, Neander. In 1842 he was Privatdozent in the university of Berlin, and in 1843 he was called to become professor of church history and Biblical literature in the German Reformed Theological Seminary of Mercersburg, Pennsylvania, then the only seminary of that church in America. On his appointment he wrote an address in English, and also Pusey and other Tractarians. His inaugural address on The Principle of Protestantism, delivered in German at Reading, Pennsylvania, in 1844, and published in German with an English version by J. W. Nevin (q.v.), by his Neander-like view that Romanism and Protestantism were only stages in the divinely appointed development of the Christian Church, aroused fierce opposition in the Reformed Church and Schaff was characterized as "Puseyistic" and "semi-papistical"; in 1845 he was tried for heresy and found not guilty by the Synod. Opposition to him soon died out within his own denomination, but more active opposition was raised against his polemic champion, Nevin, and it had its source more in the Dutch (than in the German) Reformed Church, and even there was confined more to the New Brunswick school (i.e. the churchmen of the Dutch Reformed Theological Seminary in New Brunswick, New Jersey) and its English and Scottish members,—as late as 1856 J. J. Janeeway of New Brunswick published his Antidote to the Poison of Popery in the Writings and Conduct of Professors Nevin and Schaff. Schaff's broad views strongly influenced the German Reformed Church, through his teaching at Mercersburg, through his championship of English in German Reformed churches and schools in America, through his hymnal (1850), through his labours as chairman of the committee which prepared a new liturgy, and by his edition (1863) of the Heidelberg Catechism. His History of the Apostolic Church (in German, 1851; in English, 1853) and his History of the Christian Church (7 vols., 1853-1890), opened a new period in American study of ecclesiastical history. After 1864 his home was in New York City, where he was until 1890 secretary of the New York Sabbath Committee (which fought the "continental Sunday"), and was corresponding secretary of the American Evangelical Alliance, of which he was in 1866 a founder. In 1867 he opened the first German Sunday School in Stuttgart. In 1868-1867 he lectured on church history at Andover, and after 1869 taught at the Union Theological Seminary—as instructor in church history in 1869-1870, and professor of theological cyclopædia and Christian symbolism in 1870-1875, of Hebrew and cognate languages in 1873-1874, of sacred literature in 1874-1887, and of church history in 1887-1893. The English Bible Revision Committee in 1870 requested him to form a co-operating American Committee, of which he became president in 1871. He died in New York City on the 20th of October 1893. Working with the Evangelical Alliance and the Chicago (1893) World's Parliament of Religions, and in Germany, through the monthly Kirchenfreund, he strove earnestly to promote Christian unity and union; and it was his hope that the pope would abandon the doctrine of infallibility and undertake the reunion of Christianity. He recognized that he was a "mediator between German and Anglo-American theology and Christianity"; his theology was broad rather than definite, though he sharply disented from Nevin's mystical doctrine of the union in the eucharist of the believer with Christ's glorified body as well as his glorified soul. He edited (1864-1880) the American translation and revision of Lange's Bibelwerk, the great Schaff-Herzog Encyclopædia of Religious Knowledge (1884, 3rd ed. 1891); the first seven volumes of the Nicene and Post-Nicene Church Fathers in English (1886-1894); and the International Illustrated Commentary on the New Testament (4 vols., 1879-1883) and the International Revision Commentary (5 vols. 1881-1884), as far as the Epistle to Romans. His Bibliotheca symbolorum ecclesiae universalis: the Credos of Christendom (3 vols. 1877, 6th ed. 1893) was a pioneer work in English in the field of symbolics. His History of the Christian Church, already mentioned, resembled Neander's work, though less biographical, and was pictorial rather than philosophical. He wrote, besides, biographies, catechisms and hymnals for children, manuals of religious verse, lectures and essays on Dante, &c.

His son, DAVID SCHLEY SCHAFF (1852- ), was professor of church history in Lane Theological Seminary in 1870-1903, and after 1903 in Western Theological Seminary at Allegheny, Pa. He wrote a Commentary on the Book of Acts (1882) and a Life of the Prophet Isaiah (1882).

SCHAFFHAUSEN (Fr. Schaffhouse), the most northerly of the Swiss cantons, and the only one wholly (excepting the small hamlet of Burg, a suburb of Stein) north of the Rhine. It is divided into three detached portions by the grand-duchy of Baden, which surrounds it on all sides save that of the Rhine, which separates it from the cantons of Thurgau and of Zürich: by far the largest part is the region near the chief town, Schaffhausen, while to the south is the small isolated district of Rüdlingen and Buchberg (purchased in 1590), and to the east the more extensive tract around the old town of Stein on the Rhine (ceded by Zürich in 1798). With the Rhine Schaffhausen are two "enclaves," belonging politically to Baden—the village of Büssingen (just east of the chief town) and the farm of Veranahof, near Büttenhardt. The total area of the canton is 113.5 sq. m., of which 108.4 sq. m. are classed as "productive" (forests covering 46 sq. m., and vineyards 4 sq. m.). The main portion of the canton consists of the gently inclined plateau of the Randen (its highest point, 8300 ft., is at its north edge) that slopes towards the Rhine, and is intersected by several short gorges, separated by rounded ridges. The Rhine is navigable for several miles above Stein, and the town is on a two miles wide island, the most important city in the league of the Rhine, with a population of 41,454, of whom 40,290 were German-speaking, while 34,046 were Protestants, 7403 Romanists and 22 Jews. The inhabitants are devoted chiefly to agriculture (particularly fodder stuffs and wheat), but there are also cotton mills, silk weaving, linen, and lace factories. There are tile factories in the Reith region (N.E. of the capital). The canton is divided into six administrative districts, which comprise thirty-six communes. The cantonal constitution dates in its main features from 1787. The legislature or Grossrat is composed of members elected for four years in the proportion of one to every 500 (or fraction over 250) of the population, but only communes with more than 250 inhabitants form separate electoral circles, the smaller being united for electoral purposes with their greater neighbours. The executive or Regerungsrat of five members is also elected for four years by a popular vote, as are the two members of the Federal Nationalrat. One thousand citizens have the right of "initiative," as to legislative projects and important financial matters as well as to the revision of the cantonal constitution. Since 1893 the "obligatory referendum" for all legislative projects has been prevailing, as well as a curious institution (formerly existing in several cantons) by which the legislature can consult the people on certain questions involving principles and not merely fully drafted legislative projects. The taxes are very small, while the property of the canton is the most considerable in Switzerland, so that from a financial point of view Schaffhausen is the most favoured in the country, and till recently it had no public debt. The numerous forests are well managed and bring in much money.

The canton arose from acquisitions made at various dates from 1461 to 1798 by the town, which at the time of the Reforma- tion obtained possession of the outlying estates of the ecclesiastical foundations then suppressed. The most interesting spot in the canton is the little town of Stein, with its Benedictine monastery (1055-1326), now a sort of medieval museum, and the castle of Hohenklingen towering above it. (W. A. B. C.)
SCHAFFHAUSEN—SCHANDAU

SCHAFFHAUSEN, the capital of the Swiss canton of that name, situated entirely (for its suburb, Feuerthalen, is in the canton of Zürich) on rising ground above the right bank of the Rhine. Its streets are narrow (save in the modern quarters), while it is dominated by the fortress of Unnong (wrongly called Munoth). It is by rail 31 m. W. of Constance and 59 m. W. of Basel. It is a city of contrasts, medieval architecture of the true Swabian type and modern manufactures mingling curiously together. Its fortunes in London and from the old houses, though few have preserved traces of the frescoes which formerly adorned their external walls. The chief ancient building in the town is the Münster (now Protestant) of All Saints, formerly a Benedictine monastery. It was consecrated in 1052, and is a good specimen of the "sternest and plainest Romanesque, finished with a single side tower near the east end, that is architecturally connected both with Italian chapels and the so-called Anglo-Saxon towns of England" (E. A. Freeman). Close to it is the celebrated 13th-century bell that suggested Schall's name to his instrument maker. Imthurneum, and houses a theatre, a picture gallery, concert rooms and the school of music. There are a number of factories in the town, while at Neuhausen, its suburb, are aluminium works, railway rolling stock works and a manufactory of playing cards and railway tickets. Industrial development has been furthered by the hydraulic works for the utilization of the forces in the Rhine; founded 1865-1866 by H. Moser (1805-1874), a wealthy citizen, these are now the property of the town and since 1900 are worked by electricity. In 1900 the town had 15,275 inhabitants (14,684 German-speaking), while there were 11,144 Protestants and 4,085 Roman Catholics and 21 Jews.

The spot is first mentioned in 1045, "Villa Schafthausen," while in 1050 we hear of the "ford" there across the Rhine. Hence it is probable that the name "Schafthausen" is derived from scoepha, a skiff, as here goods coming from Constance were disembarked in consequence of the falls of the Rhine a little below. Some writers, however, prefer the derivation from Schaf (a sheep), as a ram (now a sheep) formed the ancient arms of the town, derived from those of its founders, the counts of Nellenburg. About 1050 those counts founded here the Benedictine monastery of All Saints, which henceforth became the chief church of the town. Perhaps as early as 1100, certainly in 1208, it was an imperial free city, while the first seal dates from 1253. The powers of the abbot were gradually limited and in 1277 the emperor Rudolf gave the town a charter of liberties. It ran considerable risk of becoming a part of the private estates of the Habsburgs, as the emperor Louis of Bavaria pledged it in 1330 to that family, which held it till Duke Frederick with Empty Pockets was placed under the ban of the empire in 1475, its freedom being finally purchased in 1418, while from 1411 the trade guilds ruled the town. But it was much harassed by the neighbouring Austrian nobles, so that in 1454 it made an alliance with six of the Swiss confederates (Uri and Unterwalden coming in in 1476), by whom it was received as an "ally," being finally admitted a full member in 1501. The Reformaition was adopted in 1524, finally in 1529. The town suffered much in the Thirty Years' War from the passage of Swedish and Bavarian troops. It was not till the early 19th century that the arrested industrial development of the town took a fresh start.

AUTHORITIES.—F. L. Baumann, Das Kloster Allerheiligen in Schaffhausen (vol.iii.of the "Quellen z. Schweizer Geschichte") (Bazel, 1881); Beiträge z. vaterländische Geschichte (5 parts, 1863-1884); E. Im-Thurn, Der Kanton Schaffhausen (St Gall and Bern, 1849); A. Pfaff, Das Staatsrecht d. alten Eidgenossenschaft (Schaffhausen, 1870) (pp. 89-97 contain a history of Schaffhausen). In 1901 there appeared at Schaffhausen two elaborate historical "Festschriften," one for the canton and one for the town, while in 1906-1907 there were published at Schaffhausen two parts (from 1892 and 1910) of an official Urkundenregister für den Kanton Schaffhausen.

SCHAFFELE, ALBERT EBEBARD FRIEDRICH (1831-1903), German statesman and political economist, was born at Nürtlingen in Württemberg on the 24th of February 1831, and in 1848 became a student at the university of Tübingen. From 1850 to 1860 he was attached to the editorial staff of the Schwäbische Merkur in Stuttgart, and in the latter year accepted a call to the chair of political economy at Tübingen. From 1862 to 1864 Schaffe was a member of the Württemberg diet, and in 1868 he received a mandate to the German Zollparlament. This year he was appointed professor of political science at the university of Vienna, and in 1871 he entered the cabinet of Karl Siegmund Graf von Hohenwart as minister of commerce for Austria. But the government fell in the same year, and Schaffe withdrew to Stuttgart, where he took up his residence, devoting himself entirely to literary work. He died at Stuttgart on the 25th of December 1903. Among his numerous writings must be mentioned Das Gesellschaftliche System der menschlichen Wirtschaft (new ed., 1873); Die Nationalökonomische Theorie der ausschliessenden Absatzverhältnisse (1867); Bau und Leben des sozialen Körpers (2nd ed. 1886); Ein Votum gegen den neuen Zolltarif (Tübingen, 1901); Die agrarische Gefahr (Berlin, 1902); Gesammelte Aufsätze (1885-1887). From 1892 to 1901 Schaffe was the sole editor of the Zeitschrift for die gesamte Staatswissenschaft.

See Biermann, Schaffe und der Agrarismus (Bonn, 1902) and his autobiography, Aus meinem Leben (Berlin, 1905).

SCHALCKEN, GODFRIED (1643-1706), Dutch genre and portrait painter, was born at Dort in 1643, and studied under Hoogstraten, and afterwards under Gerhard Douw, whose works his earlier genre-pictures very closely resemble. He visited England and painted several portraits, of which the half-length of William III., now in the Museum, Amsterdam, is a good example. In this work he shows an effect of candle-light, which he also introduced—frequently with fine effect—in many of his subject-pictures. These may be studied in the collections at Buckingham Palace, the Louvre, Vienna and Dresden. His Scriptural subjects are of very indifferent merit. He died at The Hague in 1706.

SCHALL, JOHANN ADAM VON (1591-1666), Jesuit missionary in China, born of noble parents in Cologne. At the age of twenty he joined the Society of Jesus, and in 1628 went out to China. Apart from successful missionary work, he became the trusted counsellor of the emperor, was created a mandarin, and held an important post in connexion with the mathematical school. His position enabled him to procure from the emperor permission for the Jesuits to build churches and to preach throughout the country. Proceylon's to the number of 106,000 are said to have been obtained within fourteen years. The emperor, however, died in 1661, and Schall's circumstances at once changed. He was imprisoned and condemned to death. The sentence was not carried out, but he died after his release owing to the privations he had endured. A collection of his MS. remains was deposited in the Vatican Library.

There are a number of Germany, in the kingdom of Saxony, situated on the right bank of the Elbe, at the mouth of the little valley of the Kirnitsch. It is 4 m. from the Bohemian frontier, 20 m. S.E. of Dresden on the railway to Bodenbach, and has a branch to Niederneukirch, which is carried from the railway station lying on the right bank across the Elbe by an iron bridge. Pop. (1905) 3373. Schandau has an Evangelical parish church, a hydrophatic establishment and a school of river navigation. The position of Schandau in the heart of the romantic "Saxon Switzerland" has made it a place of importance, and thousands of tourists make it their headquarters in summer. For their accommodation numerous hotels and villas have been
erected. The chief manufactures of the town are artificial flowers and furniture.

See Schäfer, Führer durch Schandau und seine Umgebung (Dresden, 1907).

SCHANDORPH [or Skamrup], SOPHUS CHRISTIAN FREDERICK (1836–1901), Danish poet and novelist, was born at Ringsted in Zealand on the 8th of May 1836. In 1855 he entered the university of Copenhagen. In 1862 he published his first volume of poetry, written in the romantic style and giving a little indication of the ultimate direction that his talent was to take. Other books followed, but his gifts first found full expression in a volume of rustic tales entitled Fra Provinser (1876), in which he described provincial character and life with much frankness of detail and a great deal of wit. In 1878 his novel, Uden Midtpunkt ("Without a Centre"), recast later in dramatic form, attracted great attention by its exposure of contemporary failings. Among the more famous of his later novels are: Thomas Friis' Historie (2 vols., 1881), Det gamle Apotheke ("The Old Apothecary") (1855) and Helga (1900); but his last years was too occupied with his v. and direction of short sketches. He published his own Recollections (Oplevelser) in 1889. He died after a long illness at Frederiksborg on New Year's Day 1901.

See an article by V. Möller in C. F. Bricka's Dansk Biografisk Lexikon (vol. xv., 1901).

SCHARF, SIR GEORGE (1820–1893), British art critic, was born in London on the 16th of December 1820, the son of George Scharf, a Bavarian miniature painter who settled in England in 1816 and died in 1860. He studied in the schools of the Royal Academy. In 1842 he accompanied Sir Charles Fellowes to Asia Minor, and in 1843 acted as draughtsman to a government expedition to the same country. After his return he devoted himself with great industry and success to the illustration of books relating to art and antiquity, of which the best known are Macaulay's Lays of Ancient Rome (1847); Milman's Horace, (1849) Kugler's Handbook of Italian Painting (1851); and Dr Smith's classical dictionaries. He also engaged largely in lecturing and teaching, and took part in the formation of the Greek, Roman and Pompeian courts at the Crystal Palace. He acted as art secretary to the great Manchester Art Treasures Exhibition of 1857, and in 1853 exchanged, in the capacity of a government art inspector, his services as an art critic for those of draughtsman to the newly founded National Portrait Gallery. The remainder of his life was given to the care of that institution. Scharf acquired an unrivalled knowledge of all matters relating to historic portraiture, and was the author of many learned essays on the subject. In 1885, in recognition of his services to the Portrait Gallery, he was made C.B., and on his resignation, early in 1895, K.C.B. and a trustee of the Gallery. He died on the 19th of April of the same year.

SCHRANNHORST, GERHARD JOHANN DAVID VON (1755–1813), Prussian general, was born at Bordenuk near Hanover, of a farmer stock, on the 28th of November 1755. He succeeded in educating himself and in securing admission to the military academy of Wilhelmstein, and in 1778 received a commission in the Hanoverian service. He employed the intervals of regimental duty in further self-education and literary work. In 1783 he was transferred to the artillery and appointed to the new artillery school in Hanover. He had already founded a military journal which under various names endured till 1803, and in 1788 he designed, and in part published, a Handbuch für Offiziers in den anwendbaren Thesen der Kriegswissenschaften. He also published in 1792 his Militärische Taschenbuch für den Gebrauch im Felde. The income he derived from his writings was his chief means of support, for he was still a lieutenant, and though the farm of Bordenuk produced a small sum annually he had a wife (Claara Schmalz, sister of Theodor Schmalz, first director of Berlin University) and family to maintain. His first campaign was that of 1793 in the Netherlands, in which he served under the duke of York with distinction. In 1794 he took part in the defence of Menin and commemorated the escape of the garrison in his Vertheidigung der Stadt Menin (Hanover, 1803), which, next to his paper Die Ursachen des Glücks der Franzosen im Revolutionskrieg, is his best-known work. Shortly after this he was promoted major and employed on the staff of the Hanoverian contingent.

In 1795, after the peace of Basel, he returned to Hanover. He was by now so well known to the armies of the various allied states that from several of them he received invitations to transfer his services. This in the end led to his engaging himself to the king of Prussia, who gave him a patent of nobility, the rank of lieutenant-colonel and a pay more than twice as large as that he had received in Hanover (1801). He was employed, almost as a matter of course, in important instructional work at the War Academy of Berlin, where he had Clausewitz (q.v.) as one of his pupils, and he was the founder of the Berlin Military Society. In the mobilizations and precautionary measures that marked the years 1804 and 1805, and in the war of 1806 that was the natural consequence, Scharnhorst was chief of the general staff (lieutenant-quartmaster) of the duke of Brunswick, received a slight wound at Auerstädt and distinguished himself by his stern resolution during the retreat of the Prussian army. He was appointed aide-de-camp to the king, and in the last stages of the disastrous campaign, was taken prisoner with him at the capitulation of Ratisbon, and, being shortly exchanged, bore a prominent and almost decisive part in the leading of L'Estocq's Prussian corps which served with the Russians. For his services at Eylau, he received the order for the merit.

It was now evident that Scharnhorst was more than a brilliant staff officer. Educated in the traditions of the Seven Years' War, he had by degrees, as his experience widened, divested his mind of antiquated forms of war, and it had been borne in upon him by his reading of the "Artillerie" and "Artillerie" of the "nationale" forces that a single decisive battle, fought by a general who had himself directed and fought the battles alone responded to the political and strategic situation created by the French Revolution. The steps by which he converted the professional long-service army of Prussia, wrecked at Jena, into the national army as we know it to-day, based on universal service, were slow and laboured. He was promoted major-general a few days after the peace of Tilsit, and placed as the head of a reform commission, to which were appointed the best of the younger officers such as Gneisenau, Grolman and Boyen. Stein himself became a member of the commission and secured Scharnhorst free access to the king by causing him to be appointed aide-de-camp-general. But Napoleon's suspicions were quickly aroused, and the king had repeatedly to suspend or cancel the reforms recommended. In 1809 the war between France and Austria roused premature hopes in the patriots' party, which the conqueror did not fail to note. By direct application to Napoleon, Scharnhorst evaded the decree of the 26th of September 1810, whereby all foreigners were to leave the Prussian service forthwith, but when in 1811–1812 Prussia was forced into an alliance with France against Russia and despatched an auxiliary army to serve under Napoleon's orders, Scharnhorst left Berlin on unlimited leave of absence. In retirement he wrote and published a work on fireworks, Über die Wirkung des Feuerwerks (1813). But the retreat from Moscow at last soundest the call to arms for the new national army of Prussia. Scharnhorst was recalled to the king's headquarters, and after refusing a higher post was made chief of staff to Blücher, in whose vigour, energy and influence with the young soldiers he had complete confidence. The first battle Lützen or Gross-Görschen was a defeat, but a very different defeat from those which Napoleon had hitherto been accustomed to inflict. In it Scharnhorst received a wound in the foot, not in itself grave, but soon made mortal by the fatigues of the retreat to Dresden, and he succumbed to it on the 8th of June at Prague, whither he had been sent to negotiate with Schwarzenberg and Radetzky for the armed intervention of Austria. Shortly before his death he had been promoted to the rank of lieutenant-general. Frederick William III. erected a statue in memory of him, by Rauch, in Berlin.

SCHAUMBURG-LIPPE—SCHEELE

work in two volumes); also Max Jänicke, 
"Gesch. der Kriegswissenschaften, Schiffsverkehr und die Durchführung der allgemeinen Wehrpflicht" (1892); A. von Holleben, Der Früh- 
jahresfeldzug, 1813 (1905); and F. N. Maude, The Leipzig Campaign (1908).

SCHAUMBURG-LIPPE, a principality forming part of the 
German Empire, consisting of the western half of the old countship of 
Schaumburg, and surrounded by Westphalia, Harover and the 
Prussian part of Schäumburg. Area, 131 sq. m. Its northern 
extremity is occupied by a lake named the Steinruher Meer. The 
southern part is hilly (Wesergebirge), but the remainder consists of 
a fertile plain. Besides husbandry, the inhabitants practise 
sparrow-spinning and linen-weaving, and the coal-mines of the 
Bückeburg, on the south-eastern boundary, are important. 
The capital is Bückeburg, and Stadthagen is the only other town. 
Under the constitution of 1868 there is a legislative diet of 15 
members, so elected by the towns and rural districts and 1 each 
by the nobility, clergy and educated classes, the remaining 2 
nominated by the prince. Schaumburg-Lippe sends one member to 
the Bundesrat (federal council) and one deputy to the 
reichstag. The annual revenue and expenditure amount each to 
about £41,000.

SCHEDULE, originally a written or printed list of names or 
items, or a leaf of paper or parchment, a label or ticket, especially when attached to another 
document, as explaining or adding to its contents, hence any 
additional detailed statement such as cannot conveniently 
be embodied in the main statement. The word occurs first 
(14th century) as cedule, or sedule, representing the Fr. 
cedule (mod. cédule, cf. Ital. cedola, Gen. Zettel, &c.), which is derived from 
Late Lat. sedula or schedula, dim. of sedula, a written strip 
of parchment (late Gr. σενδερη), probably from σενδιρε, to cleave, 
cf. σκινδαλα, a shingle. The original pronunciation in English was 
sedule, the modern pronunciation is schedule; American usage 
has gone back to the original Latin or Greek, and adopts 
the latter.

SCHEELE, KARL WILHELM (1742-1786), Swedish chemist, 
was born at Stralsund, the capital of Pomerania, which then 
belonged to Sweden, on the 10th of December 1742. He 
was apprenticed to an apothecary in Gothen-
burg, with whom he stayed for eight years. His spare time 
and great part of his nights were devoted to the experimental ex-
amination of the different bodies which he dealt with, and 
the study of the standard works on chemistry. He thus acquired 
a large store of knowledge and great practical skill in manipula-
tive dexterity. In 1765 he removed to Malmö, and in 1768 to 
Stockholm. While there he wrote an account of his experiments 
with cream of tartar, from which he had isolated tartaric acid, 
and sent it to T. O. Bergman, the leading chemist in Sweden. 
Bergman somehow neglected it, and this caused for a time a reluctance on 
Scheele's part to become acquainted with that savant, but the 
paper, through the instrumentality of Anders Johann 
Retzius (1742-1821), was ultimately communicated to the 
Academy of Sciences at Stockholm. He left Stockholm in 1770 
and took up his residence at Upsala, where through the agency 
of Johann Gottlieb Gahn (1745-1818), assessor of mines at Falun, 
he acquired a personal acquaintance of Bergman. A friendship, 
of mutual advantage, soon sprang up between the two men, and 
has been said that Scheele was Bergman's greatest discovery.

In 1775, the year in which he was elected into the Stockholm 
Academy of Sciences, he left Stockholm for Köpenick, a small 
place on Lake Malar, where he became provisor and subsequently 
proprieter of a pharmacy. The business, however, was not what 
he had been led to expect, and it took him several years to put it 
on a sound footing. Yet in spite of his business cares he found 
time for an extraordinary amount of original research, and every 
year he published two or three papers, most of which contained 
some discovery or observation of importance. His unremitting 
work, it is said, especially at night, exposing him to cold and 
draughts, induced a rheumatic attack which brought about his 
death. He had intended, as soon as his circumstances permitted 
him, to marry the widow of his predecessor, but his illness 
increased so rapidly that it was only on his death-bed, on the 19th 
of May 1786, that he carried out his design. Two days later he 
died, leaving his wife what property he had acquired.

Scheele's power as an experimentalist in stoicheiometry has seldom if 
ever been surpassed, and his accuracy is most remarkable when 
his primitive apparatus, his want of assistance, his place of 
residence, and the undeveloped state of chemical and physical 
science in his time, are all taken into account. Research was 
at once his occupation and his relaxation, and his natural endow-
ments were cultivated by unceasing practice and unwearyed 
attention. Study of his original papers shows that his 
discoveries were not made at haphazard, but were the outcome of 
experiments carefully planned to verify inferences already 
drawn, and so to reach the simplest and most direct manner. He left nothing in doubt if 
experiment would decide it, and he evidently did not consider 
that he had fully investigated any compound until he could both 
unmake and remake it. His record as a discoverer of new subst-
ances is probably unequalled. The analysis of manganese 
dioxide in 1774 led him to the discovery of chlorine and baryta; 
to the description of various salts of manganese itself, including 
The manganates and permanganates, and to the explanation of its 
action in colouring and decolourizing glass. In 1775 he investigated 
arsenic acid and its reactions, discovering arseniuretted hydrogen 
and "Scheele's green", and he was the first to prepare the 
process which on a large scale he published in 1778. Papers published 
in 1776 were concerned with quartz, alum and clay and with 
the analysis of calculus vesicae from which for the first time he obtained 
uric acid. In 1778 he proposed a new method of making calomel 
and powder of algaroth, and he got molybdic acid from mineral 
molybdaena nitens which he carefully distinguished from ordinary molybdina (plumbago or black lead of commerce). In the follow-
ing year he showed that plumbago consists essentially of carbon, 
and he published a record of estimations of the proportions of 
oxides in the atmosphere, which he had obtained by passing 
air through a tube of red-hot iron, before Cavendish. In 1780 he 
proved that the acidity of sour milk is due to what was after-
wards called lactic acid; and by boiling milk sugar with nitric 
acid he obtained mucic acid. His next discovery, in 1781, was 
the composition of the mineral tungsten, since called scheelleite 
(cadmium tungstate), from which he obtained tungstic acid. In 
1782 he published some experiments on the formation of sulfur, 
and in 1783 examined the properties of glycercine, which he had 
discovered seven years before. About the same time he showed 
by a wonderful series of experiments that the colouring matter 
of "Scheele's green" copper arsenite in a process for preparing 
the precursor of a substance of the nature of an acid, to which the name 
of prussic acid was ultimately given; and he described the com-
position, properties and compounds of this body, and even 
ascertained its smell and taste, quite unaware of its poisonous 
character. In the last years of his life he returned to the vegetable 
acids, and investigated citric, malic, oxalic and gallic acids. His 
only book, on Air and Fire, was published in 1777, but was 
written some years before. The manuscript was in the hands 
of the printers in 1775, and most of the experimental work for 
it was done before 1773. Although it starts from the erroneous 
idea that the physical phenomena of fire, in the strictest sense, it contains much matter of 
permanent value. One of the chief observations recorded in it is that 
the atmosphere is composed of two gases—one which supports 
combustion and the other which prevents it. The former, "fire-air," or oxygen, he prepared from "acid of nitre," from saltpetre, from black oxide of manganese, from oxide of mercury and other substances, and there is little doubt but that he obtained it independently a considerable time before Priestley. 
Incidentally in 1777 Scheele prepared sulphuretted hydrogen, 
and noted the chemical action of light on silver compounds and 
other substances.

A list of Scheele's papers is given in Poggendorff's "Biographisch-
Literarisches Handwörterbuch" (Leipzig, 1863). They were 
collected and published in French as "Mémoires de chimie" (Paris, 1785-1788); 
in English as "Chemical Essays," by Thomas Beddoes (London, 1788-1793); 
in Latin as "Opuscula," translated by Schäfer, edited by Heibsen 
(Leipzig, 1788-1786); and in German as "Sämmtliche Werke," edited
by Hernbstadt (Berlin, 1793). The treatise on Air and Fire appeared in German, Leipzig and Upsala in 1777, and again in 1782; in English, by J. R. Forster (London, 1780); and in French, by Dietrich (Paris, 1781).

Scheelite, a mineral consisting of calcium tungstate, CaWO₄. It was early known as "tungsten" (meaning in Swedish, "heavy stone"), and is the mineral in which K. W. Scheele discovered tungstic acid, hence the name scheelite. Well-developed crystals are not infrequent; they usually have the form of acute tetragonal bipyramids (P in fig.); sometimes other pyramid-faces are present, and these (g and h) being developed on only one side of P indicate the parallel-faced hemihedrim of the crystals. Compact and granular masses also occur. The colour is usually yellowish white or brownish, the crystals sometimes transparent to translucent; the lustre vitreous to adamantine. The hardness is 4½, the specific gravity 6·0. Molybdenum is usually present, replacing an equivalent amount of tungsten; and in a green variety known as "cupro-scheelite" part of the calcium is replaced by copper.

Scheelite usually occurs with topaz, fluor, apatite, wolframate, &c., in thin-bearing veins; and is sometimes found in association with gold. Fine crystals have been obtained from Caldbec Fellis in Cumberland, Zinnwald and Elbogen in Bohemia, Guttannen in Switzerland, the Riesengebirge in Silesia, Dragon mountains in Arizona and elsewhere. At Trumbull in Connecticut and Kimpus-san in Japan large crystals of scheelite completely covered with yellowish wealth have been found: those from Japan have been called "reinite."

Scheemakers, Peter (1661-1770), Flemish sculptor, was born in Antwerp, and learnt his art from his father and from Delvaux. After visiting Denmark and walking thence to Rome for purposes of study, he returned on foot to the port of embarcation for England, but stayed in London but a short while. From 1728 to 1735 he again sojourned in Rome and then settled in England, where he remained from 1735 to 1770, returning in the latter year to his native city where he died a few months afterwards. He worked for a time with Francis Bird, the pupil of Grinling Gibbons. Fifteen of his works—monuments, figures and busts—are in Westminster; and, with the master Delvaux, the "Hug Chamberlen" (d. 1728, and therefore perhaps produced during his first visit to London) and "Catherine, duchess of Buckinghamshire." He is best, though not most creditably, known to fame by his monument to Kent the blame for the errors of taste therein displayed must not be laid to Scheemakers' account. In addition to these may be mentioned the monuments to Admiral Sir Charles Wager, Vice-Admiral Watson, Lieut.-General Percy Kirk, George Lord Viscount Howe, General Monck, and Sir Henry Belasyse. His busts of John Dryden (1720) and Dr Richard Mead (1754), also in the Abbey, are among the best of his smaller works. The most important of his monuments elsewhere, as mentioned by Walpole, are those to the 1st and 2nd dukes of Ancaster at Edenhall, Lincolnshire; Lord Chancellor Hardwicke at Wimpole, Cambridgeshire; the duke of Kent, his wives and daughters, at Fletton, Bedfordshire; the earl of Shelburne, at Wycombe, Bucks; and the figure on the sarcophagus to Montague Sherrard Drake, at Amersham. Although less esteemed by modern artists than Rysbrack and Roubilac, Scheemakers was a very popular and widely-employed sculptor in his day, whose influence was considerable; he was the master of Nollekens, and left a son, Thomas Scheemakers, who produced a considerable amount of work, and exhibited in the Royal Academy from 1782 to 1804. See Walpole's Anecdotes of Painting, vol. 3 (ed. 1876), and Dictionary of National Biography.

Schefer, Leopold (1784-1862), German poet and novelist, was born at Muskau in Lower Lusatia on the 30th of July 1784, and educated at the gymnasium of Bautzen. In 1813, he was appointed manager of the estates of Prince Pückler-Muskau (q.v.). The prince, recognizing the literary abilities of the young man, encouraged his early poetical efforts and gave him the means to travel. After visiting England, Italy, Greece and Turkey, Schefer returned in 1820 to Muskau, where he lived in easy circumstances and with abundant leisure for his literary pursuits, until his death on the 16th of February 1862. Schefer wrote a large number of poems, of which appeared in several series, Novellen (5 vols., 1825-1829); Neue Novellen (4 vols., 1831-1835); Laabecker (2 vols., 1833), Kleine Romane (6 vols., 1836-1837). The historical novel Die Grünen Ulföld (2 vols., 1834), and the piquant satire, Die Sibylle von Mantua (1852), were published separately. But Schefer is less known for his novels which are lacking in plastic power and creative imagination, than for a volume of charming poems, Laienbrevier (1834-1835). These, owing to their warmth of feeling and fascinating descriptions of the beauties of nature, at once established his fame as a poet. This vein, in close imitation of his friend the poet Richard Georg Spiller, was employed by the pseudonym Max Waldauf (1822-1855), he followed in later years with the poems Vignelen (1843), Der Weltpriester (1846), and Hausrenden (1860). His Hafis in Hellas (Hamburg, 1853) and Koran der Liebe (Hamburg, 1855) contain with their glowing descriptions of the East, original poetry of a high order. A selection of Schefer's works, Ausgewählte Werke, in 12 vols., was published in 1845 (2nd ed., 1857). See J. Schmidt, Geschichte der deutschen Litteratur (2nd ed., vol. i.), L. von der Mühlen, VON Schefer (1864); and L. Geiger in Dichter und Denker (1896).

Scheffel, Joseph Viktor von (1856-1886), German poet and novelist, was born at Karlsruhe on the 16th of February 1856. His father, a retired major in the Baden army, was a civil engineer and member of the commission for regulating the course of the Rhine; his mother, née Josephine Kredrer, the daughter of a prosperous tradesman at Oberndorf on the Neckar, was a woman of great intellectual powers and of a romantic disposition. Young Scheffel was educated at the lyceum at Karlsruhe and afterwards (1853-1854) at the universities of Munich, Heidelberg and Berlin. After passing the state examination, or "Examen," for the judicial service, he graduated doctor juris and for four years (1855-1859) held an official position at Säckingen. Here he wrote his poem Der Trompeter von Säckingen (1855), a romantic and humorous tale which immediately gained extraordinary popularity. It has reached more than 250 editions. Scheffel next undertook a journey to Italy. Returning home in 1859 he found his parents more than ever anxious that he should continue his legal career. But in 1854, defective eyesight incapacitated him; he quit the government service and took up his residence at Heidelberg, with the intention of preparing himself for a post on the teaching staff of the university. His studies were, however, interrupted by eye-disease, and in search of health he proceeded to Switzerland and took up his abode on the Lake of Constance, and elaborated the plan of his famous historical romance Ekkhard (1857); (Eng. trans. by S. Delffs, Leipzig, 1872). The first ideas for this work he got from the Monumenta Germaniae. It gained popularity hardly inferior to that of Der Trompeter von Säckingen. In 1901 it had reached the 179th edition. Scheffel next returned to Heidelberg, and published Gaudeamus, Lieder aus dem Engeren und Weiten (1868), a collection of joyous and humorous songs, the matter for which is taken partly from German legends, partly from historical subjects. In these songs, the author shows himself the light-hearted student, a friend of wit and song; and their success is unexampled in German literature and encouraged numerous imitators. For two years (1857-1859) Scheffel was custodian of the library of Prince Egon von Fürstenberg at Donaueschingen, but giving up his appointment in 1859, visited Joseph Freiherr von Lasseburg, at Meersburg on the Lake of Constance, stayed for a while with the grand duke Charles Alexander of Saxe-Weimar at the Wartburg in Thuringia, then settling at Karlsruhe, he married in 1864 Caroline von Malzen, and, in 1872, retired to his villa Seehalde near Radolitzell
Scheffer—Scheffer

on the lower lake of Constance. On the occasion of his jubilee (1876), which was celebrated all over Germany, he was granted a patent of hereditary nobility by the grand duke of Baden. He died at Karlsruhe on the 9th of April 1886.

His works, which have been already mentioned, are Frau Aventiure. Literally translated, Heinrich von Offlerdingsen Zeit (1863); Juniipcrus, Geschichte eines Kreuzfahrers (1866); Berghauser. Waldeinsamkeit (1880); Der Heim von Sieier (1883); and Huguenod, eine alte Geschichte (1884). Volumes of Briefe (1892) and Briefe (1898) were published posthumously. Scheffel’s Gesamteme Werke have been published in six volumes (1907).

Scheffel was joined by Joseph von Scheffel (1819); J. Prola, Scheffels Leben und Dichten (1887); L. von Kobell, Scheffel and seine Frau (1901); E. Boerschel, J. von Scheffel and Emma Heim (1906).

Scheffer, Ary (1795–1838), French painter of Dutch extraction, was born at Dort on the 10th of February 1795. After the early death of his father, a poor painter, Ary was taken to Paris and placed in the studio of Guérin by his mother, a woman of great energy and character. The moment at which Scheffer left Guérin coincided with the movement of the Romantic period. He had little sympathy with the directions given to it by either of its most conspicuous representatives, Sigalon, Delacroix or Géricault, and made various tentative efforts—"Gaston de Foix" (1824), "Sullot Women" (1827)—before he found his own path. Immediately after the exhibition of the last-named work he turned to Byron and Goethe, selecting from Faust a long series of subjects which had an extraordinary vogue. Of these, we may mention "Margaret at her Wheel"; "Faust Doubting"; "Margaret at the Sabbath"; "Margaret Leaving Church"; the "Garden Walk"; and, lastly, perhaps the most popular of all, "Margaret at the Well." The two "Mignons" appeared in 1836; and "Francesca da Rimini," which is one of the whole Scheffer’s best work, belongs to the same period. He now turned to religious subjects: "Christus Consolator" (1836) was followed by "Christus Remunerator," "The Shepherds Led by the Star" (1837), "The Magi Laying Down their Crowns," "Christ in the Garden of Olives," "Christ bearing his Cross," "Christ Interred" (1845), "St Augustine and Monica" (1846), after which he ceased to exhibit, but shut up in his studio, continued to produce much which was first seen by the outer world after his death, which took place at Argenteuil on the 15th of June 1838.

At the posthumous exhibition of his works there figured the "Sorrows of the Earth," and the "Angel Announcing the Resurrection," which he had left unfinished. Amongst his numerous portraits those of La Fayette, Béranger, Lamartine and Marie Amélie were the most noteworthy. His reputation, much shaken by this posthumous exhibition, was further undermined by the sale of the Paturier Gallery, which contained many of his most celebrated achievements; the charm and facility of their composition was replaced by an undermannered style, much overemphasized by their poor and earthy colour and vapid sentiment. Scheffer, who married the widow of General Baudrand, was only made commander of the Legion of Honour in 1848—that is, after he had wholly withdrawn from the Salon. His brother Henri, born at the Hague on the 27th of September 1798, was also a fertile painter.

See Vitet’s notice (1861) prefixed to Birmingham’s publication of writings of A. Scheffer; Etex, Ary Scheffer; Mrs Grote, Life of A. Scheffer (1860).

Schenk, Jean De (c. 1555–1635), Seigneur de Saumazées, French poet, was born about 1555 near Verdun of a Calvinist family. He studied at the university of Paris and then joined Turenne’s army in Holland, where he gained rapid advancement. He was the author of a tragedy, Tyr et Siden, ou les funestes amours de Belcar et Mélanie, published in 1658 under the anagram-name Daniel d’Ancheres, and reprinted with numerous changes in 1668 under the author’s own name. In defiance of all the rules the action proceeds alternately at Tyre, where Belcar, prince of Siden, is a prisoner, and at Siden where Léonte, prince of Tyre, is a prisoner and pursues his gallant adventures. The play, which was divided into two days and ten acts, had a complicated plot and contained 5000 lines. It required an immense stage on which the two towns should be represented, with a field between, where the contests should take place. It is noteworthy as an attempt to introduce the liberty of the Spanish and English drama into France, thus anticipating the romantic revolt of the 19th century. It has been suggested that Schenck was directly acquainted with Shakespearean drama, but of this there is no direct proof, although he appears to have spent some time in England, and to have seen James L. Tyr et Siden is reprinted in the 8th volume of the Ancien Théatre français. Schenck was also the author of a Stuarteide (1611), and of Les Sept Excellents Travaux de la pérennité de Saint Pierre (1636). He pursued his military career to the end of his life, dying at Saumazées in 1655 from wounds received in the German campaign of Louis d’Épernon, Cardinal de la Valette.

See Ch. Asselineau, Jean de Schenckl (Paris, 1854).

Scheldt (Fr. Escaut, Flem. Schelde), a river rising near Catcel in France, entering Belgium near Bleharies in Hainaut, and flowing past Tournai, Oudenaarde, Ghent and Termonde, till it reaches Antwerp. Some distance below Antwerp, in front of the island Beveland, where the river divides into two channels, respectively north and south of the island, both banks belong to Holland. Of the two channels named, the southern, which reaches the sea at Flushing, is the more important and is used for ocean commerce. The Scheldt has a length of 250 m., of which, by a skilful arrangement of locks, not less than 207 m. are navigable. The principal tributaries are the Lys and the Dender. By the treaty of Munster in 1648 the Dutch obtained the right to navigation on the Scheldt, and they clung tenaciously to it for over two centuries. In 1839, by the Act of Union of the kingdom of the Netherlands, Holland gave definite form to this right by fixing the toll, and by obtaining the assent of the powers to the arrangement which fettered the trade of Antwerp. In 1863, after long negotiations Belgium bought up this right—each of the powers interested in the trade contributing its quota—and the navigation of the Scheldt was then declared free.

Scheler, Jean Auguste Ulric (1816–1890), Belgian philologist, was born at Ebnat, Switzerland, in 1819. His father, a German, was chaplain to King Leopold I. of Belgium, and Jean Scheler, after studying at Bonn and Munich, became King’s librarian and professor at the Brussels Free University. His investigations in Romance philology earned him a wide reputation. He died atIxelles, Belgium, in 1890.

The most important of his numerous philological works are:

- Mémoire sur la conjuration française considérée sous le rapport du droit public (Brussels, 1847), Dictionnaire éymologique du langage de la frankh (Paris, 1848), and a monograph Sur le séjour de l’apôtre saint Pierre à Rome (Brussels, 1849), which was translated into German and English.

- Schelling, Friedrich Wilhelm Joseph von (1775–1854). German philosopher, was born on the 27th of January 1775 at Leonberg, a small town in Württemberg. He was educated at the cloister school of Bebenhausen, near Tübingen, where his father, an able Orientalist, was chaplain and professor, and where Schelling, the theological seminary at Tübingen, where he was specially allowed to enter when he was three years under the prescribed age. Among his (elder) contemporaries were Hegel and Hölderlin. In 1792 he graduated in the philosophical faculty. In 1793 he contributed to Paulus’s Memorabilien a paper "Über Mythus, historische Sagen, und Philosophere der ältesten Welt"; and in 1795 his thesis for his theological degree was De Mancione Paulinorum epistolorum emendatore. Meanwhile a much more important influence had begun to operate on him, arising out of his study of Kant and Fichte. The Review of Aeneidem and the tractate On the Notion of Wissenschaftskre found in his mind a fruitful soil. With characteristic zeal and inquisitiveness Schelling had no sooner grasped the leading ideas of Fichte’s amended form of the critical philosophy than he put together his impressions of it in Über die Möglichkeit
a form der Philosophie überhaupt (1794). There was nothing original in the treatment, but it showed such power of appreciating new ideas of the Fichtean method that it was hailed with cordial recognition by Fichte himself, and gave the author immediately a place in popular estimation as in the foremost rank of existing philosophical writers. The more elaborate work, *Vom Ich als Princip der Philosophie*, oder über das Unbedingte im menschlichen Wissen (1795), which, still remaining within the limits of the Fichtean idealism, however, exhibits unmistakable traces of a tendency to give the Fichtean method a more objective application, and to amalgamate with it Spinoza's more realistic view of things.

After two years as tutor to two youths of noble family, Schelling was called as extraordinary professor of philosophy to Jena in midsummer 1798. He had already contributed articles and reviews to the *Journal* of Fichte and Niethammer, and had thrown himself with all his native impetuosity into the study of physical and medical science. From 1796 date the *Briebe über Dogmatismus und Kriticismus*, an admirably written critique of the ultimate issues of the Kantian system; from 1797 the essay entitled *Neue Deduction des Naturrechts*, which to some extent anticipated Fichte's treatment in the *Grundlage des Naturrechts*, published in 1798, but not before Schelling's essay was vaguely contemplated by both. August's death in 1800 (due partly to Schelling's rash confidence in his medical knowledge) drew Schelling and Caroline together, and Schelling having removed to Berlin, a divorce was, apparently with his consent, arranged. On the 2nd of June 1803 Schelling and Caroline were married, and with the marriage Schelling's life at Jena came to an end. It was full time, for Schelling's undoubtedly overweening self-confidence had involved him in a series of disputes and quarrels at Jena, the details of which are important only as illustrations of the evil qualities in Schelling's nature which deface much of his philosophical work.

From September 1803 until April 1806 Schelling was professor at the new university of Würzburg. This period was marked by considerable changes in his views and by the final breach on the one hand with Fichte and on the other hand with Hegel. In Würzburg Schelling had many enemies. He embroiled himself with his colleagues and also with the government. In Munich, to which he removed in 1806, he found a quiet residence. A position as state official, at first as associate of the academy of sciences and secretary of the academy of arts, afterwards as secretary of the philosophical section of the academy of sciences, gave him ease and leisure. Without resigning his official position he lectured for a short time at Stuttgart, and during seven years at Erlangen (1820–1827). In 1809 Caroline died, and three years later Schelling married one of her closest friends, Pauline Götter, in whom he found a faithful companion.

During the long stay at Munich (1806–1841) Schelling's literary activity seemed gradually to come to a standstill. The "Aphorisms on Naturphilosophie" contained in the *Jahrbücher der Medicin als Wissenschaft* (1808–1808) are for the most part extracts from the Würzburg lectures; and the Denkmal der Schrift von den göttlichen Dingen des Herrn Jacobi was drawn forth by the special incident of Jacobi's work. The only writing of significance is the "Philosophische Untersuchungen über das Wesen der menschlichen Freiheit," which appeared in *Philosophische Schriften*, vol. i. (1809), and which carries out, with increased success as to form, the aim of the previous work, *Philosophie und Religion*. In 1815 appeared the tract *Über die Geistheilen zu Samothrake*, ostensibly a portion of a great work, *Die Weltalter*, frequently announced as ready for publication, of which no great part was ever written. Probably it was the overpowering strength and influence of the Hegelian system that constrained Schelling to so long a silence, for it was only in 1834, after the death of Hegel, that, in a preface to a translation by H. Beckers of a work by Cousin, he gave public utterance to the antagonism in which he stood to the Hegelian system. Some of the extracts of the essays on the history of philosophy (Stimmt. Werke, x. 124-125) of 1822 express the same in a pointed fashion, and Schelling had already begun the treatment of mythology and religion which in his view constituted the true positive complement to the negative of logical or speculative philosophy. Public attention was powerfully attracted by these vague hints of a new system which promised something more positive, as regards religion in particular, than the apparent results of Hegel's teaching. For the appearance of the critical writings of Strauss, Feuerbach and Bauer, and the evident dissolution in the Hegelian school itself had alienated the sympathy of many from the then dominant philosophy. In Berlin particularly, the headquarters of the Hegelians, the desire found expression to obtain officially from Schelling a treatment of the new system which he was understood to have in reserve. The realization of the desire did not come about till 1841, when the appointment of Schelling as Prussian privy councillor and member of the Berlin Academy, gave him the right, a right he was requested to exercise, to deliver lectures in the university. The opening lecture of his course was listened to by a large and appreciative audience. The enmity of his old foe, F. T. F. Fr. Paulus, sharpened by Schelling's apparent success, led to the surreptitious publication of a verbal report of the lectures on the philosophy of revelation, and, as Schelling did not succeed in obtaining legal condemnation and suppression of this piracy, he in 1845 ceased the delivery of any public courses.

No authentic information as to the nature of the new positive philosophy was obtained till after his death (at Bad Rogaz, on the 20th of August 1854), when his sons began the issue of his collected writings with the four volumes of Berlin lectures: vol. i. Introduction to the Philosophy of Mythology (1856); ii. Philosophy of Mythology (1857); iii. and iv. Philosophy of Revelation (1858).

Philosophy.—Whatever judgment one may form of the total worth of Schelling as a philosopher, his place in the history of that important movement called generally German philosophy is unmistakable and assured. It happened to him, as he himself claimed, to turn a page in the history of thought, and one cannot ignore the actual advance upon his predecessor achieved by him or the brilliant fertility of the genius by which that achievement was accomplished. On the other hand he nowhere succeeds in attaining to a complete scientific system. His philosophical writings are the successive manifestations of a restless, highly expansive spirit, striving unsuccessfully after a solution of its own problems. Such unity as they possess is a unity of tendency and endavour; in some respects the final form they assumed is the least satisfactory. Hence it has come about that Schelling remains for the philosophic student both a source of historical value in the development of thought, and that his works have for the most part ceased now to have more than historic interest.

1 The reviews of current philosophical literature were afterwards collected, and edited under the title "Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre" in Schelling's *Philosophische Schriften*, vol. i. (1809).
philosophizing with the very nature of the thinker and with the inherent nature of thought. In his early writings, for example, more particularly those making up Naturphilosophie, one finds in painful abundance the evidences of hastily acquired knowledge, impatience of the hard labor, of the labor of discovery. It is the possessor of genius, and desire instantaneously to present even in crudest fashion the newest idea that had dimly been involved in his ardent and impetuous desires. It is not possible to altogether separate the Schellingian philosophy from the Hegelian philosophy; and if we claim for him perfect disinterestedness of view we must accuse him of deficient insight.

Nothing could be more striking than the forms and the forms of some other system Thus Fichte, Spinoza, Jakob Boehme and the Mystics, and finally, the great Greek thinkers with their Neoplatonic, Gnostic, and Scholastic commentators, give respectively colouring to the ideas of Schelling. Schelling does not derive his own view the turning points seem to have been—(1) the transition from Fichte’s method to the more objective conception of nature—the individuality of the subject, (2) the definition and organization of that which implicitly, as Schelling states, is involved in the idea of Naturphilosophie, viz. the thought of the identical, indifferent, absolute substratum of both nature and spirit, the advance to Identitätsphilosophie (3) the opposition of concept and positive philosophy, an opposition which is the theme of the Berlin lectures, though its germs may be traced back to 1804. Only what falls under the first and second of the divisions so indicated can be said to have effectively divided a fundamental philosophy: only so much constitutes Schelling’s philosophy proper.

1. Naturphilosophie.—The Fichteian method had striven to exhibit the nature of spiritual activity as an immanent unity of subjective and objective consciousness. The fundamental features of knowledge, whether as activity or as sum of apprehended fact, and of conduct had been deduced as elements necessary in the attainment of self-consciousness. Fichtean idealism therefore at once stood out negatively, as abolishing the dogmatic conception of the two real worlds, subject and object, by whose interaction cognition and practice arise, and as denuding the critical idea which retained with dangerous caution too much of the formalism of the older rationalism. Schelling, on the other hand, was disposed to identify too closely the ultimate ground of the universe of rational conception with the finite, individual spirit, and on the other hand to endanger the reality of the world of nature by regarding it too much as not merely a creation, but as a mere possibility of the finite thought, existed, in the existence of the finite thinking mind. It was almost a natural consequence that Fichte never succeeded in forming in his system the aesthetic view of nature to which the Kritik of Judgment had pointed as an essential component in any complete system. Schelling set Fichte’s position Schelling started. From Fichte he derived the form of a comprehensive philosophy consisting in the formal method to which for the most part he continued true. The earliest writings tended gradually towards the first important advance. Nature must not be conceived as merely abstract limit to an ideal, an absolute principle of mind, as it is by Fichte. It must be that and more than that. It must have reality for itself, a reality which stands in no conflict with its ideal character, a reality the inner structure of which is Ideal, a reality the root and spring of which is spirit. Nature as the sum of that which is objective, intelligence as the complex of all the activities making up self-consciousness, appear thus as equally real, as alike exhibiting ideal structure, as parallel with one another. The philosophy of nature and transcendental philosophy are the two complementary portions of philosophy as a whole.

With this new conception Schelling made his hurried rush to Naturphilosophie, and with the aid of Kant and of fragmentary knowledge of contemporary scientific movements, threw off in quick succession the Ideen, the Weltensche, and the Erster Entwurf als Metaphysik der Art der Seele. Schelling had the aid of modern science. His efforts after a construction of nature reality are bad in themselves, and gave rise to wearisome and useless physical speculation. Yet it would be unjust to ignore the many brilliant and sometimes valuable thoughts. But let us glance over the writings on Naturphilosophie—thoughts to which Schelling himself is but too frequently untrue. Regarded merely as a criticism of its premises, this interpretation proceeds, these writings have still importance and may have proved more and more they been untainted by the tendency hasty, ill-considered, a priori anticipations of nature.

Its manifoldness is not then to be taken as excluding its fundamental unity; the divisions which our ordinary perception and thought introduce into it have not absolute validity, but are to be regarded as the formal and partial outlines of the system for the good of the system; the many-sidedness of forces which is the inner aspect, the soul of nature. This we are in a position to apprehend and constructively to exhibit to ourselves in its inner form, if not in its full range, for it is the same spirit, though unconscious, of which we become aware and conscious. It is the realization of spirit. Nor is the variety of its forms imposed upon it from without; there is neither external (S.V. iii). In a full and lucid statement of Naturphilosophie is that given by K. Fischer in his Gesch. d. n. Phil., vi, 435-692.

1. The briefest and best account in Schelling himself of Naturphilosophie is that contained in the Einleitung zu dem Ersten Entwurf als Metaphysik der Art der Seele, and to this act, to make of it something more than empty sameness; it was necessary, in the second place, to clear up in some way the relation in which the reality or apparent actuality of nature and spirit...
stood to the ultimate real. Schelling had already (in the System der ges. Phil.) begun to endeavour after an amalgamation of the Spinozistic conception of substance with the Platonic view of an ideal realm, and to find therein the means of enriching the barrenness of the systems of Descartes, Leibnitz, and the like. It is evident that, in the realm of ideas, this latter absorbs all being, and that it is a tendency of his historical method to show this and to bring it to the fore; but, if the world of being is the absolute, and the finitude of man is the character of this absolution in the minds of men, this world and this character are not identical, and the latter is not the same as the former. Hence Schelling was led to the further statements that not in the rational conception of God is an explanation of existence to be found, nay, this is a mere external form or abstraction of the not-abstract, i.e., not the real—that God is to be conceived as act, as will, as something over and above the rational conception of the divine. Hence the stress laid on will as the realizing factor, in opposition to aview through which Schelling conveys and V. Hartmann, and on the ground of which he has been recognized by the latter as the reconciler of idealism and realism. Further, the position of negative, i.e., mere rational philosophy, and positive, of which the content is the real evolution of the divine as it has taken place in fact and in history, and as it is recorded in the varied mythologies and religions of mankind. The exposition of the latter, or its possible insight, is the exposition of either as it appears in the volumes of Berlin lectures.

Schelling's works were collected and published by his sons, in 6 vols., Berlin 1847. The codification of his philosophical doctrine can be found in Theorie der Möglichkeit, besonderer Form der Philosophie überhaupt (Tuebingen, 1794); Ideen zu einer Philosophie der Natur (Leipzig, 1797, ed. 1803); Von der Weltseele (Hamburg, 1798, 3rd ed. 1809); Erster Entwurf eines Systems der Naturphilosophie (Jena, 1799); Einleitung zu seinem Entwurf der Naturphilosophie (ib. 1799); System des transzendentalen Idealismus (Tubingen, 1800); Bruno, oder über das göttliche und natürliche Prinzip der Dinge (Berlin, 1802, ed. 1843); Vorlesungen über die Methode des akademischen Studiums (Tuebingen, 1803, ed. Braun, 1897); Uber das Verhältniss der bildenden Kunst zu der Natur (Munich, 1807); Uber die Goethes von Sammlkarte (Stuttgart, 1812). His Munich lectures were published by A. Dries (Liber amabilis: eine rühmliche Werke in der Philosophie, 3 vols., Aus Schelling's Leben in Briefen (3 vols., 1869-1870), in which a biographic sketch of the philosopher's early life is given by his sons. N. Tranlitz, Schelling: Briefe, welche mit seinen Werken und Leben sich verbinden, ein (1871). Of his other works is Klaiber, Helldrin, Hegel, u. Schelling in ihren schwäbischen Jugendjahren (1877). The biography in Kuno Fischer's Gesch. der neueren Philosophie, vol. vii. (3rd ed., 1902) is complete and admirable. See further Schelling als Persönlichkeit, Briefe, Reden, Aufsätze, ed. Otto Braun (1906), who also wrote Schellings geistliche Wandelungen in den Jahren 1800-1810 (1906); Rosenkranz, Schellings (1843); L. Noack, Schelling und die Philosophie der Romantik (2 vols., 1869); G. C. Frantz, Schellings positive Philosophie (3 vols., 1879-1880); Watson, Schellings Transcendental Idealism (1882); Groos, Die reine Vernunftwissenschaft, Systematische Darstellung von Schelling's Philosophie (1883); and G. Mele, Schellings Geschicht der Philosophie (2 vols., 1890). The Einfluss der Schellings auf die Entwicklung des Schleierschmers System (1909).

SCHELLING, CAROLINE (1763-1800), one of the most intellectual German women of her age, was born at Göttingen on 11 May 1763, daughter of Prof. Carl Michael Schelling. She married, in 1784, the state medical officer, one Böhmer, in Clausthal in the Harz, and after his death, in 1788, returned to Göttingen. Here she entered into close relations to the poet Gottfried August Bürger and the critic of the Romantic school, August Wilhelm Schlegel. In 1791 she took up her residence in Mainz, joined the famous society of the Clubbists (Klubblitzen), and suffered a short period of imprison-
a greater degree of freedom, especially commercial freedom, than had been possible on the Manor. The land was purchased from the Mohawks. To each of the fifteen original proprietors, except Van Cortland, who received a double portion, was assigned a village lot 200 ft. sq., a tract of bottom-land for farming purposes, a strip of woodland, and common pasture rights. Many of the early settlers were well-to-do and brought their slaves with them, and for many years the settlement was reputed the richest in the colony. It received a serious set-back in 1690, when on the 9th of February a force of French and Indians surprised and burned the village, massacred sixty of the inhabitants and carried thirty-two of the women and children captive. The village was not rebuilt in the present year, and a military post was established. About 1700 there was a considerable influx of English settlers. In 1745 the French and Indians again descended on the region and killed many of the inhabitants of the outlying settlement at Beekendael, 3 m. N.W. of Schenectady. Schenectady became a chartered borough in 1765 and a city in 1798. The first newspaper, the Gazette, was established in 1799. For some years after the completion of the Erie Canal, Schenectady, which had formerly been an important depot of the Mohawk river boat trade to the westward, suffered a decline in population and importance. With the abandonment of its terminus, the Mohawk & Hudson opening to Albany in September 1831 and the Saratoga & Schenectady in July 1832; the original station of the Mohawk & Hudson is still standing. It was not, however, until its new manufacturing era began, about 1880, that Schenectady's modern growth and prosperity began.


SCHENKEL, DANIEL (1813-1888), Swiss Protestant theologian, was born at Dägerlen in the canton of Zürich on the 21st of December 1813. After studying at Basel and Göttingen, he was successively pastor at Schaffhausen (1841), professor of theology at Basel (1849); and at Heidelberg professor of theology (1851), director of the seminary and university preacher. At first inclined to conservatism, he afterwards became an exponent of the mediating theology (Vermittlungstheologie), and ultimately a liberal theologian and advanced critic. Associating himself with the "German Protestant Union" (Deutsche Protestantien-verein), he defended the community's claim to autonomy, the cessation of railways in the suburbs, and the church and the rights of the laity. From 1852 to 1859 he edited the Allgemeine Kirchenzeitung, and from 1861 to 1872 the Allgemeine Kirchliche Zeitsschrift, which he had founded in 1859. In 1867, with a view to popularizing the researches and results of the Liberal school, he undertook the editorship of a Bibel-Lexicon (5 vols., 1869-1872), a work which was so much in advance of its time that it is still useful. In his Das Wesen des Protestantismus aus den Quellen des Reformationseides abgeleitet (3 vols. 1846-1851, 2nd ed. 1862), he declares that Protestantism is a principle which is always living and active, and not something which was realized once and for all in the past. He contends that the task of his age was to struggle against the Catholic principle which had infected Protestant theology and the church. In his Christliche Dogmasik (2 vols., 1838-1859) he argues that the record of revelation is human and was historically conditioned: it can never be absolutely perfect; and that inspiration, though originating directly with God, is continued through human instrumentality. His Charakterbild Jesu (1864, 4th ed. 1873; Engl. trans. from 3rd ed., 1869), which appeared almost simultaneously with D. Strauss's Leben Jesu, met with fierce opposition. The work is considered too subjective and fanciful, the great fault of the author being that he lacks the impartiality of objective historical insight. Yet, as Pfeiderer says, the work "is full of a passionate enthusiasm for the character of Jesus." The author rejects all the miracles except those of healing, and these he explains psychologically. His main purpose was to modernize and reinterpret Christianity; he says in the preface to the third edition of the book: "I have written it solely in the service of evangelical truth, to win to the truth those especially who have been most unhappily alienated from the church and its interests, in a great measure through the fault of a reactionary party, blinded by hierarchical aims." Schenkel died on the 18th of May 1885.

Other works—Friedrich Schleiermacher, Ein Lebens- und Charakterbild (1868); Christentum und Kirche (2 vols., 1867-1872); Die Schule in der neuen Zeit, (2 vols., 1865-1866); Das Christusbild des Glaubens dargestellt (1877); and Das Christusbild der Apostolischen und apostolischen Zeit (1879). See Herzog-Hauck, Realencyklopädie, Otto Pfeiderer, Development of Theology (1900); and F. Lichtenberger, History of German Theology (1886).

SCHERER, EDMOND HENRI ADOLPHE (1815-1889), French theologian, critic and politician, was born in Paris on the 8th of April 1815. After a course of legal studies he spent several years in theological study at Strassburg, where he graduated doctor in theology in 1843, and was ordained. In 1843 he was appointed to a professorship in the École Évangélique at Geneva, but the development of his opinions in favour of the Liberal movement in Protestant theology led to his resigning the post six years later. He founded the Anti-Jésuite, afterwards the Réformation au XIXe siècle, in which he advocated the separation of the Church from the State; but he gradually abandoned the Protestant doctrine. It is thought he became a pronounced Hegelian. Eventually he settled in Paris, where he at once attracted attention by brilliant literary criticisms, at first chiefly on great foreign writers, contributed to the Revue des deux mondes. He was elected municipal councillor at Versailles in 1870, deputy to the National Assembly for the department of Seine-et-Oise in 1871 and senator in 1875. He supported the Republican party. Towards the end of his life he devoted himself mainly to literary and general criticism, and was for many years one of the ablest critics to Le Temps. He was a frequent visitor to England, and took a lively interest in English politics and literature. He died at Versailles on the 16th of March 1880.

His chief works are: Dogmatique de l'Église réformée (1843), De l'État actuel de l'Église réformée en France (1844), Esquisse d'une histoire de l'Église moderne (1861, 2nd ed. 1866), Alexandre Vinet (1853), Lettres à Mon curé (1852), Etudes critiques sur la littérature contemporaine (1863-1889), Etudes critiques de littérature (1876), Diderot (1880), La Démocratie et la France (1883), Etudes sur la littérature au XVIIIe siecle (1891).

A memoir of him, by V. C. O. Gréard, appeared in 1890. See also an article by Professor E. Dowden in the Fortnightly Review (April 1889).

SCHERER, WILHELM (1841-1886), German philologist and historian of literature, was born at Schönborn in Lower Austria on the 26th of April 1841. He was educated at the academic gymnasium at Vienna and afterwards at the university, where he was the favourite pupil of the distinguished Germanist, Karl Viktor Müllenhoff (1818-1884). Having taken the degree of doctor philologicae, he became Privatdozent for German language and literature in 1864. In 1868 he was appointed ordinary professor, and in 1872 received a call in a like capacity to Strassburg, and in 1877 to Berlin, where in 1884 he was made member of the Academy of Sciences. He died at Berlin on the 6th of August 1886.

Scherer's literary activity falls into three categories: in Vienna he was the philologist, at Strassburg the professor of literature and in Berlin his author. His earliest work was a biography of the great philologist Jakob Grimm (1864, 2nd ed. 1883); he next, in conjunction with his former teacher Müllenhoff, published Denkmäler deutscher Poesie und Prosa aus dem 8. bis 12. Jahrhundert (1864, 3rd ed. 1892). His first great work was, however, Zur Geschichte der deutschen Sprache (Berlin, 1868; 3rd ed., 1890), a history of the German language with special reference to phonetic laws. He contributed the section on Alsatian literature to O. Lorenz's Geschichte des Elsasses (1871, 3rd ed. 1880). Other important works are: Geschichte der deutschen Literatur vom ersten bis zum 17. Jahrhundert (1874-1875); Geschichte der deutschen Dichtung im 11. und 12. Jahrhunderte (1875); and Vorüber- und Aufsätze zur Geschichte des geistigen Lebens in Deutschland und Österreich (1874). Scherer's best known work is his history of German literature, Geschichte der deutschen Literatur (Berlin, 1883; 10th ed., 1905; English translation by Mrs. F. C. Conybeare, 1883; new ed. 1966). This work is distinguished by the clearness with which details are caught and connected, and comprehensive survey of German literature from the beginning to the death of Goethe. Besides many other philological treatises, Scherer wrote largely on Goethe (Aus Goethes Freizeit,
The distinguished Brahms's mastery between 1895 and 1897)

SCHERR, Johannes (1817-1880), German man of letters and novelist, was born at Hohenrechberg in the kingdom of Württemberg on the 3rd of October 1817. After studying philosophy and history at the university of Tübingen (1837-1840), he became a pupil of the school conducted by his brother Thomas in Winterthur. In 1843 he removed to Stuttgart, and, entering the political arena with a pamphlet Württemberg im Jahre 1843, was elected in 1848 a member of the Württemberg House of Deputies; became leader of the democratic party in south Germany and, in consequence of his agitation for parliamentary reform in 1849, was obliged to take refuge in Switzerland to avoid arrest. Condemned in contumacia to fifteen years' hard labour, he established himself in Zurich as Privadozent in 1859, but removed in 1852 to Wintertur. In 1866 he was appointed professor of history and Helvetic literature in the Polytechnic in Winterthur, in which city he died on the 21st of November 1886.

Scherr was a voluminous writer in the field of historical investigation into the civilization, literature, and manners and customs of his country. His works have largely a political bias, but are characterized by an absence of any cleavage between exposition and careful research. Numberless among his books are the following: Geschichte der deutschen Kultur und Stüte (1852-1853, new ed. 1867); Schiller und seine Zeit (1859, new ed. 1870); Geschichte der deutschen Geschichte (1860, 4th ed. 1869); Geschichte der deutschen Musik (1860, 4th ed. 1880); Geschichte der englischen Literatur (1854, 2nd ed. 1853); Bücher, seine Zeit und sein Leben (1862, 4th ed. 1887). Scherr also wrote the humorous Sommertagebuch des vierten Dr. Gastroseptik, Jerimich Saurerhammer (1873); as a novelist he published the historical novels, Schiller (1856), and Michel, Geschichte eines Deutschen unserer Zeit (1858) which have passed through several editions.

With the exception of some of his stories (Novellenbuch, 10 vols. 1872-1877) Scherr's works have not appeared in a collected edition.

SCHERZO (Italian for "a joke"), in music, the name given to a quick movement evolved from the minuet and used in the position thereof in the sonata form. The term is occasionally applied otherwise, as a mere character name. Haydn first used it for a middle movement quicker than a minuet, in the comparatively early set of six quartets, Op. 74, and the three quartets Op. 77, as a joke. Mozart used it for a similar purpose, as well as for a coda to the last movement of his Jupiter Symphony. Scherzo is the French word for a round, as contrasted with the Russian quadrilles.

He never used the term again, though his later minuets, especially those in the Salomon symphonies, and the last completed quartets (Op. 77), are in a very rapid tempo and on a larger scale than any of the earlier scherzos of Beethoven. Haydn wished to see the minuet made more worthy of its position in large sonata works; but he did not live to appreciate (though he might possibly have heard) the great scherzos of his pupil Beethoven, which brought the element of the sublime into what may be generally termed the dance movement of the sonata style.

With rare exceptions Beethoven not only retained the dance character in lively middle movements, but accentuated it to the utmost in terms of what we have elsewhere called "dramatic" as distinguished from "decorative" music. He took those features of minuet form and style which most contrast the minuet with the larger and more highly organized movements, and he devised a form that emphasized them as they have never been emphasized before or since. The distinctive external feature in the minuet and trio is the combination of melodic binary forms with an exact division of minuet and trio themes. In the sonata admitting of so purely decorative a symmetry, the form of Beethoven's typical scherzo purposely exaggerates this feature. Mozart had frequently enriched minuets by giving them two or even three trios, with the minuet da capo after each. Beethoven does not do this; for, the general structure and texture of his scherzos being more continuous and highly organized, the variety of themes thereby produced would tend to give the form an elaborate rondo character which would not have differentiated it sufficiently from finales. But after Beethoven's mature scherzo has run through the stages of scherzo, trio and scherzo da capo, it goes through the same trio and da capo again; and perhaps even tries to do so a third time, as if it could not find a way out, and is then playfully and abruptly stopped.

This form lends itself to high-spirited humour, and differentiates the scherzo from the more highly organized movements by dramatically emphasizing its formal and decorative side. But Beethoven's Scherzo (Op. 33) where its "round-and-round" effect is realized with a mastery which alone suffices to dispose of Thayer's belief that these bagatelles are in their finished form, to Beethoven's boyhood.1 As a rule Beethoven did not find the piano forte a favourable instrument for his characteristic scherzo style; and his only other typical examples for piano forte are the second movements of the sonatas Op. 9, 10 and 11, a number of which is the trio repeated, and the fifth of the Six Bagatelles Op. 126.

The scherzo of the Eroica symphony is too long for Beethoven to allow it to go twice round; and that of the 9th symphony is so enormous that the main body of the scherzo is like a complete first movement of a sonata, from which it differs only in its comparative uniformity of texture and its incessant onrush, which not even the startling measured pause and the changes from 4-bar to 3-bar rhythm can really interrupt. Beethoven directs as many repetitions of its sub-sections as possible, and his coda consists of a most impressive attempt to begin the trio again, dramatically cut short. The scherzo of the Eroica and the scherzo of his 5th symphony are exceptions.

The scherzo of the 3rd symphony was originally meant to go twice round; but in its fifth edition, where it was not composed in the space of thirty years after Beethoven's death, was due simply to traces of the difference between the prima volta and seconda volta being left in the score.

Beethoven also used other types of quick middle movement in the place of the scherzo. In one case, that of the second allegretto of the E flat trio (Op. 70, No. 2), the round-and-round form is developed to the utmost in an almost humorous type, which thirty years after Beethoven's death, were due simply to traces of the difference between the prima volta and seconda volta being left in the score.

Modern custom uses the name of scherzo as a mere technical term for quick middle movements, and in this sense we may speak of the second movement of Beethoven's F major string quartet (Op. 59, No. 1) as a unique example; it being a very highly developed application of binary form with the utmost humour and unexpectedness of detail and style. It is possible that this gigantic movement, occurring in a work which was an especial favourite of Mendelssohn's, may have been the inspiring source of the Mendelssohnian scherzo of Liszt's A flat trio of 1853. But the scherzo of the E minor symphony, though not composed in the space of thirty years after Beethoven's death, is due simply to traces of the difference between the prima volta and seconda volta being left in the score.

Of Brahms's scherzos there are many distinct types. His largest, such as that of the trio Op. 8, are greatly influenced by Beethoven; but there are several great quick movements in the usual form which are not called scherzos, and are as far from being jokes as is the third movement of Beethoven's F minor quartet. The third movement of Brahms's fourth symphony is perhaps the most gigantic scherzo since Beethoven's time. It lasts hardly seven minutes, but is a fully developed blend of rondo and first-movement forms, with a coda containing one of the greatest climaxes in symphonic and operatic history. It was introduced as a new type of scherzo, independent of the sonata, but still in the quick triple time (one beat in a bar) which is Beethoven's typical scherzo rhythm. Chopin's form is traceable.

1 The autograph date, 1783, tallies neither with the handwriting nor with the style, but it may well refer to the raw material. Beethoven sometimes kept back his ideas for thirty years before executing them.
to the classical of scherzo and trio, and the style is dramatically
capricious and romantic, but far too impressive to suggest
humour. The same may be said of many classical scherzos,
though Beethoven uses the title only where the humorous
character of the movement lies on the surface. Even then
Beethoven's only mature instances of the title (except in the
form of scherando as a mark of expression) are those of the
Eroica symphony, the B flat trio Op. 97 and the B flat sonata
Op. 106. It is, however, correct to call any energetic move-
ment a scherzo when it occupies the position thereof in a sonata
scheme.

SCHETKY, JOHN CHRISTIAN (1778-1874), Scotch marine
painter, descended from an old Transylvanian family, was born
in Edinburgh on the 11th of August 1778. He studied art under
Alexander Nasmyth, and after having travelled on the continent
he settled in Oxford, and taught for six years as a drawing-
master. In 1808 he obtained a post in the military college,
Great Marlow, and three years later he was appointed professor
of drawing in the naval college, Portsmouth, where he had ample
opportunities for the study of his favourite marine subjects.
From 1836 to 1835 he held a similar professorship in the military
college, Addiscombe. To the Royal Academy exhibitions he
correspondingly contributed several works. He died in London on
the 9th of January 1874. A memoir by his daughter was published in 1877.

His younger brother, JOHN ALEXANDER SCHETKY (1785-1824),
studied medicine in Edinburgh university and drawing in the
Trustees' Academy. As a military surgeon he served with
distinction under Lord Beresford in Portugal. He contributed
excellent works to the exhibitions of the Royal Academy and
of the Water-Colour Society, and executed some of the illustra-
tions in Sir W. Scott's Provincial Antiquities. He died at Cape
Castle on the 5th of September 1824, when preparing to
follow Mungo Park's route of exploration.

SCHEUCHZER, JOHANN JAKOB (1672-1733), Swiss savant,
was born at Zurich on the 2nd of August 1672. The son of the
senior town physician (or Archiater) of Zurich, he received his
education in that place, and in 1692 went to the university of
Altdorf near Nuremberg, being intended for the medical profession.
Early in 1694 he took his degree of doctor in medicine at the
university of Utrecht, and then returned to Altdorf to complete
his mathematical studies. He went back to Zurich in 1696,
and was made junior town physician (or Poliater), with the
promise of the professorship of mathematics; this he obtained
in 1710, being promoted to the chair of physics, with the office
of senior town physician, in January 1733, a few months before
his death on the 23rd of June.

His published works (apart from numerous articles) were estimated
at thirty-four in number. His historical writings are mostly still
in MS, and many of his mathematical and physical writings are
lost; while his works on medicine and natural history are almost all
to his scientific observations (all branches) or to his journeys, in
the course of which he collected materials for these scientific works.
In the former category are his Beschreibung der Naturgeschichte
des N. Orients, and his Miscellanea physica, 1700, the second with the Swiss
writings on the Swiss mountains (summing up all that
was then known about them, and serving as a link between Sinler's
work of 1709 and Gruner's of 1766), the second with the Swiss rivers,
lakes and mineral baths, and the third with Swiss meteorology and
geology. Scheuchzer's works, as issued in 1740 and in 1752, formed
(with Tschudi's Chronicum Helveticum) one of the chief sources for
Schiller's play of Wilhelm Tell (1804). In 1704 Scheuchzer was
elected a F.R.S.; he published many scientific notes and papers in
the Philosophical Transactions for 1706-1707, 1709 and 1727-1728.
His published scientific catalogues include the Synopsis generum
(1704-1705), which was published in London in 1708, and dedicated to
the Royal Society, while the plates illustrating it were executed at
the expense of the various learned societies, including the president,
Sir Isaac Newton (whose form imprimatur is on the title-page).

SCHIAPARELLI, GIOVANNI VIRGINIO (1835-1910), Italian
astronomer and senator of the kingdom of Italy, was born on
the 14th of March 1835 at Savigliano in Piedmont. He entered
Turin university in 1859, and graduated in 1854. Two years
later he went to Berlin to study astronomy under Encke, and
in 1859 was appointed assistant observer at Pulkova, a post
which he resigned in 1860 for a similar one at Brema, Milan.
On the death of Francesco Carlini (b. 1793) in 1862, Schiaparelli
succeeded to the directorship, a position which he held until
1903. He died at Milan on the 4th of July 1910.

Schiaparelli's most striking work was the discovery of the
asteroid Asperia in 1861—but he had also considerable
mathematical gifts, as is shown in his treatment of orbital
motions, published in 1864, and in other papers. His great contribution
to astronomy are his studies of the Perseids and the Leonid
comets. In 1885 he published an important work on the
stellar system, which was largely amplified in his Le Stelle cadenti (1873) and
in his Norme per le osservazioni dellevette cadenti dei bolidi (1896) gained for him
the Lalande prize of the Academy of Sciences, Paris, in 1868, and the
pulvinar medal of the Royal Astronomical Society in 1872. He next worked on the
double stars, but his results have only been partially published. This labour was
in
SCHIAVONE, the Italian name of the basket-hilted sword of the 17th century, resembling what is erroneously called the "claymore" of modern Highland regiments. The "schiavone" was the sword of the Slavonic guards (Schiavonetti) of the doges of Venice, whence the name has been derived. He also produced a "Mater Dolorosa" after Vandyck, and Michelangelo's cartoon of the "Sight of the Soldiers on the Banks of the Arno." From 1803 to 1808 he was engaged in etching Blake's designs to Blair's Grave, which, with a portrait of the artist engraved by Schiavonetti after T. Phillips, R.A., were published in 1808. The etching of Stothard's "Canterbury Pilgrims" was one of his latest works, and on his death on the 7th of June 1810 the plate was taken up by his brother Niccolo, and finally completed by James Heath.

SCHILL, FERDINAND (1814-1869), German engineer and shipbuilder, was born at Elbing, where his father was asmith and ironworker, on the 30th of January 1814. He studied engineering at Berlin and then in England, and returning to Elbing in 1837 started works of his own, which from small beginnings eventually developed into an establishment employing some 8000 men. He began by making steam engines, hydraulic presses and industrial machinery, and, by concerning himself with canal work and river or coast improvement, came to the designing and construction of dredgers, in which he was the principal (1847), and contributed largely to the art.

His "Boatschiff" in 1855, was the first screw-rudder vessel constructed in Germany. Schichau began to specialize in building torpedo-boats and destroyers (at first for the Russian government); at an early date, he also had the honor of the cooperation of Carl H. Ziese, who married his daughter. Ziese introduced compound engines into the first vessels built by Schichau for the German navy, the gun-boat "Habicht" and "Möwe," launched in 1859, and also designed in 1881 the first triple-expansion machinery constructed on the continent, supplying these engines to the torpedo-boats built by Schichau for the German navy in 1884, the first of some 160 that by the year 1900 were provided for Germany out of the Elbing yards. torpedo-boats were also built for China, Austria and Italy. Meanwhile Elbing had become insufficient for the increased output demanded. In 1880 Schichau established a floating dock and repairing shops at Pillau, and soon afterwards by agreement that with the government, started a large shipbuilding yard at Danzig, for the purpose of constructing the largest ships of war and for the mercantile marine. He died on the 2nd of January 1886; but Ziese carried on the work, and not only made the Danzig yard the chief cradle of the new German fleet, rivalling the finest English establishments, but also largely developed the equipment at Elbing. These great works have made the name of their originator to rank with that of Krupp.

SCHIEDAM, a town and river port of Holland, in the province of South Holland, on the Schie, near its confluence with the Maas, and a junction station 3 m. by rail and steam tramway W. of Rotterdam. Pop. (1905) 29,227. The public buildings of interest are the Grooto of Janskork, the old Roman Catholic church, the synagogue, the town-hall, the exchange, the concert-hall and a ruined castle. Schiedam is famous as the seat of a great gin manufacture, which, carried on in more than three hundred distilleries, gives employment besides to malt-factories, cooperages and cork-cutting establishments, and supplies grain refuse enough to feed about 30,000 pigs, as well as sufficient yeast to form an important article of export. Other industries include shipbuilding, glass-blowing and the manufacture of stearine candles.

SCHIEFNER, FRANZ ANTON (1817-1870), Russian linguist, was born at Reval, in Russia, on the 18th of July 1817. His father was a merchant who had emigrated from Bohemia. He was admitted first at the Reval grammar school, matriculated at St Petersburg as a law student in 1836, and subsequently devoted himself at Berlin, from 1840 to 1842, exclusively to Eastern languages. On his return to St Petersburg in 1843 he was employed in teaching the classics in the First Grammar School, and soon afterwards received a post in the Imperial Academy, where in 1852 the cultivation of the Tibetan language and literature was assigned to him as his special function. Simultaneously he held from 1860 to 1873 the professorship of classical languages in the Roman Catholic theological seminary. And in 1874 till his death he was an election from member of the Imperial Academy. He visited England three times for purposes of research—in 1861, 1867 and 1878. He died on the 16th of November 1879.

Schiefler made his mark in literary research in three directions. First, he contributed to the Memoirs and Bulletin of the St Petersburg Academy, and brought out independently a number of valuable research papers. He also devoted much time to the composition of larger publications on the language and literature of Tibet. He possessed also a remarkable acquaintance with Mongolian, and when death overtook him had just finished a revision of the New Testament in that language with which the British and Foreign Bible Society had entrusted him. Further, he was one of the greatest authorities on the philology and ethnology of the Finnish tribes. He edited and translated the great Finnish epic Kalevala; he arranged, completed and brought out in twelve volumes the literary remains of Alexander Castrén, bearing on the languages of the Samoyedic tribes, the Koibal, Karagass, Tungusian, Buryat, Orestiak and Kottic tongues, and prepared several valuable papers on Finnish mythology for the Imperial Academy. In the third place, he made himself the exponent of investigations into the languages of the Caucasus, which his lucid analyses placed within reach of European philologists. Thus he gave a full analysis of the Tush language, and in quick succession, from Baron P. Usär's investigations, comprehensive papers on the Awar, Ude, Abkhasian, Tchetchen, Kási-Kümük, Hútkinan and Kúrian languages. He also mastered Ossetic, and in 1874 till his death he was an election from member of the Imperial Academy, several of them accompanied by the original text.

SCHILL, FERDINAND BAPTISTA VON (1776-1809), Prussian soldier, was born in Saxony. Entering the Prussian cavalry at the age of twelve, he was still a subaltern of dragoons when he was wounded at the battle of Auerstädt. From that field he escaped to Kolberg, where he played a very prominent part in the celebrated siege of 1807, as the commander of a volunteer force of all arms. After the peace of Tilsit he was promoted major and given the command of a hussar regiment formed from his Kolberg men. In 1809 the political situation in France appeared to Schill to favour an attempt to liberate his country from the French domination. Leading out his regiment from Berlin under pretext of manoeuvres, he raised the standard of revolt, and, joined by many officers and a company of light infantry, marched for the Elbe. At the village of Dodendorf (5th of May 1809) he had a brush with the Magdeburg garrison, but was soon driven northwards, where he hoped to find British support. The king of Prussia's proclamations prevented the patriots from receiving any appreciable assistance, and with little hope than his original force Schill was surrounded by 2500 Danish and Dutch soldiers in the neighbourhood of Wandsbek. He escaped by hard fighting (action of Damgarten, 24th of May) to Stralsund, and attempted to put the crumbling fortifications in order. The Danes and Dutch soon hemmed him in, and by sheer numbers overwhelmed the defenders (May 31). Schill himself was killed. Some parties escaped to Prussia, where the officers were tried by court-martial, cashiered and imprisoned. A few escaped to Swinemünde, but the rest were either killed or taken. Handled over to the French, the soldiers were sent to the galleys, and the eleven officers shot at Wesel on the 16th.
of September. The body of Schill was buried at Stralsund, his head sent to Leiden, where it remained until 1837. Monuments were erected at Brunswick, Stralsund and Wesel, and the 1st Silesian Leib-Hussars have borne Schill's name since 1880.

See Haken, Ferdinand von Schill (Leipzig, 1824); Bärsch, Ferdinand von Schill's Zug und Tod (Leipzig, 1860), and F. von Schill, ein Charakterbild (Stuttgart, 1860); Petrich, Pommer'sche Lebensbilder, vol. ii. (Stettin, 1884); Francke, Aus Stralsunds Frankensiszeit (1890).

Schiller, Johann Christoph Friedrich von (1759-1805), German poet, dramatist and philosopher, was born at Marbach on the Neckar, on the 10th of November 1759. His grandfather, Johann Schiller, a wine merchant in Marbach, had settled, near Wabingen; his father, Johann Kaspar (1732-1799), was an army-surgeon, who had settled in Marbach and married the daughter of an innkeeper, Elisabeth Dorothea Kodweis (1732-1805). In 1773 Schiller's father again took service in the army and ultimately rose to the rank of captain. The vicesituates of his profession entailed a constant change of residence; but at Lorch and at Ludwigsburg, where the family was settled for longer periods, the child was able to receive a regular education. In 1773 the duke Karl Eugen of Württemberg claimed young Schiller as a pupil of his military school at the "Solitude" near Ludwigsburg. In 1776, during his school holidays, he was obliged to devote himself to law. On the removal of the school in 1775 to Stuttgart, he was, however, allowed to exchange this subject for the more congenial study of medicine. The strict military discipline of the school lay heavily on Schiller, and intensified the spirit of rebellion, which, nurtured on Rousseau and the writers of the Sturm und Drang, burst out in the young poet's first tragedy; but such a school-life had for a poet of Schiller's temperament advantages which he might not have known had he followed his own inclinations; and it afforded him glimpses of court life invaluable for his later work as a dramatist. In 1776 some specimens of Schiller's lyric poetry had appeared in a magazine, and in 1777-1778 he completed his drama, Die Räuber, which was read surreptitiously to an admiring circle of schoolmates. In 1780 he left the academy qualified to practise as a surgeon, and was at once appointed by the duke to an ill-paid post as doctor to a regiment garrisoned in Stuttgart. His discontent found vent in the passionate, unbalanced lyrics of this period. Meanwhile Die Räuber, which Schiller had been obliged to publish at his own expense, appeared in 1781 and made an impression on his contemporaries hardly less deep than Goethe's Götz von Berlichingen, eight years before.

The strength of this remarkable tragedy lay, not in its inflated tone or exaggerated characterization—the restricted horizon of Schiller's school-life had given him little opportunity of knowing men and women—but in the sure dramatic instinct with which it is constructed and the directness with which it gives voice to the most poignant ideas of the time. In this respect, Schiller's Räuber is one of the most vital German dramas of the 18th century. In January 1782 it was performed in the Court and National Theatre of Mannheim, Schiller himself having stolen secretly away from Stuttgart in order to be present. The success encouraged him to begin a new tragedy, Die Verschwörung des Fiesco zu Genova, and he edited a lyric Anthologie auf das Jahr 1782, to which he was himself the chief contributor. A second surreptitious visit to Mannheim came, however, to the ears of the duke, who was also irritated by a complaint from Switzerland about an uncompromising reference to Graubünden in Die Räuber. He had Schiller put under a fortnight's arrest, and forbade him to write any more "comedies" or to hold intercourse with any one outside of Württemberg. Schiller, embittered enough by the ungenial conditions of his Stuttgart life, resolved on flight, and took advantage of some court festivities in September 1782 to put his plan into execution. He hoped in the first instance for material support from the theatre in Mannheim, and its intendant, W. H. von Dalberg; but nothing but rebuffs and disappointments were in store for him. He did not even feel secure against extradition in Mannheim, and after several weeks spent mainly in the village of Ogersheim, where his third drama, Luisi Millerin, or, as it was subsequently renamed, Kabale und Liebe, was in great part written, he found a refuge at Bauerbach in Thruringia, in the house of Frau von Wolzogen, the mother of one of his former schoolmates. Here Luise Millerin was finished and Don Carlos begun. In July 1783 Schiller received a definite appointment for a year as "theatre poet" in Mannheim, and here both Fiesco and Kabale und Liebe were performed in 1784. Neither play is as spontaneous or inspired as Die Räuber had been; but both mark a steady advance in characterization and in the technical art of the playwright. Kabale und Liebe, especially, is an admirable example of that "tragedy of common life" which had been introduced into Germany from England and which bulked large in Schiller's and Goethe's drama of the 18th century. In this drama Schiller's powers as a realistic portrait painter and of conditions familiar to him are seen to best advantage. Although Schiller failed to win an established position in Mannheim, he added to his literary reputation by his address on "Die Schaubühne als eine moralische Anstalt betrachtet" (1784), and by the publication of the beginning of Don Carlos (in blank verse) in his journal, Die rheinische Thalia (1785). He had also the opportunity of reading the first act of the new tragedy before the duke of Weimar at Darmstadt in December 1784, and as a sign of favour, the duke conferred upon him the title of "Rat".

In April 1788 Schiller, whose position in Mannheim had long before become hopeless, accepted a call from some unknown friends—C. G. Körner, L. F. Huber, and their fiancées Minna and Dom Stock—with whom he had corresponded, to pay a visit to Leipzig. He spent a happy summer mainly at Gohlis, near Leipzig, his jugant being reflected in the Gieße an die Freiheit (published in September of the same year he followed his new friend Körner to Dresden. As Körner's guest in Dresden and at Loschwitz on the bank of the Elbe, he read the drama Don Carlos, which was the dramatic tale, Der Verbrecher aus Infamie (later entitled Der Verbrecher aus verlorener Ehre, 1786) and the unfinished novel, Der Geisterseher (1786). The Rheinische Thalia was continued as the Thalia (1786-1791; in 1792, and in 1803 and 1805) and Don Carlos appeared as a kind of "review" of most of his writings at this time. Körner's interest in philosophy also induced Schiller to turn his attention to such studies, the first results of which he published in the Rhinische Bauernfreude (1796). Don Carlos, meanwhile, appeared in book form in 1797, and added to Schiller's reputation as a poet. In adopting verse instead of prose as a medium of expression, Schiller showed that he was prepared to challenge comparison with the great dramatic poets of other times and other lands; but in seeking a model for this higher type of tragedy he unfortunately turned rather to the classic theatre of France than to the English drama which Lessing, a little known friend of Schiller's, had been the first to translate. The unwieldiness of the plot and its inconsistencies show, too, that Schiller had not yet mastered the new form of drama; but Don Carlos at least provides Schiller with an opportunity of expressing ideas of politics and intellectual freedom with which the disciples of Rousseau, he, in warm sympathy.

A new chapter in Schiller's life opened with his visit to Weimar in July 1788. Goethe, the poet, the philosopher, who was absent from Weimar; but the poet was kindly received by Herder and Wieland, by the duchess Amalie and other court notabilities. The chief attraction for Schiller was, however, Frau von Kalb with whom he had been passionately in love in Mannheim; but not very long afterwards he made the acquaintance at Rudolstadt of the family von Lengefeld, the younger daughter of which subsequently became his wife. Meanwhile the preparation for Don Carlos had interested Schiller in history, and in 1788 he published the first volume of his chief historical work, Geschichte des Abfalls der vereinigten Niederlande von der spanischen Regierung, a book which at once gained for him the respect which, among the historians of the 18th century, it obtained for him, on the recommendation of Goethe, a professorship in the university of Jena, and in November 1790 he delivered his inaugural lecture, Was heisset und zu welchem Ende stehe die Geschichte? In 1792 he married Charlotte von Lengefeld. Schiller's other historical writings comprise a Sammlung historischer Memoires, which he began to publish in 1793; a 3-volume work, from 1791-1797. The latter work is more perfunctory in execution and written for a wider public than his first history, but the narrative is dramatic and vivid, the portraiture is sympathetic, and the general views are historically realistic. Its influence by the light of the rationalistic optimism of the later 18th century.

Before, however, the History of the Thirty Years' War was finished, Schiller had turned from history to philosophy. A year after his marriage he had written a satire on the effects of which he was never completely to recover; financial cares followed, which were relieved unexpectedly by the generosity of the
hereditary prince of Holstein-Augustenburg and his minister, Graf Schimmelpenninck, who conferred upon him a pension of 1000 florins to enable him to devote himself to the study of philosophy. In the summer of 1790 he had lectured in Jena on the aesthetics of tragedy, and in the following year he studied carefully the new stage in the history of aesthetic theory, Über Anmut und Würde, published in 1793, which had just appeared and appealed powerfully to Schiller's mind. The influence of these studies is to be seen in the essays Über den Grund unseres Vergnügens an tragischen Gegenständen and über die Würde des Gefühls, (1792), as well as in his correspondence with his friend Körner. Here Schiller arrives at his definition of beauty, as Freiheit in der Erscheinung, which, although it failed to remove Kant's difficulty that beauty was essentially a subjective conception, marked the beginning of a new stage in the history of aesthetic theory. Über Anmut und Würde, published in 1793, was a further contribution to the elucidation and widening of Kant's theories; and it is the first attempt at aesthetic theory of which (1795), Schiller proceeded to apply his new standpoint to the problems of social and individual life. These remarkable essays were published in Die Horen, a new journal, founded in 1794, which was the immediate occasion for that intimate friendship with Goethe which dominated the remainder of Schiller's life. The two poets had first met in 1788, but at that time Goethe, fresh from Italy, felt little inclination towards the author of the turbulent dramas Die Räuber, Kabale und Liebe and Don Carlo. By degrees, however, Schiller's historical publications, and, in a higher degree, the magnificent poems, Die Göter Griechenlands (1788) and Die Kunst und ihr Stand, published in 1798, secured for the younger poet invited Goethe to become a collaborator in the Horen, the latter responded with alacrity. In a very few weeks the two had become friends. In the meantime a holiday in Schiller's Wirtemberg during the height of the French war, and the immediate outcome of the new friendship was Schiller's admirable essays, published in the Horen (1795-1796) and collected in 1800 under the title Über naive und sentimentale Dichtung. Schiller applied his aesthetic theories to this branch of art which was most peculiarly his own, the art of poetry; it is an attempt to classify literature in accordance with an a priori philosophic theory of "ancient," "modern," "classical" and "romantic," of "naive," and "sentimental," and it sprang from the need Schiller himself felt of justifying his own "sentimental" and "modern" genius with the "naive" and "classical" tranquility of Goethe's. While Schiller arrived at his definition of beauty, it was the function of his life to lay claim to finality, it is, on the whole, the most concise statement we possess of the literary theory which lay behind the classical literature of the period.

For Schiller himself this was the bridge that led back from philosophy to poetry. Under Goethe's stimulus he won fresh laurels in that domain of philosophical lyric which he had opened with Die Künstler; and in Das Ideal und das Leben, Die Macht des Gesangses, Würde der Frauen, and Der Spaziergang, he produced masterpieces of reflective poetry which have not their equal in German literature. These poems appeared in the Musenalmanach, a new publication which Schiller began in 1796, the Horen, which had never met with the success it merited, coming to an end in 1797. In the Musenalmanach were also published the first fragments of Wallenstein (1797), and in the succeeding numbers of the journal Schiller and Goethe, in which the two friends avenged themselves on the cavalier critics who were not in sympathy with them. The Almanach of the following year, 1798, was even more noteworthy, for it contained a number of Schiller's most popular ballads, "Der Ring des Polykrates," "Der Handschuh," "Ritter Toggenburg," "Der Taucher," "Die Kraniche des Ibykus" and "Der Gang nach dem Eisenhammer," "Der Kampf mit dem Drachen" following in 1799, and "Das Lied von der Glocke in 1800. As a ballad poet, Schiller's position has been less high than as a dramatist; the bold and simple outline, the terse expression, the heavy rhythm, which appealed directly to the popular mind, which did not let itself be disturbed by the often artificial and rhetorical tone into which the poet falls. But the supreme importance of the last period of Schiller's life lay in the series of master-dramas which he gave to the world between 1799 and 1804. Just as Don Carlos had led him to the study of Dutch history, so now his occupation with the history of the Thirty Years' War supplied him with the theme of his trilogy of Wallenstein (1798-1799). The plan of Wallenstein was of long standing, and it was only towards the end, when Schiller was impelled by a conviction that he must say within five acts, that he decided to divide it into three parts, a descriptive prologue, Wallenstein's Lager, and the two dramas Die Piccolomini and Wallenstein Tod. Without entirely break-

with the pseudo-classic method he had adopted in Don Carlos —the two lovers, Max Piccolomini and Thelka, are an obvious concession to the tradition of the French theatre—Wallenstein shows how much Schiller's art had benefited by his study of Greek tragedy; the fostering of his hero is a masterly application
peculiar force to the German empire, especially in periods of political despondency. But since the re-establishment of the German empire in 1871 there has been, at least in intellectual circles, a certain waning of his popularity, the Germans of to-day realizing that Goethe's influence was the result of the achievements of the nation. In point of fact, Schiller's genius lacks that universality which characterizes Goethe's; as a dramatist, a philosopher, an historian, and a lyric poet, he was the exponent of ideas which belong rather to the Europe of the period before the French Revolution than to our time; we look to his high principles of moral conduct, his noble idealism and optimism, rather as the ideal of an age that has passed away than as the expression of the more material ambitions of the modern world.

The first edition of Schiller's Sämtliche Werke appeared in 1812–1813, and has been followed by numerous editions, the latest being that of C. G. Körner. Of the countless subsequent editions mention need only be made here of the historisch-britische Ausgabe by K. Goedeke and others (19 vols., 1867–1876), the edition published by Hennel and edited by K. Boxberger and W. von Maltzahn (16 vols., 1868–1874); that in Kärscher's Deutsche Nationalliteratur, vols. 118–129 (1882–1890), edited by R. Boxberger and A. Birlinger; and the latest Complete edition (Säkulare Ausgabe), edited by May Hellen and others (17 vols., 1904–1905). A critical edition of Schiller's Briefe was published by P. Jonas (7 vols.) in 1892–1896; the chief collections of his correspondence are: Briefwechsel zwischen Schiller und Goethe (1824–1850, published in 1893); Briefwechsel zwischen Schiller und W. von Humboldt (1830, edited by F. Muncker, 1893); Schiller Briefe mit Körner (1847, edited by L. Maier); Schiller Briefe und Dokumente (1892, edited by W. Vögel, 1897); Briefwechsel zwischen Schiller und Cotta, ed. by W. Vögel (1879, 3 vols.).

The chief biographies of Schiller are the following: T. Carlyle, Life of Friedrich Schiller (1824, German translation with an introduction by Goethe, 1876); Goethe, Gedichte (1830, 5th ed., 1876, cheap reprint, 1884); K. Hofmeister, Schillers Leben (1838–1842); G. Schwab, Schillers Leben (1840, 2nd ed. 1844); E. Pallaske, Schillers Leben und Werken (1858–1864, 3th ed. 1894); E. Schwab, Schillers Leben (1875, new ed. 1888); H. Düntzer, Schillers Leben (1881); J. Sime, Schiller (1882); R. Weltreich, F. Schiller (vol. i., 1890); O. Brahm, Schillers Werke, vols. 1–2, (1888–1892); J. Minor, Schillers Leben und Werke, ed. by W. Böhme, 1895; E. Müller, Regesten zu Schillers Leben und Werken (1900); A. Kontz, Les drame de la jeunesse de Schiller (1890); E. Kühnemann, Kant und Schiller (1897); E. Kühnemann, Friedrich Schiller (1898); E. Schiller, Schillers Dramen: Beiträge zu ihrem Verständnis (2 vols., 1888–1891; 2nd ed. 1898); K. Werder, Vorlesungen über Schillers Werke (1889); A. Küster, Schiller als Dramatiker (1891); L. Bölling, Schillers Meister (1883); K. Fischer, Schiller-Schriften (1891–1892); J. W. Braun, Schiller im Urteile seiner Zeitgenossen (3 vols., 1882); J. G. Robertson, Schiller after a Century (1905). (J. G. R.)

SCHILTBERGER, JOHANN or HANS (1581–1448?), German traveller and writer, was born of a noble family in 1581 (probably in Holten near Lobolf, half way between Munich and Freising, on what was then a property of his family. In 1394 he joined the suite of Lienhart Richartinger, and went off to fight under Sigismund, king of Hungary (afterwards emperor), against the Turks on the Hungarian frontier. At the battle of Nicopolis (Sept. 28th, 1396) he was wounded and taken prisoner; when he had recovered the use of his feet, Sultan Bayezid I. (Ildertin) took him into his service as a runner (1396–1402). He seems to have since accompanied Ottoman troops to certain parts of Asa Minor and to Egypt. On Bayezid's overthrow in 1402, and his flight to Syria, he served in the service of Bayezid's conqueror Timur: he now appears to have followed Themülin to Samarkand, and perhaps also to Armenia and Georgia. After Timur's death (February 17th, 1405) his German runner first became a slave of Shah Rukh, the ablest of Timur's sons; then of Miran Shah, a brother of Shah Rukh; then of Abu Bekr, a son of Miran Shah, whose camp roamed up and down Armenia. He next accompanied Chereke, a Tatar prince living in Abu Bekr's horde, on an excursion to Siberia, of which name Schiltberger gives us the first clear mention in west European literature. He also probably followed his new master to the land of the Red Bulgarians of the middle Volga, answering to the modern Kazan and its neighbourhood. Wanderings in the steppe lands of south-east Russia; visits to Sarai, the old capital of the Kipshak Khanate on the lower Volga and to Azov or Tana, still a trading centre for Venetian and Genoese merchants; a fresh change of servitude on Chereke's ruin; travels in the Crimea, Circassia, Akhkhia and Mingrelia; and finally escape (from the neighbourhood of Batum) followed. Arriving at Constantinople, he there lay hid for a time; he then returned to his Bavarian home (1427) by way of Kilia, Akkerman, Chersones, and finally Varna. He there in 1432 became a chamberlain of Duke Albert III., probably receiving this appointment in the first instance before the duke's accession in 1438.

Schiltberger's Reisebuch contains not only a record of his own experiences and a sketch of various chapters of contemporary Eastern history, but also an account of countries and their manners and customs, especially those whom he was first visited. First come the lands "this side" of Danube, where he had travelled; next follow those between the Danube and the sea, which he saw for the first time in 1429; then the Turkic dominions in Asia; last come the more distant regions of Schiltberger's world, from Trebizond to Russia and from Egypt to India. In this regional geography the descriptions of Brusa, of Constantinople, and the Black Sea, are particularly full. The Tatars around the Caspian, and the habits of their peoples (especially the Red Tartars); of Siberia; of the Crimea with its great Genoese fortress of Feodosia (where Schiltberger spent the winter); of Egypt and Arabia, are particularly worth notice. His allusions to the Islamic missions still persisting in Armenia and in other regions beyond the Euxine, and to (non-Roman?) Christian communities in Asia Minor, and to the history of the steppes are also marked. Schiltberger is perhaps the first writer of Western Christendom to give the true burial place of Mahomet at Medin: his sketches of Islam and of Eastern Christendom, with all their shortcomings, are valuable for the student of the early Middle Ages. He was among the authors who contributed to fix Prester John, at the close of the middle ages, in Abyssinia. His work, however, contains many inaccuracies; thus in reckoning the years of his service both with Bayezid and with Timur he unaccountably multiplies by two. His account of Timur and his campaigns is misty, often incorrect, and sometimes fabulous; nor can von Hammer's parallel between Marco Polo and Schiltberger be sustained without large reservations.

Four MSS. of the Reisebuch exist: (1) at Donaueschingen in the Fürstenberg Library, No. 481; (2) at Heidelberg, University Library, 216; (3) at Nürnberg, City Library, 34; (4) at St Gall, in the Bibliotheca Imperialis. The first edition was printed in 1625. The work was first edited at Augsburg, about 1460; four other editions appeared in the 15th century, and six in the 16th; in the 17th century it went through several editions. (Odess, 1666, with Russian commentary, in the Records of the Imperial University of New Russia, vol. i., and V. Langmantel's (Tiibingen, 1888); Hans Schiltbergers Reisebuch, in the 17th volume of the Bibliothek des literarischen Vereins in Stuttgart). See also the English (Hakluyt Society) version, The Bondage and Travels of Johann Schiltberger. . . trans., by Buchan Teller with notes by P. Bruun (London, 1879); von Hammer, "Berechtigung d. orientalischen Namen Schiltberger," in Denkschriften d. Königl. Akad. d. Wissenschaften (vol. ix., Munich, 1823–1824); R. Röhrich, Bibliotheca geographica Palaeasitana (Berlin, 1890, pp. 103–104); C. R. Beazley, Dawn of Modern Geography, iii. 356-378, 594. (C. B. R.)

SCHIMMEL, HENDRIK JAN (1825–1887), Dutch poet and novelist, was born on the 30th of June 1825, at 'S Graveland, in the province of North Holland, where his father was a notary and the burgomaster. From 1836 to 1842 Schimmel served in his father's office, and upon his death he was taken into the office of the agent of the Dutch Treasury in Amsterdam, exchanging in 1849 for a post with the Dutch Trading Company there. In 1863 he became a director of the Amsterdam Credit Bank. His works number many, but he was first of all a writer of historical dramas in blank verse and one of the regenerators of the Dutch stage that his literary position was made. His finest production was Strenuuse (1868), which was preceded by Napoleon Bonaparte (1851) and Juffrouw Serklaas ("Mrs Serklaas," 1857). Among his other dramatic works may be mentioned Joan Wouters (a drama, 1847), Twice
Tudors ("Two Tudors," 1847), Goudelbald (1848), Schuld en Boete ("Guilt and Retribution," a drama, 1852), Het Kind van Staat ("The State Child," a dramatic fragment, 1859); Zege na Strijd ("Struggle and Triumph," a drama, 1878). Schimmel's renderings of Casimir de la Vigne's Louis XI., Gebel's Sophonte, and Ponson's Louvre are alike in their Neo-Neoclassical style. His novels are distinguished by their vigorous style and able characterization. The earlier, better-known ones betray the writer's English proclivities. The plots of Mary Hollis (1860, 3 vols., English translation, London 1872, under the title of "Mary Hollis, a Romance of the Days of Charles II. and William, Prince of Orange," 3 vols.) and of Mylady Carlisle (1864, 4 vols.) are laid in England, whereas those of his Sireign Semyens (1875, 3 vols.), a powerful picture of the terrible year 1762, and of De Kaptein van de Lijffsarde (1888, 3 vols., English translation, London 1889, under the title of "The Lifeguardman," 1 vol.), a continuation of "Master Semyens," are almost entirely centred in Holland. He had many points of style and manner in common with Madame Bosboom-Toussaint, though both remained highly original in their treatment. Both finally reverted to essentially national subjects.

To the earlier romances of Schimmel belong: Bonaparte en syn Lyf ("Bonaparte and his Time," 1853), De Eerste Dag eens Nieuwen Lyf ("The First Day of a New Life," 2 vols., 1853), Sproken en Vertellingen ("Legends and Tales," 1853), Een Haagse Joffer ("A Hague Dam," 1859), De Horizons sterren ("The Signs of the Stars") (1860). Schimmel was an early collaborator of Potgieter on the Gids staff. His dramatic works appeared in a collected edition in 1855-1856 at Amsterdam (3 vols.), followed by a complete and popular issue of his novels (Schiedam, 1892). Schinkel, Karl Friedrich (1781-1841), German architect and painter, and professor in the academy of fine arts at Berlin from 1820, was born at Neuruppin, in Brandenburg, on the 13th of March 1781. He was a pupil of Friedrich Gilly, the continuation of whose work he undertook when his master died (1805). He went to Italy, returning to Berlin in 1805. The Napoleonic wars interfered seriously with his work as architect, so that he took up landscape painting, displaying a talent for the romantic delineation of natural scenery. In 1810 he drew a plan for the mausoleum of Queen Louise and in 1819 a brilliant sketch for the Berlin cathedral in Gothic style. From 1808 to 1814 he painted a number of dioramas for Gropins. From 1815 he devoted much time to scene painting, examples of his work being still in use in the royal theatres of Germany. Schinkel's principal buildings are in Berlin and its neighbourhood. His merits are, however, best shown in his plans for the transformation of the ancient Acropolis into a royal palace, for the erection of the Orlando Palace in the Crimea and for a monument to Frederick the Great. These and other designs may be studied in his Sammlung architektonischen Entwürfe (1820-1837, 3rd ed. 1857-1868) and his Werke der höheren Baukunst (1845-1846, new ed. 1874). See the biographies by Kuugler, Bötticher, Quast, H. Grimm, Wagen, Woertz, Ziller, Pech, Dohme, and vol. xxviii. of the Künstler- und monumenten project, by Ziller (Leipzig, 1807).

Schirmer, Friedrich Wilhelm (1802-1866), German landscape artist, was born in Berlin. As a youth he painted flowers in the royal porcelain factory; afterwards he became a pupil of F. W. Schadow in the Berlin Academy, but his art owed most to Italy. He went to Italy in 1827; his sojourn extended over three years; he became a disciple of his countryman Joseph Koch, who built historic landscape on the Poussins, and it is to him that Schirmer is indebted. In 1830 Schirmer established himself in Berlin in a studio with scholars from 1839 to 1865; he was professor of landscape in the academy. Schirmer's place in the history of art is distinctive: his sketches in Italy were more than transcripts of the spots; he studied nature with the painter's eye when he painted historic landscapes. On the completion of the Berlin Museum of Antiquities he had the opportunity of studying the works of the ancient landscape artists. Schirmer was the first to devote himself to the study of the manorial landscape; he reveals in his studies the poet's instinct for atmosphere. His pictures appeal to the mind by the ideal they embody, by beauty of form, harmony of line, significance of light and colour. In this constructed landscape German critics discover "motivic," "inner meaning," "the subjective," "the ideal." And Schirmer thus formed a school.

Schirmer, Johann Wilhelm (1809-1863), German landscape painter, was born at Jülich in Rhenish Prussia. This artist, a namesake of F. W. Schirmer, had a similar aim and career. He was first a student, and subsequently became a professor in the academy at Düsseldorf. In 1854 he was made director of the art school at Carlsruhe, where he died. He travelled and sketched in Italy, and aimed at historic landscape after the manner of the Poussins. His Biblical landscapes with figures are held in good esteem.

Schism, a division, especially used of a formal separation from a church or religious body, a sect, or church formed by such separation. The Greek schisma, as a clef isolation, from schízein, to cleave, is used in the New Testament of an actual rent in a garment (Matt. ix. 16) and also several times of divisions or differences of opinion as to the teaching and message of Christ (John vii. 43) or of dissension in the church (1 Cor. xi. 18).

In the early Christian Church, as defined by the Fathers, and later, the offence of "schism" is distinguished from that of "heresy"; it refers not to differences of belief or doctrine, but to the promotion, or the state, of divisions of organisation, and to the formation of bodies separate from the true church, or to dissension and separations due to disputes over matters of discipline or authority (compare "schismatic" in a similar sense). The dispute which led to the separation of the Latin and Greek Churches is known as the "Great Schism," and the division over the election to the Papacy of Urban VI. and Clement VII. as the "Great Schism of the West" (1378-1417) (see PAPACY and CHURCH HISTORY).

Schists (Gr. σχίτω, to split), in petrology, metamorphic rocks which have a fissile character. In all of them there is at least one mineral which crystallizes in platy forms (e.g. mica, talc, chlorite, haematite), or in long blades or fibres (anthophyllite, tremolite, actinolite, tournamite), and when these have a well-marked parallelism in definite bands or folia, the rock will break far more easily along the bands than across them. The platy minerals have also a perfect cleavage parallel to their flat surfaces, while the fibrous species often have two or more cleavages following their long axes; hence a schistose rock may split not only by separation of the mineral plates from one another but also by cleavage of the parallel minerals through their substance.

Schists in the common acceptance of that term are really highly crystalline rocks; fissile slates, shales or sandstones, in which the original sedimentary structures are little modified by recrystallization, are not included in this group by English petrologists, though the French schistes and the German Schiefer are used to designate also rocks of these types. The difference between schists and gneisses is mainly that the latter have less highly developed foliation; they also, as a rule, are more coarse grained, and contain far more quartz and felspar, two minerals which rarely assume platy or acicular forms, and hence do not lead to the production of a fissile character in the rocks in which they are important constituents. Schists, as a rule, are found in regions composed mainly of metamorphic rocks, such as the Scottish Highlands, the Rhenish Prussia, Saxony, Scandinavia, the Highlands of Scotland and north-west of Ireland. They are typical products of "regional" metamorphism, and are in nearly all cases older than the fossiliferous sedimentary rocks. Transitions between schists and normal igneous or sedimentary rocks are often found. The Silurian mica-schists of Bergen in Norway are fossiliferous; in the Alps it is believed that even Mesozoic rocks pass laterally into mica-schists and calc-schists. These changes are regarded as having been produced by the operation of heat, pressure and folding. It is often taught that gneisses are the further stages of the crystallization of schists and belong to a deeper zone where the pressures and the temperatures were greater. Igneous rocks also lead into schists (e.g. serpentine into talc-schist, dolerite into hornblende-schist) by the same agencies.
There are two great groups of schists, viz. those derived from sedimentary and those derived from igneous rocks, or, as they have been called, the "paraschists" and "orthoschists," respectively. Most metamorphic rocks, and includes some of the commonest metamorphic rocks. In the paraschists, though fossils are exceedingly rare, sedimentary structures such as bedding and the outer ridges of sandstones may sometimes be preserved. The foliation is often parallel to the bedding, but may cross it obliquely or at right angles; or the bedding may be folded and contorted while the foliation maintains a nearly uniform orientation. When the foliation is undulate or sinuous the rocks are said to be crumpled, and have wavy splitting surfaces instead of nearly plane ones. The development of foliation in shaly rocks is undoubtedly closely akin to the "shearing" or "slaggage" phenomena in clays which have been deformed by hard pressure. The orthoschists or paraschists have three great subdivisions, the mica-schists and chlorite-schists (which correspond in a general way to shales or clay rocks) the calc-schists (imurelites, or the rock limestones), and the gneiss-schists and gneisses (gneisses, or quartz-schists). In the mica-schists of this group biotite or muscovite may be the principal mineral and often both are present in varying proportions; the mica has developed from the argillaceous matter of the original rock; in addition there is always quartz and sometimes talc (albite or oligoclase). A large number of minerals may occur as accessories, e.g. garnet, tourmaline, staurolite, andalusite, actinolite, chloritoid or ottreille, epidote, prehnite, can be identified and when the minerals present are indicated by the name given the rock, e.g. staurolite-mica-schist. The phyllites (g.v.) form a middle term between this group and the slates; they consist usually of quartz, which is often crystalline and exhibits the foliation, with the fine schistosity of the mica-schists. These rocks which contain andalusite and staurolite are sometimes found in such associations as to show that they are due to contact action by intrusive igneous masses. The foliation of igneous rocks, such as granites, hornblendes or fine lavas which have been metamorphosed. Many of them contain large octahedra of magnetite. Others are probably sedimentary rocks, especially those of the so-called "tectonic" or "tectonized" varieties that are usually argillaceous limestones in which a large development of biotite or phlogopite has occasioned foliation. Often they contain quartz and felspar, sometimes pyroxene, amphibole, garnet, or epidote, but not all of them on schistose rocks. The quartz-schists consist of quartz and white mica, and are intimately related to quartzites. Many of them have been originally micaceous or felspathic sandstones. We may mention also graphitic schists (g.v.), which are usually black and graphitic, or altered types of carbonaceous schists, and haematite-schists which may represent beds of ironstone. The orthoschists are white mica-schists produced by the shearing of acid rocks, such as felsite and porphyry. Some of the "porphyro" which have grains of quartz and felspar in a finely schistose micaceous matrix are intermediate between porphyries and mica-schists of this group. Still more numerous are orthoschists of hornblende (hornblende-schists) consisting of green hornblende with often felspar, quartz and felspar (also rutile, garnet, epidote or zoisite, biotite and iron oxides). These are modified forms of basalt and diorite. Every transition can be found between perfectly normal philitic dolerites and typical hornblende-schists, and occasionally the same dike or sill will provide specimens of all the various dolerites and diorites, or schists and metamorphosed gabbros; others have developed from dikes or sills of lamprophyre. Under extreme crushing these basic rocks may be converted into dark biotite-schists, or greenish chlorite-schists in 1850 (Gedeken, and another schistosity in nearly all cases the representatives of the ultra-basic igneous rocks such as peridotite in regions of high metamorphism. Talc-schists are of the same category. They are soft and lustrous, with a peculiarly smooth feel, and though often confounded with mica-schists may be distinguished by their richness in magnesia; many of them contain tremolite or actinolite; others have residual grains of olivine or augite; and also a number of gneisses found in the uppermost metamorphic types and the perfectly metamorphic schists. Occasionally serpentines become sheared without yielding talcose minerals; they are then known as serpentine-schist and antigorite-schist, the latter being tough, dark-green rocks, more or less transparent.

SCHLAGINTWET, the name of five German scientific explorers or students of foreign countries. They were brothers, and were named HERMANN (1826-1882, who became known as Hermann von Schlagintweit Sakünlinski), ADOLF (1829-1857), Eduard (1831-1866), Robert (1833-1885), and Emil (1835-1904). Hermann was born at Munich on the 15th of May 1826. His first scientific labours were studies in the Alps, carried on between 1845 and 1848 in association with his brother Adolf (born at Munich on the 9th of January 1826). The publication of the "Untersuchungen über die physikalischen Geographie der Alpen" in 1850 (Leipzig) founded the scientific reputation of the two brothers, and their reputation was increased by subsequent investigations in the same field, in which Robert (born at Munich on the 27th of October 1837) also took part. Soon after the publication of the "Untersuchungen über die physikalischen Geographie der Alpen" (Leipzig, 1854), the three brothers received, on the recommendation of Alexander von Humboldt, a commission from the East India Company to travel for scientific purposes in their territory, and more particularly to make observations on the geological and magnetic altitudes of the Himalayas. During 1854-1857 they travelled, sometimes in company, sometimes separately, in the Deccan and in the region of the Himalayas, prosecuting their investigations beyond the frontiers of the company's territory into the region of the Karakorum and Kuen-lun mountains. Hermann and Robert were the first Europeans who crossed the Kuen-lun, and in honour of that achievement the former had the title or surname of Sakünlinski bestowed upon him (in 1864). Robert returned to Europe early in 1857; Hermann, after a visit to Nepal, joined him on his homeward journey; but Adolf, who remained to prosecute his explorations in Central Asia, was put to death by the amir of Kashgar on the 26th of August. Hermann and Robert published in four volumes the Results of a Scientific Mission to India and High Asia (Leipzig, 1860-1866). They had, moreover, made extensive ethnographical and natural history collections. Hermann spent the last years of his life chiefly in literary and scientific activity, partly at Munich, partly at the castle of Jägerburg near Forchheim. He died at Munich on the 19th of January 1882. Robert was appointed professor of geography at Giessen in 1863. He paid several visits to America, which furnished him with a wealth of ethnographical and topographical data. His best works are "Die Mineralien" (1870), "Die Monomorien" (1874), "Die Pränien" (1876), &c., all published at Cologne. He died at Giessen on the 6th of June 1885. Eduard, born on the 23rd of March 1831, killed in battle at Kissingen in 1866, made himself known by an account of the Spanish expedition to Morocco in 1839-1860. Emil, born on the 7th of July 1835, served several learned works relating to India and Tibet. He died on the 29th of October 1904.

SCHLA, (Czech, Slane), a town of Bohemia, 37 m. N.W. of Prague by rail. Pop. (1900) 4497, mostly Czech. The most notable churches are St. Gotthard (14th century, remodelled in 1782) St Mary, attached to the Priest college (1655-1658), the chapel of St Lawrence (13th century) and the church of the Holy Trinity belonging to the Franciscan friary (1653). There are extensive coal-fields and important iron, metal and machine industries, together with the manufacture of chemicals and corn-milling.

SCHLAGGENBAD, a watering-place of Germany, in the Prussian province of Hesse-Nassau, pleasantly situated in a deep and well-wooded valley of the Taunus range, 6 m. N.W. of Wiesbaden, 43 m. S. of Langenschwalbach, and 5 m. E. of Eltville on the Rhine, with which it is connected by a steam tramway. Its eight thermal springs are mostly used for bathing, and are efficacious in nervous complaints and feminine disorders. There is a handsome kursaal connected with the principal bathing establishment. Permanent population (1905) 400, while the number of visitors numbers about 250,000 annually.

SCHLEGEL, AUGUST WILHELM VON (1767-1845), German poet, translator, and critic, was born on the 8th of September, 1767, at Hanover, where his father, Johann Adolf Schlegel (1721-1795), was a Lutheran minister. He was educated at the Hanover gymnasium and at the university of Göttingen. Having spent some years as a tutor in the house of a banker at
Amsterdam, he went to Jena, where, in 1766, he married Karoline, the widow of the physician Böhmer (see Schelling, Karolinen) and in 1768 was appointed extraordinary professor. Here he began his translation of Shakespeare, which was ultimately completed, under the superintendence of Ludwig Tieck, by Tieck's daughter Dorothea and Graf W. H. Baudissin. This rendering is one of the best poetical translations in German, or indeed in any language. At Jena Schlegel contributed to Schiller's periodicals the Horen and the Musenalmanach; and with his brother Friedrich he conducted the Athenaenau, the organ of the Romantic school. He also published a volume of poems, and carried on a rather bitter controversy with Kotzebue. At this time many other Germans were moving to Berlin in order to be enabled to withstand the severity and coldness of the French school. He and his brother, though they were freemen of Sanskrit, had not in their possession the knowledge of the Greek, which in their judgment was necessary for the translation of the classics. Their acquaintance and freshness of their ideas, and commanded respect as the leaders of the new Romantic criticism. A volume of their joint essays appeared in 1801 under the title Charakteristiken und Kritiken. In 1802 Schlegel went to Berlin, where he delivered lectures on art and literature; and in the following year he published Ion, a tragedy in Euripidean style, which gave rise to a suggestive discussion on the principles of dramatic poetry. This was followed by Spanisches Theater (2 vols., 1803-1809), in which he presented admirable translations of five of Calderon's plays. In 1807 his two brothers, and Madame de Staël, who owed to him many of the ideas which she embodied in her work, De l'Allemagne. In 1813 he acted as secretary of the crown prince of Sweden, through whose influence the right of his family to noble rank was revived. Schlegel was made a professor of literature at the university of Bonn in 1818, and during the remainder of his life occupied himself chiefly with oriental studies, although he continued to lecture on art and literature, and in 1828 he issued two volumes of critical writings (Kritische Schriften). In 1823-1830 he published the journal Indische Bibliothek (5 vols.) and edited the periodicals Die Räumya (1829) and Die Räumya (1829) the Räumya. These works mark the beginning of Sanskrit scholarship in Germany. After the death of Madame de Staël Schlegel married (1818) a daughter of Professor Paulus of Heidelberg; but this union was dissolved in 1821. He died at Bonn on the 12th of May 1845. As an original poet Schlegel is unimportant, but as a poetical translator he has rarely been excelled, and in criticism he put into practice the Romantic principle that a critic's first duty is not to judge from the standpoint of superiority, but to understand and to characterize a work of art.

In 1846-1847 Schlegel's Sämtliche Werke were issued in twelve volumes by E. Böcking. There are also editions by the same editor of his Œuvres écrites en français (3 vols., 1846), and of his Opuscula Latina scripta (1848). Schlegel's Shakespeare translations have been often published; an edition of 1811-1812 was revised with Schlegel's MSS. by M. Bernays. See M. Bernays, Zur Entstehungs geschichte des Schlegel'schen Shakespeare (1872); R. Genée, Schlegel and Shakespeare (1903). Schlegel's Berlin lectures of 1801-1804 were reprinted from MS. notes by J. Minier (1884). A selection of the writings of both A. W. and Friedrich Schlegel, edited by O. F. Watzol, will be found in Künzler's Deutsche Nationalliteratur, 143 (1892), and especially R. Haym, Schlegel, and the article in the Allg. deutsiche Biographie by F. Muncker.

SCHLEGEL, JOHANN ELIAS (1719-1749), German critic and dramatic poet, was born at Meissen on the 28th of January 1719. He was educated at Schulpforta and at the university of Leipzig, where he studied law. In 1743 he became private secretary to his relative, von Spener, the Saxon ambassador at the Danish court. Afterwards he was made professor extraordinary at the academy of Serce, where he died on the 13th of August 1749. Schlegel was a contributor to the Bremer Beiträge and for some time, while he was living in Denmark, edited a weekly periodical, Der Freund. With his dramatic as well as with his critical writings he did much to prepare the way for Lessing, by whom his genius was warmly appreciated. He wrote two lively and well-constructed comedies, Der Triumph der guten Frauen and Die stumme Schönheit, the former in prose, the latter in alexandrines. Hermann and Canut (in alexandrines) are generally considered his best tragedies.

His works were edited (in 5 vols., 1761-1770) by his brother, J. H. Schlegel (1774-1780), who had a considerable reputation as a writer on Danish history. Another brother, J. Adolf Schlegel (1721-1793), an eminent preacher, and author of some volumes of poems, was the father of August Wilhelm and Friedrich von Schlegel. J. E. Schlegel's Asher's Sherry (a dramaturgical work) was first edited by J. von Antoniewicz (1887), and a selection of his plays by F. Muncker in Bremer Beiträge, vol. ii. (Kürschners Deutsche Nationalliteratur, vol. xlvii., 1899). See, besides the biography by his brother in the edition of his works, E. Wolff, Johann Elias Schlegel (1886); and J. Rentsch, Johann Elias Schlegel als Trauerspielschiller (1890).

SCHLEGEL, KARL WILHELM FRIEDRICH VON (1727-1829), German poet, critic and scholar, was the younger brother of August Wilhelm von Schlegel. He was born at Hanover on Christmas Day, 1727. His first education was at the school of his brother in Leipzig, but ultimately devoted himself entirely to literary studies. He published in 1797 the important book Die Griechen und Römer, which was followed by the suggestive Geschichte der Poesie der Griechen und Römer (1798). At Jena, where he lectured as a Privatdozent at the university, he contributed to the Athenaenau the aphorisms and essays in which the principles of the Romantic school are most definitely stated. Here also he wrote Lucinde (1799), an unfinished romance, which is interesting as an attempt to transfer to practical ethics the Romantic demand for complete individual freedom, and Alarosc, a tragedy (1829) in which, without much success, he attempted to introduce romantic and classical elements. In 1802 he went to Paris, where he edited the review Europa (1803), lectured on philosophy and carried on Oriental studies, some results of which he embodied in an epoch-making book, Uber die Sprache und Weisheit der Indier (1805). In the same year in which this work appeared, he and his wife Dorothea (1763-1839), a daughter of Moses Mendelssohn, joined the Roman Catholic Church, and from this time he became more and more opposed to the principles of political and religious freedom. He went to Vienna and in 1807 was appointed to the chair of classical poetry, which he held at the headquarters of the archduke Charles. At a later period he was counsellor of legation in the Austrian embassy at the Frankfort diet, but in 1818 he returned to Vienna. Meanwhile he had published his collected Gedichte (1809) and two series of lectures, Uber die neuere Geschichte (1811) and Geschichte der alten und neuen Literatur (1815). After his return to Vienna from Frankfort he edited Concordia (1820-1823), and began the issue of his Sämtliche Werke. He also delivered lectures, which were re-published in his Philosophie des Lebens (1828) and in his Philosophie der Geschichte (1829). He died on the 11th of January 1829 at Dresden. A permanent place in the history of German literature belongs to Friedrich Schlegel and his brother August Wilhelm as the critical leaders of the Romantic school, which derived from them most of its governing ideas as to the characteristics of the middle ages, and as to the methods of literary expression. Of the two brothers, Friedrich was unquestionably the more original genius. He was the real founder of the Romantic school; to him more than to any other member of the school we owe the revolutionizing and germinating ideas which influenced so profoundly the development of German literature for a century and a half.
SCHLEICHER—SCHLEIERMACHER


SCHLEICHER, August (1831–1868). German philologist, was born in Coburg on the 19th of February 1831, the son of a medical practitioner. He attended (1832–1836) the gymnasium at Coburg. In the autumn of 1840 he entered the university of Leipzig as a student of theology, but exchanged Leipzig in the spring of 1841 for Tübingen. Here he remained two years, and under the influence of the famous orientalist Ewald, relinquished the study of theology for that of languages. Proceeding to the university of Bonn in 1843, he took his doctor's degree in 1846 and established himself as Privatdozent for comparative philology.

In 1850 he was appointed extraordinary professor of Slavonic philology at Prussia. Schleicher in 1853 was advanced as ordinary professor to the chair of German and comparative philology and Sanskrit. While at Prague he commenced the study of Slavonic languages, and with the assistance of the Vienna academy of sciences undertook in 1852 a journey of scientific research into Prussian Lithuania, the fruits of which were the first scientific examination and description of the character of the Lithuanian language. In 1857 he became professor of philology at Jena, where he lived and worked until his death on the 6th of December 1868. Next to Franz Bopp (q.v.), the founder of the science of language, no German savant left a more enduring stamp of his personality upon this science than did Schleicher.

His first scientific work, *Zur vergleichenden Sprachgeschichte* (1848), was followed by *Die Sprachen Europas* (1850); but the book by which he is best known in *Kompendium der vergleichenden Grammatik der indogermanischen Sprachen* (2 pts., 1861, 1863; 4th ed., 1876), and a supplementary volume, *Indogermanische Christenstammtie* (1864). Among his minor writings are: *Zur Morphologie der Sprache* (in the *Memoires de l'academeie de St. Petersbourg*, 1856); *Die Dargetische Theorie und die Sprachwissenschaft* (1863, new ed. 1873); *Über die Bedeutung der Sprache für die Naturgeschichte des Menschen* (1865); while in the department of Slavonic and Lithuanian languages particularly, he may be mentioned for his *Die Litauischen sprachen* (1852); *Hdbuch der italischen Sprache* (with grammar, reader and glossary, 1856–1857). Besides Lithuanian legends he published an edition of Christian Donaleis' *Lithauische Dichtungen* (1865).

See S. Lefmann, *August Schleicher* (1870) and *Zeitschrift für vergleichende Sprachforschung*, vol. xvii.

SCHLEIDEN, MATTHIAS JAKOB (1804–1881), German botanist, was born at Hamburg on the 5th of April 1804. He studied law at Heidelberg and practised as an advocate in Hamburg till 1831, but not succeeding he studied botany and medicine at Göttingen and Berlin, and in 1839 graduated at Jena, where he was appointed extraordinary professor of botany, becoming honorary professor in 1840 and ordinary professor in 1850. In 1863 he was called to Dorpat, but resigned the following year and returned to Germany, where he lived as a private teacher. He died at Frankfort-on-Main on the 23rd of June 1881. His title to remembrance is twofold. Uniting the labours of two centuries of workers in vegetable histology, he proved that a nucleated cell is the only original constituent of the plant embryo, and that the development of all vegetable tissues must be referred to such cells, thus preparing the way for the epoch-making cell theory of Theodor Schwann (q.v.); and his *Geschichte der Zelltheorie* (1842; 14th ed. 1873) through several editions, did much to make the significance of the purely systematic Linnean school, whose accumulations he was accustomed irreverently to describe as "hay." Despite a certain inability to criticize and verify his own hypotheses, he gave, both by his speculative activity and by the introduction of improved technical methods, so vivid an impetus to the younger botanists of his time as to have earned from Anton de Bary the title of reformer of scientific botany. His botanical labours practically ceased after 1850, when he entered on various philosophical and historical studies.

SCHLEIERMACHER, FRIEDRICH DANIEL ERNST (1768–1834), theologian and philosopher, was the son of a Prussian army chaplain of the Reformed confession, and was born on the 21st of November 1768 at Breslau. He was educated in a Moravian school at Niesky in upper Lusatia, and at Barby near Halle. Moravian theology, however, soon ceased to satisfy him, and his doubts rapidly took definite shape. Reluctantly his father gave him permission to leave Barby for the university of Halle, which had already (1787) abandoned Pietism and adopted the rationalist spirit of Wolf and Seemler (see Rationalism). As a student he pursued an indistinguishable course of reading and neglected to his permanent loss the study of the Old Testament and the Oriental languages. But he frequented the lectures of Seemler and of J. A. Eberhard, acquiring from the former the principles of an independent criticism of the New Testament and from the latter his love of Plato and Aristotle. At the same time he studied with great earnestness the writings of Kant and Jacobi. He acquired thus early his characteristic habit of forming his opinions by the process of patiently examining and weighing the positions of all thinkers and parties. But with the receptivity peculiar to the eclectic school he gained much from the struggle with a profoundly original thinker. While yet a student he began to apply ideas gathered from the Greek philosophers in a reconstruction of Kant's system. At the completion of his three years' course at Halle he was for two years private tutor in the family of Count Dohna-Schlobitten, developing in a cultivated and aristocratic household his deep love of family and social life. In 1796 he became chaplain to the Charité Hospital in Berlin. Having no scope for the development of his powers as a preacher, he sought mental and spiritual satisfaction in the cultivated society of Berlin, and profound philosophical studies. This was the period in which he constantly developed the central lines of his philosophical and religious system. It was the period, too, when he made himself widely acquainted with art, literature, science and general culture. He was at that time profoundly affected by German Romanticism, as represented by his friend Friedrich Schlegel. Of this his *Confidential Letters on Schlegel's Lucinde (Vertrauten Briefe über Schlegel's "Lucinde," 1801; ed. 1833; by Jonas Fränkel, 1897; R. Frank, 1907), as well as his perilous relation to Eleonore Grunow, the wife of a Berlin clergyman, are personal illustrations. Though his ultimate dedication to the position he had gained must have left a profound and abiding influence upon his personality, it showed him much of the inner truth of human feeling and emotion, and enriched his imagination and life with ideals ancient and modern, which gave elevation, depth and colour to all his thought. Meantime he studied Spinoza and Plato, and was profoundly influenced by both, though he was never a Spinozist; he made Kant more and more his master, though he departed on fundamental points from him, and finally remodelled his philosophy; with some of Jacobi's positions he was in sympathy, and from Fichte and Schelling he accepted ideas, which in their place in his system, however, received another value and import. The literary fruit of this period of intense fermentation and of rapid development was his "epoch-making" book, *Reden über die Religion* (1799; ed. Göttingen, 1906), and his "new year's gift" to the new century, the *Monologen* (1800; ed. 1902). In the first book he vindicated for religion an eternal place amongst the divine mysteries of human nature, distinguished it from all current caricatures of it and allied phenomena, and described the perennial forms of its manifestation and life in man and society, giving them by the programme of his subsequent theological system. In the *Monologen* he threw out his ethical manifesto, in which he proclaimed his ideas as to the freedom and independence of the spirit, and as to the relation of the mind to the world of sense and imperfect social organizations, and sketched his ideal of the future of the individual and society.

From 1802 to 1804, Schleiermacher was pastor in the little Pomeranian town of Stolpe. These years were full of literary
work, as well as rich in personal and moral progress. He relieved Friedrich Schlegel entirely of his nominal responsibility for the translation of Plato, which they had together undertaken (vols. 1–5, 1830; 2nd ed., 1835–1861; full ed., 1838; and ed., 1855–1863). At the same time another work, Grundzüge einer Kritik der bisherigen Sittenlehre (1830; 2nd ed. 1834), the first of his strictly critical and philosophical productions, occupied him. This work is a severe criticism of all previous moral systems, especially those of Kant and Fichte, Plato's and Spinoza's finding most favour; its leading principles are that the tests of the soundness of a moral system are the completeness of its view of the laws and ends of human life as a whole and the harmonious arrangement of its subject-matter under one fundamental principle. The most complete of Friedrich Schleiermacher's works, and indeed the only one released exclusively critical and negative, the book announces clearly the division and scope of moral science which Schleiermacher subsequently adopted, attaching prime importance to a "Güterlehre," or doctrine of the ends to be obtained by moral action. But the obscurity of the style of the book as well as its almost purely negative results proved fatal to its immediate success. In 1804 Schleiermacher removed as university preacher and professor of theology to Halle, where he remained until 1807, and where he quickly obtained a reputation as professor and preacher, and exercised a liberal and enlightened influence on his students, by the change of his being athiest, Spinozist and Pietist. In this period he wrote his dialogue the Weih- nachtsfeier (1806; 4th ed. 1850), a charming production, which holds a place midway between his Reden and his great dogmatic work, Der christliche Glaube, and presents in the persons of its speakers phases of his growing appreciation of Christianity as well as the conflicting elements of the theology of the period. After the battle of Jena he returned to Berlin (1807), was soon appointed pastor of the Trinity Church there, and the next year married the widow of his friend Willich. At the foundation of the Berlinerschule (1810), in which he himself was so influential, and which was, in a sense, the spiritual successor of the house of his being atheist, Spinozist and Pietist, he was thus placed in a position suited to his powers and in domestic and social surroundings adapted to meet the wants of his rich nature. At the same time he approved himself in the pulpit and elsewhere as a large-hearted and fearless patriot in that time of national calamity and humiliation, acquiring a name and place in his country's annals with Arnlt, Fichte, Stein and Scharnhorst. He took a prominent part too in the reorganization of the Prussian church in 1817. His energy and influence found expression in the union of the Lutheran and Reformed divisions of German Protestantism. The twenty-four years of his professional career in Berlin were opened with his short but important outline of theological study (Kurse Dorststellung des theologischen Studiums, 1811; 2nd ed. 1830), in which he sought to do for theology what he had done for religion in his Reden. While he preached every Sunday, he also gradually took up in his lectures in the university almost every branch of theology and philosophy—New Testament exegesis, introduction to and interpretation of the New Testament, ethics (both philosophic and Christian), dogmatic and practical theology, church history, history of philosophy, psychology, dialectics (logic and metaphysics), politics, pedagogy and aesthetics. His own materials for these lectures and his students' notes and reports of them are the only form in which the larger proportion of his works exist—a circumstance which has greatly increased the difficulty of getting a clear and harmonious view of fundamental portions of his philosophical and ethical system, while it has effectually deterred all but the most courageous and patient students from reading these posthumous collections. As a preacher he produced a powerful effect, yet not at all by the force of his-oratorical gifts, his intellectual strength, his devotional spirit and the philosophical breadth and unity of his thought. In politics he was an earnest friend of liberty and progress, and in the period of reaction which followed the overthrow of Napoleon he was charged by the Prussian government with "demagogic agitation" in conjunction with the great patriot Arnlt. At the same time he prepared for the press his chief theological work Der christliche Glaube nach den Grundsätzen der evangelischen Kirche (1821–1822; 2nd ed., greatly altered, 1830–1831; 6th ed., 1884). The fundamental principle of this classical work is that a religious feeling, the sense of absolute dependence on God as communicated by Jesus Christ through the church, and not the creeds or the letter of Scripture or the rationalistic understanding, is the source and law of dogmatic theology. The work is therefore simply a description of the facts of religious feeling, or of the inner life of the soul in its relations to God, and these inward facts are looked at in the various stages of their development and presented in their systematic connexion. The aim of the work was to reform Protestant theology by means of a Christian and ethical philosophy. Though the religion of the anthropomorphized Deity is "a failure, a monstrosity, a misrepresentation of the unreason and superficiality of both supernaturalism and rationalism, and to deliver religion and theology from a relation of dependence on perpetually changing systems of philosophy. Though the work added to the reputation of its author, it naturally aroused the increased opposition of the theological schools it was intended to overthrow, and at the same time Schleiermacher's defence of the right of the church to frame its own liturgy in opposition to the arbitrary dictation of the monarch or his ministers brought upon him fresh troubles. He felt himself to be the victim of his own success, and though his lecture-room continued to be largely attended, he prosecuted his translation of Plato and prepared a new and greatly altered edition of his Christliche Glaube, anticipating the latter in two letters to his friend Lüke (in the Studien und Kritiken, 1829), in which he defended with a masterly hand his theological position generally and his book in particular against opponents on the right and the left. The same year he lost his only son—a blow which, he said, "drove the nails into his own coffin." But he continued to defend his theological position against Hengstenberg's party on the one hand and the rationalists and romantics on the other, and his books added to the subscription to the ancient creeds and the imposition of a new rationalistic formulary. In the midst of such labours, and enjoying still full bodily and mental vigour, he was carried off after a few days' illness by inflammation of the lungs, on the 12th of February 1834.

Philosophical System.—A great antithesis lies at the basis of all thought and life—that of the real and the ideal, of organism, or sense, and intellect. But the antithesis is not absolute, for in life and thought both elements—intellectual and organismic—exist. The antithesis of life and thought would be impossible. In the actual world the antithesis appears as reason and nature, in each of which, however, there is a combination of its two elements—the ideal and the real—wherein, through a certain historical development, the predominance of one is more or less accompanied by a decrease in the other. At the basis of nature lies universal reason as its organizing principle, and when reason becomes a conscious power in man it finds itself in conflict as well as in harmony with the unity of the intellectual and physical and end of human thought and action is the gradual reduction of the realm and the power of this antithesis in the individual, the race and the world. Though the antithesis is real and deep, the human mind cannot admit its absolute nature: we are compelled to suppose a transcendental reality or entity in which the real and the ideal, being and thought, subject and object, are one. Consciousness itself involves the union of the antithetic elements, and prior to moral, action nature is found organized and reason manifested or symbolized therein. We are ourselves proofs of the unity of the real and the ideal, of thought and being, for we are both, our self-consciousness supplying the expression of the fact. As we have in ourselves an instance of the identity of thought and being, we must suppose a universal identity of the ideal and real behind the antithesis which constitutes the world. This supposition is the basis of all knowledge, for knowledge becomes knowledge only when it corresponds to being. The supposition may be called a belief, but it is so only in the sense in which belief appears in the religious department, where it is the ultimate ground of position and action. It is, without the conviction of the correspondence of thought and reality action would be fruitless and in the end impossible. It is above all the substance of religious feeling, which is the immediate consciousness of the unity of the world, the absolute and the absolute behind the infinite multiplicity of contrasts; indeed, it is the religious conviction of the unity which is the best guarantee of the truth of the oppositions of philosophy. It is "the religious antithesis of the contradiction of the intellectual and physical and end of human thought and action in "God" which is to overcome the scepticism of the critical philosophy. But, though
this unity must be laid down as the basis of knowledge, it is absolute and transcendental. In contrast with the "world," as the totality of things, the ego is only a part of the world, the real as manifold, and the spirit as one, find their uniting base, by its very nature is unphenomenal, indefinable and inconceivable. The idea is outside the boundary of thought, though its necessary positing of its "chance," and God with the absolute, is transcendent, but in God they are one, and therefore the world must not be identified with Him. The world and God are distinct, but correlative, and neither can be conceived without the other. The world without God would be chaotic, and God without the world nothing but "phantasm." But though God is transcendent and unknowable He is immanent in the world. In self-consciousness God is present as the basis of the unity of our nature in every transition from an act, e.g., of the mind, to the осуществление, to the presentation of the "ego" is the unity of the real and the ideal, God is in him. He also is in life, inasmuch as in everything the totality of the world and its transcendental basis is presupposed by virtue of their being and correlation. The unity of our personal life amidst the multiplicity of its functions is the symbol of God's immanence in the world, though we may not conceive of the Absolute as a person. The idea of the world as the totalizing of being of the transcendental idea of God, only of regulative value; it is transcendent, as we never do more than make approaches to a knowledge of the sum of beings absolute and transcendent terminus a quo and the other the transcendental terminus a quo and the transcendental idea of God, but though the world cannot be exhaustively known it can be known very extensively, and though the positive idea of God must always remain absolutely unknowable, it is capable of being understood as a contradiction of the postulate of the Absolute. Thus the pantheistic and the theistic conceptions of God as the supreme power, as the first cause, as a person, are alike unallowable, since they all bring God within the sphere of antithesis and preclude His absolute unity. On the other hand, the world can be known as the realm of antithesis, and it is the correlative of God. Though He may not be known, the sum of beings absolute and transcendent terminus a quo of the absolute and transcendental idea of God, only regulative, is the idea of absolute causality as symbolized in it may be taken as the approximate expression of the contents of the religious consciousness. The unbroken connexion of cause and effect throughout the world, we can think and act as God is in us, and in us only in ourselves and in the world. He is completely immanent in the universe. It is impossible that His causality should have any other sphere than the world, which is the totality of being. No God without a world, and no world without God. "The omnipotence is quantitatively represented by the sum of the forces of nature, and qualitatively distinguished from them only as the unity of infinite causality from the multiplication of its finite phenomena. Throughout the world—not excepting the realm of mind—absolute necessity prevails. As a whole the world is as good and perfect as it could possibly be, and everything in it, as occupying its necessary place in the system of the world, is also good, evil being only the necessary limitation of individual being.

Schleiermacher's psychology takes as its basis the phenomenal dualism of the ego and the non-ego, and regards the life of man as the relation of these two. The soul is an individual consciousness, a finite destination. The dualism is therefore not absolute, and, though present in man's own constitution as composed of body and soul, it is nowhere more clearly distinct as a distinct self. The ego soul—the conjunction of both constitutes it; our "organization" or sense nature has its intellectual element, and our "intellect" its organic element. There is no such thing as a "pure mind" or "pure body." The one general function of the ego, thought, becomes in relation to the non-ego either receptive or spontaneous action, and in both forms of action its organic, or sense, and its intellectual energies co-operate; and in relation to man, nature and the universe the ego gradually finds its true individuality by becoming an interconnection of every extension of consciousness being higher life." The specific functions of the ego, as determined by the relative predominance of the organic energies, are (subjective) and (objective) functions of the intellect. The former fall into the two classes of feelings (subjective) and perceptions (objective); the latter, according as the receptive or the spontaneous element predominates, into cognition and volition. Cognition is the object and in volition it is the purpose of thought: in the first case we receive (in our fashion) the object of thought into ourselves; in the latter we plant it out into the world. Both cognition and volition are functions of the ego as self-consciousness, or as the manifestation of the non-ego. This self-consciousness is the third special form of consciousness—which also called feeling and immediate knowledge. In it we cognize our own inner life as affected by the non-ego, but we cognize nothing as necessary or necessary as opposed to necessary expresses simply the fact that the mind can propose to itself ends, though a man cannot alter his own nature. In contrast to Kant and Fechter and modern moral philosophers
Schleiermacher reintroduced and assigned pre-eminent importance to the doctrine of the *summa bonum*, or highest good. It repre-
sents the highest good of the individual, and Schleiermacher's
approach is to define the highest good in terms of the essential
fundamental idea of the individual, and the natural right to feel
the natural goodness of the individual. The highest good of the
individual is the self-consciousness of the individual, and the
highest goodness of the individual is the quality of the individual
as a moral agent. Schleiermacher's foundation of the individual
is the natural goodness of the individual, and the natural right
to feel the natural goodness of the individual. The highest good
of the individual is the self-consciousness of the individual, and
the highest goodness of the individual is the quality of the
individual as a moral agent.

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affords access to small vessels only. Fishing, tanning, flour-milling and brewing are the chief industries.

Schleswig (ancient forms Slesitorp, Slesisaw, i.e. the town or bay of the Slia or Schel) is a town of very remote origin, and seems to have been a trading place of considerable importance as early as the 9th century. It served as a medium of commercial intercourse between the North Sea and the Baltic, and as far as the extent of the southern German rivers. The first Christian church in this district was built here by Hildegarde (d. 775), and it became the seat of a bishop about a century later. The town, which obtained civic rights in 1200, also became the seat of the dukes of Schleswig, but its commerce gradually dwindled owing to the rivalry of Lübeck, the numerous wars in which the district was involved, and the silting up of the Schlei. At the partition of 1544 the old chateau of Gottorp, originally built in 1160 for the bishop, became the residence of the Gottorp line of the Schleswig-Holstein family, which remained here till expelled by the Danish king Frederick IV. in 1713. From 1731 to 1846 it was the seat of the Danish governor of the duchies. In the wars of 1848 and 1864 Schleswig was an important strategic point on account of its proximity to the Dannenwerkg (p.t.) and was occupied by the different contending parties in turn. It has been the capital of Schleswig-Holstein since its incorporation by Prussia in 1864.

See Sach, Geschichte der Stadt Schleswig (Schleswig, 1875); and Jensen, Geschichte Schleswigs (Weimar, 1848).

Schleswig-Holstein, a province in the north-west of Prussia, formed out of the once Danish duchies of Schleswig, Holstein and Lauenburg, and bounded W. by the North Sea, N. by Denmark (Jutland), E. by the Baltic Sea, Lübeck and Mecklenburg, and S. by the lower course of the Elbe (separating it from Hanover). It thus consists of the southern half of the Cimbric peninsula, and forms the connecting link between Germany and Denmark. (For map, see Denmark.) In addition to the mainland, which decreases in breadth from south to north, the province includes several islands, the most important being Alsen and Fehmarn in the Baltic, and Röm, Sylt and Föhr of the North Frisian chain in the North Sea. The total area of the province is 7338 sq. m., 450 of which belong to the small duchy of Lauenburg in the S.E. corner, while the rest are divided almost equally between Holstein to the south of the Eider and Schleswig to the north of it. From north to south the province is about 140 m. long, while its breadth varies from 90 m. in Holstein to 35 m. at the narrower parts of Schleswig.

Holstein, the greater part of this province, is an agricultural country. The great North-German plain, of the characteristic features of which it affords a faithful reproduction in miniature, down to the continuation of the Baltic ridge or plateau by a range of low wooded hills skirting its eastern coast and culminating in the Rugenborg (528 ft.), a little to the north of Eutin. This hilly district contains the most productive land in the province, the soil consisting of diluvial drift or boulder clay. The central part of the province forms a continuation of the great Lüneburg Heath, and its thin sandy soil is of little use for cultivation. Along the west coast extends the "Marshland," a belt of rich alluvial soil formed by the deposits of the North Sea, and varying in breadth from 5 to 15 m. It is seldom above sea-level, while at places it is below it, and it has consequently been defended by an extensive system of dykes or embankments separating those of Holland.

The vast ancient alluvial formations are scarcely met with in Schleswig-Holstein. The contrast between the two coast-lines of the province is marked. The Baltic coast has generally steep well-defined banks and is irregular, being pierced by numerous long and narrow inlets (Föhren) which often afford excellent harbours. The islands of Alsen and Fehmarn are separated from the coast by narrow channels. The North Sea coast is low and flat, and its smooth outline is interrupted only by the estuary of the Eider and the peninsula of Eiderstadt. Dunes or sand-hills, though rare on the protected mainland, occur on Sylt and other islands, while the small flat sand-hills called Halligen are being washed away where not defended by dykes. The number of Halligen on the west coast probably formed part of the peninsula at no remote period, and the sea between them and the mainland is shallow and full of sandbanks.

The coast of Schleswig is determined by the proximity of the sea, and the mean annual temperature, varying from 45° F. in the north to 49° F. in the south, is rather higher than is usual in the same latitude. Rain and fog are frequent, but the climate is in the whole healthy. The Elbe forms the southern boundary of Holstein for 65 m., but the only river of importance
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within the province is the Eider, which rises in Holstein, and after a course of 120 m. falls into the North Sea, forming an estuary 3 to 12 m. in breadth. It is navigable from its mouth as far as Rendsburg, which is on the Kaiser Wilhelm (Kiël-Elbe) canal, which intersects Holstein. The purchasers of the duchies of Holstein and Schleswig have been in a discussion of the line of the rivers, which is the boundary of the two duchies. The Plönner See (12 sq. m.) and the Selenter See (9 sq. m.). Of the total area of the province 37% is occupied by tilled land, 22% by pastures, and 19% by forests. The ordinary cereals are all cultivated with success and there is generally a considerable surplus for export. Rape is grown in the marsh lands and flax on the east coast, while large quantities of apples and other fruit are raised near Kiel, for the Flensburg and English market. The marsh lands afford admirable pasture, and a greater proportion of cattle (65 per 100 inhabitants) is reared in Schleswig-Holstein, mainly because the cattle in the large towns are confined within city limits, provided that cattle are exported to England. The Holstein horses are also in request, but sheep-farming is comparatively neglected. Bee-keeping is a productive industry. The hills skirted by the bays of the Baltic coast are generally pleasantly wooded, but the forests are nowhere of great extent except in Lauenburg. The fishing in the Baltic is productive; Eckernförde is the chief fishing station in Prussia. The oysters from the beds on the west coast of Schleswig are the most esteemed in the world. The mineral resources are almost confined to a few layers of rock-salt near Segeburg. The more important industrial establishments, such as the ironworks at Chemnitz and the large chemical works are mainly confined to the large towns, such as Altona, Kiel and Flensburg. The shipbuilding of Kiel and other seaports, however, is important; and lace is made by the peasants of north Schleswig. The important art of timber cutting and flax growing, with its position between two seas, as well as by its excellent harbours and waterways, are much more prominent than its manufactures. Kiel is the outlet for the exports of the coal and other valuable commodities mostly raised by Altona and Flensburg. The main exports are grain, cattle, horses, fish and oysters, in return for which come timber, coal, salt, wine and colonial produce. The population of the province in 1905 was 1,594,248, comprising 1,454,526 Protestants, 41,227 Roman Catholics and 3,720 Jews. The urban and rural communities are in the proportion of 1 to 2. The largest bulk of the Holsteiners are a mixed race, a proportion of the Schleswigers are of genuine German stock, but of the 148,000 inhabitants in the north part of Schleswig 139,000 are Danish-speaking. Among the Germans the prevalent tongue is Low German, but the North Frisians on the west coast of Schleswig and the North Sea islands (about 19,000 in all) still speak a Frisian dialect, which, however, is dying out. The peninsula of Angeln, between the Gulf of Flensburg and the Scheld, is supposed to have been the original seat of the English, and observers profess to see a striking resemblance between this district and肯特郡. The slopes of the Dithmarschen in the south-west also retain many of their ancient peculiarities. The boundary between the Danish and German languages is approximately a line running from Flensburg south-west to Joldclund and thence north-west to Tondern and the North Sea coast; not more than 15% of the entire population of the province speak Danish as their mother-tongue, but the proportion is far larger for Schleswig alone, where there is also a considerable bilingual population. The chief educational institution in Schleswig-Holstein is the university of Kiel. Kiel is the official capital of the province, Altona and Kiel are the largest towns, the latter being the chief naval station of Germany. Kiel and Friedrichsort are fortified, but the old lines of Düppel have been dismantled. The province sends 10 members to the Reichstag and 19 to the Prussian Abgeordnetenhause (house of deputies). The provincial estates meet in Rendsburg.

For the history of the duchies of Schleswig and Holstein see SCHLESWIG-HOLSTEIN QUESTION below.

SCHLESWIG-HOLSTEIN QUESTION, the name given to the whole complex of diplomatic and other issues arising in the 19th century out of the relations of the two "Elbe duchies," Schleswig and Holstein, to the Danish crown, on the one hand and the German Confederation on the other, which came to a crisis with the extinction of the male line of the reigning house of Denmark by the death of King Frederick VII. on the 15th of November 1863. The central question was whether the two duchies did or did not constitute an integral part of the dominions of the Danish crown, with which they had been more or less intimately associated for centuries. This involved the purely legal question, raised by the death of the last common male heir to both Denmark and the duchies, as to the proper succession in the latter, and was involved in the international questions arising out of the relations of the duchies to the Danes as well as to the other, and of Holstein to the German Confederation. There was also the national question: the ancient racial antagonism between German and Dane, intensified by the tendency, characteristic of the 19th century, to the consolidation of nationalities. Lastly, there was the international question: the rival ambitions of the German powers involved, and beyond them the interests of other European states, notably that of Great Britain in preventing the rise of a German sea-power in the north.

The whole question first arose from the time of the immemorial Danish claim to the country north of the Elbe, the battle-ground of Danes and Germans. Danish scholars point to the prevalence of Danish place-names far southward into the German-speaking districts as evidence that at least the whole of Schleswig was at one time Danish; German scholars claim it, on the other hand, as essentially German. That the duchy of Schleswig, or South Jutland (Sønderjylland), had been from time immemorial a Danish fief was, indeed, not in dispute, nor was the fact that Holstein had been from the first a fief of the Germano-Roman Empire. The controversy in the 19th century raged around the ancient "in- terest" of the union of Denmark and the inferences to be drawn from it; the "Elder Danes" 1 was the integral part of the Danish monarchy, which, on the principle of the union, involved the retention of Holstein also; the Germans claimed Holstein as a part of Germany and, therefore, on the same historic principle, Schleswig also. The history of the relations of Schleswig and Holstein thus became of importance in the practical political question.

Though the designation of Schleswig-Holstein, implying the fusion of the Duchies of Schleswig and Holstein in a single Prussian province, only dates from 1866, the history of the duchies has since the 14th century been so closely interwoven that it is impossible to treat them separately. Some political unions, however, were attempted by the Danes to prove their separate history up to the time of their first union under the Holstein counts.

When it first appeared in history South Jutland was inhabited by mingled Cimbri, Angles, Jutes and Frisians, upon whom the Danes exercised an unceasing pressure from the north. To the south of Schleswig what is now Holstein was inhabited mainly by Saxons, pressed upon from the east by the Wends and other Slavonic races. These Saxons were the last of their nation to submit to Charlemagne (804), who put their country under Frankish counts, the limits of the Empire being demarcated in 810 as far north as the Elbe. The Danish secural struggle between the Danish kings and the German emperors, and in 934 the German king Henry I. established the Mark of Schleswig (Limes Danorum) between the Elder and the Schlei as an instrument for the consolidation of the German empire, Schleswig and Holstein being the main point of contact between Germans and Slavs. The latter, conquered and Christianized, rose in revolt in 953, after the death of the emperor Otto II., and for a while reverted to paganism and independence. The Saxon dukes, however, continued to rule central Holstein, and when Lothair of Saxony became duke of Saxony (1106), on the extinction of the Billung line, he invested his younger brother, the infant Adolf I. of Slesvig, with the countship of Holstein. The chancellor of Adolph I.'s son, Adolf II. (1128-1164), succeeded in reconquering the Slavonic Wagr and founded the city and see of Lübeck to hold them in check. Adolf III. (d. 1225), his successor, received Dithmarschen in 1209 for his services against the Danes. Under the seigniors of the Duchy, the duchies of Holstein and of Schleswig were often at war and sometimes the Hanseatic League was led by Holstein, while the Hansa was led by Schleswig. However, when the Hanseatic League was formed in 1356, the members of the League were divided into those of Holstein and those of Schleswig, and it was, therefore, some time after 1356 that the two duchies were finally united.

Mark of Schleswig.

Countship of Holstein.

Early history of the Duchies.

1 I.e. place names according to popular usage, not the official names given in German maps (e.g. Hadersleb for Hadersleben). See La Question du Sleesw, p. 61 seq., Noms de Sieurie.
in 1261, Holstein was split up into several countships by his sons and grandsons: the lines of Kiel, Flensburg, Schauenburg-Pinneberg, and Rendsburg.

In 1232 King Valdemar II., who had retained the former German Mark north of the Elbe, was succeeded (1233) by his son, Gerhard, duke for his second son, Abel. On the death of the latter's descendant, Duke Eric, in 1319, Christopher II. of Denmark attempted to seize the duchy, the heir of which, Valdemar of Holstein-Friesland, was imputed to the king's line and uncle, Gerhard III. of Holstein-Rendsburg (1304-1340), surnamed "the Great," a notable warrior, drove back the Danes and, Christopher having been expelled, succeeded in preserving his position. He died at the age of nineteen in his youth, and his reward was the duchy of Schleswig and the famous charter, known as the Constitution Valdemariana, which laid down the principle that the union of Schleswig and Holstein was unseparable and inalienable from the kingdom of Denmark or ruled by the same sovereign (June 1326). Thus Schleswig and Holstein were forever united. The union was, indeed, as yet precarious. In 1336 Christopher II. was restored to his throne and Valdemar V. to his duchy, Gerhard having to be content with the reversion in the case of the duchy dying without issue. Gerhard, however, was assassinated in 1340 by a Dane, and it was not till 1375, when the male lines both entered the kingdom and the duchy became extinct by the death of King Valdemar IV. and Duke Valdemar V., that the counts of Holstein seized on their inheritance, and Schleswig became practically independent of the Danish monarchy, a claim formally recognized by the emperor Sigismund in 1424. It was not till 1440 that the struggle ended with the investiture of Count Adolf IV., Gerhard's son, with the hereditary dukedom of Schleswig, under the condition that the new lord of Schleswig should not be of junior birth, nor marry a lady of the Danish Jutlandian blood. In 1386 Queen Margaret allowed their claim in return for the usual homage and promise of feudal service, and directed that one of their number should be elected duke of Schleswig. The first election of this kind was that of Count Adolf of Holstein-Rendsburg, who after the extinction of the line of Kiel (1390) obtained in 1403 the whole of the countship of Holstein, except the small Schauenburg territories. With this begins the line of dukes, known as the House of Holstein-Danneborg, the direct antece-

The Constitution Valdemariana, 1326.

The Union of Schleswig and Holstein.

The duchies of Schleswig and Holstein.

The Charter of Ribe, 1468. The indivisibility of Holstein.

The Duchy of Holstein, 1472.

On the death of King Frederick I. (1523-1533), under whom the Reformation had been introduced into the duchies, occurred the first of several partitions of the inheritance of the house of Oldenburg; the elder son, Christian III., succeeding his father, was forced to abdicate, thereby allowing his uncle, Frederick, to found the line of the dukes of Gottorp. In 1581 a further partition was made, by a compact signed at Flensburg, between King Frederick II. and his uncle Duke Adolphus I., under which the rights of ownership in the various towns and territories of Schleswig were divided between them, and the duchy remained undivided, and the king and duke ruled the country alternately. To make conclusion worse confounded, Frederick II. in 1611 died childless, and his exeat to Halsenluben to his brother John, who founded the line of Schleswig-Sonderburg, and his grandsons again partitioned this appanage. Ernest Günther (1669-1689), founding the line of Schleswig-Sonderburg-Augustenburg, and his representatives, the Dukes of Gottorp, was assassinated with his son Christian Albert (d. 1694) by the treaty of Oliva, though it was not till after years of warfare that Denmark admitted the claim by the convention of Altona (30 June 1689). Christian Albert's successor, Frederick IV., who in 1710 had a powerful champion in Charles XII. of Sweden, who secured his rights by the treaty of Trondhjem in 1700. Frederick was killed at the battle of Klessow in 1702, and his brother Christian Augustus (1715) was restored to his father's throne. In 1716 Christian Augustus, who had been recognized as sovereign in Schleswig by the estates and by the princes of the Augustenburg and Glücksburg lines, was succeeded by Duke Charles Frederick with the tsarina Anna Pavlovna, and the recognition in 1742 of their son Charles Peter Ulrich as co-regent by the empress Elizabeth of Russia. For the next 200 years the duchy of Lübeck, son of Christian Augustus, acted as regent until 1745; in 1751 he became king of Sweden.2 But the king had no right to political administration of Schleswig and Holstein and their confused and disputed common rights in Jutland, and in 1767 the empress Catherine II., renounced them, thereby the city of Copenhagen, in the name of her son, the last of the Romanovs, and confirmed the rights of the Danish king in the city of Copenhagen. The Danish court itself at the time was largely German in language and feeling, and the king himself was as yet a very young prince. The Congress of Vienna, instead of settling the questions involved in the relations of the duchies of Denmark once for all, sought to settle them by a certain compromise. The settlement of 1806 was reversed, and while Schleswig Holstein remained as before, Holstein and Lauenburg were included in the new German Confederation. The opening up of the Schleswig-Holstein question thus became sooner or later inevitable. The Germans of Holstein, influenced by the new national enthusiasm evoked by the War of Liberation, resented more than ever the attempts of the government of Copenhagen to treat them as part of the Danish monarchy and, encouraged by the sympathy of the Germans in Schleswig, early tried to reassert in the interests of nationalism the old principle of the unity of the duchies. The king, however, was a powerful monarch and had large resources, and his demands were met by the Danes with a nationalistic temper as intractable as their own. Their affairs were ripe for a crisis, which, the threatened failure of the common male heirs to the kingdom and the duchies precipitated.

1 Question du Sleswig, p. 78.

2 The Church (Lutheran) was organized under a Protokoll (provisor) and consistory, the king himself assuming the jurisdiction of summum episcopum.

The Duchies of Gottorp.

Russia resigns her rights in the duchies, 1756, 1773.

The Congress of Vienna, 1814-1815.
When Christian VIII. succeeded his father Frederick VI.
in 1839, the elder male line of the house of Oldenburg was obviously
on the point of extinction, the king's only son and heir
having no children. Ever since 1814, when joint
consultative estates had been re-established for the
duchies, the question of the succession had been
deated in this assembly. To German opinion the solution
seemed clear enough. The crown of Denmark could be inherited
by female heirs; in the duchies the Salic law had never been
repealed and, in the event of a failure of male heirs to Christian
VIII., the succession would pass to the dukes of Augustenburg,1
Danish opinion, on the other hand, clamoured for a
monarchical arrangement. To the Dissolution of the
indivisibility of the monarchy and its transmission intact to a single heir, in accord-
ance with the royal law. To this Christian VIII. yielded so far as to issue in 1846 letters patent declaring that the royal law
in the matter of the succession was in full force so far as Schleswig
was concerned, in accordance with the letters patent of August
22, 1721, the oath of fidelity of September 3, 1721, the guarantees
given by France and Great Britain in the same year and the
 treaties of 1767 and 1773 with Russia. As to Holstein, he stated
that certain circumstances prevented him from giving, in regard
 to some parts of the duchy, the same guarantees, as Schleswig.
The principle of the independence of Schleswig and
of its union with Holstein were expressly reaffirmed. An appeal
against this by the estates of Holstein to the German diet
received no attention. The revolutionary year 1848 brought
matters to a head. On the 28th of January, Christian VIII.
issued a rescript proclaiming a new constitution which, while
preserving the autonomy of the different parts of the country, incorporated them for common purposes in a single organiza-
tion. The estates of the duchies replied by demanding the
incorporation of Schleswig-Holstein, as a single constitutional
state, in the German Confederation. Frederick VII., who had
succeeded his father at the end of January, declared (March 4)
that he had no right to deal in this way with Schleswig, and,
yielding to the importunity of the Eider-Danish party, withdrew
the rescript of January (April 4) and announced to the people of
Schleswig (March 27) the premunition of a liberal constitu-
tion under which the duchy, while preserving its local autonomy,
would become an integral part of Denmark.

Meanwhile, however, the duchies had broken out into open
insurrection against this decision. As had been the case in
Britain, though obviously on the point of extinction, the king's only son and heir
having no children. Ever since 1814, when joint
consultative estates had been re-established for the

1 This was the argument of Karl Samwer, the German jurist, in his
_Die Staatsereignisse der Herzogthümer Schleswig und Holstein_,
published in 1844 at the instigation of the duke of Augustenburg.
and proposed that, at least, any treaty concluded should be
presented for ratification to the Frankfort government. This
the Danes refused; and negotiations were broken off. Prussia
was now confronted on the one side by the German nation
urging her clamorously to action, on the other side by the
European powers with one voice threatening the
worst consequences should she persist. After painful
hesitation, Frederick William chose what seemed
the lesser of two evils and, on the 26th of August 1848,
Prussia signed at Malmö a convention which yielded practically
all the Danish demands. The Holstein estates appealed to
the central government to unite itself up to the cause; but it
was soon clear that the central government had no means of
enforcing its views, and in the end the convention was ratified
at Frankfort.

The convention was only in the nature of a truce establishing
a temporary _modus vivendi_, and the main issues, left unsettled,
continued to be hotly debated. At a conference held in London
in October, Denmark suggested an arrangement on the basis
of a separation of Schleswig from Holstein, which was about
to become a member of the new German empire, Schleswig
would remain a _pariah_ state under the Danish crown. This
was supported by Great Britain and Russia and rejected by
Prussia and the German government (27th January 1849). The
negotiations broke down, however, on the refusal of Denmark
to yield the principle of the indissoluble union with the Danish
crown; on the 23rd of February the truce was at an end, and on
the 3rd of April the war was renewed. At this point the tsar intervened in favour of peace; and Prussia, conscious of its
restored strength and weary of the intractable temper of the
Frankfort government, determined to take matters into its
own hands. On the 5th of July 1849 a truce was signed;
Schleswig, until the peace, was to be administered separately, under a mixed commission, Holstein was to be governed by a
vicegerent of the German empire—an arrangement equally
offensive to German and Danish sentiment. A settlement
seemed as far off as ever; the Danes still clamoured for the
principle of succession in the female line and union with Denmark,
the Germans for that of succession in the male line and union with Holstein. In utter weariness Prussia proposed, in April 1850,
a definitive peace on the basis of the _status quo ante bellum_
and the postponement of all questions as to mutual rights.
Thus were the plans for a _pariah_ state swept away and the
proposed settlement to settle nothing. The emperor Nicholas, openly disapproved of Frederick William's weak-kneed truckling to the Revolu-
tion, again intervened. To him the duke of Augustenburg was
a rebel; Russia had guaranteed Schleswig to the Danish
crown by the treaties of 1767 and 1773; as for Holstein, if the
king of Denmark was unable to deal with the rebels there, he
himself would intervene as he had done in Hungary. The threat
was reinforced by the menace of the European situation.
Austria and Prussia were on the verge of war, and the sole
hope of preventing Russia from throwing her sword into the
scale of Austria lay in settling the Schleswig-Holstein question
in the sense desired by her. The only alternative, an alliance
of the devil's nephew," Louis Napoleon, who already
dreamed of acquiring the Rhine frontier for France at the
price of his aid in establishing German sea-power by the cession
of the duchies, was abhorrent to Frederick William.
On the 2nd of July 1850 was signed at Berlin a treaty of
peace between Prussia and Denmark. Both parties
reserved all their antecedent rights; but for Denmark
it was enough, since it empowered the king-duke to restore
his authority in Holstein with or without the consent of the
German Confederation.

Danish troops now marched in to coerce the refractory duchies;
but while the fighting went on negotiations among the powers
continued, and on the 2nd of August 1850 Great Britain, France,
Russia and Norway-Sweden signed a protocol, to which Austria
subsequently adhered, approving the principle of restoring
the integrity of the Danish monarchy. The Copenhagen govern-
ment, which in May 1851 made an abortive attempt to come

Conven-

Treaty

To bey of

SCHLESWIG-HOLSTEIN QUESTION
to an understanding with the inhabitants of the duchies by convening an assembly of notables at Flensburg, issued on the 6th of December 1851 a project for the future organization of the monarchy on the basis of the equality of all its constituent states, with a common ministry; and on the 28th of January 1852 a royal letter announced the institution of a unitary state which, while maintaining the fundamental constitution of Denmark, would increase the parliamentary powers of the estates of the two duchies. This proclamation was approved by Prussia and Austria, and by the German federal diet in so far as it affected Holstein and Lauenburg. The question of the succession was next approached. Only the question of the Augsburg succession made an agreement between the powers impossible, and on the 31st of March 1852 the duke of Augustenburg resigned his claim in return for a money payment. Further adjustments followed.

After the renunciation by the emperor of Russia and others of their eventual rights, Charlotte, landgravine of Hesse, sister of Christian VIII., and her son Prince Frederick transferred their rights to the latter’s sister Louise, who in her turn transferred them to her husband Prince Christian of Glücksburg. This arrangement received international sanction by the protocol signed in London on the 8th of May 1852 by the five great powers and Norway and Sweden. ¹ On the 31st of July 1853 King Frederick VII. gave his assent to a law settling the crown on Prince Christian, “prince of Denmark,” and his heirs male. The protocol of London, while consecrating the principle of the integrity of Denmark, stipulated that the rights of the German Confederation in Holstein and Lauenburg should remain unaffected. It was, in fact, a compromise, and left the fundamental issues unsettled. The German federal diet had been unrepresented in London, and the terms of the protocol were regarded in Germany as a humiliation. As for the Danes, they were far from being satisfied with the settlement, which they apprehended as far as it went for the virtual proscription of their unionist schemes. On the 15th of February and the 11th of June 1854 the king of Denmark, after consulting the states, promulgated special constitutions for Schleswig and Holstein respectively, under which the provincial assemblies received certain very limited powers. On the 26th of July 1854 he published a common constitution for the whole monarchy; this, which was little more than a veiled absolutism, was superseded on the 2nd of October 1855 by a parliamentary constitution of a modified type. The legality of this constitution was challenged by the two German great powers, on the ground that the estates of the duchies had not been consulted as promised in the royal letter of the 6th of December 1851; the diet of the Confederation refused to admit its validity so far as Holstein and Lauenburg were concerned (11th February 1858).

The question was now once more the subject of lively international debate; but the European situation was no longer so favourable as it had been to the Danish view. The Crimean War had crippled the power of Russia, and Nicholas I. was dead. France was prepared to sell the interests of Denmark in the duchies to Prussia in return for “compensations” to herself elsewhere. Great Britain alone sided with the Danes; but the action of British ministers, who realized the danger to British supremacy at sea of the growth of German sea-power in the Baltic, was hampered by the natural sympathy of Queen Victoria and the prince consort with the German point of view. ² The result was that the German diet, on the motion of Bismarck, having threatened federal intervention (July 29), King Frederick VII. issued a proclamation abolishing the general constitution so far as affected Holstein and Lauenburg, while retaining it for Denmark and Schleswig (November 6).

³ Herrsat, Map of Europe, ii. 1151.
⁴ See Queen Victoria to Lord Malmesbury, 1st of May 1858, in Letters (pop. ed., 1908), iii. 280. Compare the letters to Palmerston of 21st of June 1849, ii. 222, and 22nd of June 1850, ii. 279, with Palmerston to Russell, 23rd of June 1850, and Queen Victoria to Russell, ii. 250.

Though even this concession violated the principle of the “indissoluble union” of the duchies, the German diet, fully occupied at home, determined to refrain from further action till the Danish parliament should make another effort to pass a law or budget affecting the duchies. This decision was confirmed by the estates of the duchies. This contingency arose in July 1860, and in the spring of the following year the estates were once more at open odds with the Danish government. The German diet now prepared for armed intervention; but it was in no condition to carry out its threats, and Denmark decided, on the advice of Great Britain, to ignore it and open negotiations directly with Prussia and Austria as independent powers. These demanded the restoration of the union between the duchies, a question beyond the competence of the Confederation. Denmark refused with a refusal to recognize the right of any foreign power to interfere in her relations with Schleswig; to which Austria, anxious to conciliate the smaller German princes, responded with a vigorous protest against Danish infringements of the compact of 1852. Lord John Russell now intervened, on behalf of Great Britain, with a proposal for a settlement of the whole question on the basis of the independence of the duchies under the Danish crown, with a decennial budget for common expenses to be agreed on by the four assemblies, and a supreme council of state consisting in relative proportion of Danes and Germans. ⁵ Though spokesmen for Russia and by the Congress of great powers, and Denmark found herself isolated in Europe. The internal situation, however, favoured a bold attitude, and she met the representations of the powers with a flat defiance. The retention of Schleswig as an integral part of the monarchy was to her a matter of life and death; the German Confederation had made the terms of the protocol of 1852, defining the intimate relations between the duchies, the excuse for an irreversible indispensable to the internal affairs of Denmark; and on the 30th of March 1863 a royal proclamation was published at Copenhagen repudiating the compact and claiming the separate position of Holstein in the Danish monarchy, negativing once for all the claims of Germany upon Schleswig.

¹ The reply of the German diet to this move was to forward a note to Copenhagen (July 9) demanding, on pain of federal execution, the withdrawal of the proclamation and the grant of a fresh constitution, based on the compacts of 1852 or on the British note of the 24th of September 1862. Instead, King Frederick VII. issued on the 28th of September 1863 a new constitution for “our kingdom Denmark”; the former diet now resolved on federal intervention; but action was delayed, partly through British efforts at mediation, partly because Bismarck judged the time for a satisfactory solution of the whole question had not yet come. Encouraged by this hesitating attitude, the Danish parliament passed the new constitution on the 13th of November. Two days later Frederick VII. died.

² Note of Sept. 24, 1862. For the diplomatic correspondence on the duchies see Parl. Papers, Lxiv. (1864). ² For this and later correspondence see Parl. Papers, Lxiv. (1864), p. 40 seq.
supported by the German princes and people, and in spite of the negative attitude of Austria and Prussia the federal diet decided to occupy Holstein "pending the settlement of the succession. On the 24th of December Saxon and Hanoverian troops marched into the duchy in the name of the German Confederation, and supported by their presence and by the loyalty of the Holsteiners the duke of Augustenburg assumed the government under the style of Duke Frederick VIII. With this "folly"—as Bismarck roundly termed it—Austria and Prussia, in the teeth of violent public opinion, would have nothing to do, for neither wished to risk a European war. It was clear to Bismarck that the two powers, as parties to the protocol of 1852, must uphold the succession as fixed by it, and that any action they might take in consequence of the violation of that compact by Denmark must be so "correct" as to deprive Europe of all excuse for interference. The publication of the new constitution by Christian IX. was in itself sufficient to justify a declaration of war by the two powers as parties to the signature of the protocol. As to the ultimate outcome of their effective intervention, that could be left to the future to decide. Austria had no clear views. King William wavered between his Prussian feeling and a sentimental sympathy with the duchy of Augustenburg. Bismarck alone knew exactly what he wanted, and how to attain it. "From the beginning," he said later (Reflections, ii. 10). "I kept annexation steadily before my eyes." The protests of Great Britain and Russia against the action of the German diet, together with the proposal of Count Beust, on behalf of Saxony, that Bavaria should bring forward in that assembly a formal motion for the recognition of Duke Frederick's claims, helped Bismarck to persuade Austria that immediate action must be taken. On the 28th of December a motion was introduced in the diet by Austria and Prussia, calling on the Confederation to occupy Schleswig as a pledge for the observance by Denmark of the compacts of 1852. This implied the recognition of the rights of the duches of Schleswig. At the same time it was made clear that the provisions of the diet were to be executed at once, and not, as Austria had suggested, in the manner of a settlement. The news of Austria's move was not very well received by the governments of the wider Confederation. The Austrian diplomatic correspondence shows that Bismarck's diplomatic strategy was not thought much of. The Austrian government had decided to make no attempt to block Austria's action, and to wait and see what would happen. The British government, on the other hand, was determined to prevent any attempted settlement by the Germans. The British government, in fact, was determined to prevent any settlement by the Germans. The British government, however, decided to support Austria's action. The British government, however, decided to support Austria's action. The British government, however, decided to support Austria's action.

At this stage, the Danes yielded to the necessities of the situation, and withdrawn from Schleswig under protest, the European powers would probably have intervened, and the European powers would have had no choice but to prevent any attempt upon it by the duke of Holstein. To prevent this possibility Bismarck made the Copenhagen government believe that Great Britain had threatened Prussia with intervention should hostilities be opened, "as, a matter of fact, England did nothing of the kind." The cynical stratagem succeeded; Denmark remained defiant; and on the 1st of February 1864 the Austrian and Prussian forces crossed the Elbe. An invasion of Denmark itself had not been part of the original programme of the allies; but on the 18th of February some Prussian Hussars, in the excitement of a cavalry skirmish, crossed the frontier and occupied the village of Kolding. Bismarck determined to use this circumstance to revise the whole situation. He urged upon Austria the necessity for a strong policy, so as to set once for all not only the question of the duchies but the wider question of the German Confederation; and Austria reluctantly consented to press the war. On the 5th of March a fresh agreement was signed between the powers, under which the compacts of 1852 were declared to be no longer valid, and the position of the duchies within the Danish monarchy as a whole was to be made the subject of a friendly understanding. Meanwhile, however, Lord John Russell on behalf of Great Britain, supported by Russia, France and Sweden, had intervened with a proposal that the whole question should once more be submitted to a European conference. The German powers agreed on condition that the compacts of 1852 should not be taken as a basis, and that the duchies should be bound to Denmark by a personal tie only. But the proceedings of the conference, which opened at London on the 25th of April, only revealed the inextricable tangle of the issues involved. Beust, on behalf of the Confederation, demanded the recognition of the Augustenburg claimant; Austria leaned to a settlement on the lines of that of 1852; Prussia, it was increasingly clear, aimed at the acquisition of the duchies. The first step towards the realization of the latter ambition was to secure the recognition of the absolute independence of the duchies, and this Austria could only oppose at the risk of forfeiting her whole influence in Germany. The two powers, then, agreed to demand the complete political independence of the duchies bound together by common institutions. The next move was uncertain. As to the question of annexation Prussia would leave that open, but made it clear that any settlement must involve the complete military subordination of Schleswig-Holstein to herself. This alarmed Austria, which had no wish to see a further extension of Prussia's already overgrown power, and she began to champion the cause of the duchies. Bismarck himself had foreseen and himself offered to support the claims of the duke at the conference if he would undertake to subordinate himself in all naval and military matters to Prussia, surrender Kiel for the purposes of a Prussian war-harbour, give Prussia the control of the projected North Sea Canal, and enter the Prussian Customs Union. On this basis, with Austria's support, the whole matter might have been arranged without—as Beust pointed out (Mem. i. 272)—the increase of Prussia's power beyond the Elbe being any worse than the augmentation of the King of Denmark's power, which had been far greater. The Prussian government, however, for Bismarck's plans, Austria's distrust and jealousy of Prussia led her to oppose this settlement and at her instigation the duke of Augustenburg rejected it. On the 25th of June the London conference broke up without having arrived at any conclusion. On the 24th, in view of the end of the truce, Austria and Prussia had arrived at a new agreement, the object of the war being now declared to be the complete separation of the duchies from Denmark. As the result of the short campaign that followed, the preliminaries of a treaty of peace were signed in the last week of August, the king of Denmark renouncing all his rights in the duchies in favour of the emperor of Austria and the king of Prussia. The definitive treaty was signed at Vienna on the 30th of October 1864. By Article XIX., a period of six years was allowed during which the inhabitants of the duchies might "opt" for Danish nationality and transfer themselves and their goods to Denmark; and the right of "indigency" was guaranteed to all, whether in the kingdom or the duchies, who enjoyed it at the time of the exchange of ratifications of the treaty.

The Schleswig-Holstein Question from this time onward became merged in the larger question of the general relations of Austria and Prussia, and its later developments are sketched in the article Germany: History. So far as Europe was concerned it was settled by the decisive result of the war of 1866. It survived, however, as between Danes and Germans, though narrowed down to the question of the fate of the Danish population of the northern duchy. This question is of great interest to students of international law and as illustrating the practical problems involved in the assertion of the modern principle of "nationality."1

1 Parl. Papers (1864), lxv. 124 seq. Beust (Mem. i. 252) says that Queen Victoria personally intervened to prevent British action in favour of Denmark.

The last phase of the question.

The Powers and Augustenburg.

Treaty of Vienna, 1864.

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This adjustment, brought about by the friendly intercourse between the courts of Berlin and Copenhagen, seemed to close the last frontier of the autochthonous Germans and to give to the Danes the apparent only served to embitter the inter-racial feud. The "autochthonous Germans of the Northern Marches" regarded the new treaty as a delusion, not to be availing of the treaty to give to their hereditary enemies. For forty years Germany, backed by all the weight of the empire and imposed with all the weapons of official persecution, had barely held its own in North Schleswig; in spite of an enormous emigration, in 1908, of the 148,000 inhabitants of North Schleswig 139,000 spoke Danish, while of the German-speaking immigrants it was found that more than a third refused to be assimilated. But the scattered outposts of Germanism could hardly be expected to acquire new influence in a situation that threatened them with social and economic extinction. Forty years of dominance, secured by official favour, had filled them with a double measure of aggressive pride of race, and the question of the rival nationalities in Schleswig, like that in Poland, remained a source of trouble and weakness within the frontiers of the German empire.

AUTHORITIES.—The literature on the subject is vast. From the German point of view the most comprehensive treatment is in C. Jansen and K. Samwer, Schleswig-Holstein Befreiung (Wiebaden, 1897); see also H. C. L. von Sybel, Foundation of the German Empire (Eng. trans., New York, 1890-1891); Bismarck's Reflections and Reminiscences (Eng. trans. by J. Sterrett and E. A. Garlin), 1861-1888. The Danish point of view is ably and moderately presented in La Question du Danemark, a collection of essays by various writers edited by F. de Jessen (Copenhagen, 1906), with maps and documents. (W. A. P.)

Schlettstadt—Schley

Schlettstadt is a place of very early origin. It was an extension in Carolingian times and became a free town of the Empire in the 13th century. In the 15th century it was the seat of a celebrated academy, founded by the humanist Rodolphus Agricola, who contributed not a little to the revival of learning in this part of Germany; Erasmus of Rotterdam was one of its students. In 1634 the town came into the possession of France, and it was afterwards fortified by Vauban. It offered little resistance, however, to the Prussians in 1870, and the fortifications have been demolished. The Hohland, or defensible hill, standing at an elevation of 247 ft., was presented to the emperor William II. by the town of Schlettstadt in 1899, and was completely restored in 1908. The site is first mentioned as being a castle in the 8th century.

See Naumann, Die Eroberung von Schlettstadt (Berlin, 1876) and J. Canon, Die Reichsstadt Schlettstadt 1400-1539 (Freiburg i. B., 1906).

Schley, Winfield Scott (1835-1914), American naval officer, was born at Richfields, near Frederick, Maryland, on the 9th of October 1835. He graduated at the United States Naval Academy in 1856, and during the Civil War was in active service as a lieutenant until July 1863. In 1867-1869 he was an instructor in the U.S. Naval Academy. He took part in Rear-Admiral John Rodgers's expedition to Korea in 1871, and was adjutant of the American land forces in the attack on the Korean forts on Salée river on the 10th and 11th of June. In 1872-1875 he was head of the department of modern languages in the U.S. Naval Academy. He was promoted commander in June 1875; in 1876-1879 commanded the "Essex," most of the time in the South Atlantic, and then until October 1883 was inspector of the second lighthouse district. In February 1884, after the failure in 1883 of the second expedition (under Lieut. E. A. Garlin) for the relief of the Lady Franklin Bay Expedition commanded by Lieut. A. W. Greely, Schley was appointed to command the third Greely relief expedition; and near Cape Sabine on the 22nd of June rescued Greely and six of his twenty-four companions. He was chief of the bureau of equipment and recruiting
in 1885-1889; and in April 1888 was promoted captain. He commanded the “Baltimore” in Rear-Admiral George Brown’s squadron off the coast of Chile in 1891. Early in 1892 he was again transferred to the lighthouse bureau, and until February, 1895, was in charge of the third lighthouse district; and in 1897-1898 he was a member (and chairman) of the Lighthouse Board. He was commissioned commodore on the 6th of February 1898, and on the 24th of March, although lowest on the list of commodores, he was put in command of the “flying squadron,” with the “Brooklyn” as his flagship, for service in the war with Spain. The command of the fleet off Santiago de Cuba was taken from Schley by Acting Rear-Admiral W. T. Sampson on the 1st of June. In the battle of Santiago on the 3rd of July Schley, in Sampson’s absence, was the senior officer. The “Brooklyn” did especial service with the “Oregon,” in overhauling and disabling the “Cristobal Colón.” On the 10th of August Schley was advanced six numbers and was made rear-admiral for “eminent and conspicuous conduct in battle.” On the 19th he was appointed a commissioner of the United States to arrange the evacuation of Porto Rico. When the Navy Department recommended that Sampson be promoted eight numbers and over the head of Schley, who had ranked him for forty-two years, there was a bitter controversy, and the Senate did not confirm the promotion. On the 14th of April 1899 Schley was promoted to the rank of rear-admiral, and was ordered to report to the Secretary of the Navy on the subject of the proposed Far Eastern expedition. In November 1899 he was put in command of the South Atlantic Station, and in October 1901 he retired from active service upon reaching the age limit. At his request, because of the charges made against him in E. S. Maclay’s History of the Navy, a court of inquiry investigated Schley’s conduct before and during the battle of Santiago; on the 13th of December 1901 the court pronounced Schley guilty of delay in locating Cervera’s squadron, of carelessness in endangering the “Texas” by a peculiar “loop” movement or turn of the “Brooklyn” which blanketed the heads of other American vessels, and of disobedience to a departmental order of the 25th of May, but it recommended that no action be taken. Admiral Schley filed a protest against the court’s findings, which, however, were approved by the Secretary of the Navy.


SCHLIEMANN, HEINRICH (1822-1890), German archaeologist, was born on the 6th of January 1822 at Neu Buckow in Mecklenburg-Schwerin, the son of a poor pastor. He has stated in his autobiography that through all his early years he was beset with the most unusual points of struggle, when he was successively grocer’s apprentice at Fürstenberg, cabin-boy on the “Dorothea” bound for Venezuela, and, after her wreck, office assistant and then book-keeper at Amsterdam, he nourished a passion for the Homeric story and an ambition to become a great linguist. In the end, thanks to an unusually powerful memory and determined energy, he acquired a knowledge of seven or eight tongues besides his own, including ancient and modern Greek. The house of B. H. Schröder of Amsterdam sent him in 1846 to St. Petersburg, where he established a business of his own and embarked in the indigo trade. He made a fortune at the time of the Crimean War, partly as a military contractor. Happening to be in California when made a state of the Union, in 1850, he became and remained an American citizen. After travels in Greece, Tunisia, India, China and Japan, and writing a short sketch of the last two countries, he took his large fortune to Greece in 1858, and proceeded to visit Homeric sites. In an ensuing book—Ithaka, der Peloponnes, and Troy—he propounded two theories which he was destined eventually to test in practice, viz. that Hisarlik, not Furnarbasli, was the site of Troy, and that the Troy graves, seen by Pausanius at Mycenae, lay within the citadel wall. Two years later he took up Calvert’s work on the former site, and, convinced that Troy must be on the lowest level, hewed his way downward, regardless of the upper strata, wherein lay unseen the remains of which he was really in search. By 1873 he had laid bare considerable fortifications and other remains of a burnt city of very great antiquity, and discovered a treasure of gold jewelry. We now know this city to have belonged to the middle pre-Mycenaean period, long prior to the generation of Homer’s Archaeans; but Schliemann far and wide proclaimed it “Troy,” and was backed by Gladstone and a large part of the European public.

Trying to resume his work in February 1874, he found himself inhibited by the Ottoman government, whose allotted share of the gold treasure had not been satisfactory, and it was not till April 1876 that he obtained a firman. During the delay he issued his Troy and its Remains (1875), and betook himself to Mycenae. There in August 1876 he began work in the Dome-tombs and by the Lion Gate, and opened a large pit just within the citadel. The famous double ring of slabs and certain stone relics were brought to light. Schliemann, thinking it was only a platform levelled as a place of Archaean assembly, paused; and did not resume till November. Then, resolved to explore to the rock, he cleared away some three feet more of earth and stones, and lighted on the five shaft graves which have placed him first among fortunate excavators. A sixth grave was found immediately after his departure. The immense treasure of gold, silver, bronze, fine stone and ivory objects, which was buried with the sixteen corpses in this circle, is worth intrinsically more than any treasure-trove known to have been found in any land, and it reveals for all the character of a great civilization—Sumerian, the Hittite, and the Mycenaean, and gradually and cleaned and arranged in the Polytechnic; and the discoverer, publishing his Mycenae in English in 1877, had his full share of honours and fame.

He had now settled in Athens, where he married a Greek lady, and built two splendid houses, which became centres of Athenian society. In 1878 he dug unsuccessfully in Ithaca, and in the same year and the following resumed work at Hisarlik. He then published his result in a discursive memoir, Ilios, and made a sequel, Troy, issued in 1884, after Wilhelm Dörpfeld, associated in 1882, had introduced some method into the explorations, was a considerable improvement.

In 1880 and 1881 Schliemann cleared out the ruined dome-tomb of Orchomenus, finding little except remains of its beautiful ceiling; and in 1885, with Dörpfeld, he laid bare the upper stratum on the rock of Tiryns, presenting scholars with a complete ground plan of a Mycenaean palace. This was his last fortunate excavation. While Tsountas, for the Greek Archaeological Society, picked up his work at Mycenae in 1886, and gradually cleared the Acropolis, with notable results, Schliemann tried for traces of the Caesareum at Alexandria, of the Palace of Minos in Crete, and of the Bronze Age tombs in Crete, Sardinia and Cythera (1888); but he was not successful, meeting in the two former enterprises with a local opposition which his wealth was unable to bear down. In 1889 he entertained at Hisarlik a committee of archaeological experts, deputed to examine Bötticher’s absurd contention that the ruins represented not a city, but a cremation necropolis; and he was contemplating a new and more extensive campaign on the same site when, in December 1890, he was seized at Naples with an illness which ended fatally on the morning of Christmas Day. His great wealth was left mainly to the two families that he had in Russia and Greece; but a sum was reserved for Hisarlik, where Dörpfeld in 1890 and 1891, by clearing away the debris of the former excavations, exposed the great walls of the sixth stratum which Schliemann had called Lydian, and proved their synchronism with Mycenae, and identity with Mycenaean remains; that is to say, with Homer’s Troy, if Troy ever was.

Schliemann was on several occasions in England, in 1853 to receive honours from the great universities, and in 1856 to confer, at a special gathering of the Hellenic Society, the assertion of Stillman and Penrose that the Troytanical palace was posterior to the Christian era. Nowadays he is better appreciated, and most of his books were first issued in English.

SCHLIPPE’S SALT, or sodium thioantimoniate, NaSbS₂O₇H₂O, named after K. F. Schlippe (1790-1867), is prepared by dissolving the calculated quantities of antimony trisulphide, sulphur,
and sodium hydroxide in water, or by fusing sodium sulphate (16 parts), antimony sulphide (13 parts) and charcoal (4-5 parts), dissolving the melt in water and boiling the solution with 2 parts of sulphur. The liquid is then filtered and evaporated. The salt crystallizes in large tetrahedra, which are easily soluble in water, and has a specific gravity r 806. The anhydrous salt melts easily on heating, and in the hydrated condition, on exposure to moist air becomes coated with a red film. It combines with sodium thiosulphate to form Na₂S₂O₃·2H₂O.

SCHLOSSER, FRIEDRICH CHRISTOPH (1776-1861), German historian, was born at Jever in East Friesland on the 17th of November 1776. He took up the study of theology, mainly at Göttingen, and began life as a private tutor. Turning to the study of history, he carried with him the tendency to construct his syntheses upon the scanty basis of 19th-century generalizations; yet in spite of the growing scientific school he became and remained for a quarter of a century the most popular German historian. In 1807, inspired by his study of Dante, he published his first work Abüßard und Dulcin, a defence of scholasticism and medieval thought. Two years later biographical studies of Theodore Beza and Peter Martyr Vermili (Leben des Theodor de Beza und des Peter Martyr Vermili, Heidelberg, 1809) revealed more genuine scholarship. In 1812 appeared his History of the Iconoclastic Emperors of the East (Geschichte der bildersämmernden Kaiser des orientalischen Reiches), in which he controverted some points in Gibbon’s work. In 1823 he undertook a study of the past in present-day colours. His own strong predispositions prevented him from accomplishing this, however, and the history remains open to grave scientific criticism. But it won for him the favour of Archbishop Karl Theodor Dalberg, and secured for him a professorship in the Frankfort Lyceum. He left Frankfort in 1819 to become professor of history at Heidelberg, where he resided until his death on the 23rd of September 1867.

In 1815 appeared the first volume of his World History (Weltgeschichte in zusammenhängender Erzählung), this work, though never completed, was extended through many volumes providing an inexhaustible energy and a vast erudition. But it lacks both accuracy of fact and charm of style, and is to-day deservedly quite forgotten. On the other hand a translation of the pedagogical handbook of Vincent of Beauvais and the accompanying monograph are still of value. The next noteworthy work was a history of antiquity and its culture (Universalhistorische Übersicht der Geschichte der alten Welt und ihrer Kultur), 1 part, 1826; 2nd part, 1834), which, while revealing little knowledge of the new criticism of antique painting by F. A. Wolf and B. G. Niebuhr, won its way by its unique handling of the subject and its grand style. In 1823 he published in two volumes a Geschichte des 16ten Jahrhunderts; then, enlarged and improved, this work appeared in six volumes as Geschichte des 16ten Jahrhunderts und des 17ten bis zum Sturz des französischen Kaiserreichs (1836-1845). The history had a most extraordinary success, especially among the common people, owing, not to its scientific qualities, but to the fact that the author boldly and externally sat in judgment upon men and events, and in his judgments voiced the feelings of the German nation. Unfortunately, for this very reason it is no longer read. It has been translated into English by D. Davison (8 vols., 1843-1852). Finally, Schlosser undertook a popular World History for the German People (Weltgeschichte für das deutsche Volk, 1844-1857), which also enjoyed the favour of those for whom it was written.

Schlosser stands apart from the movement towards scientific history in Germany in the 19th century. Refusing to limit himself to political history, as did Ranke, he never learned to handle his literary sources with the care of the scientific historian. History was to him, as it had been to Goethe, a school for morals; but he had perhaps a juster conception than Ranke of the breadth and scope of the historian’s field.

See G. G. Gervinus (Schlosser’s pupil), F. C. Schlosser, ein Nebenbold (1861); G. Weber, F. C. Schlosser, der Historiker, Erinnerungsbilder (Leipzig, 1875); and O. Lorenz, F. C. Schlosser (Vienna, 1878).

SCHLOTHEIM, ERNST FRIEDRICH, Baron von (1764-1832), German paleontologist, was born in Grazschaft Schwarzwburg on the 2nd of April 1764. He was Privy Councillor and President of the Chamber at the court of Gotha. Becoming interested in geology he gathered together a very extensive collection of fossils. In 1824 he published descriptions and illustrations of remarkable remains of (Carboniferous) plants, Ein Beitrag zur Floras der Vorwelt. In this he incorporated the plates used in his previous memoir and supplemented it by a folio atlas (1822), in which he illustrated his collection “of petrified and fossil remains of the animal and vegetable kingdom of a former world.” For the first time in Germany the fossils were named according to the binomial system. The species are preserved in the Berlin Museum. He died at Gotha on the 28th of March 1832.

SCHLÖZER, AUGUST LUDWIG VON (1735-1809), German historian, was born at Gaggenstedt, in the county of Hohenlohe-Kirchberg, on the 5th of July 1735. Having studied theology and oriental languages at the universities of Wittenberg and Göttingen, he went in 1755 as a tutor to Stockholm, and afterwards to Upsala; and while in Sweden he wrote in Swedish an Essay on the General History of Trade and of Sea-faring in the most Ancient Times (1758). In 1759 he returned to Göttingen, where he began the study of medicine. In 1761 he went to St. Petersburg with Gerhardt Friedrich Müller, the Russian historiographer, as full historian to avoid the post of provincial tutor in his family. Here Schlozer learned Russian and devoted himself to the study of Russian history. In 1762 a quarrel with Müller placed him in a position of some difficulty from which he was delivered by an introduction to Count Rasumovski, who procured his appointment as adjunct to the Academy. In 1765 he was appointed by the empress Catherine an ordinary member of the Academy and professor of Russian history. In 1767 he left Russia on leave and did not return. He settled at Göttingen, where in 1764 he had been made professor extraordinarius, and Doctor honoris causa in 1766, and in 1769 he was promoted to an ordinary professorship. In 1804 he was ennobled by the emperor Alexander I. of Russia and made a privy councillor. He retired from active work in 1805 and died on the 9th of September 1809.

Schlozer’s activity was enormous, and he exercised great influence by his lectures as well as by his books, bringing historical study into touch with political science generally, and using his vast erudition in an attempt to solve practical questions in the state and in society. He was “a journalist before the days of journalism, a traveller before that of travelling, a critic before that of criticism, and an opponent of political opponents.” His most important works were his Allgemeine nordische Geschichte, 2 vols. (Halle, 1772) and his translation of the Russian chronicler Nestor to the year 980, 5 vols. (Göttingen, 1802-1809). He awoke much intellectual interest in universal history by his Weltgeschichte im Auszuge und Zusammenhang, 2 vols. (2nd ed., Göttingen, 1792-1801); and in several works he helped to lay the foundations of statistical science. He also produced a strong impression by his political writings, the Briefwechsel, 10 vols. (1776-1782) and the Staatsanzeigen, 18 vols. (1782-1793).
and diplomatist, who in 1871 was appointed German ambassador to the United States and in 1882 to the Vatican, when he was instrumental in healing the breach between Germany and the papacy caused by the May Laws.

In 1872, August Ladung-Schlüter (Berlin, 1872; Wesendonck, Die Begründung der neuen deutschen Geschichtsschreibung durch Gatterer und Schlüter (Leipzig, 1876) and F. Frendorff in Allgemeine deutsche Biogr. vol. xxxi.

Schlüsselburg, a town of Russia, in the government of St. Petersburg, sited on low ground surrounded by marshes, at the confluence of the river Neva from Lake Ladoga, 40 m. by steamer E. of the city of St. Petersburg. Pop. (1897) 2285. It was founded in 1323 by the Novgorodians, and though afterwards lost by Russia, was reconquered by Peter the Great in 1702. It has a cathedral and a fortress, built on an island in the Neva, which is now used as a political prison.

Schlüter, Andreas (1604-1714), German sculptor and architect, was born in Hamburg. Much of his activity as a sculptor was exercised in Warsaw, but in 1694 he was summoned to Berlin. Two years later he began his designs for the rebuilding of the royal palace. The execution of these occupied him from 1699 to 1706, and the palace became a conspicuous example of barocco style in Germany. In 1713 Schlüter went to St. Petersburg, where he did architectural work for Peter the Great. His principal works in Berlin are the monument of the great elector Frederick William and the 22 masks of dying warriors in the courtyard of the arsenal, the tombs of King Frederick I. and his wife, and the marble pulpit in the Marienkirche.

See C. Gurlitt, Andreas Schlüter (1901); C. F. von Kloeoden, Andreas Schlüter (1855).

Schmalkalen, a town of Germany, in the Prussian province of Hesse-Nassau, situated in a narrow valley at the southwestern slope of the Thuringian forest, 30 m. S.W. of Erfurt, on the railway Wernhausen-St. Blasii. Pop. (1903) 9290. It has a Gothic parish church, a palace—Schloss Wilhelmsburg—with an interesting chapel and a collection of antiquities, and possesses a Gothic town hall in which the important Protestant League of Schmalkalden, or Smallwald, was concluded in 1531, and also the house in which the articles of Schmalkalden were drawn up in 1537 by Luther, Melanathan and other reformers. It has three other Evangelical churches, a Roman Catholic church and several schools. Its industries are chiefly connected with ironwares, but leather, beer, soap and toys are also manufactured. Karl Wilhelms (1815-1873), the composer of "Die Wacht am Rhein," was born here, and there is a memorial of him in the market-place. Schmalkalen, which was first mentioned in 874, came wholly into the possession of Hesse in 1535, having been a town since 1335.

See Wagner, Geschichte der Stadt und Herrschaft Schmalkalden (Marburg, 1836); Wilisch, Schmalkalde und seine Umgebungen (Schmalkalen, 1884).

Schmerling, Anton von (1805-1863), Austrian statesman, was born on the 23rd of August 1805 at Vienna, where his father held a high position on the judicial side of the civil service. After studying law at Vienna, in 1829 he entered the public service, and during the next eighteen years was constantly occupied, chiefly in Lower Austria. In 1847, as a member of the lesser nobility, he entered the Estates of Lower Austria, and took an active part in the Liberal movement for administrative and constitutional reform of which they were the centre. On the outbreak of the revolution in Vienna in March 1848, when the mob broke into the Assembly, Schmerling was one of the deputation which carried to the palace the demands of the people, and during the next few days he was much occupied in organizing the newly formed National Guard. At the end of the month he was sent by the ministry to Frankfort as one of the men of "public confidence." He soon succeeded Count Colleredo as president of the Diet, and in this capacity officially transferred to the archduke John, who had been elected regent of Germany, the powers of the "double crown" which was violently attacked in the German parliament by the extreme Radicals; but on this and other occasions (he had himself been elected to the parliament) he defended moderate and constitutional principles, all the more effectively because he depended not on eloquence but on a recognition of what has been called the "irony of facts"—to which the parliament as a whole was so blind. He was the first and the most influential member of the ministry which the regent formed; he held the ministry of the interior and, later, also that of foreign affairs, and it was almost entirely due to him that at least for a short time this phantom government maintained some appearance of power and dignity. A defeat in the parliament when he defended the armistice of Malmö led to his resignation; but he was immediately called to office again, with practically dictatorial power, in order to quell the revolt which broke out in Frankfort on the 18th of September. His courage and resolution averted what nearly became a terrible catastrophe. It was his hope to establish in Germany the supremacy of a Liberal and reformed Austria. This brought him into opposition to the party of Foulis and against whom they attained a majority, he resigned, and was succeeded by Gagern. He remained at Frankfort, holding the post of Austrian envoy, and was the leader of the so-called Great German party until the dissolution of the Austrian parliament showed that the forces of reaction had conquered at Vienna and scattered all hopes of Austria attaining the position he had hoped for.

After the abortive election of the king of Prussia to be emperor, he, with the other Austrians, left Frankfort. On his return to Vienna he became minister of justice, and the reforms which he carried out added to his reputation. His popularity among all the Austrians was increased by his resignation in 1853, as a protest against the failure of the government to establish the constitution they had promised. During the next few years he was judge of the supreme court of appeal. When his forecast was fulfilled, and the system of absolutism broke down, he became minister in January 1862. His first act was the publication of the constitution by which the whole of the empire was to be organized as a single state with a parliamentary government. The experiment failed, chiefly because of the opposition of the Croatians and Magyars, whom he bitterly offended by his celebrated saying that "Hungary could not be satisfied with a minister who had been engaged in opposing it as a national party; and when the government attempted to keep the German Liberals as a strong and united party; he was opposed by a powerful faction at court, and by the Clerical leaders. After the first few months the emperor gave him only a very lukewarm support; and with his retirement in 1865 the attempt to carry out the ideals of Joseph II. to Germanize while he liberalized the whole of the empire, and to compel Hungarians, Poles, Czechs and Croatians to accept a system in which the government of the whole should be conducted by a German-speaking parliament and bureaucracy, failed. The constitution of 1862, though suspended on Schmerling's fall, was still regarded as legally valid for the cisleithanian territories, and is the basis on which the present constitution for half the empire was framed. On his retirement he returned to his judicial duties; in 1867 he was made life-member of the Upper House in the Reichsrath, of which he became vice-president, and in 1871 president. This post he laid down in 1879, and came forward as leader of the Liberal German opposition to the administration of Count Taaffe. In 1891 he retired from public life, and died at Vienna on the 23rd of May 1893.

Schmerling married, in 1851, Pauline, daughter of Field-Marshall-Lieutenant Baron von Koudela, from whom Schmerling, who was distinguished by literary and artistic abilities, at that time rare in the Austrian capital, died in 1840, leaving two daughters.

See Arhen, Anton u. Schmerling (Prague, 1865). This contains a full account of Schmerling's life during 1848-1849, but does not deal with later life.

See Neumann, Geschichte des Landes Chorin; Biographisches Lexicon des Kaisergebietes (2 vols., 1874); Gagern, Biographisches Lexicon des deutschen Osten; Friedhöf, Der Kampf um die Vorherrschaft in Deutschland; Rogge, Geschichte Österreichs. (J. W. HE.)

Schmidt, Heinrich Julian (1818-1886), German journalist and historian of literature, was born at Marienwerder in East Prussia on the 7th of March 1818, and after studying history and philosophy at the universities of Königsberg and Halle, was appointed, in 1842, to a mastership in the Lüneburg Realschule in Berlin. In 1847 he joined the editorial staff of the "Grenzboten"
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in Leipzig, and in the following year became, with Gustav Freytag, joint owner of that periodical. In 1861 he removed to Berlin as editor-in-chief of the Berliner allgemeine Zeitung, and in 1876 was rewarded for the journalistic services rendered to the government, by a pension from the emperor William I. He died in 1877, in the 71th year of his age.

Julian Schmidt's principal contributions to literary history are Geschichte der Romanistik im Zeitalter der Revolution und Restauration (1848); Geschichte der deutschen Nationalliteratur im 19. Jahrhundert (1853); Geschichte des geistigen Lebens in Deutschland von Leibniz bis auf Lessings Tod (1861-1863). These works subsequently appeared as Geschichte der deutschen Literatur von Leibniz bis auf unsere Zeit (4 vols., 1886-1890); Schmidt also wrote a Geschichte der jüngsten deutschen Literatur seit der Revolution (1852), and a biography of Schiller (1890).

SCHMIDT, KARL VON (1817-1875), Prussian cavalry general, was born at Schwedt on the Oder, on the 12th of January 1817, and entered the 4th Ulans as a second lieutenant in 1834. His long regimental service was varied by staff service and instructional work, and in the mobilization of 1850 he had the command of a landwehr cavalry regiment. He was promoted Major on the 16th of August 1875. In 1889 the 4th Ulans, in which his regimental service was almost entirely spent, were given the name "Von Schmidt." His drill and manoeuvre instructions were codified and published after his death by his staff officer, Captain von Vollard Bockelberg, was born at Leipzig in 1815, was.prime minister to Charles X of France. The English translation, Instructions for Cavalry, has been published by the War Office. Von Schmidt himself wrote a pamphlet, Auch ein Reiter soll einen Kelch trinken (1850), an original German edition of the Instructions for Cavalry, prefaced by a memoir of Schmidt's life and services, written by Major Kaehler.

SCHMIDT, WILHELM ADOLF (1812-1887), German historian, was born in Berlin on the 26th of September 1812. He became in 1831 professor of history at Zürich, and nine years later professor at Jena, where he died on the 10th of April 1887. He was a member of the Frankfort parliament in 1848, and of the German Reichstag from 1874 to 1877. His historical works deal mainly with modern German history, and the most important of them are:

Preussens deutsche Politik (Berlin, 1850, and other editions); Geschichte der preussisch-deutschen Unionbestrebungen (Berlin, 1851); Geschichte des preussischen Geschlechts bis auf die Franzosen (Berlin, 1851-1852); Geschichte der preussischen Verwaltungsfrage zwischen der Befreiungskriege und dem Wiener Kongresses (Stuttgart, 1850), which was published after his death by A. Stern. Schmidt also wrote: Tableaux de la Révolution française publiés sur les papiers inédits du département de la police secréte de Paris (Leipzig, 1855-1856); Pariser Zustände während der Revolutionszeit (Jena, 1857-1858), translated into French by P. Viollet (Paris, 1858-1859); Das Parlamentarische Zeitalter (Jena, 1857-1859); Handbuch der griechischen Chronologie (Jena, 1888); and Abhandlungen zur alten Geschichte (Leipzig, 1888).

See also Schmidt, Zur Erinnerung an Adolf Schmidt (Berlin, 1887).

SCHOMMER, GUSTAV (1838-1893), German political economist, was born at Heilbronn on the 24th of June 1838. He studied political science, philosophy and history at the university of Tübingen from 1857 to 1861, when he obtained an appointment at the Württemberg Statistical Department. In 1864 Schmoller became extraordinary—and in the following year, ordinary—professor of political economy and science at Halle, was transferred in a like capacity to Strasburg in 1872 and finally in 1882 to Berlin. In 1876 he was a member of the Prussian Staatsrat, in 1887 member of the Prussian Landtag and in 1892 of the Prussian Landtag. In 1897 Schmoller was called to the Prussian Herrenhaus (Upper Chamber) as representative of the university of Berlin. Schmoller is famous for his researches in the field of the history of political economy and is one of the founders of the Verein für Social Politik (Social Political Society).

Among his numerous scientific works must be specially mentioned: Der französische Handelsstrang und seine Gegner (1882); Zur Geschichte des deutschen Kleingewerbes im 19ten Jahrhundert (1886); Über einige Grundfragen des Rechtes und der Volkswirtschaft (1875). In late years Schmoller concentrated his attention more upon the history of Prussian administration, and besides editing the Jahrbuch für preussische Geschichte und Landeskunde, published the result of his labours in this department in the Umriss und Untersuchungen zur Verfassungs-, Verwaltungs- und Wirtschaftsgeschichte, besonders des preussischen Staates, im 17ten und 18ten Jahrhundert (1898).

For an estimate of Schmoller's work cf. Stämpfli, Gustav Schmoller (1901).

SCHNEEBERG, a town of Germany, in the kingdom of Saxony, in the Erzgebirge, 14 m. S.E. from Zwickau by rail. Pop. (1905) 9044. It contains a handsome Gothic parish church, one of the largest ecclesiastical buildings in Saxony, dedicated to St Wolfgang, with an altar-piece by Lucas Cranach the elder, and numerous tombs; a gymnasium; a school of lace-making and a hospital. Hand-made lace and silver mining, formerly its two most important industries, have declined. The first has been almost entirely superseded by machine-made goods, while the second appears to have languished owing to exhaustion of the mines. Cobalt, bismuth and nickel are worked and yield satisfactory results, and machine-made lace, embroidery, porcelain, corsets, shoes and colours are among the chief of its other industrial products. Schneeberg is also noted for a snuff made of aromatic herbs, which commands a ready sale in the district.

See Lehmann, Chronik von Schneeberg (Schneeberg, 1837-1840).

SCHNEEKOPPE, a mountain of Germany, on the Silesian Bohemian frontier, the highest peak (5100 ft.) of the Riesengebirge, situated immediately above the town of Schmiedeberg, 8 m. S. from Hirschberg. From the crest, which is about 50 yds. sq. and across which runs the frontier line between Silesia and Bohemia, a magnificent view is obtained across the Oder plain to Breslau on the north and over Bohemia to the southern foot of the Sudeten ridge. On the Prussian side, lies the chapel of St Lawrence, which has been a place of pilgrimage from 1824 to 1850, when a new hostel was erected. Since 1900 a meteorological station has been established here.

See Zeitmann, Panorama von der Schneekeppe (Berlin, 1903).

SCHNEIDEMÜHL (Polish Pila), a town of Germany, in the Prussian province of Posen, situated on the Cudłow, 60 m. N. of Posen and 145 m. N.E. of Berlin on the main line to Königsberg, and at the junction of lines to Stargard and Thorn. Pop. (1905) 21,624. It has five churches, a classical school and a Roman Catholic teachers' seminary. Schneidemühl carries on a trade in grain, wood, gosp and potatoes, and possesses an ironworks, several glass works and machine-shops, and other industrial establishments. Considerable damage was done to the town in 1893 by a violent overflow of water from a deep artesian well.

SCHNEIDER, JOHANN GOTTLOB (1759-1822), German classical scholar and naturalist, was born at Kollmern in Saxony on the 18th of January 1750. In 1774, on the recommendation of Heyne, he became secretary to the famous Strassburg scholar, R. F. Bruneck, and in 1811 professor of ancient languages and eloquence at Breslau (chief librarian, 1816) where he died on the 15th of January 1822. Among his numerous works the most important was his Kritisches lexicon-deutsches Handwörterbuch (1797-1798), the first independent work of the kind since Stephanus's Thesaurus, and the basis of F. Passow's and all succeeding German lexicons. A special improvement was the use of traditional suffixes in the formation of compound words.
introduction of words and expressions connected with natural history and science. The scientific writings of ancient authors especially attracted him. He published editions of Aelian, De natura animalium; Nicander, Alexipharmaca and Theriaca; the Scripторes rei rusticae; Aristotle, Historia animalium and Politica; Epicurus, Physica and Meteorologica; Theophrastus, Elogae physicae; Oppian, Halieutica and Cynegyeta; the complete works of Xenophon and Vitruvius; the Argonautica of the so-called Orpheus (for which Ruhnken nicknamed him "Orpheomastix"); an essay on the life and writings of Pindar and a collection of his fragments. His Elogae physicae is a selection of extracts of various length from Greek and Latin writers on scientific subjects, containing the original text and commentary, with essays on natural history and science in ancient times.

See F. Passow, Opuscula academica (1835); C. Bursian, Geschichte der klassischen Philologie in Deutschland (1883).

SCHNEIDER, LOUIS (1809-1878), German actor and author, was born at Berlin on the 29th of April 1809, the son of George Abraham Schneider, (1770-1830). At an early age he was engaged at the Royal Theatre, Berlin, where he soon rose to play leading comedy parts. His reputation as a comedian grew with his success in such roles as Zierl in the Einfahrt von Lande, Peter in the Kapellmeister von Venedig, Schikaneder in the Schauspieldirektor and Basileio in Figaro's Hochzeit, and he became the favourite of Berlin. In 1845 he was appointed head of the Royal opera in Berlin. But his bold patriotic couplets and impassioned discourses during the revolutionary war 1848 necessitated his retirement, and thereafter he translated and adapted for the stage Mozart's Così fan tutti; published, under the pseudonym "L. W. Both," Das Bühnerepertoire des Auslandes; and founded, as a result of his experiences as a soldier in the Danish war of 1849, the periodical Der Soldatenfreund. He also wrote Geschichte der Oper und des Opernhauses in Berlin (1845-1852). Soon after his retirement he was appointed reader to King Frederick William IV. of Prussia, and subsequently he received the title of Geheimen Hofrat. He continued to enjoy the favour of the court, and, as correspondent of the Staatsanzeiger, was attached to the headquarters' staff of the Prussian army during the campaign of 1866; and, by special invitation, accompanied the emperor William during the war of 1870. Schneider also wrote a novel. Das bunte Glück, and several volumes of reminiscences: König Wilhelm (1869), Kaiser Wilhelm, 1867-1871 (1875). He died at Potsdam on the 16th of December 1878.

See his posthumous memoirs, Aus meinem Leben (Berlin, 1879-1882). See also Kaiser Wilhelm's (1888), which caused some sensation on their publication.

SCHNEIDEWIN, FRIEDRICH WILHELM (1810-1856), German classical scholar, was born at Helmstedt on the 6th of June 1810. In 1833 he became a teacher at the Brunswick gymnasmum, in 1837 extraordinary and in 1842 ordinary professor of classical languages and literature in the university of Göttingen, where he died on the 11th of January 1856. Schneidewin's work on Sophocles and the Greek lyric poets is of permanent value. His most important publications are: Ibyci Rheicis reliquiae (1835), severely criticized by G. Hermann; Simonidesi reliquiae (1835); Delectus poëtarum Graecorum elegiæcæ, iambicæ, melicæ (1838-1839), in which the fragments of the lyric poets were for the first time published in a convenient form; Paromiographi græci (1839, with E. von Leutsch); Sophocles (1840-1854, revised after his death by A. Nauck). He also edited the fragments of the speeches of Herocles on behalf of Exuxenipus and Lycophron (already published by Churchill Babington from a papyrus discovered in Egyptian Thebes in 1847) and a Latin poem on rhetorical figures by an unknown author (Incertæ auctoritatis de figuris vel schematibus versus horrivit, 1841), found by Jules Quicherat in the Paris library. Schneidewin was also the founder of Phthloegia (1846), a journal devoted to classical learning, and dedicated to the memory of K. O. Müller. See A. Baumeister in Allgemeine deutsche Biographie; E. von Leutsch in Phthloegia, x.; and M. Lechner, Zur Erinnerung an K. F. Hermann, F. W. Schneidewin (1864).

SCHNORR VON KAROLSFELD, JULIUS (1794-1872), German painter, was born in 1794 at Leipzig, where he received his earliest instruction from his father Johann Veit Schnorr (1794-1834), a draughtsman, engraver and painter. At seventeen he entered the Academy of Vienna, from which Overbeck and others who rebelled against the old conventional style had been expelled about a year before. In 1818 he followed the founders of the new school of German pre-Raphaelites in the general pilgrimage to Rome. This school of religious and romantic art abjured modern styles and returned to and revived the principles and methods of earlier centuries. At the outset he was eager to learn fresco painting and "monumental art," and Schnorr found opportunity of proving his powers, when commissioned to decorate with frescoes, illustrative of Ariosto, the entrance hall of the Villa Massimo, near the Lateran. His fellow-labourers were Cornelius, Overbeck and Veit. His second period dates from 1825, when he left Rome, settled in Munich, entered the service of King Ludwig, and transplanted to Germany the art of wall-painting learnt in Italy. He showed himself qualified as a sort of poet-painter to the Bavarian court; he organized a staff of trained executants, and set about clothing five halls in the new palace with frescoes illustrative of theNibelungenlied.

Other apartments his prolific pencil decorated with scenes from the histories of Charlemagne, Frederick Barbarossa and Rudolph of Habsburg. These interminable compositions are creative, learned in composition, masterly in drawing, but exaggerated in thought and extravagant in style.

Schnorr's third period is marked by his "Bible Pictures" or Scripture History in 180 designs. The artist was a Lutheran, and took a broad and unsectarian view which won for his Pictorial Bible ready currency throughout Christendom. Frequently the compositions are crowded and confused, wanting in harmony of line and symmetry in the masses; thus they suffer under comparison with Raphael's Bible. The style is severer from the simplicity and severity of early times, and surrendered to the florid redunance of the later Renaissance. Yet throughout are displayed fertility of invention, academic knowledge with facile execution; and modern art has produced nothing better than "Joseph Interpreting Pharaoh's Dream," the "Meeting of Rebecca and Isaac" and the "Return of the Prodigal Son." Biblical drawings and cartoons for frescoes formed a natural prelude to designs for church windows. The painter's renown in Germany and abroad was immense. At the outset he was despatched to Rome, where he was allowed to carry out the royal factory, Munich, for windows in Glasgow cathedral and in St Paul's cathedral, London. This Munich glass provoked controversy: medievalists objected to its want of lustre, and stigmatized the windows as coloured blinks and picture transparencies. But the opposing party claimed for these modern revivals "the union of the severe and excellent drawing of early Florentine oil-paintings with the colouring and arrangement of the glass-paintings of the latter half of the 16th century." Schnorr died at Munich in 1873. His brother Ludwig Ferdinand (1809-1863) was also a painter.

SCHOFIELD, JOHN McALLISTER (1832-1906), American soldier, was born at Gerry, Chautauqua county, New York, on the 29th of September 1831. He graduated at West Point in 1853, served for two years in the artillery, was assistant professor of natural and experimental philosophy at West Point in 1853-1860, and while on leave (1860-1861) was professor of physics at Washington university, St Louis. When the Civil War broke out, he became a major in a Missouri volunteer regiment and served as chief of staff to Major-General Nathaniel Lyon until the death of that officer. (In 1862 he received a promotion to "brigadier general of volunteers" for "conspicuous gallantry at the battle of Wilson's Creek." ) In 1863-1865 he performed various military duties in Missouri. In April 1863 he took command of a division in the Army of the Cumberland, and in 1864, as commander of the Army of the Ohio, he took part in the Atlanta campaign under Major-General W. T. Sherman. In October 1864 Schofield was sent to Tennessee to join Major-General G. H. Thomas in opposing General J. B. Hood, and on the 30th of November he fought with General Hood the desperate and
indecisive battle of Franklin. Two weeks later he took part in Thomas's crowning victory at Nashville. For his services at Franklin he was awarded the rank of brigadier-general (November 1780); and in the rank of major-general (March 1805) he was made a regular army. Being ordered to co-operate with Sherman in North Carolina, Schofield moved his corps by rail and sea to Fort Fisher, North Carolina, in seventeen days, occupied Wilmington on the 22nd of February 1865, fought the action at Kinston on the 8–10th of March, and on the 23rd joined Sherman at Goldsboro. After the war he was sent on a special diplomatic mission to France, on account of the presence of French troops in Mexico; and from June 1868 to March 1869 he served as secretary of war under President Andrew Johnson, after the retirement of E. M. Stanton (529). From 1876 to 1881 he was superintendent of the Military Academy at West Point, and from 1888 until his retirement in 1895 he was commanding general of the United States army. He had become major-general in March 1869, and in February 1895 he was made lieutenant-general. He died at St Augustine, Florida, on the 4th of March 1906. General Schofield published Forty-six Years in the Army (New York, 1897).

SCHOLAR, SCHOLARSHIP. The term “scholar,” primarily meaning a “learner,” is secondarily applied to one who has things aptly to be learned; and the successful scholar (or the

by early training and constant self-culture has attained a certain
maturity in precise and accurate knowledge. Hence the term
“scholarship” in the sense of the knowledge or method of a

scholar. Similarly “classical scholarship” may be defined as
the sum of the mental attainments of a classical scholar. Scholars
is sometimes identified with classical learning or erudition;

it is more often contrasted with it. The contrast is thus drawn
by Donaldson in his Classical Scholarship and Classical Learning
(1856), and by Mark Pattison, in his Essay on Oxford Studies
(1855). “I maintain,” says Donaldson, “that not all learned
men are accomplished scholars; that a much-acclaimed scholar
may, if he chooses to devote the time to the necessary
studies, become a learned man” (p. 149). “It is not a know-
ledge,” writes Mark Pattison, “but a discipline, that is required;

not science, but the scientific habit; not erudition, but scholar-
ship” (Essays, i. 429).

The expression a “scholarship” is also used in England for
a money payment made by a school, college or university, as a
prize (either for one year or a series of years) to the successful
competitors at an examination at which one or more such scholar-
ships are to be awarded; and the successful candidate is called a
a “scholar,” as the holder of a “scholarship.” In this sense the word
is almost synonymous with an “exhibition,” but the latter is
usually considered inferior in merit and dignity, if not in
amount.

On the general history of classical scholarship, see Classics:
Greek and Latin.

SCHOLASTICISM, the name usually employed to denote the
most typical products of medieval thought. After the
centuries of intellectual darkness which followed upon the
closing of the philosophical schools in Athens (500), and the
death of Boetus, the last of the ancient philosophers, the first
symptoms of renewed intellectual activity appear contempor-
aneously with the consolidation of the empire of the West in the
hands of Charlemagne. He endeavoured to attract to his
court the best scholars of Britain and Ireland, and by imperial
decree (787) commanded the establishment of schools in con-
nexion with every abbey in his realms. Peter of Pisa and
Alcuin of York were his advisers, and under their care the opposi-
tion long supposed to exist between godliness and secular learning
speedily disappeared. Besides the celebrated school of the
Palace, where Alcuin had among his hearers the members of the
imperial family and the dignitaries of the empire as well as
talented youths of humbler origin, we hear of the episcopal schools
of Lyons, Orleans and St Denis, the cloister schools of St Martin
of Tours, Fulda, Corbie, Fontenelle and many others, besides
the older monasteries of St Gall and Reichenau. These schools
became the centres of medieval learning and speculation,
and from them the name Scholasticism is derived (cf. Sandys,
Hist. of Class. Schol., i. 471, 1906). They were designed to
communicate instruction in the seven liberal arts which con-
stituted the general curriculum of the middle ages, and were
considered the sole method of education (see TERTIUM). The name
director scholasticus was applied originally to any teacher in such an ecclesiastical gymnasium, but gradually
the study of dialectic or logic overshadowed the more elementary
disciplines, and the general acceptance of “doctor” came
to be one who occupied himself with the teaching of logic. The
philosophy of the later Scholastics is more extended in its scope;
but to the end of the medieval period philosophy centres in the
discussion of the same logical problems which began to agitate
the teachers of the 9th and 10th centuries.

SCHOLASTICISM begins as a philosophy that extends from the
9th to the end of the 14th or the beginning of the 15th century
from Erigena to Occam and his followers. The belated
Scholastics who lingered beyond the last mentioned
date served only as marks for the obloquy heaped upon the schools by the men of the new time.
Erigena is really of the spiritual kindred of the Neoplatonists
and Christian mystics rather than of the typical Scholastic
deem, and, in fact, the activity of Scholasticism is mainly
confined within the limits of the 11th and the 14th centuries.
It is divided into two logical traditions: the middle extend-
ning to the end of the 12th century and embracing as its chief
names Roscellinus, Anselm, William of Champeaux and Abæard,
while the second extended from the beginning of the 13th
century to the Renaissance and the general distinction of
men’s thoughts from the problems and methods of Scholastic-
ism. In this second period the names of Albertus Magnus,
Thomas Aquinas and Duns Scotus represent (in the 13th century
and the first years of the 14th century) the culmination of
Scholastic thought and its consolidation into system.

Prantl says that there is no such thing as philosophy in the
middle ages; that it is logic and theology. The remark
overlooks two facts—firstly that the main objects of
theology and philosophy are identical, though the
method of treatment is different, and secondly that
logical discussion commonly leads up to metaphysical
problems, and that this was pre-eminent in the case with the logic of
the Schoolmen. But the saying draws attention to the two great
influences which shaped medieval thought—the tradition of ancient
logic and the system of Christian theology. Scholasticism opens
with a discussion of certain points in the Aristotelian logic; it
should be noted that it is the logical distinctions that the middle
of the church; and when it attains its full stature in St Thomas
it has, with the exception of certain mysteries, rationalized or
Aristotelianized the whole churchly system. Or we might say
with equal truth that the philosophy of St Thomas is Aristotle
Christianized. The Schoolmen contemplate the universe of
nature and man not with their own eyes but in the glass of
Aristotelian formulations. Their chief works are in the shape of
commentaries upon the writings of “the philosopher.” Their
problems and solutions arise from the master’s dicta—
from the need of reconciling these with one another and with
the conclusions of Christian theology.

The fact that the channels of thought during the middle
ages were determined in this way is usually expressed by saying
that reason in the middle age is subject to authority.

It has not the free play which characterizes its activity
in Greece and in the philosophy of modern times. Its
conclusions are predetermined, and the initiative
of the individual thinker is almost confined, therefore,
to formal details in the treatment of his thesis. To the
church, reason is the handmaid of faith (anxia iuris). But the
first principle

of the subordination of the reason wears a different aspect accord-
ing to the century and writer referred to. In Scotus Erigena,
at the beginning of the Scholastic era, there is no such subdivi-
sion contemplated, because philosophy and theology in his work
are in implicit unity. 

"Conficitur inde veram esse philosophiam veram religionem, conversique veram religionem esse veram

1 The common designation of Aristotle in the middle ages.

Chronological limits.

Logic and theology.

Reason and authority.
philosophism” (De divina praedestinatione, Proem). Reason in its own strength and with its own instruments evolves a system of the universe which coincides, according to Erigena, with the teaching of Scripture. For Erigena, therefore, the speculative reason is the supreme arbiter; and in accordance with its results the utterances of Scripture and of the church have not infrequently to be subjected to an allegorical or mystical interpretation. But this is only to say again that Erigena is more of a Neoplatonist than a Scholastic. Hence Cousin suggested in respect of this period of knowledge the chronological division, the outset the passive subordination of philosophy to theology, then the period of their alliance, and finally the beginning of their separation. In other words, we note philosophy gradually extending its claims. Dialectic is, to begin with, a merely secular art, and only by degrees are its terms and distinctions applied to the subject-matter of theology. The early results of the application, in the hands of Berengarius and Roscellinus, did not seem favourable to Christian orthodoxy. Hence the strength with which a champion of the faith like Anselm insists on the subordination of reason. To Bernard of Clairvaux and many others of his school the first application of knowledge had substituted a system which was dangerous as it is impious. Later, in the systems of the great Schoolmen, the rights of reason are fully established and acknowledged. The relation of reason and faith remains external, and certain doctrines—an increasing number as times go on—are withdrawn from the sphere of reason. But with these exceptions the two march side by side; they establish by different means the same results. For the conflicts which accompanied the first intrusion of philosophy into the theological domain more profound and cautious thinkers with a far more limited apparatus of knowledge had substituted a system which, by the constant effort of Scholasticism to be at once philosophy and theology, seemed at last satisfactorily realized. But the further progress of Scholastic thought consisted in a withdrawal of doctrine after doctrine from the possibility of rational proof and their relegation to the sphere of faith. Indeed, no sooner was the harmony apparently established by Aquinas than Duns Scotus began this negative criticism, which is carried much farther by William of Occam. But this is equivalent to a confession that Scholasticism had failed in its task, which was to rationalize the doctrines of the church. The Aristotelian form of reason had been adopted in the midst of a proposed system of Christian theology refused to be forced into an alien form. The end of the period was thus brought about by the internal decay of its method and principles quite as much as by the variety of external causes which contributed to transfer men’s interests to other subjects.

But, although the relation of reason to an external authority thus constitutes the badge of medieval thought, it would be unjust to look upon Scholasticism as philosophically barren, and to speak as if reason, after an interregnum of a thousand years, resumed its rights at the Renaissance. Such language was excusable in the men of the Renaissance, fighting the battle of classic form and beauty and of the manysidedness of life against the barbarous terminology and the monastic ideals of the schools, or in the protagonists of modern science. The new is never just to the old. In the schools and universities of the middle age the intellect of the semi-barbarous European peoples had been trained for the work of the modern world. But we may go further and say that, in spite of their initial acceptance of authority, the Scholastics are not the antagonists of reason; on the contrary, they strive to fit this into its highest place in the system. In the history of thought, therefore, by argument the authority of faith is in reality the unconscious establishment of the authority of reason. Reason, if admitted at all, must ultimately claim the whole man. Anselm’s motto, Credo ut intelligam, marks well the distance that has been traversed since Tertullian’s Credo quia absurdum est. The claim of reason has been recognized to manipulate the data of faith, at first blindly and immediately received, and to weld them into a system such as will satisfy its own needs. Scholasticism that has outlived its day may be justly identified with obscurantism, but not so the systems of those who, by their intellectual force alone, once held all the minds of Europe in subjection. The scholastic systems are not the free products of speculation; in the main they are summae theologicae, or they are modified versions of Aristotle. But each system is a fresh recognition of the rights of reason, and Scholasticism as a whole may be regarded as the history of the growth and gradual emancipation of reason which was completed in the movements of the Renaissance and the Reform. Thus Scholasticism is the central theme of Scholastic debate (see Nominalism, Realism). This is the case almost exclusively during the first period, and only to a less extent during the second, where it reappears in a somewhat different form as the difficulty concerning the principle of individuation. The controversy was between Nominalists and Realists; and, exclusively logical as the point may at first sight seem to be, adherence to one side or the other is an accurate indication of philosophic tendency. The two opposing theories express at bottom, in the phraseology of their own time, the radical divergence of pantheism and individualism—the two extremes between which philosophy seems pendulum-wise to oscillate, and which may be said still to await their perfect reconciliation. First, however, we must examine the form which this question assumed to the first medieval thinkers, and the source from which they derived it. A single sentence in Porphyry’s Isagoge or “Introduction” to the Categories of Aristotle furnishes the “Isagoge” of the text of the discussion. The treatise of Porphyry deals with the notions of genus, species, difference, property and accident (see PREDICABLES); and he mentions, but declines to discuss, the various theories that have been held as to the ontological import of genera and species. In the Latin translation of Boetius, in which alone the Isagoge was then known, the sentence runs as follows:—

“Max de generibus et speciebus illud quidem sive subsistat, sive in solis nulis intellectibus posita sit, sive subsistat corpori a corporali sit et utrum separata a sensibilibus in sensibilius posita et circa haec consistenti, dicere recusabo; altdissimium enim negationem est hujusmodi et majoris egens inquisitionem.”

This passage indicates three possible positions with regard to universals. It may be held that they exist merely as conceptions in our minds; this is Nominalism or Conceptualism (p.v.). It may be held that they have a substantial existence of their own, independent of their existence in our thoughts. This is Realism, which may be of two varieties, according as the substantially existent universals are supposed to exist apart from the sensible phenomena or only in and with the objects of sense as their essence. The first form of Realism corresponds to the Platonic theory of the transcendence of the ideas; the second reproduces the Aristotelian doctrine of the essence as inseparable from the individual thing. But, though he implies an ample previous treatment of the questions by philosophers, Porphyry gives no references to the different systems of which such distinctions are the outcome, nor does he give any hint of his own opinion on the subject, definite enough though that was. He simply sets the discussion aside as too difficult for a preliminary discourse, and not strictly relevant to a purely logical inquiry. Porphyry, the Neoplatonist, the disciple of Plotinus, was an unknown personage to those early students of the Isagoge. They may perhaps possess for them a mysterious charm, largely due to its isolation and to their ignorance of the historic speculations which suggested it. And accordingly it gave rise to the three great doctrines which divided the medieval schools: Realism of the Platonie type, embodied in the formula universalis ante rem; Realism of the Aristotelian type, universalis in re; and Nominalism, including Conceptualism, expressed by the phrase universalis post rem, and also claiming to be based upon the Peripatetic doctrine.
To form a proper estimate of the first stage of Scholastic discussion it is requisite above all things to have a clear idea of the appliances then at the disposal of the writers. What was the extent of the Platonic doctrine of reality? The Platonic doctrine of reality is nothing by and large was ignorant of Greek, and possessed no philosophical works in their Greek original (see CLXI 8). In translations they had the Tractatus de divisione (translated by Michael Psalterius) and De interpretatione. In the versions of Boethius, the Timaeus of Plato in the version of Chalcidius, and Boethius's translation of Porphyry's Isagoge. Some generals are being the Platonic doctrines (chapters II of Boethius platonic garb) was obtained from the commentary which with Chalcidius (6th century) accompanied his translation, from the work of Apuleius (2nd century) De dogmate Platonis, and indirectly from the work of the Stoics (ibid. 400) on the position of Cicero, and from the writings of St Augustine. As aids to the study of logic, the doctors of this period, beside the commentaries and treatises, possessed a treatise which is ascribed to St Augusti-

nus, the first of which, Principia dialectica, is probably mainly grammatical in its import. The other tract, known as Categorica decem, and taken at first for a translation of Aristotle's treatise, is really a rapid summary of it, and certainly does not belong to Augustine. To this list must be added: (1) the Satyricon of Martianus Capella (q.v.), the greater part of which is a treatise on the seven liberal arts, the fourth book deals with logic; (2) the De arzibis ac disputibis liberum liberorum of Cassiodorus (q.v.); (3) the origines of Isidore of Seville (ob. 636), which is little more than a reproduction of (2). The constitutes the whole major part of the middle ages of logic.

The grandly conceived system of Erigena (see ERIGENA and MYSTICISM) stands by itself in the 9th century like the product of another age. John the Scot was still acquainted with Greek, seeing that he translated the work of the pseudo-Dionysius; and his speculative genius achieved the fusion of Christian doctrine and Neoplatonic thought in a system of quite remarkable metaphysical completeness. It is the only complete and independent system between the decline of ancient thought and the system of Aquinas in the 13th century. If Aquinas (q.v.) intended us not to go further, to modern times, to find a parallel. Erigena proposed no solution upon the question which was even then beginning to occupy men's minds; but his Platonico-Christian theory of the Eternal Word as containing in Himself the exemplars of created things is equivalent to the assertion of universalis ante rem. His whole system, indeed, is based upon the idea of the divine as the exclusively real, of which the world of individual existence is but the theophany; the special and the individual are immanent, therefore, in the general. And hent at a much later date (in the year of the Scot's 13th century) his name was invoked to cover the pantheistic heresies of Ausbert of Basle and his followers. Erigena does not separate his Platonico theory of pre-existent exemplars from the Aristotelian doctrine of the universal as in the individuals. As Uebberweg points out, his theory is rather a result of a fusion between an Aristotelian conception of substance to the Platonic idea, and of an independent conception of the relation to the substance in which they inhere with that of the individuals to the idea of which, in the Platonic doctrine, they are copies (Hist. of Philosophy, I, 243, Eng. trans.). Hence it may be said that the universals are in the individuals, constituting their essential reality (and it is an express part of Erigena's system that the created but creative Word, the second division of Nature, should pass into the third stage of created and non-creating things); or rather, perhaps, we ought to say that the individuals exist in the bosom of their universal. At all events, while Erigena's Realism is pronounced, the Platonic and Aristotelian forms of the doctrine are not distinguished in his writing. Excepted to it, the inner stream of Nominalism also in Scotus Erigena; but beyond the fact that he discusses at considerable length the categories of thought and the essential relations, occasionally using the terms used by the Schoolmen, his expression of himself is quite consistent with the opinion of Erigena. It is a matter of fact that his was the first to express his meaning, Prantl appears to adduce no reasons for an assertion which directly contradicts Erigena's most fundamental doctrines. Moreover, Erigena again and again declares that dialectic has made no advance in the category of the singular (cf. the passage from the Dialogues, qv.), while in the treatise De divisione naturae, iv. 4).

The immediate influence of Erigena's system cannot have been great, and its works seem soon to have dropped out of notice in the centuries that followed. The real gurus of Realism and Nominalism are to be found in the 9th century, in scattered commentaries and glosses upon the statements of Porphyry and Boethius. Boethius in commenting upon Porphyry had already started the discussion as to the nature of universals. He is definitely anti-Platonic, and his language sometimes takes even a nominalistic tone, as when he declares that the species is nothing more than a thought or conception gathered from the substantial similarity of a number of dissimilar individuals. The expression "substantial similarity" is still, however, sufficiently vague to cover a multitude of views. He concludes that the genera and species exist as universals only in thought; but, inasmuch as they are derived from reality, he maintains on account of a real resemblance, they have a certain existence independently of the mind, but not an existence disjoined from the singulars of sense. "Sub-

sistent ergo circa sensibilia, intelligitur autem praeter corpora." Or, according to the phrase which recurs so often during the middle ages, "universe intelligitur, singularur sentitur." Boethius ends by declining to adjudicate between Plato and Aristotle, remarking in a semi-apologetic style that, if he has expounded Aristotle's opinion by preference, his course is justified by the fact that he is commenting upon an introduction to Aristotle. And, indeed, his discussion cannot claim to be more than semi-apologetic. His character as a polemicist has not in his hands the all-absorbing importance it afterwards attained, and the keenness of later distinctions is as yet unknown. In this way, however, though the distinctions drawn may still be comparatively vague, there existed in the schools a Peripatetic tradition to set over against the Neo-platonic influence of John the Scot, and amongst the earliest remains of Scholastic thought we find this tradition asserting itself somewhat vigorously. There were Nominalists before Roscellinus among these early thinkers.

Alcuin (q.v.) does nothing more in his Dialectic than abridge Boethius and the other commentators. But in the school of Fulda, presided over by his pupil Hrabanus Maurus (776–856), there are to be found some fresh contribu-

tions to the discussion. The collected works of Hrabanus himself contain nothing new, but in some gloses on Aristotle and Porphyry, first exhumin by Cousin, there are several noteworthy expressions of opinion in a Nominalistic sense. The author interprets Boethius's meaning to be "Quod eadem res individuum et species est genus, et non esse universum, sed esse univer-

sum, quasi quadam diversum." He also cites, apparently with approval, another passage which Boethius's treatise to be not de quinque rebus, but de quinque vocibus. A genus, they said, is essentially something which is predicated of a subject; but a thing cannot be a predicate (res enim non praedicatur). These glosses, it should be added, however, have been attributed by Prantl and Kaulich, on the ground of diver-

gence from doctrines contained in the published works of Hrabanus, to some disciple of his rather than to Hrabanus himself. Fulda had become through the teaching of the latter an intellectual centre. Eric or Heuricus, who studied there under Haimon, the successor of Hrabanus, and afterwards taught at Auxerre, wrote glosses on the margin of his copy of the pseudo-Augustinian Categoriae, which have been published by Cousin and Hauréau. He there says in words which recall the language of Locke (Essay, iii. 3) that because proper names are innumerable, and no intellect or memory would suffice for the knowing of them, they are all as it were comprehended in the species. Taken strictly his words state the position of extreme Nominalism; but even if we were not forbidden to do so by other passages, in which the doctrine of Realism is adopted (under the name of the current distinction between the singular and the universal as understood), it would still be unfair to press any passage in the writings of this period. As Cousin says, "Realism and Nominalism were undoubtedly there in germ, but their true principles with their necessary consequences remained profoundly unknown; their connexion with the great questions of religion and politics was not even suspected. The two systems were nothing more as yet than two different ways of interpreting a phrase of Porphyry, and they remained unnoticed in the
The 11th century was the time of Scholasticism, an era characterized by a profound engagement with the ideas of the past, a conscientiousness of the differences involved and the issues at stake; and, thanks to the heretical conclusion disclosed by Roscellinus, Realism became established for several centuries as the orthodox philosophical creed. Roscellinus (d. c. 1125) was looked upon by later times as the originator of the *sententia rocem*, that is to say, of Nominalism proper. From the scanty and ill-natured notices of his opponents (Anselm and Abelard), we gather that he refused to recognize the reality of anything but the individual; he treated "the universal substance," *Sic
deliberation of one kind or another, and in a similar strain he denied any reality to the parts of which a whole, such as a house, is commonly said to be composed. The parts in the one case, the general name or common attributes in the other, are only, he seems to have argued, so many subjective points of view from which we choose to regard that which in its own essence is one and indivisible, existing in its own right apart from any connexion with other individuals. This pure individualism, consistently interpreted, involves the denial of all real relation whatsoever; for things do not retain, Roscellinus stated their position general characteristics. Accordingly, if these general characteristics do not possess real, things are reduced to a number of characterless and mutually indifferent points. It is possible, as Hauréau maintains, that Roscellinus meant no more than to refute the extreme Realism which asserts the substantial and, above all, the independent existence of the universals. Some of the expressions used by Anselm in contending his position favour this idea. He upholds Roscellinus, for example, because he was unable to conceive whiteness apart from its existence in something white. But this is precisely an instance of the hypostatization of abstractions in exposing which the chief strength and value of Nominalism lie. Cousin is correct in pointing out, from the Realistic point of view, that it is one thing to deny the hypostatization of an accident like colour or wisdom, and another thing to deny the foundation in reality of those "true and legitimate universals" which we understand by the terms genera and species. It is not to be supposed that the full scope of his doctrine was present to the mind of Roscellinus; but Nominalism would hardly have made the sensation it did had its assertions been as innocent as Hauréau would make them. Like most innovators, Roscellinus stated his position in bold characteristics, which emphasized his opposition to accepted doctrines; and, of course, his words, if not his intentions, involved the extreme Nominalism which, by making universality merely subjective, pulverizes existence into detached particulars. And, though we may acquit Roscellinus of consciously propounding a theory so subversive of all knowledge, his criticism of the doctrine of the Trinity is proof at least of the determination with which he was prepared to carry out his individualism. If we are not prepared to say that the three Persons are one thing—in which case the Father and the Holy Ghost must have been incarnate along with the Son—then, did usage permit, he says, we ought to speak of three Gods.

This theological deduction from his doctrine drew upon Roscellinus the polemic of his most celebrated opponent, Anselm of Canterbury (1033-1109). Roscellinus appears at first to have imagined that his tritheistic theory had the sanction of Lanfranc and Anselm, and the latter was led in consequence to compose his *Proslogion* to show the *Trinitatis* doctrine to be a pernicious perversion of the nature of universals. "How shall he who has not arrived at understanding how several men are in species one man comprehended how in that most mysterious nature several persons, each of which is perfect God, are one God?" The manner in which humanity exists in the individual was soon to be the subject of keen discussion, and to bring to light diverging views within the Realistic camp; but St Anselm, too, went on to develop his position in a different way; for it is not surrounded by special difficulties. In truth, his Realism was of a somewhat uncritical type. It was simply accepted by him in a broad way as the orthodox philosophic doctrine, and the doctrine of the tritheistic churchmen; he was perceived to be post in harmony with Christian theology. Anselm's natural element was theology, and the high metaphysical questions which arise as to what is the essence of the Father, and the nature of the Logos (his personal logical argument (in his *Proslogion*) for the existence of God, he joins hands with some of the profoundest names in modern philosophy. To Anselm specially belongs the motto *credo ut intelligam*, or, as it is
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otherwise expressed in the sub-title of his Prologion, *Fides quaerens intellectum*. He endeavored to give a philosophical demonstration not only of the existence of God but also of the Trinity and the Incarnation, which were placed by the later Scholastics among the "decisive in extremities;" "appears the individual. In opposition to this Nominalistic view, which implied the reversal of his whole position, William may have meant to say that, instead of the universal being multiplied, it is rather the individuals which are reduced to unity in the universal. The species is essentially one, but it takes on individual varieties or accidents. If, however, we are more immature, we may regard the phrase, with Prantl, as simply a meaningless makeshift in extenuities; and if so, Abelard's account of the subsequent decline of William's reputation would be explained. But there is in some of the manuscripts the variety of opinion. Since the doctrine of the universal is not accepted as giving the true sense of the passage by Cousin and Rému006;as (Hauréau and Prantl taking, on different grounds, the opposite view). According to this reading, William sought to rectify his position by asserting, not the numerical identity of the universal in each individual, but rather its sameness in the sense of indistinguishable similarity. Ueberweg cites a passage from his theological works which apparently bears out this view, for William there expressly distinguishes the two senses of the word "same." Peter and Paul, he says, are the same in so far as they are both men, although the humanity of each is, so to speak, not identical but similar. In the Persons of the Trinity, on the other hand the relation is one of absolute identity.

Whether this view is to be traced to William or not, it is certain that the theory of "indifference" or "non-difference" (*indifferentia*) was a favourite solution in the Realistic schools soon after his time. The inherent difficulties of Realism led to a considerable attempt to express the doctrine of the universals, and by John of Salisbury, in his account of the controversies of these days (*Metalogicus*, ii. 17) reckons up nine different views which were held on the question of the universals, and the list is extended by Prantl (ii. 118) to thirteen. In this list are included all shades of opinion, from extreme Nominalism to extreme Realism. The doctrine of indifference as it appears in later writers certainly incorporates the views of William of Champeaux and of the Nominalism of John of Salisbury, but it also gives up the substantiality of the universals. The universal consists of the non-different elements or attributes in the separate individuals, which alone exist substantially. If we restrict attention to these non-different elements, the individual becomes for us the *species* (*sane*) the genus, &c.; everything depends on the point of view from which we regard it. "Nihil omno est praeter individuum, sed et illud aeterrimum et alterum attention especs et genus et generalissimum est." Adelard of Bath (whose treatise *De coenobio et diverso* must have been written between 1105 and 1117) was probably the author of or at all events the elaborator of this doctrine, and he sought by its means to reconcile the theories of William and of Abelard. Realistic interpretation is the view which we see at once genus and species and individual, Aristotle rightly insisted that the universals do not exist except in the things of sense. But, since those universals, so far as they are called genera and species, cannot be apprehended by the senses, he maintained that the admixture of imagination, Plato maintained that they existed and could be beheld beyond the things of sense, to wit, in the divine mind. Thus these men, although in words they seem opposed, yet held the two faculties of the soul in different ways, and set up a system of indifference the "status" doctrine attributed by John of Salisbury to Walter of Mortagne (d. 1174), according to which the universal is essentially united to the individual, which may be looked upon, *e.g.* as Plato, man, animal, &c., according to the "status" or point of view which we assume. But this seems only a different expression for the same position, and the same may doubtless be said of the theory which employed the outward word "species" (*individuum*), to signify that genus and species represented the different ways in which individuals might be regarded. The concessions to Nominalism which such views embody make them represent what Hauréau calls "the Peripatetic section of the Realistic school." Somewhat apart from current controversies stood the teaching of the school of Chartres, humanistically nourished on the study of the ancients, and important as a revival of Platonism in opposition to the formalism of the Aristotelians. Bernard of Chartres, at the beginning of the 12th century, en-dorsed the nominalist tendencies of the school of Hauréau and Aristotle; but his doctrine is almost wholly derived from the former through St Augustine and the commentary of Chalcedius. The *universalia in rer* have little place in his thoughts, which are limited by his adherence to the doctrine of the *endothelion* in the super-sensible world of the divine thought. His *Macrocosmos* and *Microcosm* are little more than a poetical gloss upon the *Timaeus*. William of Champeaux's influence in logical and physiological questions, was of less importance for the specific logico-metaphysical problem. But Gilbert de la Porée, according to Hauréau, is the most eminent logician of the Realistic
school in the 12th century and the most profound metaphysician of either school. The views which he expressed in his commentary on the pseudo-Boetian treatise, *De Trinitate*, are certainly much more involved and more far-reaching. One of the most interesting of these is the distinction which Gilbert draws between the manner of existence of genera and species and of substances proper. He distinguishes between the *quod est* and the *qua est* of a substance. By the *qua est* he means a certain reality in their own right as substances. What exists as a substance and the basis of qualities or forms (*quod est*) may be said *substantia*; the forms on the other hand by which such an individual substance exists separately (*qua est*) are *substantiatum*, though it cannot be said that they *substant*. The intellect collects the universal, which exists but not as a substance (*est sed non substrat*), from the particular things which we call facts. And, as subjects of accidents, have substantial existence (*substantia*), by considering only their substantial similarity or conformity. The universals are thus forms inherent in things—native forms,—according to the Realist tradition of Gilbert or his particular knowledge of Abelard. The individual consists of an assemblage of such forms; and it is individual because nowhere else is exactly such an assemblage to be met with. The form exists concretely in the individual things (*sensibilis in re sensibilis*), for in sensible things form and matter are always united. But they may be conceived abstractly or non-sensuously by the mind (sed mente *conceptus insensibilis*), and they then refer themselves as copies to the Ideas their divine exemplars. In God, who is pure form without matter, the archetypes of material things exist as eternal immutable forms. In this way Gilbert was at once Aristotelian and Platonist. The distinctions he had already developed as forms of concepts were in the same spirit he teaches that no one of the categories can be applied in its literal sense to God (see further Gilbert de la Portree).

But the outstanding feature in the controversies of the first half of the 12th century is Abelard. There is considerable difference of opinion as to his system, some, like Ritter and Erdmann, regarding it as a moderate form of Realism—a return indeed to the position of Aristotle—while others, like Cousin, Rémyau, Haurau and Uchberw, consider it to be essentially Nominalist, only more prudently and perhaps less consistently expressed than was the case with Roscelinus. His position is ordinarily designated by the name Conceptualism (q.v.), though there is very little talk of concepts in Abelard's own writings. There can be no doubt, at all events, that Abelard himself intended to find a compromise. As against Realism he maintains consistently *Res de re non praedicatur*; genera and species, therefore, which are predicated of the individual subject, cannot be treated as things or substances. This is manifestly true, however real the facts may be which are designated by the general names chosen by Abelard. A Nominalist, then, might just as well as has been seen, by a Realist like Gilbert, who perhaps adopted it first from Abelard. Abelard also perceived that Realism, by separating the universal substance from the forms which individualize it, makes the universal indifferent to these forms, and leads directly to the doctrine of the identity of all beings in one universal substance or matter—a pantheism which might take either an Averroistic or a Spinozistic form. Against the system of non-difference Abelard has a number of logical and traditional arguments to bring, but it is sufficiently condemned by his fundamental doctrine that only the individual exists in its own right. For that system still seems to recognize a generic substance as the core of the individual, whereas, according to Cousin's rendering of Abelard's doctrine, "only individuals exist, and in the individual nothing but the individual." Holding fast then on the one hand to the individual as the only true substance, and on the other to the traditional definition of the genus as that which is predicated of a number of individuals (*quod praedicatur de pluribus*), Abelard declared that this definition of itself condemns the Realistic theory; only a name, not a thing, can be so predicated—not the name, however, as a *flatus vocis* or a collection of letters, but the name as used in discourse, the name as a name; with meaning—in a word, not *sos* but *sermo*. *Sermo est praedicabiles.*

By these distinctions Abelard hoped to escape the consequences of extreme Nominalism, from which, as a matter of history, his doctrine has been distinguished under the name of Conceptualism, seeing that it lays stress not on the word as such but on the thought which the word is intended to convey. Moreover, Abelard evidently did not mean to imply that the distinctions of genera and species are of arbitrary or merely human imposition. His favourite expression for the universal is "*quod de pluribus natur est praedicari*" (a translation of Aristotle, *De int. prel.*, 7), which would seem to point to a real or objective counterpart of the products of our thought; and the traditional definitions of Boetius, whom he frequently quotes, support the same view of the concept as generated from a number of individuals in virtue of a real resemblance. What Abelard combats is the substantiation of these resembling qualities, which leads to their being regarded as identical in all the separate individuals, and which, he says, is the way to the gradual undermining of the individual, the only true and indivisible substance. But he modifies his Nominalism so as to approach, though somewhat vaguely, to the position of Aristotle himself. At the same time he has nothing to say against the Platonic theory of *universalia ante rem* (see IDEALISM). Abelard's discussion of the problem (which it right is to say is on the whole incidental rather than systematic) is thus marked by an eclecticism which was perhaps the source at once of its strength and its weakness. But his brilliant ability and restless activity made him the central figure in the dialectical as in the other discussions of his time. To him was indirectly due, in the main, that troubling of the Realistic waters which resulted in so many modifications of the original thesis; and his own somewhat eclectic ruling on the question in debate came to be tacitly accepted in the schools, as the arbiter of the disputants began to abate after the middle of the century.

Abelard's application of dialectic to theology betrayed the Nominalistic bias of his doctrine. He zealously combated the Triheism of Roscelinus, but his own views on the Trinity were condemned by two councils (at Soissons in 1127 and at Sens in 1140). Of the alternatives—three Gods or una res—which his Nominalist logic presented to Roscelinus, Roscelinus had chosen the first; Abelard recoiled to the other extreme, reducing the three Persons to three aspects or attributes of the Divine Being (Power, Wisdom and Love). For this he was called to account by Bernard of Clairvaux (1091-1153), the recognized guardian of orthodoxy in France. Nor can it be said that the instinct of the saint was altogether at fault. The germs of Rationalism were unquestionably present in several of Abelard's opinions, and still more so, the traditionalists must have thought, in his general attitude towards the real existence of universals. And no one would say, "not because God has said it, but because we are convinced by reason that it is so." "Doubt is the road to inquiry, and by inquiry we perceive the truth." The application of dialectic to theology was not new. Anselm had made an elaborate employment of reason in the interest of faith, but the spirit of pious subordination which had marked the demonstrations of Anselm seemed wanting in the arguments of this bolder and more restless spirit; and the church, or at least an influential section of it, took alarm at the encroachments of Rationalism. Abelard's remarkable compilation *Sic et Non* was not calculated to allay their suspicions. In bringing together the conflicting opinions of the fathers on all the chief points of Christian dogmatics, it may be admitted that Abelard's aim was simply to make these contradictions the starting point of an inquiry which should determine in each case the true position and *via media* of Christian theology. Only such a determination could enable the doctrines to be summarily presented as a system of thought. The book was undoubtedly the precursor of the famous *Books of Sentences* of Abelard's own pupil Peter Lombard and others, and of all the *Summae theologicae* with which the church was presently to abound. But the antiquities, as the author treated them, without their solutions could not but seem to insinuate a deep-seated scepticism with regard to authority. And even the proposal to apply the unaided reason to solve questions which had divided the fathers must have been resented by the more rigid churchmen as the rash intrusion of an over-confident Rationalism.

Realism was in the beginning of the 12th century the dominant doctrine and the doctrine of the church; the Nominalists were the innovators and the special representatives of the Rationalistic
tendency. In order to see the difference in this respect between the
schools we have only to compare the peaceful and fortunate
life of William of Champeaux (who enjoyed the friendship of
St Bernard) with the agitated and persecuted existence of
Roscellinus and, in a somewhat less degree, of Abelard. But now
the greater boldness of the dialecticians awakened a spirit of
general distrust in the exercise of reason on sacred subjects,
and we find even a realist like Gilbert de la Porre arraigned by
Bernard and his friends before a general council on a charge
of heresy (at Rheims, 1148). Though Gilbert was acquitted, the
fact of his being brought to trial illustrates the growing spirit of
suspicion and intolerance which was characteristic of_ the
school of St Victor, yet they are in a way just the obverse of his
deep mystic piety. The same attitude is maintained by the
magic school of St Victor. Hugo of St Victor (1097-1141)
declares that "the uncorrected truth of things cannot be
discovered by reasoning." The perils of dialectic are
manifest, especially in the overload spirit it engenders.

Nevertheless Hugo, by the composition of his Summa senenti-
arum, endeavoured to give a methodical and rational presentation
of the content of faith, and was thus the first of the so-called
Summists. Richard of St Victor, prior of the monastery from
1193 until 1199, was still more involved in mysticism, and his
successor Walter loses his temper altogether in abuse of the
dialecticians and the Summists alike. The Summists have as much to
say against the existence of God as for, and the dialecticians,
having gone to school to the pagans, have forgotten over Aristotle
the way of salvation. Abelard, Peter Lombard, Gilbert de la
Porre and Peter of Poitiers he calls the "four labyrinths of
France."

This anger and contempt may have been partly justified by the
discreditable state into which the study of logic had fallen.
According to the Dominican Albert, the first disputations were
held in the year 1148, at the end of the 11th and the first half of the 12th
century—a period more original and more interesting in many
ways than the great age of Scholasticism in the 13th century. By
the middle of the century, logical studies had lost to a great
extent their real interest and application, and had degenerated
into trivial displays of ingenuity. On the other hand, the
Summists^ occupied themselves merely in the systematizing
of authorities. The mystic held aloof from both, and devoted
themselves to the practical work of preaching and edification.
The intellect of the age thus no longer exhibited itself as unity.
And it is significant of the most cultivated and most cultured
representative of the second half of the century was rather an
historian of opinion than himself a philosopher or a

John of
Salisbury

The autobiographical account of these years contained in his Meta-
logicus is of the utmost value as a picture of the schools of the
time; it is also one of the historian's chief sources as a record of
the many-coloured logical views of the period. John recoiled from
the idle casuistry which occupied his own local contemporaries;
and, mindful probably of their aimless ingenuity, he adds the
cautions that dialectic, valuable and necessary as it is, is "like
the sword of Hercules in a pigmy's hand" unless there be added to
it the accoutrement of the other sciences. Catholic in spirit
rather than dogmatic, John ranks himself at times among the
Academics, "since, in those things about which a wise man may
doubt, I depart not from their footsteps." It is not fitting to
sublitize overmuch, and in the end John of Salisbury's solution is
the practical one, his charitable spirit pointing him in particular
to that love which is the fulfilling of the law.

In saying this I am not mentioning Robert Pulley (d. 1150).
Peter Lombard (d. 1164), called the Magister senentiarum, whose
work became the text-book of the schools, and remained so
for centuries. Hundreds of commentaries were written upon it.
Peter of Poitiers, the pupil of Peter Lombard, flourished about 1160-
1170. Other names are Robert of Melun, Hugo of Amiens, Stephen
Langton and William of Auverre. More important is Alain de Lille
(Alanus de Insulis), who died at an advanced age in 1203. His De
arte en droit et en artis catholicae fidelium, though based on
the earlier dialectical theology, but with a greater infusion than usual of philosophical reasoning.
Alain was acquainted with the celebrated Liber de causis.

The first period of Scholasticism being thus at an end, there is an
interval of nearly half a century without any noteworthy philosophical
productions. The cause of the new development of thought during this
period is the almost simultaneous end of the first time of the complete works of Aristotle (see
Classics and Arabian Philosophy). The doctrines and the
works of Aristotle had been transmitted by the Arabs to the Moslems, and the
succession of philosophers, first in the East and afterwards
in the West. The chief of these, at least so far as regards the influence
which they exerted on medieval philosophy, were Avicenna, Avem-
pace and Averrosse. The unification by the last-mentioned
of Aristotle's active intellect in all men, and his consequent denial of
individual immortality are well known. The universal human
interest in his teaching is due, partly, to his attempt to
eliminate the mystical exegesis of the Neoplatonic
emanations. In the course of the 12th century the writings
of these men were introduced into France by the Jews of Andalusia,
of Marselles and Montpellier. "These writings contained," says
the poet of the romance of the Parva natura (the Ethics, the De anima, the Parva natura) and a large number of
other treatises of Aristotle, accompanied by continuous commentaries.
There arrived besides by the same channel the glosses of Theophrastus,
of Simplicius, of Alexander of Aphrodisias, of Philoponus, annotated
in the same sense by the same hands. This was the rich but dangerous
present made by the Mussulman school to the Christian (i. 382).
To these must be added the Neoplatonically inspired Fons Vitae of
the Jewish philosopher and poet Ibn Gabirol (q.v.), or Avicebron.
By special command of Raimund, archbishop of Toledo, the chief
of these works were translated from the Arabic through the Castilian
language. This work by the poet of the Parva natura (Johannes
Avendeath = ben David), a converted Jew, about 1150.
About the same time, or not long after, the Liber de causis became
available, and work depended on it. The real character was a
thought, especially in the period immediately succeeding. Ac-
cepted at first as Aristotle's, and actually printed in the first Latin
editions of his works, the book is in reality an Arabical translation
of Neoplatonism. In theses of the similar character was
the Neoplatotelin Theologia which was in circulation at least as early as 1200.

The first effects of this immense acquisition of new material were
markedly unsettling on the doctrinal orthodoxy of the
The apocryphal Neoplatonie treatises and the first
views of the Arabian commentators obscured for the
first students the genuine doctrine of Aristotle, and the
13th century opens with quite a crop of mystical
heresies. The mystical pantheism taught at Paris by Amalrich
of Bena (d. 1207; see AMALRIC and MYSTICISM), though based
by him upon a revival of Scotus Erigena, was doubtless connected
in its origin with the Neoplatonic treatises which now become
current. The immanence of God in all things and His incarnation
as the Holy Spirit in Himself appear to have been the chief
characteristics of the new doctrine. Thus wrote William of
Moerbeke, "Omnia unum, quia quicquid est Deus."
About the same time David of Dintan, in a book De tomis (rendered by Albertus
De divisionibus), taught the identity of God with matter (or the
indivisible principle of bodies) and nous (or the indivisible
principle of intelligences)—an extreme Realism culminating in
a materialistic pantheism. If they were diverse, he argued, there
must exist above them some higher or common element or being,
in which case this would be God, nous, or the original matter.
The spread of the Amaranic doctrine led to fierce persecutions,
and the provincial council which met at Paris in 1209 expressly
decreed "that neither the books of Aristotle on natural
philosophy, nor commentaries on the same, should be read, whether
privately or privately, at Paris." In 1215 this prohibition is
renewed in the statutes of the university of Paris, as sanctioned by
the papal legate. Permission was given to lecture on the logical
books, both those which had been known all along and those
introduced since 1128, but the veto upon the Physics is extended to
the Metaphysics and the summaries of the Arabian
commentators. By 1231, however, the fears of the church
were beginning to be allayed. A bull of Gregory IX. which
makes no mention of any Aristotelie work except the Physics.
Finally, in 1254, we find the university officially prescribing how
many hours are to be devoted to the explanation of the Meta-
physics and the principal physical treatises of Aristotle. These
dates enable us to measure accurately the stages by which the
church accommodated itself to, and as it were took possession of,
the Aristotelian philosophy. Growing knowledge of Aristotle's
works and the multiplication of translations enabled students to
distinguish the genuine Aristotle from the questionable accompa-
niments with which he had made his first appearance in Western
Europe. Fresh translations of Aristotle and Avroyes had already
been made from the Arabic (Ibn Ṭāriq Ḥalafī and the Hebrew)
by Michael Scot, and Hermannus Alamanus, at the instance of
the emperor Frederick II.; so that the whole body of Aristotle's
works was at hand in Latin translations from about 1210 to 1225.
Soon afterwards efforts began to be made to secure more literal
translations direct from the Greek. Robert Grosseteste (d. 1253)
was one of the first to stir in this matter, and he was
followed by Albertus Magnus and Aquinas. The latter
attempted to remove the lan of the church, and soon
Aristotle was recognized on all hands as "the philosopher
par excellence, the master of those that know. It even became
customary to draw a parallel between him as the praecursor
Christi in naturaibus and John the Baptist, the praecursor
Christi in gratia.

This unquestioned supremacy was not yielded, however, at the
very beginning of the period. The earlier doctors who availed
themselves of Aristotle's works, while bowing to his authority
implicitly in major points, did not failed to bring into the
Chalcedonian and Platonicism against the doctrine of the
Metaphysics.

So it is with Alexander of Hales (d. 1245), the first Scholastic who
was acquainted with the whole of the Aristotelian works and the
Aristotelian commentaries upon them. He was more of a
philosopher than a theologian in his chief treatise, Summa
universae theologicae, he simply employs his in-
creased philosophical knowledge in the demonstration of theological
documents. So great, however, did his achievement seem that he was
honoured by the cardinal's biretta and the title of
archepiscopus. Alexander of Hales belonged to the Franciscan order,
and it is worth remarking that it was the mendicant orders
which now came forward as the protagonists of Christian
learning and faith and, as a demonstration of the existence of an intangible
force, to the church. During the first half of the 13th century,
when the university of Paris was plunged in angry feuds with the
municipality, feuds which ended at last in 1295, the body of the
friars established itself in the colleges of
Paris. After the university had settled its quarrels these
continued to teach, and soon became formidable rivals of the secular
universities. After a severe struggle for academical recognition they
were finally admitted to all the privileges of the university by a bull
of Alexander IV. in 1253. The Franciscans took the lead in this
intellectual movement with Alexander of Hales and Bonaventura,
but the Dominicans were soon able to boast of two greater names in
Albert the Great and Thomas Aquinas. Still later Duns Scotus and
Occam were both Franciscans. Alexander of Hales was succeeded
in the chair of St. John of Paris by a monk of
the name of John of Rochelle, who died in 1271 but taught only till 1253. His treatise
De anima, on which Hauréau lays particular stress, is
interesting as showing the greater scope now given to psychological
discussion by the natural method. No longer the
Aristotelian De anima and the numerous Greek and Arabiam
commentaries upon it, and it is observable in most of the writers that
have still to be mentioned. Even the nature of the universals is no
longer discussed from a purely logical or metaphysical standpoint,
but becomes connected with psychological questions. And, on the
whole, the widening of intellectual interests is the chief feature by
which the second period of Scholasticism may be distinguished from
the first. In some respects there is more freshness and interest in
the speculations which burst forth so ardently in the end of the
11th and the first half of the 12th century. Albert and Aquinas, who reached a level that
Abelard and Abelard, not merely by their wider range of knowledge
but also by the intellectual masterliness of their achieve-
ments; but it may be questioned whether the earlier
writers did not possess a greater force of originality and
originality. Originality was at no time the strong point of the middle
ages, but in the later period it was almost as necessity buried
under the mass of material suddenly thrust upon the age, to the
annihilation. On the other hand, the influence of the Greek is all the more
evident in the wider range of questions which are discussed by the
drivers of the period. Interest is no longer to the same extent confined
to theological science; the "mysteries" of the
Trinity and the Incarnation are henceforth detached from the sphere of rational or philosophical
theology. As the Neoplatonist influence remained strong, attempts were still made to demonstrate the
document of the Trinity, chiefly in a mystical sense as in Erigena,
but also by orthodox churchmen like Anselm. Orthodoxy,
whether Catholic or Protestant, has since generally adopted
Thomas's distinction. The existence of God is maintained by
Albert and Aquinas to be demonstrable by reason; but here again they reject the ontological argument of Anselm, and restrict
themselves to the a posteriori proof, rising after the manner of
Aristotle from that which is prior for us to that which is prior
by nature or in itself. God is not fully comprehensible to us,
says Albert, because the finite is not able to grasp the
infinite, which is altogether beyond our contemplation; or, to put it
another way, the sphere of the divine is cut off from us by a ray of his light, and through this contact we are
brought into communion with him. God, as the only self-
subsistent and necessary being, is the creator of all things. Here
the Scholastic philosophy comes into conflict with Aristotle's
document of the eternity of the world. Albert and Aquinas alike
maintain the beginning of the world in time; time itself only exists
since the moment of this miraculous creation. But
Aquinas, though he holds the fact of creation to be rationally
possible, regards the beginning of the world in time as only
John of Rochelle was succeeded in 1253 by John Fidanza, better
known as Bonaventura (p. o.), who also had been a pupil of
Albert of Hales. But the fame of "the Seraphic Doctor"
is connected closely with the name of his successor (see
MYSTICISM) than with the main stream of Scholastic
thought. Like his master, he defended Plato—or what he considered
it to be the Platonic theory—against the attacks of Aristotle.
Thus he is best remembered as the author of an encyclopaedia,
entitled De universo, and 249, whose treatises De universo and De anima make extensive
use of Aristotle and the Aristotelian, but display a similar
Platonic leaning. The existence of intellec~ons in our minds is, he
maintains, due to the divine intelligence, and censured Aristotle's doctrine of the eternity of
the world. Among the earlier teachers and writers of this century we
may quote as examples, the names of Ma;ius, whose treatises De
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the world. Among the earlier teachers and writers of this century we
may quote as examples, the names of
William of Auvergne, the theologian, and his
comprehensive, and a prolific writer, Vincent of
Auvergne (d. 1274.), who was the author of an encyclopaedia
entitled Speculum majus. In which, without much independent
ability, he collected the opinions of ancient and
medieval writers on the most diverse points, transcribing
the fragments of their works which he deemed most interesting.

Albertus Magnus introduces us at once to the great age of
Scholasticism (1193-1280). The limits of his long life include
that of his still greater pupil, Thomas Aquinas (1227-
1274). For this reason and because the system of
Thomas is simply that of Albert rounded to a greater
completeness and elaborated in parts by the subtle intellect
of the younger man, it will be convenient not to separate
the views of master and scholar, except where their differences
make it necessary. Albert was "the first Scholastic who
reproduced the whole philosophy of Aristotle in systematic order
with constant reference to the Arabic commentators, and who
modelled it to meet the requirements of ecclesiastical
dogma" (Ueberweg, I. 436). On this account he was called "the Universal
Doctor." But in Albert it may be said that the matter was still
too new and too multifarious to be thoroughly mastered. In
St Thomas this is no longer so. The pupil, entering into his
master's labours, was able from the first to take a more
comprehensive survey of the whole field; and in addition he was
doubtless embossed with an intellect which was finer, though it
might not be more powerful, than his master's.

The monothestic influence of Aristotle and his Arabic
commentators shows itself in Albert and Aquinas, at the outset,
in the definitive fashion in which the "mysteries" of
the Trinity and the Incarnation are henceforth
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possible, regards the beginning of the world in time as only

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an article of faith, the philosophical arguments for and against being inconclusive.

The question of universals, though fully discussed, no longer forms the centre of speculation. The great age of Scholasticism presents, indeed, a substantial unaniimity upon this vexed point, maintaining at the same time that the universals exist in re and post rem. Albert and Aquinas both profess the moderate Aristotelian Realism which treats genera and species only as substantial and real in themselves, but not as individuals, and constitutes their form or essence. The universals, therefore, have no existence, as universals, in rerum natura; and Thomas endorses, in this sense, the polemic of Aristotle against Plato's hypostatized abstractions. The former defends the identity of the divine mind, the universal ante rem may well be admitted as possessing real existence. Finally, by abstraction from the individual things of sense, the mind is able to contemplate the universal apart from the universal nature, that is, the universal as a bus; these subjective existences are the universalia post rem of the Nominalists and Conceptualists. But the difficulties which embarrass the former are in trying to conceive the mode in which the universal exists in the individual reappear in the systems of the present period as the problem of the principium individuationis. The universal, as the form or essence of the individual, is called its quoddam (its "whatness" or nature); but, besides possessing a general nature and answering to a general definition (i.e. being a "what"), every man, every soul, is this particular man, here and now. The question of the possibility (hac esto Duns Scotus afterwards named it) that embarrasses the Scholastics. Albert and Aquinas agree in declaring that the principle of individuation is in mass and matter, and Aquinas says, "the principle of the diversity of the individuals of the same species is the quantitative division of matter," which his followers render by the abbreviated phrase divisiones quod sanitatis. A tolerably clear statement of such a doctrine is that, while declaring the quantitative determination of matter to be the individual element in the individual, it gives no account of how such quantitative determination arises. Yet, as Leibniz often says, the question is a metaphysical question; for determinate matter already involves particularity or this-ness. This difficulty was presently raised by Duns Scotus and the realistically-inclined opponents of the Thomist doctrine. But, as Leibniz points out, it might fairly be urged by Aquinas that he does not pretend to explain how the individuation is actually created, but merely states what he finds to be an invariable condition of the existence of individuals. Apart from this general question, a difficulty arises on the Thomist theory in respect to the existence of spirits or disembodied personalities. This affects first of all the existence of angels, in regard to whom Aquinas admits that they are immediately existent (existentia prima materiae germinem separatum). They possess the principle of individuation in themselves, he teaches, but plurality of individuals is in such a case equivalent to plurality of species (in ipsis diversis species sunt individuales). The same difficulty, however, affects the existence of disembodied spirits. It is impossible that plurality depends on matter, we must not conclude with Averroes that individuality is extinguished at death, and that only the universal form of a rational soul has endured. It is not to say that he opposed both by Albert and by Aquinas. It is still admissible, however, to doubt whether the hateful consequence does not follow consistently from the theory laid down. Aquinas regards the souls of men, like the angels, as immaterial forms; and he includes in the soul-unit, so to speak, not merely the anima rationalis of Aristotle, but also the vegetative, sensitive, appetitive and motive functions. The latter depend, it is true, on bodily organs during our earthly sojourn, but the dependence is not necessary. The soul is created by God when the body of which it is the entelechy is prepared for it. It is the natural state of the soul to be united to a body, but being immediately existent it is not so created by the dissolution of the body. The soul must be immaterial since it has the power of cognizing the universal; and its immortality is further based by St Thomas on the natural longing for an endless existence which belongs to a being whose essence is action and thought. "Iste" and "in se," but are able to abstract from every limitation.

Thomism, which was destined to become the official philosophy of the Roman Catholic Church, became in the first instance the accepted doctrine of the Dominican order, who were presently joined in this allegiance by the Augustinians. The Franciscan order, on the other hand, early showed their rivalry in attacks upon the doctrines of Albert and Aquinas. One of the first and most important of these attacks was the tractatus de fide et pratis Thomas, published in 1285 by William Lamenar, in which the Averroistic consequences of the Thomist doctrine of individuation are already pressed home. More important was Richard of Middletown (d. c. 1300), who anticipated many of the objections urged soon after him by Duns Scotus (q.v.). His system is conditioned by its relation to that of Aquinas, of which it is in effect an elaborate criticism. The chief characteristic of this criticism is well expressed in the name bestowed on Duns by his contemporaries—Doctor subtilis. It will be sufficient therefore to note the chief points in which the two antagonists differ. In general it may be said that Duns shows less confidence in the power of reason than Aquinas, and to that extent Erdmann and others are right in looking upon his system as of a different type. The question of the existence of the divine mind, the universal ante rem may well be admitted as possessing real existence. Finally, by abstraction from the individual things of sense, the mind is able to contemplate the universal apart from the universal nature, that is, the universal as a bus; these subjective existences are the universalia post rem of the Nominalists and Conceptualists. But the difficulties which embarrass the former are in trying to conceive the mode in which the universal exists in the individual reappear in the systems of the present period as the problem of the principium individuationis. 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union with the body. But the matter of spiritual beings is widely different from that of the matter of corporeal things. In his treatment of the conception of matter, Duns shows that he inclined much more to the Realism which makes for pantheism than was the case with the Aristotelianism of Thomas. A perfectly formless matter (materia prorsa) would demonstrate all the fundamental Chalcedonian element of all finite existences. He expressly intimates in this connection his acceptance of Avicenna’s position.

In the end of the 13th century and the beginning of the 14th the Thomists and Scotists divided the philosophical and theological world between them. Among the Thomists may be named John of Paris, Aegidius of Lessines (wrote in 1278), Bernard of Trillia (1240-1292) and Peter of Auvergne. More important was Aegidius of Colonies, (1247-1336), general of the Augustinian order,surrounded by the fundamentalists and Pre-Aquinalists, Natalis (d. 1323) and Thomas Bradwardine (d. 1349) were determined opponents of Scotism. Siger of Brabant and Gottfried of Fontaines, chancellor of the university of Paris, taught Thomism at the Sorbonne; and through Humbert, abbot of Prulli, the doctrine won admission to the Cistercian order. Among the disciples of Duns Scotus are mentioned John of Bassolis, Francis of Mayrone (q.v.), Antonius Andreac (d. c. 1320), John Dumbleton and Walter Burleigh (Buryle) (b. 1275) of Oxford, Nicolaus (q.v.) of Lyra, Peter of Aquila and others. Henry Goethals or Henry of Ghent (Henricus (Gazarian, 1217-1293), surnamed Doctor solensis, occupied on the whole an independent and pre-Thomist position, leaning to an Augustinian Platonism (see Henry of Ghent). Gerard of Bologna (d. 1317) and Raoul of Brittany are rather to be ranked with the Thomists. So also is Petrus Hispanus (Pope John XXI), who is chiefly important, however, as the author of the much-used manual Summulae logicales, in which the logic of the schools was expanded by the incorporation of fresh matter of a semi-grammatical character. Petrus Hispanus had predecessors, however, in William of Shrewesbury (died 1247) as a champion of the Thomistic doctrine. The name for which he was hotly disputed whether the whole of the additions are not originally due to the Byzantine Synopsis of Psellus. By far the greatest disciple of Aquinas is Dante Alighieri, in whose Divina Commedia the theology and philosophy of the middle ages, as fixed by Saint Thomas, have received the immortality which poetry alone can bestow. Two names stand apart from the others of the century—Raimon Lull (1234-1315) and Roger Bacon (1222-1294). The Ars magna of the former, phases of a species of logical machine to give a complete axiomatic system of philosophy, was largely followed and was intended by its author as an infallible instrument for the conversion of the Saracens and heathen. Roger Bacon was rather a pioneer of modern science than a Scholastic, and persecution and imprisonment were the penalty of his opposition to the spirit of his time.

The last stage of Scholasticism preceding its dissolution is marked by the revival of Nominalism in a militant form. This doctrine is already to be found in Petrus Aureolus (q.v.), a Franciscan, trained in the Scotist doctrine, and in William Durand of St Poucain (d. 1323), a Dominican who passed over from the school of Aquinas to the school of Scotus. The name for which he is chiefly remembered is that of the “Invisible Doctor,” William of Occam (q.v.), who, as the author of a doctrine which came to be almost universally accepted, received from his followers the title Venerabilis inceptor. The hyponostating of abstractions is the error against which Occam is continually fighting. The Realists, he considers, have greatly sinned against this maxim in their theory of a real universal or common element in all the individuals of a class. From one abstraction they are led to another, to solve the difficulties which are created by the realization of the first. Thus the great problem for the Realists is how to derive the individual from the universal. But the whole inquiry moves in a world of unrealities. Everything that exists, by the mere fact of its existence, is individual (Quodlibetern, coi, ipso quod est, est haecres). It is absurd, therefore, to seek for a cause of the individuality of the thing other than the cause of the thing itself. The individual is the only reality, whether the question be of an individual thing in the external world or of an individual state in the order of thought. It is the individual which needs explanation but the universal. Occam reproaches the “modern Platonists” for perverting the Aristotelian doctrine by these speculations, and claims the authority of Aristotle for his own Nominalistic doctrine. The universal is not anything really existing; it is a terminus or predicicable (whence the followers of Occam were at first called Terminists). It is no more than a “mental concept signifying univocally several singulars.” It is a natural sign representing these singulars, but it has no reality beyond that of the mental act by which it is produced and that of the singulars of which it is predicated. As mere names, the universals of the universal in mente, Occam indicates his preference, on the ground of simplicity, for the view which identifies the concept with the actus intelligendi, rather than for that which treats ideas as distinct entities within the mind. And in a similar spirit he explains the universalia ante rem as being, not substantial existences in God, but simply God’s knowledge of things—a knowledge which is not of universals but of singulars, since these alone exist realiter.

Such a doctrine, in the stress it lays upon the singular, the object of immediate perception, is evidently gaining ground at the expense of the philosophical and theological doctrines of the Schoolmen, especially the Realism of Thomas. It is a spirit which distrusts abstractions, which makes for direct observation, for inductive research. Occam, who is still a Scholastic, gives us the Scholastic justification of the spirit which had already taken hold upon Roger Bacon, and which was to enter upon its rights in the 15th and 16th centuries. Moreover, there is no denying that the new Nominalism not only represents the loss of reality and the spirit of induction, but also contains in itself the germ of that empiricism and sensualism so frequently associated with the former tendencies. Aquinas had regarded the knowledge of the universal as an intellectual activity which might exist even with circumscribed knowledge of the immunity of the soul. Occam, on the other hand, maintains in the spirit of Hobbes that the act of abstraction does not presuppose any activity of the understanding or will, but is a spontaneous secondary process by which the first act (perception) or the state it leaves behind (habitus derelictus ex primo acta = Hobbes’s “ decaying sense”) is naturally followed, as soon as two or more similar representations are present.

In another way also Occam heralds the dissolution of Scholasticism. Theology is the philosophy of the spirit and is despised by the Schoolmen of the middle ages, but in Occam their servitude is complete. A pupil of Scotus, he carried his master’s criticism farther, and denied that any theological doctrines were rationally demonstrable. Even the distinction of a material and a spiritual unity of God was not to be accepted as articles of faith. The Cenotagium theologicum has often been cited as an example of thoroughgoing scepticism under a mask of irrefragable ironies. But if that were so, it would still remain doubtful, as Erdmann remarks, whether the irony is directed against the church or against reason. The most interesting example of this method is seen in the Tractatus de sacramento altaris where Occam accepts the doctrine of Real Presence as a matter of Faith, and sets forth a rational theory of the Eucharist (afterwards adopted by Luther) known as “Consubstantiation.” On the whole, there is no reason to doubt Occam’s honest adhesion to each of the two guides which he sets forth, and that the one in particular and the unity of God were in position in itself an untenable one and the parent of scepticism. The principle of the twofold nature of truth1 thus embodied in Occam’s system was unquestionably adopted by many merely to cloak their theological unbelief; and it is significant of the internal dissolution of Scholasticism. Occam denied the title of a science to theology, emphasizing, like Scotus, its practical character. He also followed his master in laying stress on the arbitrary will of God as the foundation of morality.

Nominalism was at first met by the opposition of the church and the constituted authorities. In 1339 Occam’s treatises were put under a ban by the university of Paris, and in the following year Nominalism was solemnly condemned. Nevertheless the new doctrine spread on all hands. Dominicans like

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1 This principle appeared occasionally at an earlier date, for example in Simun of Tournay about 1200. It was expressly condemned by Pope John XXII in 1276. But only in the period following Occam did it become a current doctrine.
Armand de Beauvoir (d. 1334) and Gregory of Rimini accepted it. It was taught in Paris by Albert of Saxony (about 1350–1360) and Marsilius of Inghen (about 1364–1377, afterwards at Heidelberg), as well as by John Buridan, as early as 1327. We find, however, as late as 1473, the attempt made to bind all teachers in the university of Paris by oath to teach the doctrines of Realism; but this expiring effort was naturally ineffectual, and from the 1481 onward even the show of obedience was no longer exacted. Pierre d’Ailly (1350–1423) and John Gerson (Jean Charlier de Gerson, 1363–1429), both chancellors of the university of Paris, and the former a cardinal of the church, are the chief figures among the later Nominalists. Both of them, however, besides their philosophical writings, are the authors of works of religious mysticism, and the mystic element in the thought of that period was temporarily in their own persons what was no longer combined in the spirit of the time, or rather they satisfy by turns the claims of reason and faith. Both are agreed in placing repentance and faith far above philosophical knowledge. They belong indeed (Gerson in particular) to the history of mysticism rather than of Scholasticism, and the same may be said of another cardinal, Nicolaus of Cusa (1401–1464), who is sometimes reckoned among the last of the Scholastics, but who has more affinity with Erigena than with any intervening teacher. The task of the Scholastics is common to all, and Gabriel Biel (q.v.), the summarizer of Ockam’s doctrine, highest. The title is not actually correct, and might be more fitly borne by Francisco Suarez (q.v.), who died in 1617. But after the beginning of the 15th century Scholasticism was divorced from the spirit of the time, and it is useless to follow its history further. As has been indicated in the introductory remarks, the end came both from within and from without. The harmony of reason and faith had given place to the doctrine of the dual nature of truth. While this sceptical thesis was embraced by philosophers who had lost their interest in religion, the spiritually minded men were satisfied to reduce Scholasticism, which frequently cast itself loose from ecclesiastical trammels. The 14th and 15th centuries were the great age of German mysticism, and it was not only in Germany that the tide set this way. Scholasticism had been the expression of a universal church and a common learned language. The university of Paris, with its scholars of all nations numbered by thousands, was a symbol of the intellectual unity of Christendom; and in the university of Paris, it may almost be said, Scholasticism was reared and flourished and died. But the different nations and tongues of modern Europe were now set free from their constrictions, and men's interests ceased to be predominatingly ecclesiastical. Scholasticism, therefore, which was in its essence ecclesiastical, had no longer a proper field for its activity. It was in a manner deprived of its accustomed subject-matter and died of inanition. Philosophy, as Hauréau finely says, was the passion of the 13th century; but in the 15th humanism, art and the beginnings of science and of practical discovery were busy creating a new world, which was destined in due time to give birth to a new philosophy. Authorities.—Besides the numerous works quoted in articles on the individual philosophers, see Hauréau, Histoire de la philosophie scolastique; vol. i. (1887) (revised vol. ii. (1897) as Histoire de la phil. scol.,) Kaulich, Geschichte d. schol. Philosophie: Stöckl, Gesch. der Phil. des Mittelellters; Karl Werner, Die Scholastik des späteren Mittelellters; and, on a smaller scale, de Wulf’s Histoire de la phil. médiévale (1900). Supplementary details are given in Hauréau’s Singularités historiques et littéraires (1861) and in R. L. Poole’s Illustrations of the History of Medieval Thought (1864); while much light is thrown upon the minuter history of the period by the Chorographia Universitatis Parisinsis edited by Denifle and Chatelain in 1894, by Hauréau’s Notices et extraits de quelques M.S. latins de la Bibliothèque Nationale (1897–1899) and Beier’s Geschichte d. phil. d. Mittelellters, in course of publication since 1891 by Baeumker and others. A critical survey of recent literature on Scholasticism is given by Baeumker in the Archiv für Geschichte d. Philosophie, vol. v. and x. The accounts of medieval thought given by Ritter, Erdmann and Uebenweg in their general histories of philosophy are exceedingly good. That of Windelband, though going less into detail, is a remarkably fresh treatment of the problems involved. There are also notices of the leading systems in Milman’s History of Latin Christianity; and the same writers are considered from the theological side in many works devoted to theology, and the history of dogma. The psychology of the Scholastic writers is ably dealt with in Siebeck’s Die Psychologie von Aristoteles bis zu Thomas von Aquino (1885). Jourdain’s Recherches critiques sur l’âge et l’origine des traductions latines d’Aristote (Paris, 1819; 2nd ed. 1843); Ronsselot’s Études sur la philosophie dans le moyen âge (1840–1842), Cousin’s Introduction to his Oeuvres édits d’Abélard (1836), and Frantz’s Geschichte der Logik (1879) are invaluable aids in studying the history of medieval thought. (A. S. F.-P.; X.)

Scholefield, James (1789–1853), English classical scholar, was born at Henley-on-Thames on the 15th of November 1789. He was educated at Christ’s Hospital and Trinity College, Cambridge, and was in 1825 appointed professor of Greek in the university and canon of Ely (1849). He was for some time curate to Charles Simeon, the evangelical churchman, and his low church views involved him in disputes with his own party. He died at St Michael’s, Cambridge, of which he was perpetual curate from 1823 till his death at Hastings on the 4th of April 1853. Scholefield was an excellent teacher. His most useful work was his edition of the Adversaria of P. P. Dohbre (q.v.), his predecessor in the chair of Greek. He also published editions of Aeschylus (1828), in which he dealt very conservatively with the text, and of Porson’s four plays of Euripides. His Hints for an improved Translation of the New Testament met with considerable success. He was one of the examiners in the first Classical Tripos (1824). The Scholefield Theological Prize at Cambridge was established in recognition of his contributions.

See Memoirs of James Scholefield (1858), by his wife, Harriet Scholefield; Gentleman’s Magazine (June 1853, p. 644).

Scholefield, Jan Hendrik (1811–1883), Dutch Protestant theologian, was born at Vleuter near Utrecht on the 17th of August 1811. After studying at Utrecht, he was appointed professor of theology at Franeker. From Franeker in 1843 he moved to Leiden as professor extraordinary, and in 1845 was promoted to the rank of ordinarius. Through Scholefin, A. Kuenen became interested in theology; Scholefin was not then the radical theologian he became later. The two scholars in course of time created a movement resembling that of the

1 To be distinguished from scolium (σκολίον), an after-dinner song.

See also: Historical and Critical Introduction to the New Testament (1855–1856); The Oldest Witnesses to the Writings of the New Testament (1866); The Oldest Gospel (1868); and The Pauline Gospels (1874). Scholten’s contributions to the study of the theological development of the New Testament in the context of the Essene movement in the desert of Judaea are of the highest importance. In his paper, “Die Abschiedrede bei het Neerleggen van het Hoogleraarssambti” (1881), and in the biography written by A. Kuener, Levensbericht van J. Heinrich Scholten (1885).

SCHÖMANN, GEORGE FRIEDRICH (1793–1879), German classical scholar, was born at Stralsund in Pomerania on the 28th of June 1793. In 1827 he was appointed professor of ancient literature and eloquence in the university of Greifswald, where he died on the 25th of March 1879. Schomann’s attention was chiefly devoted to the constitutional and religious antiquities of Greece. His first works on the subject were De comitiis Atheniensium (1819), the first independent account of the forms of Athenian political life, and a treatise De sornilhones judicium apud Athenienses (1820). In conjunction with M. H. E. Meier, Schomann wrote Der ätische Prozeß (1824, revised ed. by J. H. Lipsius, 1827–1831), which although in some respects out of date, still has considerable value.

Among his other works are:—editions of Isaæus (1831) and Plutarch’s Agis and Cleomenes (1839, important for the Attic law of inheritance and the history of the Spartan constitution at the time of the revolt); a critical examination of Grote’s account of the Athenian constitution (1845, Eng. trans. by B. Bosanquet, 1878) from a conservative point of view; and lastly, Griechische Alterthumer (1846–1853), which, although in some respects outdated, is still a valuable work. See S. (Susenbich) in C. Burnand’s Biogr. Jahrbuch für Altertumskunde (1879); A. Baumeister in Allgemeine deutsche Biographie, xxxii.; C. Burnand in Dict. de la Langue Française (1890, ed. 1876); translated with introduction and notes Aeschylus’ Prometheus Bound, and wrote a Prometheus Unbound (1844), in which Prometheus is brought to see the greatness of his offence and is sought by the Greek gods to be anathematized. Special mention may be made of the Theology of the Life of the World (1862), an introduction to the elements of the science of grammar. His many-sidedness is shown in his Opuscules académiques, published in 1878.

See F. S. (Susenbich) in C. Burnand’s Biogr. Jahrbuch für Altertumskunde (1879); A. Baumeister in Allgemeine deutsche Biographie, xxxii.; C. Burnand in Dict. de la Langue Française (1890, ed. 1876); translated with introduction and notes Aeschylus’ Prometheus Bound, and wrote a Prometheus Unbound (1844), in which Prometheus is brought to see the greatness of his offence and is sought by the Greek gods to be anathematized. Special mention may be made of the Theology of the Life of the World (1862), an introduction to the elements of the science of grammar. His many-sidedness is shown in his Opuscules académiques, published in 1878.

SCHEMBERG (originally SCHOMBERG), FRIEDRICH HERMANN (or FREDERICK ARMAND), DUKE OF (c. 1615–1660), marshal of France and English general, was descended from an old family of the Palatinate, and was born in December 1615 or January 1616, at Heidelberg, the son of Hans Meinard von Schomberg (1582–1616) and Anne Sutton, daughter of the 6th Lord Dudley. An orphan within a few months of his birth, he was brought up by his uncle, Count von Neurleggen, whom he called the “Winter King,” Frederick V. of the Palatinate, in whose service his father had been. He began his military career under Frederick Henry, prince of Orange, and passed about 1634 into the Swedish service, whence he entered that of France in 1635. His family, and the allied house of the Saxon Schönbegs had already attained eminence in France. After a time he retired to his family estate at Geiseheim on the Rhine, but in 1639 he re-entered the Dutch army, in which, apparently, with a few intervals spent at Geiseheim, he remained until about 1650. He then rejoined the French army as a general officer (maréchal de camp), served under Turenne in the campaigns against Condé, and became a lieutenant-general in 1665, receiving this rapid promotion perhaps partly owing to his relationship with the d’Harlemin, but mainly because he was looked upon as the eventual successor of the great generals then at the height of their fame.

After the peace of the Pyrenees (1659) the independence of Portugal being again menaced by Spain, Schomberg was sent as military adviser to Lisbon with the secret approval of Charles II. of England (who knew him personally and about this time created him baron of Teford) and Louis XIV., who in order not to infringe the treaty just made with Spain, deprived Schomberg of his French offices. After meeting in the three first campaigns many difficulties from the insubordination of some of the Portuguese officers, Schomberg won the victory of Montes Claros on the 17th of June 1665 over the Spaniards under the prince of Parma. After participating with his army in the work which deposited the reigning king in favour of his brother don Pedro, and ending the war with Spain, Schomberg returned to France, became a naturalized Frenchman and bought the lordship of Coubert near Paris. He had been rewarded by the king of Portugal, in 1663, with the rank of Grandee, the title of count of Mertola and a pension of £5000 a year. In 1673 he was invited by Charles to England, with the view of taking him by command of the king for lieutenant-general. The demand for the appointment, as favouring of French influence, that it was not carried into effect. He therefore again entered the service of France. His first operations in Catalonia were unsuccessful owing to the disobedience of subordinates and the rawness of his troops, but he retrieved the failure of 1674 by retaking Bellegarde in 1675. For this he was made a marshal, being included in the promotion that followed the death of Turenne. The title had now set against the Huguenots, and Schomberg’s merits had been long ignored on account of his adherence to the Protestant religion. The revocation of the edict of Nantes (1685) compelled him to quit his adopted country. Ultimately he became general-in-chief of the forces of the elector of Brandenburg, and at Berlin he was the acknowledged leader of the thousands of Huguenot refugees there. Soon afterwards, with the elector’s consent, he joined the prince of Orange on his expedition to England in 1688, as second in command to the prince. The following year he was made a knight of the Garter, was created successively baron, marquis and duke, was appointed master-general of the ordinance, and received from the House of Commons a vote of £10,000,000 to compensate him for the losses of his French estates, of which Louis had deprived him. He was appointed commander-in-chief of the expedition to Ireland against James II. After capturing Carrickfergus he marched unopposed through a country desolated before him to Dundalk, but, as the bulk of his forces were raw and undisciplined as well as inferior in numbers to the enemy, he deemed it imprudent to risk a battle, and entrenching himself at Dundalk declined to be drawn beyond the circle of his defences. Shortly afterwards pestilence broke out, and when he retired to winter quarters in Ulster his forces were more shattered than if they had sustained a severe defeat. He was criticized in ill-informed quarters, but the facts justified his inactivity, and he gave a striking example of his generous spirit in placing at William’s disposal for military purposes the £100,000 recently voted him. In the spring he began the campaign with the capture of Charlemont, but no advance southward was made until the arrival of William. At the Boyne (July 1, 1690) Schomberg gave his opinion against the determination of William to cross the river in face of the opposing army. In the battle he commanded the centre, and while riding through the river without his cuisses to rally his men, was surrounded by the enemy and instantly killed. He was buried in St. Patrick’s cathedral, Dublin, where there is a monument to him, erected in 1731, with a Latin inscription by Dean Swift.
SCHOMBURGK—SCHONGAUER

His eldest son Charles, the second duke in the English peerage, died in the year 1603 of wounds received at the battle of Marignano.

The most important work on Schomburg's life and career is Kazer's Leben Friedrisch von Schomburg oder Schönberg (Mannheim, 1789). The military histories and memoirs of the time should also be consulted.

SCHOMBURG, SIR ROBERT HERMANN (1804–1859), British traveller, was born at Freiburg, Prussian Saxony, on the 5th of June 1804, the son of a Protestant minister. In 1829 he went to the United States, but in 1830 left for Anegada, one of the Virgin Isles. He surveyed the island at his own expense, and sent to the Royal Geographical Society, London, a report which created such an impression that, in 1835, he was entrusted by that body with the conduct of an exploring expedition to British Guiana. He fulfilled his mission with great success, incidentally discovering the Victoria Regia lily. In 1841 he returned to Guiana to survey the colony and fix the boundary for the British Government. The result was the provisional boundary between British Guiana and Venezuela known as the “Schomburgk Line,” for which see the articles on those two countries. On his return to England he was knighted. In 1848 he was appointed British consul to St Domingo and, in 1857, British consul to Bangkok. While holding these posts he continued his geographical surveys. He retired from the public service in 1864, and died at Berlin on the 11th of March 1865. He was the author of a Description of British Guiana and the east coast of Venezuela (1849).

SCHÖNBEIN, CHRISTIAN FRIEDRICH (1799–1868), chemist, was born at Metzingen, Swabia, on the 18th of October 1799, and died at Sauerbruck, near Baden Baden, on the 29th of August 1868. After studying at Tübingen and Erlangen, he taught chemistry and physics, first at Kelhau, Thuringia, and then at Epsom, England, but most of his life was spent at Basel, where he undertook the duties of the chair of chemistry and physics in 1828 and was appointed full professor in 1835. His name is chiefly known in connexion with ozone, which he began to investigate in 1839, and with gun-cotton, which he prepared and applied as a propellant in firearms early in 1846. He was a most prolific writer, 354 papers appearing under his name in the Royal Society's Catalogue, and he carried on a large correspondence with other men of science, such as Berzelius, Faraday, Liebig and Wöhler.

Many of his letters together with a life will be found in G. W. A. Kahlbaum's Monographien aus der Geschichte der Chemie, vols. iv. and vi. (1899 and 1901).

SCHÖNECK, a town of Germany, in the province of Prussian Saxony, on the right bank of the Elbe, 9 m. S. of Magdeburg by the railway to Halle and Leipzig. Pop. (1905) 17,986. It contains manufactories of chemicals, machinery, starch, white lead and various other articles, but is chiefly noted for its extensive salt springs and works, which produce about 75,000 tons of salt per annum. Large beds of rock-salt also occur in the neighbourhood, in which shafts have been sunk to a depth of more than 1200 ft. There is a harbour on the Elbe here, and a brisk trade is carried on in coal, grain and timber.

See Magnus, Geschichte der Stadt Schöneck (Berlin, 1880).

SCHÖNEBERG, a town of Germany, in the Prussian province of Brandenburg, forming a suburb of Berlin, which it adjoins on the south-west. Pop. (1905) 147,600. It has four churches, a statue of the emperor William I. and several educational establishments. It contains the railway station of the military line to Zossen, and is connected with the metropolis by electric trams and omnibuses. Its chief manufactures are railway plant, cigars, soap, paper and chemicals. The foundation of Alt-Schöneberg is ascribed to Albert the Bear, marquis of Brandenburg, in the 12th century, while Neu-Schöneberg was founded by Frederick the Great in 1750 to accommodate some Bohemian weavers exiled for their religion. It was made a town in 1808.

SCHÖNFELD, EDUARD (1828–1861), German astronomer, was born at Hildburghausen, in the duchy of Meiningen, on the 22nd of December 1828. He had a distinguished career at the gymnasium of his native town, and on leaving devoted himself to astronomy, but abandoned the idea in deference to his father's wishes. He went first to Hanover, and afterwards to Cassel to study architecture, for which he seems to have had little inclination. In 1849 we find him studying chemistry under Bunsen at Marburg, where his love for astronomy was revived by Gerling's lectures. In 1851 he visited the Bonn Observatory, and began his studies in astronomy under Argelander. In 1853 he was appointed assistant, and in the following year won a doctor's degree with his treatise Nova elementa Thédtis. At Bonn he took an important part in preparing the Durchmusterung of the northern heavens. He took up the investigation of the light-changes in variable stars, devoting to this work nights which, on account of moonlight, were unsuitable for zone observations. The results of these researches are published in the Sitz. Berich. Wien. Akad., vol. xii. For a short time he was a Privatdozent at Bonn, but in 1859 he was appointed director of the Mannheim Observatory. The instrumental equipment of that observatory was of antituated, its largest telescope being a small refractor of 73 lines aperture, but he selected a line of work to suit the instruments at his disposal, observing nebulae and variable stars and keeping a watch on comets and new planets. The results of his observations of nebulae are contained in two catalogues published in the Astronomische Beobachtungen der Grossherzoglichen Sternwarte zu Mannheim, 1st and 2nd parts (1862 and 1875), and those of his variable star observations appeared in the Jahresberichte des Mannheimer Vereins für Natukunde, Nos. 32 and 39 (1866 and 1875). On the morning of August 13, 1874, which occurred on February 17th 1875, Schönfeld was appointed to succeed him as director of the Bonn Observatory, and soon after his appointment he began his last and greatest piece of work, the extension, on Argelander's plan, of the survey of the heavens down to 28° of south declination. The experience gained on the northern survey under Argelander's direction enabled Schönfeld to introduce some improvements in the methods employed, which increased the accuracy of this work, which was practically accomplished in March 1887, some revision only remaining to be done. These zones of observed photographic plates of 363,932 separate planes of stars, and form the groundwork of the catalogue of 1,733,659 stars between 2° and 28° south declination, which was published in 1886 as the eighth volume of the Bonn observations.

Schenfeld was a member of the Astronomical Gesellschaft from its foundation in 1865, being a member of Council up to 1869, and in 1875 becoming editor of its publications and secretary in conjunction with Winnecke. In 1878 he was elected a Foreign Associate of the Royal Astronomical Society. He died on the 1st of May 1891.

SCHONGAUER (or Stön), MARTIN (c. 1445–c. 1488), the most able engraver and painter of the early German school. His father was a goldsmith named Casper, a native of Augsburg, who had settled at Colmar, where the chief part of Martin's life was spent. Schongauer established at Colmar a very important school of engraving, out of which grew the "little masters" of the succeeding generation, and a large group of Nuremberg artists. As a painter, Schongauer was a pupil of the Flemish Roger van der Weyden the Elder, and his rare existing pictures closely resemble, both in splendour of colour and exquisite minuteness of execution, the best works of contemporary art in Flanders. Among his very few paintings which can with certainty be attributed to him, the chief is a magnificent altarpiece in the church of St Martin at Colmar. The Colmar Museum 1 The date of Schongauer's birth is usually given wrongly as c. 1420; he was really born twenty-five or thirty years later, and is mentioned by A. Dürer as being a young apprentice in 1447. His portrait in the Munich Pinakothek is 23 inches high. The" Schongauer" of the" Schongauer" of 1453; it is obviously a blunder; see Henkel in Neumann's Archiv (1869), p. 129, and Wurzbach, M. Schongauer (Vienna, 1880). These contradict the view of Grootwaller, in his Martin Schongauer et son école (Paris, 1875). Cl. Schnase, "Gesch. M. Schongauer," in the Mittheil. der K. K. Commission (1865), No. 7.
possesses eleven panels by him, and a small panel of "David with Goliath's Head" in the Munich Gallery is attributed to him. The Milan engraving of the "Death of the Virgin" in the English National Gallery is probably the work of some pupil. In 1488 Schongauer died at Colmar, according to the register of St. Martin's church. Other authorities state that his death occurred in 1491.

The main work of Schongauer's life was the production of a large number of beautiful engravings, which were largely sold, not only in Germany, but also in Italy. It is said that he made copies of some of his engravings — the "Triumph of St. Anthony," for example. Schongauer was known in Italy by the name of "Bel Martino" and also as "Martino d'Anvers," and his prints were religious and had a certain force. Many copies of his engravings from copper by his hand are known, and about 100 more are the production of his betters. Most of his pupils' plates as well as his own are signed M. S. Among the most beautiful of Schongauer's engravings are the "Death and Coronation of the Virgin," and the series of the "Wisdom and Foolish Virgins." All are remarkable for their miniature-like treatment, their brilliant touch, and their chromatic force. In the "Death of the Virgin" and the "Adoration of the Magi" are richly filled compositions of many figures, treated with much largeness in style opposite their minute scale.

The British Museum possesses a fine collection of Schongauer's prints. Fine facsimiles of his engravings have been produced by Armand-Durand with text by Duplessis (Paris, 1881).

SCHÖNINGEN, a town of Germany, in the duchy of Brunswick, 20 m. by rail W. of Magdeburg. Pop. (1905) 9208. It has three churches, and manufactures of chemicals, machinery, and sausages. The place is mentioned as early as 747 and received municipal rights in 1370. It has the remains of a ducale residence and some ruins of a house 20 m. to the W.

SCHOOLCRAFT, HENRY ROWE (1793-1864). American traveller, ethnologist, and author, was born on the 28th of March 1793 at what is now Guilderland, New York, and died at Washington on the 10th of December 1864. After studying chemistry and mineralogy in Union College he had several years' experience of their application, especially at a glass-manufactory of which his father was manager, and in 1817 published his Vitrology. In the following year he collected geological and mineralogical specimens in Missouri and Arkansas, and in 1819 he published his View of the Lead Mines of Missouri. In 1826 he accompanied General Lewis Cass as geologist in his expedition to the Upper Mississippi and the Lake Superior copper region, and in 1823 he was appointed Indian agent for the Lake Superior country. More than sixteen millions of acres were ceded by the Indians to the United States in treaties which he negotiated. He married the granddaughter of an Indian chief; and during several years' official work near Lake Superior, and later under authorisation of an Act of Congress of 1847, he acquired much information as to institutions, &c., of the American natives. From 1828 to 1851 Schoolcraft was an active member of the Michigan legislature. In 1812, when on an embassy to some Indians, he ascertained the real source of the Mississippi to be Lake Itasca.

In 1825 he published Travels in the Central Portions of the Mississippi Valley, and in 1839 appeared his Aligic Researches, containing Indian legends, notably, "The Myth of Hiawatha and other Oral Legends." He composed a considerable quantity of prose and several mimic plays, especially Notes on the Iroquois (1846); Scenes and Adventures in the Osage Mountains (1853). His principal book, Historical and Statistical Information respecting the Indian Tribes of North America, illustrated with 336 plates from original drawings, in part a compilation, was issued under the patronage of Congress in six quarto volumes, from 1851 to 1857.

Another painting of the same subject in the Doria Palace in Rome (usually attributed to Dürer) is given to Schongauer by Crowe and Cavalcaselle, Flamen et Peintres (London, 1872, p. 539); but the existing position was ascribed to Schongauer's wonderful touch.

An interesting example of Schongauer's popularity in Italy is given by the lovely Faenza plate in the British Museum, on which is printed a copy of Martin's beautiful engraving of the "Death of the Virgin." See Bartsch, Peintre Graveur, and Willshire, Ancient Prints, best edition of 1877. According to a German tradition Schongauer was the originator of printing woodcuts, and not the central or vital one of the first who brought the art to perfection. See an interesting article by Sidney Colvin in the Jahrbuch der k. preussischen Kunstsammlung, vi. p. 69 (Berlin, 1885).

SCHOOLS. As is the case with all the institutions of modern civilization, so with schools; the name, the thing, the matter, the method, have been derived from Greece through Rome. A strange fortune has converted the Greek word σχολή, which originally meant leisure, particularly the "retired leisure that in trim gardens takes his pleasure" of men, into the proper term for the modern school.

Greek Schools.—The term and the institution date, not from the great or what may be called the Hellenic age of Greece, but from the later Macedonian or Hellenistic period. The account given by K. J. Freeman in his Schools of Helles (1907) may be summed up in the statement, "There were no schools in Hellas. That is, there were no schools in our sense, where, during boyhood and youth, boys spent their whole time in a continuous course of instruction. There were professional teachers of three kinds: (1) the grammatici, who taught reading, with writing and perhaps arithmetic, in the grammatician; (2) the citharistes, who taught music, i.e. playing and singing to the cithara—is significant that there was no word for the musical quality of a song. (3) the sophistes, w.thought gymnastics, wrestling, boxing, running, jumping, throwing the javelin, &c., in the palaistra. To these teachers the boys were taken by slaves, called boy-leaders (μαθαιωτέροι, whence our pedagogues), as single pupils, and they were taught not in classes but singly. That all boys did not go through all three schools is clear. For we hear of Socrates, when he was grown up, repairing to a lyre-school to learn music, because he thought his education was not complete without it. Roughly, the age for the grammar-school and song-school was 7 to 14, for the gymnastic school 14 to 18, for the higher schools.

The system of literature was imparted, as especially in the song-school, Homer and other early poets, the very Bibles of Hellas, were learnt by heart. In later days, under the Sophists, and Socrates, "the greatest of the Sophists," 450-400 B.C., something approaching to secondary education was developed. But it was wholly unorganized, though a similar division of labour between separate primary tutors took place as in primary education. The orators or rhetoricians taught oratory, and the learning that was considered necessary to the political orator, a smattering of Greek history, constitutional law and elementary logic. The philosophers, such as Protagoras, Empedocles, and the palaistra, or private gymnasium, was the left over to the philosophers, and it was the place for the instruction of the wealthy young men.

In the next generation, the orators and the philosophers, by settling down in fixed places, began to establish something more like schools. Plato, though like his master Socrates he taught without asking fees, was the first to give a regular educational course extending over three or four years, and in a fixed place, the Academy. The gymnasia was originally a parade or practice ground for the militia or conscript army of the state, which derived its name from the exercises being in that climate performed naked (γυμνός). At the age of 15 or 16 the boys left school, maintained at the public expense, preparatory to their admission as youths (φίλαθλοι), to take the oath of citizenship and undergo two years' compulsory training in regiments on the frontier. After those two years were over, they still required continuous exercise to keep themselves in training; consequently men of all ages, from 16 to 60, were to be found in the gymnasia. Though the gymnasia was free, the teachers and trainers in gymnastics were paid, and as the poorer citizens had to earn their own living, the Athenian gymnasium, like the modern university, was for educational purposes chiefly frequented.
by the well-to-do. So the Academy became a fashionable lounge, and here developed the walking and talking clubs, which became the Platonic or Academic Schools. Logic and ethics, built on a foundation of geometry and mathematics, seem to have been the staple subjects. An inner circle met, and dined together in Plato's private house and garden, close to the Academy. Plato devised the house and garden to his successor Speusippus, who passed them on to Xenocrates. They thus became the first endowment of the first endowed college, which grew very rich and lasted till the disestablishment and disendowment of the old learning by Justinian in A.D. 529. Aristotle, a pupil of Plato for ten years, built or set up his school of hellenistic philosophy in the Lyceum, another public gymnasium, where he lectured twice a day, in the morning esoterically to the inner circle of regular attendants, in the afternoon to the public. From these two institutions three nations of Europe have derived three different terms for a school, the Germans their gymnasium, the French their lycée, and the Scotch their academy. Yet neither of the original was a school in any real sense of the word. In the days of their founders they were like discussion forums; at the most, courses of lectures. In later years, the gilded youth who flocked to Athens from the grammar schools of the civilized world were enrolled among the epheloi, and the so-called "university of Athens" was evolved (Dumont, L'Éphémie attique).

Meanwhile the intellectual hegemony of Greece had for a time passed with the political hegemony from Athens to Alexandria. It is to the Alexandrians, either to Antiodorus or to Eratosthenes, c. 250 (J. E. Sandys, Hist. of Classical Scholarship, 7), that grammar, as a term and a science, which included literary criticism and scholarship, and the grammar school are due. The earliest extant treatise on grammar is by Dionysius of Thrace (born c. 140), a pupil of the Homeric critics Aristarchus. It defined grammar as the practical knowledge of the usage of writers of poetry and prose, and includes exegesis or explanation of the meaning of the widest sense as well as more formal or syntactical grammar. It was from the term thus understood that the grammar school (schola grammaticalis), the term which described the typical secondary school from that day to 1869, derived its denotation and its connotation. For a true conception of the history of secondary schools it cannot be repeated too often and too emphatically that to this day the true title of the greatest English public schools is grammar school. Winchester and Eton are the grammar schools of the colleges of the Blessed Mary of Winchester and of Eton respectively, and Westminster is the grammar school of the collegiate church of St. Peter, Westminster. Throughout the thirteen centuries which intervened between Dionysius Thrax and Dr. Kennedy, Dionysius's grammar was the standard work and the foundation, directly or indirectly, of all other grammars, while the grammar school has always meant, and, in the hands of the better class of teachers, has always been, not a gerund-grinding machine, but a place for the training and exercise of the mind by the study of literature. The word "school," as well as the word "grammar," seems to be due to Alexandria. Plato in the Laws has spoken of a learned discussion or teaching, the product of leisure, as a scholē. But it does not appear that the word was transferred to the place where such discussion took place before the Alexandrian epoch. The first known use of it in that sense seems to be in Dionysius Halicarnassus' Letter to Ammaeus, c. 30 B.C. But as Plautus (c. 210) uses the corresponding Latin term, ludus literarius, some two centuries earlier, we may safely infer that he used it, not on the principle of ludus a non ludendo, but as a translation of grammar school.

Roman Schools.—At Rome the schools began with intercourse with the Greeks. According to Suetonius, the emperor Hadrian's secretary, who wrote The School Masters (De grammaticis) about A.D. 140, literary teaching and the science of grammar began with Livius Andronicus, a Greek from Magna Graecia in the south of Italy, who, being brought to Rome as a slave in 272 B.C., became a freed man, translated the Odyssey into Latin, and taught both Greek and Latin. Ennius, the first Latin poet, was also half-Greek, and came to Rome in 209 B.C., where he also taught both languages. According to Plutarch (Quaest. Rom. 59) the first grammar school (grammaticoludiskelation) was opened by Spurius Carvillus, a freedman of Carvillus, who was the first Roman to divorce his wife. Like master, like man. These two innovations in morals and manners took place about 250 B.C. According to Suetonius, Crates of Mallus in Cilicia, who about 169 B.C. came to Rome as ambassador from Attalus, king of Pergamum, a great centre of learning, and was kept there by a broken leg, occupied himself in giving lectures. His example was soon followed by Romans. Schools of grammar, in which, even as late as Quintilian's time, the Ignorant (Introd. de lib. 12) and the chief text-book and were learnt by heart, were kept by Greeks or freedmen. These seem to have been of the nature of elementary schools. But at Rome, as at Athens, the working-classes were for the most part slaves; and elementary schools were like English preparatory schools rather than public elementary schools. The teachers were called literatores, a translation of the Greek γραμματιστας. Schools of rhetoric, which were more like secondary schools, were also opened after the model of that of Isocrates at Athens. Their teachers were called litterati, corresponding to the Greek γραμματειας. Suetonius says that the grammar and rhetoric were taught at Rome "as a necessary part of their studies which include both sciences." In 92 B.C. schools of Latin rhetoric were put down as an innovation. Yet among the treatises written by Cato, the praiser of the past at the expense of the present, was one on public speaking, the chief rule in which was "take care of the sense, and the sounds will take care of themselves." Cicero learned to declaim both in Greek and Latin, and the Gracchi had studied rhetoric under Greek teachers. Neither the gymnasium nor palaestra, nor the music school, flourished at Rome. As at Athens, so at Rome the boys were sent to school in charge of a slave, a pedagogus, or an ambassador.

Magister, which in English became "master" and then "master," remained the term for the teacher of the public school from that day to this, though attempts were made at the time of the Reformation to introduce the Greek word didaskalos in its place.

The public Latin school was very much like the modern school. All the methods of torture which have made the service of the Muses for most boys a veritable slavery were in full vogue. Instruction was now in a foreign language, and grammar became prominent. Early Latin poetry was more the speaking of popular Latin verses than the written word. Martial curses the master of a neighbouring school whose shouts and blows woke him up at cock crow. Horace assures us that he admires the old Latin poets in spite of their having been hugged into him by the pedagogus, a word whose name has become verbal. The staple of instruction in the Roman schools was the works of the poets, Greek and Latin, Homer and Virgil, Hesiod and Aesop, Menander and Terence. Horace says (Ep. 1. 19. 40) "who was not thought worthy of going the round of the schoolmasters' desks"; but it was a fate not long delayed, and the writings of the poets of the silver age, Lucan and Statius, became school-books in their own lifetimes.

Our knowledge of the Roman curricula is mainly due to Quintilian's Institutio oratoria, c. A.D. 91. Fabius Quintilianus, born on the banks of the Ebro, was not only the son of a man who kept a rhetoric school, but himself kept one, and is said by St. Jerome to have been the first who kept a public school, in the sense that he was the first who received a stipend from the emperor. In endeavouring to be the perfect orator, Quintilian discusses the whole of education from the cradle upwards. It is clear from him that the grammar school had trenched on the rhetoric school. The latter was then restricted to actual oratory, the rules and practice of public speaking, while the grammar consisted of the study of the Latin language, much the same teaching as English grammar schools did until 1850.

The first definitely endowed school we hear of is one founded by Pnyly the younger, a pupil of Quintilian, at his native place, according to the Historia Literaria (12) he founded him that a Comos boy was at school at Milan, because there were no teachers at Como, whereupon he lectured the parents on the small cost of board. He afterwards opened a school at Como, at the cost of boarding boys at Milan. He therefore offered to find a third of the cost, and would have found the whole did he not "fear that such an endowment might be corrupted... to private
interest, as which he saw happen in many places where teachers are hired by the public ("preceptores publice conducuntur"). The choice of the master he left to the parents. Later historians say that the emperor Antoninus Pius (138–161) assigned offices and salaries (honores) to the professor who taught the pupils. But the Severus Alexander Severus did the same, and also established exhibitions for poor boys, with the limitation, curiously repeated a thousand years later in the statutes of All Souls College and of Eton, "modi ingentes fuerint..."

There were complaints that the masters were ill-paid. The only definite statement as to tuition fees appears to be a line of Horace (Sat. 1.6. 76), who says his father took him to school at Rome as he did not know Latin. For his country neighbours went, at 8 as ass a month, said to represent 40, a month, equivalent to "about a shilling"; even this is founded on a disputed reading. Quintilian made a poor school at Rome, and Juvenal calls him in this respect a "jack-of-all-trades". As in modern times the winning jockey, so then the victorious charioteer, received more pay for a single race than the master for a whole year's labours.

Grammar and rhetoric schools spread throughout the Roman world and continued substantially unchanged in method and subject to the days of Gregory the Great and Augustine the apostle of the English. The Confessiones of St Augustine of Hippo, a school-master at Carthage, Rome, and Milan before his baptism in the year 387, and the poems of his contemporary Ausonius, educated in the grammar school at Toulouse, and himself a schoolmaster at Bordeaux before being preferred for the bishopric of Gaul, give us a picture of the school in that country during the 4th century as in the first. Ausonius celebrated in verse all the Bordeaux schoolmasters, some coming from schools at Athens, Constantinople, Sicanus and Canterbury, but there do not appear to have been any schoolmasters from Poitou, Narbonne, Toulouse, who went to Lerida and other places in Spain. Ausonius had for his pupil the emperor Gratian, who in 376 established a legal tariff for schoolmasters' salaries. "In every town," says Jerome, "the master of rhetoric shall have the charge of the rhetoric."

The rhetorical master (rhetor) was to have at least 24 anions (an anion being a year's wages of a working man); while the grammar masters were to receive half that. But St John Chrysostom, to the church in Antioch, says that teachers of rhetoric and grammar should be well-paid, so that the church can provide adequately for them in an age when "agriculture is the mother of all sciences and arts, and so must also be the mother of the church."

In the 3rd century, the great grammarian, Lingua, who writes on the Greek author Lucian, declares that there were 50,000 Greek grammarians in the Greek world in his time. This would be a little more than the population of modern Athens.

English Schools.—St Augustine of Canterbury landed in Kent in 596, and the king of Kent, Ethelbert, was christened two years later. He "did not defer giving his teachers a settled residence in his metropolis of Canterbury, with such possessions as were necessary for their subsistence," says Bede. We may therefore attribute the establishment of the Church of England and the first English school to the year 596. For as nowadays the first thing modern missionaries do is to establish a school, so did Augustine. Indeed a school was even more necessary than at present, for the "many strangers" who came to "be educated in the native tongue, and services conducted in it. But in those days the Church had not yet a完备 teaching, to understand the church service and to read the Scriptures, had to learn Latin and begin with Latin grammar; and indeed as the kyrie, the creed and the gloria were still rendered in Greek, if he was thoroughly to comprehend what he had to learn some Greek.

The first actual mention of Canterbury school is in 631. Sigebert of Essex, Bede tells us (Eccl. Hist. iii. 18, ed. Plummer, p. 162), while in exile in Gaul, was baptized. "On his return, as soon as he obtained the kingdom (of the East Saxons), wishing to educate what he had so well done in Gaul, he founded a grammar school (scolam in quas pueri litteris erudirentur), with the assistance of Bishop Felix, whom he had received from Kent, who provided them with ushers and masters (pedagogos et magistros) after the manner of the Canterburians (more Cantuariorum)." If the last words are translated Kentish folk the meaning is the same, as naturally the first and chief school of the Kentish folk was at Canterbury. Felix was a Burgundian, who had come over to Honorius, one of the last survivors of the original band of Augustine, who became archbishop in 627. The East Saxons, therefore, may be considered as the school to which the later tradition refers, and in which there has been claimed by patricia Suffolk historians as the first school in England. Though long before the Conquest Dunwich had ceased to be an episcopal see, being deposed in favour of Thetford, while half of it was swallowed up by the sea, yet, when between 1076 and 1083 the priory of Eye was founded by Robert Malet, it was appropriated to the schools of Dunwich ("the tithes of the whole town both of money and heritages . . . the school also of the same town.

So the school of Sigeberht and Felix was still existing 400 years afterwards. If it had been perished in the dissolution of the priory, to which it had been handed over.

As the model was older than the copy, Canterbury school must be allowed the primacy over Dunwich. Being spoken of as an existing institution, with no suggestion that it was then newly established, we need not doubt that it was founded by St Augustine as part of the cathedral establishment of Christ Church, Canterbury. This church was not then monastic, but like all other cathedralds, a college of priests, the monks being placed apart, outside the city walls in the abbey, first called St Paul's, and afterwards of St Augustine's. The "English SCHOOLS have attributed Canterbury school rather to the Greek archbishop, the monk Theodore, who reached Canterbury on the 27th of May 669. "Soon after," he "travelled through the whole English parts of the island," and first established a united church of England, being "the first archbishop whom the whole English church consented to obey." He travelled with Haddian, a Latin-African monk, who had been first offered the archbishopric, and was sent by the pope to look after Theodore "lest after the fashion of Greeks he should introduce something against the true faith. "Because both were learned in sacred and profane literature, and collected crowds of disciples, and streams of saving knowledge daily flowed from them, as together with holy writ they gave their hearers instruction both in the arts of metre and astronomy and ecclesiastical arithmetic," or, as the Anglo-Saxon translation has it, "cermecraft, t jungllcraft and grammaticraft" (Bede, Eccl. Hist. iv. 2). "The proof is," says Bede, "that even to this day," c. 735, "some of their pupils survive who know Latin and Greek as well as their own language in which they were born." It is a strange misconception of this passage which has narrowed a triumphant word of the first metropolis of England, the very point of which is that the archbishop left Canterbury to travel to the farthest parts of the heptarchy, into the foundation of a school at Canterbury.

Though it is clear that Theodore did not found, there is evidence that he actually taught in the school at Canterbury, since Albinus, who succeeded Haddrian as abbot of St Paul's, is said to have been "the most learned man of his time in everything, having been educated in the church of Canterbury" (not, it may be noted, in the monastery of St Paul's) by Theodore and Haddrian. Tobias, who died bishop of Rochester in 726, is also described as "a most learned man, for he was a pupil of Theodore and Haddrian, and so, together with a knowledge of literature ecclesiastical and general, Greek and Latin were as familiar to him as his native tongue." We may therefore credit Rochester with the school at least as early as Toby's episcopate.

Of schools still existing, we must give the precedence after Canterbury and Rochester to St Peter's school, the cathedral grammar school at York. If it was originally started by Paulinus, the Roman
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missionary, in 630 or 634, and there was no church or bishop there till the time of Willfrid, c. 700, it cannot claim to be older than his day. Whoever may be the originator of York school, it is at all events earlier than Archbishop Egbert (Ecgbert), to whom it is said to have been given. Bede says that Egbert was an Englishman, but his authority is a life of a Frankish monk, in MS. said to have existed at Reims in 1617, but never since seen, a mere piece of hagiology, and certainly not contemporary. It makes a main point of itself, that Egbert was the first York bishop, and the last of his name, whose authority, if not a mere tradition, was handed down from the second link. Egbert was neither a pupil of Bede's, nor Alcuin's master. Nor was Egbert ever a monk, and Alcuin only became one late in life. Had Bede been Egbert's master, he could not have written this, and there was no chance of his coming to him on becoming archbishop, in which he addresses him, not as a master might have written to a pupil, but as a rather humble but lecturing friend. Moreover, Alcuin himself, in the poem on the birthday of the church of York (Hei. ch. York., Rolls i. 390), written when master at York, only says of Egbert that he was of royal blood, an illustrious ruler of the church and an admirable teacher (gregor doctor). He finds no need to say anything about him, because his "muse hastens to the end of his song and the doings of his own master, who, after Egbert, received the insignia of the venerable see, Albert, called the wise. On Alcuin's merits, Alcuin himself writes, and no one need refer to all the stories that "was sent to the Minster to school in his boyish years and became a priest quite young, and by Egbert was made advocate of the clergy and preferred as master in the city of York." This phrase exactly describes the functions of the archbishop of York, who was, as the chief lawyer of the college of canons and also head of the school; while it shows that the school was the school, not only of the church, but of the hierarchy as well. It is thus a Latin school, grammar, rhetoric, law, singing, playing on the flute and lyre, natural history and the church calendar: above all, theology. There were boarders. For whatever youths he saw of eminent impulse, "he would make his own" to his master's charge, and so he had many pupils, advanced in various arts. Alcuin travelled abroad, went to Rome and was received "as the prince of doctors, and kings and princes invited him to irrigate their lands with learning. He returned, but, as a new archbishop, he no longer had the chief functions of an archbishop of York, and the archbishop of Lichfield, his predecessor, became the chief educators. This is because Charlemagne, largely it would seem under Alcuin's influence, did make a distinct effort to convert the monasteries practically into colleges and public schools. How far he succeeded in this is very doubtful, but if the monasteries did become the seats of public schools, or if the monks did anything for general education, it was only during his reign. Save for that period, alike in England and on the continent general education and public schools were the exclusive duty and privilege of the secular clergy from the days of Augustine to the days of Laud. The monks from first to last were never public schoolmasters or educators in the modern sense of the word. They taught, it is true, kept schools, except for their own novices, and they never, except incidentally as lords of manors or trustees, or transferees of the spiritual rights of secular colleges, even controlled schools.

Bede, the chief writer on monastics and education, in the example of even Jerome, not only did not cultivate learning other than that of the scriptures, but even repudiated it as heathenish. It was not before the 9th century, in 850, when Bede (Biblioth. Hei. ser. i.) introduces his Institutions for the two monasteries he founded, Calixtine and Lichfield, that so much reading came to be regarded as a monkish duty. The original Benedictine rule a few years earlier set apart only two hours a day for reading, except in Lent. Then, lack of food making the monks helpless able to labour with their hands, they had three hours' reading in the morning, and had to read one book through in the course of the 40 days. Even this rule was not absolute, special provision being made for the study of the works of the church fathers. Though not a word in the rule to suggest that education was one of the duties of monks or of the objects of a monastery. The only reference to boys, says Bede, is a general one, that, "in the brethren, boy novices offered (obbatis) at the altar. The Celtic monasteries, and St. Columba's letter to Dr Skene (Celtic Scotland, ii. 75), became "great educational seminaries, in which the youth of the tribe were sent, not only to be trained for monastic life, but also for the purpose of receiving secular education." But the quotations given from the ancient laws of Ireland and the life of St Brendan in support of this statement by no means bear it out. It may be questioned whether even in Ireland, which perhaps first imitated the monastic system of the Continent, Lindisfarne in England, anyone other than sucking monks imbibed the milk of learning in the nurseries of the monasteries. Where, as in Ireland, there is no record of the existence of a public secular clergy were practically swallowed up in the monastery and monks, and even the bishops kept only about an abbot, it is perhaps not possible to draw a distinction between the regular and the secular clergy which is not at once futile. The very monastic foundation of the monastery to the borders of Alsece, while indirectly through Lindisfarne it may have been known to Alcuin, as it certainly was at Fulda (Skene, 43). Charlemagne was perhaps consciously acting under Celtic influence when in the council of Aachen (Aix-la-Chapelle), on the 23rd of March 789-790, he entrusted the congregations of monks as well as those of the secular canons "not only to get together children of slaves but also the sons of freemen, and take them into their societies," and directed that "schools of reading boys should be established in every monastery and cathedral, where psalms, music (notas), arithmetic (arithmeticas), grammar, and the liberal arts shall be taught; not allowing the boys, however, to corrupt the gospels, psalters or mass books by reading or writing, but employing men of full age for that purpose."

It must have been in pursuance of this that the boys, the future schoolmen, were brought up with the ordinary novices of a monastery, under the care of the abbot or bishop, when still under the control of the monastery, if not under the control of the bishop. From infancy, were brought up with the ordinary novices of higher years seeking for admission. This school was at the end of the church, next to the infirmary of the monks. But the other school, the "inner" or "school of the novices," as the novices' school is known as a replica on a smaller scale of the monastery, complete in itself with chapel, dormitory, refectory and infirmary. On the plan of it is written, "In this cloister the oblates are associated with the postulants, "with respect to a house under the care of a bishop, the grammar school under the chancellor, and St Peter's hospital just outside the cathedral precinct, which was endowed by King Athelstan, and afterwards known as St Leonard's hospital. In another place Alcuin is said to have been one of the first to act as master in the school Offa was establishing, and expresses his pleasure at Offa's intention to study and make the light of wisdom, which was extinguished by many previous, fires in his kingdom. Whether this refers to the establishment of a school at Lichfield, or elsewhere, does not appear. It is to be noticed that Alcuin, all the time he was master at York and master of the so-called palace school of Charle- magne, was not a monk but a secular clerk. He always describes himself as Alcuin the levite, or deacon, until in his old age he retired to a religious life. In many cases, it is possible to imagine that such a man, though a monk, when he became a bishop and set up a school, had been advised by Pope Gregory to abandon the monastic seclusion and live with his clergy like an ordinary bishop.
boarders. The plan is credited to Charlemagne's son-in-law, Eginhard.

It is known not to have been carried out in its entirety; and whether any "outer" school was ever actually erected or carried on we do not know. But, if in Charlemagne's time the monastic schools had died out, and what little was left of the old school was restricted to the "inner" school, it is certain that the next generation saw them excluded again. A council at Aachen on the 9th of July 817 (Baluze, Capit. i. 551), attempted to re-establish the monastic schools, but the "inner school" was still the accepted form of education. The patronage of the church was again the foundation of the grammar school, and every one connected with it was reckoned as a clerk with the privilege of clerical immunity. The secular schools could not take cognizance of pleas concerning the conduct of schools or schoolmasters, as was emphatically reaffirmed in the Gloucester School Case in 1410, no more than they could as to churches or the conduct of rectors and vicars. Just as they could entertain suits about the patronage of livings, so they could about the appointment of schoolmasters, and teachers, and pupils. The clergy, and especially the secular judges of first instance, with appeal to the court of Canterbury and thence to the supreme court of the pope at Rome. There is a decree of Pope Eugenius II., in a synod held in 826 (Dec. prima pars, Dist. xxxvii. 12): "From certain places complaint is made to us that neither are masters found nor care taken for a school of letters (i.e. grammar school), wherefore let all care and diligence be taken by the priests and their scholars, and others, for the common good, that masters and teachers should be established to teach continually grammar schools (studia litterarum) and the principles of the liberal arts, as in them chiefly are the divine commands set forth; and let all judges, of the kingdom into England, who for two centuries at least have been the customary law of the church, that schools should be kept in every cathedral city, as we have seen they were at Canterbury, Dunwich, and York.

After York the next place in England in which we have actual evidence of a school is at Winchester, to which intellectual superiority seems to have passed with the political supremacy. In the history of education in the 9th century the name of Alfred, the Saxon, and Edward, the Confessor, is united, while the end of the 10th century marks the date of the foundation of the Abbey of Ely, by Bishop Wearl, the first of the monastic schools, as "the school of Canterbury," and in the 12th century the name of these schools is surely that of St. Osmund. The school was in St. Osmund's Abbey, where the children of the nobility of the school were taught, and also clerks, and it is impossible that "Alfred" had a school of that name. The children were taught both by the laity and by the clergy, and the name of the school is preserved in St. Osmund's, in its evidence that the grammar school was frequent, and by laity as well as clerics, and it is impossible that "Alfred" had a school of that name. The young Englishmen of good birth were brought up in the public grammar schools then as now.

Anglo-Saxon schools were not confined to bishops' sees. Apart from Malmesbury, the story of which has been so obscured by monastic writers as to make it impossible to ascertain whether it had a public school or not, there were public schools in all the principal centres of population, generally marked by being also the sites of collegiate churches. At least, whatever Etheldreda, the Lady of the Mercians, and her brother, Edward the Elder, are recorded as building "burne" through the Midlands to consolidate their conquests from the Danes, we find also collegiate churches of pre-Conquest origin and early grammar schools; e.g. at Stafford and Derby, Sheffield, and Leicester, at Bridgenorth, Tamworth and Warwick.

It is perhaps only at the last place that the direct evidence of the continuance of the school from pre-Conquest to post-Conquest times is preserved. There, in 1123 (Leach, Hist. Warwick School, 1909), the earl of Warwick, having granted to the canons of St Mary's collegiate church in the town "the school of the church, that the service of God in the same may be improved and the knowledge of the same," the old school in the castle appealed to the crown, and Henry I. issued a writ to "command that the church of All Saints have all its customs and ordinances . . . as fully as it used to have them in the time of King Edward and my father and brother and the school (scolas) in like manner." In the result the two collegiate schools were united, the canons of All Saints being transferred to St Mary's and "the school of Warwick" confirmed to the united church, which was to enjoy the same liberties as London, Lincoln, Salisbury and York churches, i.e. be like a cathedral church of secular canons. Thus this institution, the maintenance of a school is clear from a reply to one of the Abbot Sampson's writs, and his answers to their liberties and customs put the by the Warwick dean and chapter of Salisbury in 1155, viz. "the scholars to their own master stand and fall," i.e. the master not the chapter was to look after the boys.

Even the Danes became founders of churches and schools. Thus Herman, the historian of Bury, writing in 1098 (Mem. Bury St Edmunds, Rolls ser. i. 46), and speaking of Canute little more than a generation after his death, recalls his charities, how "when he came to a minster or fortified town, he handed over . . . enough for the comfort of all the clerical or the monastic order, not any chance boy of good birth, but the more select of the poor." Abbot Sampson, writing about a century later, c. 1180 (ibid. 120), credits Canute with "instituting public schools (publicas scolas; the earliest use probably of the term public school in any English writer) in the cities and towns, and, establishing masters at the state expense, sent to them boys of good promise to be taught grammar, including even freed sons of slaves." Canute is praised because he turned out the canons from Bury to put in monks. But the school, though it thus fell under the sway of the abbot, continued in the town, and became the direct ecclesiastical and secular school. Masters. So when Earl, afterwards King, Harold founded the college of Holy Cross at Waltham, the chief officer next the dean was the schoolmaster, Master Athelard, imported from Liege, whose "lessons in grammar and verses and composition did not prevent equal knowledge of singing and divine service. The boys knew the psalter by heart, and entered the choir in procession from school, and on leaving choir returned to school with all the gravity of the regular canons" who in 1177 supplanted the seculars. The secular canons, one of the expelled, who wrote the history about 1180, was himself the pupil of Master Peter, son of Athelard; for secular canons married and had children.

In the half century which followed the Conquest, the cathedral and many of the collegiate churches were reconstituted and enlarged, the normal number of seven canons being increased, and reaching in some cases as many as fifty. In this reconstitution schools were not forgotten. The statutes called "The Constitution of St. Osmund," said to have been made at the foundation of Salisbury Cathedral in 1091, are in almost identically the same words as the statutes of Lincoln, York, and Wells, and they established, insularly, precise and minims for the government of dean and chapter, four, viz. dean, singer (cantor), schoolmaster or cancellarius, and treasurer. Of these, the "cantor ouate" ruled the choir as to singing; the treasurer in keeping the ornaments, the chancellor in teaching, writing and reading the books; the archisecula or the archisecularis ought to hear the lessons and determine, carry the church seal, and compose letters and deeds, note the readers on the tablet, and so forth. Of the secular canons a few statutes codified in 1307 expressly state that the chancellor was "anciently called the schoolmaster" (magister scolarium, a variant of which was scolasticus). At St. Paul's a series of documents relating to the chancellor are
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endorsed "of the Schoolmaster, now the chancellor." When he
occupied the title of schoolmaster, the chancellor ceased himself to
attend at school except the theological school, in which he
continued to lecture until the Reformation, but he always remained the
educational officer of the schools and the patron of the grammar school.
In the book of theology, i.e. D.D., and "to him belongs the
commission to grammar schools; but the school of York, he ought
to give to a regent in arts" (i.e. an M.A. who has not taken his degree
from a university, but is an accomplished man, and chosen for the
office by grace for four years.) The grammar schools outside
York to which he was to appoint were probably those in York
dioce, outside special liberties, such as Beverley (itself a collegiate
church), but except for an appointment by the chapter, when the
chancellorship was vacant, to Doncaster grammar school in 1351
(A. F. Leach, Early Yorks. Schools, i, 22), we do not know what
time were the first. They would form one of the most important
schools without his (the chancellor's) licence and all the schools in Lincoln-
shire he confers at his own pleasure" (Vict. County Hist.: Lincs. ii.)

In London the chancellor was called schoolmaster of St. Paul's. The
school of St. Paul's, as written in the Statute Book (Mem. St. Paul's, A. B. ii), in which
in 1138, Henry of Blois, bishop of Winchester, acting as bishop of
London, holding the see in commendam during a vacancy, enforced
the exclusive privilege of Henry the Schoolmaster (scollarum magistri)
of St. Paul's, ordering the dean and archdeacon "to excommunicate
those who without a licence from schoolmaster Henry presume to
attend in the city of London, except those teaching the schools of St.
Paul's or Westminster, where the schools have been restored as it
was itself a collegiate church with a dean and chapter and the duty
and right of keeping a grammar school, and St. Mary le Bow was a
school of the archbishop of Canterbury and extra dean to London.

Precisely similar provisions prevailed at the great collegiate
churches like Beverley and Ripon in Yorkshire, and Southwell in
Nottinghamshire (A. F. Leach, Mem. of Southwell Minster, ii, iii. 13,
29), as well as many others, and the schools in the diocese of York.
At the former, where we hear (Hist. Ch. of York, Rolls ser., i. 281) a curious tale about the schoolmaster (scollarum)
c. 1180, falling in love with a girl he saw in church, the schoolmaster
also became chancellor. In 1304-1306 we find a series of reported
cases in which he enforced by excommunication the monopoly of
the grammar schoolmaster he appointed against unlicensed rivals
(i.e. the town's schoolmaster) (Hist. Ch. of York, Rolls ser., i. 281, 282).
Similarly the collegiate churches in the castles of Pontefract and Hastings (Vict. County Hist.; Susses. E.) had their grammar schoolmasters about 1150. They
were spread all over the kingdom.

The grammar school was a public school open to every one.
It has been indeed repeatedly asserted that the cathedral schools
were choristers' schools and taught nothing but the 'psaltery
and a little elementary Latin grammar. The assertion is founded
on a complete misunderstanding. It is a question whether there
were any choristers in the 12th century or whether they are
not a later introduction, the canons and their vicars choral or
choir scholars and their pupils not appearing in the school lists
at Salisbury are not mentioned in the Institution of St. Osmund,
and they first appear in the 1220 edition of that document. At
Lincoln we first find choristers mentioned in a statute of 1236,
"To the Precentor belongs the instruction and discipline of the
boys and their admission and ordering in choir." At York the
1307 edition of the statutes says "the collection (i.e. appointment
of masters) to song schools belongs to the singer," now
called precentor, "and cases affecting them ought to be heard
and decided by him, though execution belongs to the chapter"
(Leach, Early Yorks. Schools, i, 12). At St. Paul's there was
no precentor till the 13th century and there is no mention of choristers
till 1263, though school-boys (pueri scholarum) appear as
witnessing a deed between 1142 and 1148 and receiving 4d.
for cherries for doing so. It must be remembered also how very
small the number of choristers was and how incapable of
constituting a school. At St Paul's they were only eight until the
15th century, at York only seven in the 14th. So far from the
grammar school being a school solely or even chiefly for choristers,
there are several cases in which contests arose whether they had
any right of admission to the grammar school and the 14th century
registers of the almoner or almsgiver of St Paul's, who
about 1180 was given a house for the poor, in which later the
choristers were boarded, records that the grammar school-
master claimed five shillings a year for teaching them grammar.
At Beverley in 1312 a contest between the grammar school-
master and the song schoolmaster took place as to whether
the grammar schoolmaster was bound to admit all choristers
free, or only the original number of seven. It was held after
evidence as to old custom that all must be admitted free. But
there could have been no doubt if the grammar school had
been for the non-choristers' benefit. A contest at Warwick
between the grammar schoolmaster and the music school-
master, about 1215 (or 1315), owing to the latter intruding
on the domain of the former, was settled by the chapter on
the basis that the latter was to teach no grammar, but only "those
learning their letters, the psaltery, music and song" (A. F. Leach,
onwards the song or choristers' school was of the nature of an
elementary school, like that attended by Chaucer's "litel clerenge" in the Priories Tale, in which the boy sat in the school
and was taught psaltery, writing, reading, arithmetic and
"dempitoris because "I lerne song, I can (i.e. know) but small grammere." Even in quite small places, as at Northallerton,
Yorkshire, the distinction between the grammar school and the
song school was at first strictly drawn, but tended to disappear
in the dearth of M.A.s after the Black Death (Early Yorks.
Schools, ii, 60-62). In the larger places the distinction was
strictly maintained until the Reformation, when the song schools
disappeared, except in the cathedrals and the few collegiate
churces, including Winchester and Eton, which survived it, and
at Lincoln and Colchester.

The cathedral and collegiate church grammar schools under the
control of the secular clergy in the person of the chancellor
of the church furnished the chief, and perhaps in the 12th
century the sole, supply of schools. There is, however, some
excuse for the notion that monasteries kept them, in the fact
that in England, differing from the rest of the world, the cathedral
churches had, in many of the chief places, notably Canterbury,
Winchester and Worcester, during the monastic outburst
connected with the names of Ethelwold bishop of Winchester and
Dunstan of Canterbury, been taken from the secular clergy,
and monks placed in their rooms. In those places there was no
chancellor. But so essentially was education regarded as the
business, not of monks, but of the secular clergy, that even in
these places the grammar schools were not placed under the
monks but remained under the immediate care of the bishop,
either personally or through his archdeacon, a secular. Thus
we find at Winchester about 1154 Master Jordan Fantosme
and John Joichel (Jekyll), "clerks of the bishop of Winchester,"
carrying an appeal from the bishop to the school about the
right to teach at the school at Winchester first to the Court of Archbishops
then to the archbishop himself, who, after a long argument, allowed
William Waynflete appointing a master to the grammar school "called in the
vulgar tongue, the High School" (A. F. Leach, Hist. Win. Coll.).
This school was in Symonds Street outside the monastic precinct.
So at Canterbury the grammar schoolmaster appears among
lay witnesses in 1229; his right to excommunicate anyone
assaulting his scholars or carrying on a rival school was allowed
on appeal to the Court of Arches, on production of a confirma-
tion by the archbishop of the right as already ancient in 1202,
and appointments by the archbishops of the master in 1366,
1371, 1375 and 1443 are preserved (The Times, Sept. 1897).
Here also the school was outside the monastic precinct, by the
parish church of St Alphege in the town (Guardian, 12 and 19 Jan. 1898). Similar evidence is forthcoming at Worcester,
Norwich, Carlisle and elsewhere.

At the end of the 11th and beginning of the 12th century
a renewed movement began for the further extirption of the
secular clergy, on the ground of their wicked lives, the wicked-
ness being that they insisted on the liberty to marry, and for
the conversion of collegiate churches into monasteries of its
orders, first of Cluniac monks, then of Augustinian, Black
or Regular canons, who eschewed marriage. Thus Dunwich
School passed under the rule of Eye Priory (Clunians) between
1076 and 1083; and Thetford School to Thetford Priory
(Clunians) in 1094, though it was released again to the secular
dean of Thetford in 1114. Similarly the government of Glouce-
ster School was handed over to Llandthony Abbey (Augusti-

dians) in 1137; Reading School was given to the newly-founded
Reading Abbey (Clunia) in 1339; Dunstable School to Dunstable Priory in 1330; Derby School to Darley Priory (Augustinian) about 1350. Bedford collegiate church was converted into priory and moved to Newnham, and its right to the school acknowledged by the archdeacon of Bedford in 1555. A similar acknowledgment is found at Christ Church, Herts., in 1563; while Bristol School was taken from the Kalenders Gild and handed to Keynham Abbey in 1571; and Arundel School to Arundel Priory at some date unknown (see articles on “Schools” in Victoria County History for the several counties in which these places occur). But these transfers did not make the schools monastic in the sense that the schools were kept in the monasteries or taught, much less frequented, by monks. The schools continued to be primarily religious schools frequented by lay boys and secular clerks, and taught by secular clerks, sometimes in holy orders—and at that time even sub-deacons were reckoned as holy orders—but more often only in minor orders, and not seldom married men. Thus in 1420 the Patent Rolls show us one Ralph Strode, master of the schools of the city of Winchester, bringing an action with Dionisia his wife. All that was transferred to the monks was the right of appointing the schoolmaster and the power and duty of protecting the authorized schoolmaster’s monopoly. At Bury St. Edmunds the school is still maintained, and it is said that even the archdeaconry of Bury was vested in the monastery and exercised by the sacrist of it, subject to appeal to the abbot (Vict. County Hist.: Suffolk Schools, ii.). The substitution of regulars for seculars ceased in the latter part of the 12th century, owing chiefly to the secular clergy at large, under papal pressure, accepting the rule of celticab, and to the growth of universities.

The universities were developed out of the cathedral and collegiate church schools. In the days of Alcuin, as we saw, the one schoolmaster taught all subjects from the elements of grammar to theology and philosophy. In Italy the faculties of logic, grammar, and rhetoric were kept together in one. Moreover, the movement for university colleges perhaps caused a new crop of collegiate churches to spring up, of which grammar schools formed an integral and important part. In the quinquennium 1260 to 1265, the collegiate church of Howden was founded on the Yorkshire estates of the bishop and priory of Durham at one end of the kingdom, and that of Glassney in Cornwall on the estate of the bishop of Exeter at the other. These were ordinary colleges of secular canons with grammar schools attached, and the schools outfitted the colleges to the Reformation. They were contemporaneous with the first university colleges.

The college of St Nicholas, with 20 university students, was founded by Bishop Giles Bridport of Salisbury at Salisbury in 1261, Merton College by Walter of Merton at Malden in Surrey in 1265, and St Edmund’s College at Salisbury by Bishop Wyly in 1270, and Merton College was moved to Oxford in 1275. The difference between these colleges and the ordinary collegiate churches was simply that the former were ad ordinum et studendum, the latter ad studendum et ordinandum. So closely did Merton College resemble the ordinary parish church that it was an inappropriate parish church and it contained the usual appendage of a grammar school, though it was limited to 13 boys, who were to be of the founder’s kin. The master who taught them was called the “master of glomerly,” an odd corruption found also at Salisbury, Cambridge and Orleans. A similar grammar school was found at Queen’s College in 1340, but this from lack of endowment was never developed according to its founder’s intentions. These two colleges formed a starting point for yet another new development, when William of Wykeham, in founding New College on a scale more than twice as large as Merton, Merton, did not, however, put his scholars to teach theological and legal students, and placed the former as the main object of a separate, though connected and more or less subordinate college, at Winchester in 1382. Though Winchester was the first boy’s school-college, Oxford itself had been apparently the first place in medieval England at which grammar schools were maintained as separate entities, not attached to cathedrals or colleges, and practically as private adventure schools. The university apparently placed no limit on their number and rivalry, though retaining control and supervision over them, and the two grammar school surveyors elected by convocation.

In the first quarter of the 14th century even the monasteries contributed to the spread of education by almonry schools, which were now built as quasi-separate institutions by, or just outside, their outer gates, under the management of the almoner or almsgiver of a monastery. The almonry, whether a separate building or a chapel or dormitory for choristers to sing in the Lady chapels, which had become almost necessary appendages to great churches. At Canterbury a staff of six secular priests with clerks and scholars was established in the almonry to sing for the soul of Edward I. In 1310. The scholars were admitted at ten years old and might stay to twenty-five, but were expected to be ordained sub-deacons and retire at twenty. The day scholars were lodged in the almonry, and the choristers and schoolboys were taught the sick and infirm monks who lived in the infirmary. At first they were taught wholly in the city or archbishop’s grammar school. But by 1362 they had a separate grammar master, probably only as a house master, as the one mentioned in that year found Kingston school a better post, to which he had gone off without notice. The master was always a secular, and in 1451 was a married man. There is no evidence as to how many boys there were. At Westminster boys first appear in the almonry in 1354, and they first had a master in 1357, who from 1387 onwards, but not before, is called schoolmaster. The boys numbered thirteen in 1373, twenty-eight in 1385, forty in 1388. Master John of London was elected in 1379, and by 1384 there were sixty. He was succeeded by Thomas Four (A. F. Leach in Journal of Education, Jan. 1905). This almonry school for charity boys is the only school, other than the novices’ school, which existed at Westminster Abbey before, on its conversion into the cathedral of St. Mary of Westminister VII. Many of the old almonry scholars and unlimited town boys was established on the model of the old cathedral grammar schools. At Durham the almonry school first occurs in 1352; their master is first called schoolmaster in 1360 (ibid. Jan. 1905). At the dissolution there were thirty boys, who waited on the monks in the infirmary, prayed all night round dead monks, sang in the Lady chapel, were fed on the broken meals from the novices’ table and lodged in a hospital or infirmary opposite but outside the great gate of the monastery. At Reading almonry boys first appear in 1346, and were ten in number. They seem to have attended the town grammar school. At St Albans statutes were made for apparently thirteen almonry boys in 1399, who lodged by the great gate but attended the grammar school in the town. At Coventry there were fourteen boys in the almonry school, and the town quarrelled with the prior in 1349 for trying to interfere with the town school for the beggars of the almonry school. The Carthusian monastery at Coventry had twelve boys in its almonry. St Mary’s Abbey, York, the almonry had twenty, who attended St Peter’s, i.e. the city and cathedral grammar school (Early Yorks. Schools, 1.)

Taken altogether these almonry schools provided for the education of, or gave exhibitions to, a large number of boys, probably not less than 2000 in all. Many of these were not novices or oblates, but were often taught by the same master. The Carthusian monastery at Pevensey had twenty-five boys, of their number to the universities. Though Gloucester College had been established at Oxford in 1283 (reorganized in 1291) to receive them, not 1% of the men were ordained, and 60 had taken the degree of bachelor of arts. But in 1537 had only thirty-two students (Vict. Co. Hist.: Gloucester, ii. 342). The monasteries
were ordered to provide a grammar master who might be, and in
fact nearly always was, to teach the young monks and novices.
Yet in 1357 the Winchester cathedral monks were found by
William of Wykeham to be "wholly ignorant of grammar" and
to make the less peremptory by ‘‘scolding and reproaching’’ the
visitation officers of Norwich monastery in the late 15th century (Dr
Jessopp, Camd. Soc. 1892) hardly one had its grammar master as
it ought to have had. In 1453 Osney Abbey provided for the monks
a grammar master ‘‘for the instruction of the young monks, not a
monk but ex-second-master of Winchester College (Hist.
Winchester Coll. 26), and other Wykehamists were to be found
teaching grammar at the London Charterhouse and Netley Abbey,
Hants. It is clear that the monks were by no means a learned
body.

It is chiefly from the London and Oxford schools that we learn what
grammar schools actually taught in the 12th to the 15th centuries.
The local classics is Fitzstephen's Description of London (Mat.
Hist. Becket, Rolls series, iii. 4), as it was in the youth of Thomas
& Becket when about 1127 he attended St Paul's school, "the
city of Canons." Paul's was Parliament’s school; the contests of the
scholars from it and the other two schools on "saints' days, when the
elders contended in logic and rhetoric, and the boys 'vie with each other in verses, or in the principles of
literature, in law, in poetry, in morals', or in epigrams, rhymes and metres"; while on Shrove Tuesday, after
a cock-fight in the morning, they had a great game of (foot?) ball in
the streets. And yet of the Oxford and London schools statutes show us that B.A.s had to read for their degree Priscian On
Constructions twice, and Donatus's Barbarismus once; books which
imply an advanced knowledge of Latin syntax. The Oxford
grammar school statutes, not dated but of the 13th century, provide
for grammar masters being examined in verse-making and prose
composition and knowledge of Latin authors before being licensed
to teach. The only clerical act of a grammar school, and a sale of
being forbidden as improper, are Ovid's Art of Love and
Pampillius who wrote De Amore. Every fortnight the masters were to
set a copy of verses and letters to write, which the boys were to
study, and pass an oral examination on the following day. Special attention was to be paid to the smaller boys in hearing
and examining them on their rules as to parts of speech and accent.

It was particularly ordered that they were to observe the rule in
Latin and Roman (Romane), i.e. translations were to be done not
into English but Romance, i.e. French. For after the Conquest
French was the vernacular language of the upper classes, and while
the pre-Conquest school glossary of Elfric translated Latin into
English, the post-Conquest glossaries, such as Neckam of St Albans
school, give the translation in French. Though by the 13th century
English was supplanting French, the schools as usual lagged behind,
and it was not until the Englishman entered the courts of France in
England till after the victories of Edward III. John of Trevisa,
translating the Polychronicon of Higden, who, writing in 1327,
commented on the corruption of English due to the strange custom of
learning Greek and Latin in French schools. He points out that
this custom of construing into French "was changed after the first
murrain (the Black Death of 1349) by John Cornwall, a master of
grammar, who desired the English to use their own tongue, and
A.D. 1355, in all the grammar schools of England children learn French
and construe and turn the English; the advantage of was that they learned Latin quicker, but the disadvantage was that they
knew "no more French than their left heel." Master John
Cornwall was an Oxford grammar schoolmaster, being paid 10d.
In 1347 for "salary" of his school for the six founder's kin boys at
Merton; and Pencrych was not, as supposed by Mr de Montmorency (Colloquies), a schoolmaster, but was a grammar master at Penkridge in Staffordshire (though he no doubt took his
name from that place), but was another Oxford man, living in 1357
in a hall by Merton, afterwards called Pencrych Hall. Though this
very rational innovation thus began in Oxford, yet a new edition
of the Oxford Grammar School Statutes in the late 14th or early
15th century provided that the masters should in construing teach
the French tongue. A.D. 1345 for "As the French tongue should be utterly lost," as it came to be.

It is extremely difficult to ascertain what books were actually
read, as well as taught, in the grammar schools far into the 15th
century. William of Wykeham's account of his pupils, and
Christian poets such as Sedulius and Juvenal, the staple of
Ancelin, and recommended by Colet for St Paul's in 1518, were much read
in the intermediate times, is doubtful. Vincent of Beauvais, who
wrote the Speculum Maius, tells us that in rhetoric the Fransis
French, quotes Horace, Ovid, Apuleius and Valerius Maximus, but
would like to substitute the Christians for the classics. But he was
a Dominican friar. It is certain that classical authors were not
expected, as well as read, in rhetoric. The grammar school was the work
of Waltham College, for the Quen de Casimere the master of his diocese for taking the boys, "as soon as they could
read the Lord's Prayer, the creed or matins and the hours of the
Virgin, and before they could construe or parse them," to "other
school books and poets as if they were heathens instead of
Christians." Books of manners in verse were read in schools from
the days of John de Garlandia, one of the French manuals of
Sulpicius, a Roman schoolmaster of 1498, which was read in
the lower forms of Winchester and Eton in 1535. The metrical
grammar of Alexander of De villa Dei (Dol) was almost as popular as
Donatus. In 1519 the university of York decided that the books of
logic successive manuals were founded on Boethius and Isidore
of Seville. The 15th century saw a reaction against the logic, which,
valuable as it was, began too much too early and was strongly
repudiated by Waynellete, who at Magdalen College insisted that his
"demesye, or scholars, should not go on to logic till perfect in
grammar. The wide knowledge of the classics shown by Chaucer,
the son of a squire, like Becket before him and Milton for him, went to
St Paul's school, indicates what the average laymen and clerics
learnt in the average grammar school.

A question has been raised as to who attended the grammar
schools. The answer appears to be, all classes. Theoretically,
sons of slaves and villeins were excluded. But it seems certain
that picked specimens even of this class were admitted. The
bulk of early schools were then, as now, in cities and boroughs,
where all were free. Alfred's Anglo-Saxon colleagues represent
sons of smiths, hunters, cowherds, shepherds attending school and
learning Latin. That villein's sons did go to school is clear from two
instances alone. In 1312 Walter of Merton, son of the founder of
Merton College, has been found while he was at Eton, and for
him, went to St Paul's in 1344. The manor rolls at Great Waltham,
Essex, show a villein fined 3d. for sending his son to school without
licence from the lady of the manor (Hist. Rev., July 1905). In
1301, after the Peasants' Revolt, the Commons sent up a bill to
Richard II, "that no neil" (said to mean a female villein) "or villein
may henceforth send their children to school (a escolos)
for their advancement by clergy, and that for the maintenance
and salvation of the honour of all the freemen of the realm." The
petition was rejected. In 1406 the statute of artisans, while putting
umerous restrictions on their freedom, adds, "that no man or woman of what estate or condition shall be free to send their son or daughter to learn
grammar (literature) at any school in our kingdom."

Henry VI., in the statutes of Eton, bears witness to the admission of the un-
free to schools by inserting a reactionary prohibition against villeins (nativi) or illegitimate children being admitted scholars.
Illegitimates were theoretically excluded from the priesthood,
but the papal registers are crammed with indulgences to scholars
who were illegitimate for admission to holy orders. As to the
upper class, an erroneous inference that gentlemen's sons were
excluded was due to the use of the word "school" to mean not school
or monastery. It appears from the above quoted, because, after saying that children in grammar schools learnt no French now, he adds that neither did
teach their sons French. But the two classes are not mutually
exclusive. Elder sons, who were going to knighthood or squires,
did not as a rule go to school, but the younger sons did. The
vast majority of bishops, and the higher clergy, were the younger
sons of noblemen and gentlemen, and had certainly been to school.
It is made a reproach against Bishop Grosseteste of Lincoln in
his contest with his chapter that he was not a gentleman.
We find Giffard, archbishop of York, son, a great Gloucestershire
magnate, excluded from being presented to Birmingham in 1276, and another archbishop of York, William Melton,
ex-privy seal and lord chancellor, sending two nephews to
Newark school in 1338. The only known mention of the school
of Taunton before the days of its wrongly-reputed founder, Bishop
Fox, is preserved in an inquisition in 1310 to prove the age of
a royal ward, Hugh, son and heir of Thomas de la Tour. John
of Kent, 60 years old, knows Hugh's age because he had a son
at the school of Taunton with him seventeen years before (The
Genealogist, iii. 211). This cannot have been an isolated instance.
William of Wykeham would not have provided for "10 sons of
noblemen and gentlemen, special friends of the college," being
admitted as commensals or boarders with the scholars, nor have
forbidden the scholars of Winchester and New College to quarrel
as to whether their birth was noble or otherwise, nor would the
earliest lists of scholars and commoners there contain the names
of sons of judges and masters in chancery and county gentlemen, like the Pophams of Dorset and the farringtons of Lancashire, if the gentle classes were not already in the habit of going to school. At Eton the number of noblemen and gentlemen commoners was doubled. The first or second headmaster and third provost of Eton, William Westbury, a Winchester and Oxford scholar and Canon of Ely, was almost certainly a native of that name. In 1275 Sir Thomas Bourchier, son of the earl of Essex and of Eu, nephew of the archbishop of Canterbury, was a commoner outside college at Winchester, and in 1479 the son of William Paston, the judge and Norfolk landowner, was writing verses at Eton in his letters home. In 1502 Sir John Percyvale founded Macclesfield grammar school expressly for "gentlemen's and other good men's sons thereabout."

Tuition fees were normally paid in grammar schools. In 1277 the fee paid to the "master of glomery" at Oxford for five Merton grammar school's boys was 10s., a head a term; in 1506 the "scoliasm" of eight boys in the winter term was 3s., of seven boys in the Lent term 2s. 11d. and in the summer term 2s. 4d., a variation from 4d. to 4½d. and 5d., a term, probably owing to variation in the length of the term and representing 4d. a week. In that year the dica of the usher was 3d. a term, and in 1310 the usher was paid 4d. for three terms for eight boys, or 4d. a term. The usher might of course be taken in addition, but even then when the majority of livings were under £3 a year, a halfpenny could hardly have been a living wage for eight weeks. Perhaps the usher got a share of the levy of 2d. a head for offerings to the light of St Nicholas, the schoolboys' patron saint. At Westminster in 1291 the bishop was called in to settle a quarrel between the schoolmaster and the rector of St Nicholas church as to the right to the wax which guttered from the candles which had been provided by the terms. Perhaps the united Oxford statute of the 15th century fixes the upper limit of grammar school fees at 8d. a term (Reg. Giffard, f. 341). The tariff settled by the bishop of Norwich, for Ipswich grammar school in 1476-1477 was too low for grammarians, 8d. for paupersians, or those learning to read the psalter in Latin, and 6d. for primersians, or those learning the primer or accident (Vit. Co. Hist., Suffolk, ii). But the corporation rebelled against the fee of 10s. for ten boys, and in 1482 cut it down to 8d. a term. This was certainly the normal fee. In the return of chancries at their dissolution in 1548, the school at Newland is reported (Leach, English Schools at the Reformation, 78) to have been founded in 1446, to charge "half-free, that is to say making of scholars learning grammar 8d. the quarter, and of others learning to read 4d. a quarter."

At successive epochs there have been attempts to make education free (Journ. of Educ., June and July 1908). Hitherto after every attempt fees have crept back under some guise or other, as the endowments provided to ensure freedom were often inadequate to start with, and anyhow became inadequate by change in the value of money, while the inventive habit of the rich in giving "tips" to secure special attention forced contributions on others. The movement began under the Roman bishops, and in 1292 was confirmed by the canons of the chief cathedrals everywhere. But probably the main force of the effort was made by the peaceful emperors from Vespasian onwards extended the area and pay of public schools at the state expense, both of rhetoric and grammar. There can be little doubt that the cathedral schools were intended to be free just as much as the church services. Yet it had become necessary by the Lateran Council in 1179 for the canon law definitely to provide that, "to prevent the poor who could not be helped by their parents' means from being deprived of the opportunity of learning and advancement," every cathedral church should provide a competent benefice for a master to teach the clerks of the church and poor scholars gratis: and that a master who has received the school is to use the school fees for the purpose it should be restored, while no fees were to be exacted for licences to teach. At the next Lateran council in 1215 this canon was recited and its non-observance in many places lamented. The canon was confirmed and extended from cathedrals to all churches of sufficient means, while the cathedrals were also directed to provide a theological lecturer. That the first canon was not everywhere a dead letter is proved by the grant about 1180 of Archbishop Roger to the chapter of York of £5 a year to the fee of your school," charged on the synodals of the diocese, by the archdeacon, confirmed by Archbishop Geoffrey (1197-1212), and in 1400 by the chancellor to Archbishop Giffard in 1271 (A. F. Leach, Early Yorkshire Schools, c. 12-176). So at Burry St Edmunds in 1180 Abbot Sampson, who had himself when a boy and a secular clerk been admitted to the grammar school free as a special personal favour, first made the grammar school free of fees for "school-hire" by giving it a school house outside the abbey in the town, and a year or two later endowed it with half of a living worth £5 a year for which the master was to teach 40 boys free, relation of the monks being preferred. There were also many exhibition endowments, which made schools free or partially free for poor boys, such as the provision at St Cross Hospital, Winchester, founded in 1150, of free meals daily for twelve boys from the High School, Winchester; and an endowment given to the Durham Abbey almoner about 1180 for board and lodging of three boys from Durham grammar school, while at St Nicholas' Hospital, Pontefract, the custom was ancient in 1267 to provide 40 leaves a week "except in vacations" for the scholars of Pontefract school, which is mentioned about 1200 as granted to the collegiate church in the castle there. It is significant that while the inquisition which established this custom was taken in French in 1267 it was confirmed in a mixture of Latin and English in 1464. In connection with Stapledon Hall, now Exeter College, Oxford, Bishop Stapledon about 1327 provided for twelve scholars of Exeter Cathedral grammar school being boarded and clothed gratis in St John's Hospital by one of the gates of the city. In 1441 St Anthony's school was established in St Anthony's Hospital, London. Later, as in the famous case of Banbury Hospital, under Stanbridge in 1501, hospitals were bodily carried into schools, a movement not infrequently followed since. Henry VI., in 1445, under the guidance of Chicheley and Waynefete, copied Winchester down to the minutest particulars, and the wording of its statutes, but with the important difference that its school was declared, what Winchester was not, a free grammar school open to all from all parts of England. Another class of school, which if not free at first generally became so, was that of the grammar schools established by joint stock effort of the numerous gilds, or trades unions, which studied the towns. As the London City gilds still keep chaplains, so nearly every gild maintained its own school, or sent boys to the free grammar schools, as at Boston, where the chapel was near, was associated with the grammar school, and where the boys were mainly sons of the gild members. Some of these guilds provided a school for the gild apprentices or the sons of gild members. Some of these schools were those kept by chantry priests, endowed by single benefactors to pray for their souls, who sometimes by express terms of the foundation, more often perhaps to occupy their time or eke out not too substantial endowments, kept schools. These were sometimes free, more often at first not. But we know scarcely anything of these schools before the 14th century, the foundation deeds of those isolated institutions not having been preserved like those of colleges. We find, however, Osweyrd endowed as a free school by David Holbeach, a lawyer, about 1406; Middleton, Lancashire, by Bishop Langley of Durham, in 1412; Durham itself by the same in 1414; Sevenoaks by William Sennock (Sevenocch), a London grocer, the schoolmaster of which was "by no means to bein holy orders," in 1432; Newport, Shropshire, by Thomas Draper,
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1442; Newland, Gloucestershire, by Robert Gryndour esquire, 1446; Alnwick, Northumberland, by William Alnwick, bishop of Lincoln, 1448; Deritend, now in Birmingham, 1448; Towcester by Archdeacon Sponne in 1449. There was somewhat of a stoppage of such foundations during the Wars of the Roses, but it was resumed with renewed vigour during the latter years of Edward IV, and by the time of the accession of Henry VII only the “endowment to the dissolution of monasteries.” Among colleges may be noticed Acaster College for three schools of grammar, song and scribener craft, i.e. writing and accounts, by ex-chancellor Bishop Stillington, 1472; Rotherham College with three similar schools by ex-chancellor Archdeacon Rotherham, 1484; Ipswich by the chancellor Cardinal Wolsey, 1528; and among chantry schools, Hull, 1482; Long Melford, 1484; Chipping Camden and Stow on the Wold, 1487; Stockport, by ex-Lord Mayor Sir Edmund Shaa, 1487; Macclesfield, by ex-Lord Mayor Sir John Percival, 1503; Crewter, by ex-Lord Mayor Read, 1505; Week St Mary, by the ex-Lady Mayoresse Percival, 1508; and so on. The re-endowment of the old St Paul’s school, London, by Dean Colet in 1510–1512, with the property he inherited from Lord Mayor Colet, and its transfer under papal, episcopal, capitular and royal licence from the dean and chapter of St Paul’s to the Merchers’ Company, and its conversion into a school free for 153 boys, created no small stir. Especially this was so, because it is the first instance in which the tetching of Greek is mentioned in school statutes, though only in the tentative form of a direction that the high master should be learned in Latin the 12th century transfers but even by much later and known that the Greek masters were regarded as trustees, as included in the confiscation of the monastery itself. Coventry, St Albans, Eye, Reading, Bury St Edmunds, Abingdon, Faversham are some out of many which suffered from this doctrine, and if they did not in fact cease, were for a time deprived of their endowments and only revived with new ones. Reading school was actually granted to its master, an Eton and King’s scholar. St Albans was restored by the munificence of its last and well-pensioned abbot; Bury St Edmunds, like a good many more, by grant of Edward VI.; Abingdon by a private donor; Parliament in 1556. Theion was a very good property on cause shown. But many, like Dunwich, perished irretrievably.

Spit of the dissolution of monasteries, the creation of chantry schools and other grammar schools went on. In this very year, 1540, John Harman (who is generally known by his assumed name Veysey or Voysey), bishop of Exeter, endowed Sutton Coldfield grammar school, and in 1544 made its gild the governors. One of the latest of great schools, that of Berkhamsted, was founded by John Incent, dean of St Paul’s, in 1541; while archbishop Holgate of York founded three free grammar schools, through without any chantry provisions, at York, Malton and Hemsworth in 1546. In 1548 all the endowed schools in England, other than the cathedral schools, were threatened and the vast majority destroyed by the act for the dissolution of colleges and chancies. Only Winchester, Eton and Magdalen College School were exempted, and they owed their exemption to being regarded as part of the universities with which (through New College, King’s and Magdalen) they were connected; and even they had been included in the similar act passed in 1546, which was, of course, permissive and lasted for Henry VIII’s life only. The Chantrey Act, while providing for the abolition of colleges, gilds and chancies, contained indeed provision for the continuance by special order of all schools attached to them, which grammar schools by foundation, and for their increase and enlargement out of the confiscated lands. Unfortunately there was neither time nor money to spare for the purpose. A commission consisting of Sir Walter Mildmay, afterwards chancellor of the exchequer, and Robert Keyhay, or Kelway, afterwards serjeant-at-law and author of Kelway’s Reports, continued by warrant of the 20th of June 1548 “until further order” such schools as were clearly shown to be grammar schools, by petition, at the net income specifically enjoyed by the schoolmasters at the time. The “further order,” which was to re-endow them with lands, never came. Only in a comparatively few places, where the inhabitants or powerful persons bestirred themselves to beg, or more often to buy, chantry lands from the Crown, were the schools restored and re-endowed. The few that were restored, and even by an irony of fate some of those which were deprived of their lands by Edward VI. but managed to struggle on, got the name of Free Grammar Schools of King Edward VI. So Edward VI. has been credited with having destroyed the schools, estimated by various writers at 22, 30 and 44 in number, of which in the most favourable cases he increased the endowment, but also with being the promoter instead of the spoiler of a grammar school system. The earliest school actually restored by him was Berkhamsted, which was re-founded by act of parliament in 1549; St Albans, Stamford and Pocklington being also re-founded by acts of the same year. Acts of parliament were found too cumbersome. Some, as at Morpeth, Northumberland, and Safron Walden in Essex, were re-founded by grant to a town corporation of gild property with a grammar school attached. Most of them have been credited with having been refounded by patent. The first refoundation by patent for a school per se under a governing body created ad hoc was that of Sherborne, 13th of May 1550, Bury St Edmunds often, but wrongly, claimed as the first, not being till the 3rd of August 1550. The bulk were re-founded in 1551-1553.

The notion that there was any great advance or change in the curriculum of schools at the Reformation is erroneous. There is hardly any difference between the authors prescribed at Bury in 1550 and those at Ipswich in 1528; Cato’s Moralia, Aesop, Terence, Ovid, Erasmus of Rotterdam, Virgil and Horace appearing in both. If anything Ipswich was the more advanced, as Wolsey directed his boys to be taught precise writing in English, and essays and themes, also apparently in English, which are not mentioned at Bury. But Ipswich was a school of the first grade with eight forms, whereas at Bury only five were contemplated. The reign of Mary did not affect the schools as such one way or the other. Several, like Basingstoke grammar school and St Peter’s school, York, were re-endowed in her reign, the former by restoration of gild lands, the latter by appropriation of the endowment of a hospital for schooler children. Most of the latter were extruded, and so bestirred, like the master of Reading school, Julian Palmer, burnt. Similar extrusions of Romanists followed on the accession of Elizabeth. In 1580 and subsequent years the bishops were ordered to inquire as to schoolmasters who did not attend church or had not licences from the ordinaries to teach. The visitations of the chapter of Southwell as ordinaries in their liberty show schoolmasters in many small towns and villages, some of them “popish recusants,” and others inhibited until they had been duly licensed. How far they taught grammar schools and not elementary schools is not very clear. But one unfortunate result of the suppression of the song schools was that attempts were now made, as at Wellington in Northamptonshire, to make the grammar schools serve the two
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incompatible purposes of grammar and elementary schools, with the result too often that the grammar school was degraded and the elementary school inefficient.

The number of school foundations credited to Queen Elizabeth or her era is very much larger than the facts justify. The greatest of all, Westminster, which during the 18th century was facie praece in the numbers, social rank and academic and literary achievement of its scholars, had in fact never ceased after its foundation, or refoundation, as a cathedral school under Henry VIII. Though Mary had restored the monks, the school went on throughout her reign and until Elizabeth formally refounded it with the restored canons. It is more extraordinary to find St Albans, founded under act of parliament of Edward VI., with Coventry, restored under patent of Henry VIII., and Lincoln, which had existed uninterruptedly from the 11th century, credited to her time. Similarly Bristol, Mansfield, Worcester, Darlington, Leicester, Eye, Bromyard, Richmond, Bodmin, Penryn, Fotheringay and others long previously existing and deriving no benefit from her or augmentation in her time, are erroneously dubbed Elizabethan.

In the curriculum of the schools, the change made by the Reformation has been much exaggerated. Already in 1446, in founding at Cambridge the college of God's House, now included in Christ's College, which was the first training college for grammar or secondary schools in the English university, Bishop Bennyngham, put forward the necessity of having not only for translating the scriptures and carrying on the law and business of the realm, but also for communication with strangers and foreigners. In the Elizabethan schools the preparation for particular study and the filling up of various qualifications was to the fore. Under James I. and the Commonwealth the mention of Hebrew in statutes and the teaching of it in schools became quite common. It was advocated even by John Comenius, the Czech-German, who created a stir a few years before the Civil War by denouncing Latin as a subject of instruction except for boys going to the universities, and advocating the substitution of teaching in the vernacular language of each country instead.

There is one not wholly novel but notable feature which may be remarked in Elizabethan school foundations, mostly no doubt replacing old ones, and that is that many were the product of joint effort, partly in annual subscriptions and partly in donations of land or money down, not from one benefactor but from many persons. This is the case in many of which have been attributed to the queen herself or to individual founders. Wakefield and Halifax in Yorkshire; Ashbourne, Derbyshire; Sandwich, Kent; Hexham, Northumberland; and St Saviour's and St Olave's, Southwark, are cases in which the evidence of joint stock enterprise has been fortunately preserved, as it has in that of Nottingham, which, after an existence of at least 300 years as a free school, was refounded as a free school in 1517. Another and less fortunate feature may be observed in the frequent attempt to make the grammar schools do double work, and supply the loss caused by the suppression of the song schools, by doing duty also as elementary schools to teach the three R's. It is an attempt which is being continually renewed and always results in failure; generally ending in degrading the secondary school while not making the elementary school efficient. Wellingborough in Northamptonshire is a remarkable example of this. It is a school which, founded by joint effort and out of common town estate, always languished until in recent years it shook off the elementary school and became one of the most flourishing secondary schools in the county (Vict. Co. Hist., Northants., ii.). The Peace of 1629 and the establishment of the commonwealth, when new ideas on every subject were broached, education received new impetus, and under the fostering care of parliament schools were increased in numbers. Many new schools were created, many old schools obtained an increase of endowment and efficiency. Among the great schools it was during this time that Westminster, with a parliamentary committee of lords and commons substituted for the dean and chapter, under Bushy, definitely placed itself in that position of pre-eminence which it retained till the first decade of the 19th century. It is signifi-

1 Nicholas Udal (g.v.) was master in 1555-1556.

cant that the two oldest extant school-lists are of this period, that for Winchester, which flourished under a Puritan warden and headmaster, for 1635, and that for Westminster for 1653. The care that parliament showed for schools was most conspicuous, where it might have least been expected, in regard to the cathedral schools. On the 14th of October 1642 the estates of deans and chapters were ordered to be sequestered, subject to a direction that "allowances assigned for scholars, almsmen and other charitable uses might not be interrupted." The Commons of Parliament at Westminster, set up a committee of masters to regulate the administration of the monies of the deans and chapters, and to substitute for the functions of the Committee for Plundered Ministers, to remove those scandalous in life or doctrine or who had deserted their cure.

As the property of deans and chapters was gradually sequestrated in 1643-1646, power was given this committee to relieve poor ministers and schoolmasters out of the proceeds. By act of parliament, on the 30th of April 1649, deans and chapters were abolished, and the schools were expressly saved by a clause that all payments from their revenues which before the 1st of December 1641 had been or were now increased to pay the maintenance of any grammar or school scholars should continue to be paid. The temporal estates were ordered to be sold, but the spiritual property, i.e. livings and tithes, de
dolved on thirteen trustees, and afterwards on the University of Oxford and the University of Cambridge. The committee, according to the instructions of the act, and after examining the existing statutes, put into force the 1488., 3Oth. of May, the statute of Edward VI. for raising a sum of £5061 for the extermination of ignorance and ignorance, and substituting elementary schools in the several cathedrals, of which £2000 a year was to go to the increase of the universities. Under these two provisions not only were all the cathedral grammar schools preserved intact, the existing statutes were left in force, all those in the cathedrals were returned to their business and did not bear arms against parliament, but in many cases they received large increases of stipend. The chapters were allowed to retain the schoolmasters, and the existing bishops or deans and in the case of the schools, of which the heads, under the 1488. statutes or older custom, though their own incomes they had increased to many times the statutable amounts by dividing fines amongst themselves. They had not even properly maintained the school buildings. At Canterbury, parliament had at once spent the large sum of £50 in repairing the school and masters' houses; and at Rochester similar amounts. The committee augmented salaries at Chester, the master from £22 to £36 and the usher from £10 to £15; at Chichester the masters from £50 to £50; at Rochester they doubled the former stipend of £13, 6s. 8d.; at Salisbury, the schoolmasters were doubled. An Act was passed for 20 schools, London, which by a grievous error the local historians killed under Elizabeth though it survived till the Fire of London, the salary, paid by St George's, Windsor, settled in 1442, at the rate of £16. Other schools paid from chapter or crown revenues received similar increases, Grimston £50; Newcastle under Lyme £30; Bridport, Dorset, £15. Of two of the most backward districts each had obtained a special act for the restoration of the grammar schools: in the one the masters and their scholars must be "godly and oth

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Milton, though he was perhaps rather a private tutor than a schoolmaster, is the most famous now. Another of them, Charles Hoole, a royalist and ex-master of Rotherham, who taught first close to Milton in Aldersgate Street and then in Tokenhouse Garden in Lothbury, produced a most novel and useful school book in his *New Discovery of the Old Art of Teaching School*, written in 1637 and published "after 14 years' diligent trial in practice in London" in 1660. There is no more illuminating work for demonstrating the absurdity of the notion that thought and theorizing were not brought to bear on education in those days. Milton's *Tractate on Education* (1643) is but a series of vague generalities compared with Hoole's book, and is chiefly notable as one of the first attempts to assimilate antiquity and modernity into the system of instruction. It was the first wholly classical, which is assumed as a matter of course, but of the absurd method which devoted ten years to not learning a smattering of Latin when Italian or French were learnt in a year. But Milton's own idea of cramming the unfortunate boys with Varro and Columella, with agriculture and fishing, tactics and strategies in Greek and Latin authors, so that the pupils might learn things instead of words, was as visionary a one as could be conceived.

The Restoration parliament not only cut off the supply of new foundation and maintenance gifts, but by the Act of Uniformity in 1662 and the Five Mile Act in 1665, imposing prohibitory penalties on all teaching in public or private schools, except by rigid Church of England men, did its best to stop all advance. The very ferocity of the attempt in the long run defeated itself. By a series of decisions of the courts all the schools but the endowed grammar schools were (in defiance, it must be admitted, of the law and historical right) freed from the control of the bishops, and even some grammar schools. Thus in Bates's case, 1670, it was held that where a master was put in by lay patrons he could not be turned out for teaching without the licence of the ordinary, but only censured, and that the statutory penalty was a bar to proceedings in the ecclesiastical courts. Next year in Cox's case it was settled that the bishop's licence was only required in grammar schools. Private schools nominally to teach writing, arithmetic, French, geography and navigation were outside ecclesiastical cognizance and gradually monopolized the education of the middle classes. Singleton, expelled from the headmastership of Eton at the Restoration, is said to have had 300 boys in a school in St Mary Axe. Foubert, banished from France for Protestantism, had an academy in the Haymarket under royal patronage. No dissenter, however, could be a member of a governing body or master of an endowed school, and if a dissenter went as a scholar he had to go to church and learn the church catechism. The church was therefore left in sole control of the endowed schools, with the result that at the end of the 18th century the schools were in a more decrepit condition than they were at any time in their long history. Only those which had great possessions and attracted the aristocracy flourished.

The post-Restoration period is distinguished, however, by one great innovation, the development of girls' schools. There were girls' schools at Hackney and at Chelsea, at Oxford and at Bicester, boarding-schools where "young gentlewomen learnt to play, dance and sing," and where needlework was usually taught. In 1673 Mrs Makin, who had a ladies' school at Tottenham High Cross, and had been governess to the Princess Elizabeth, published an "Essay to Revive the Antient Education of Gentlewomen," dedicated to the princess, afterwards queen, Mary. She advocates the education of girls in the same subjects as men, including Latin, though not by learning Lily's grammar by heart, but by learning grammar in English.

In the 18th century, with the progress of the means of communication, a few great schools, of which Westminster, Eton, Winchester, Harrow were the greatest, threw at the expense of the country grammar schools to which the local nobility and gentry used to resort. They were conducted, however, like private schools—the town boys at Westminster, the dames' houses at Eton, the Commoners' houses at Winchester, being in fact private ventures. The process was imitated at Harrow from 1723, and Rugby from 1766, which emulated and sometimes surpassed the three old schools: while Charterhouse and Shrewsbury (which in the latter days of Elizabeth had been one of the largest schools in the country) also developed on the same lines. But there was little change even in their matter or method. In those schools in which French was taught and English poetry and prose were cultivated it was in a sort of amateur way and as a by-study. The serious work of scholarship was still confined to classics, though they were made the medium of excursions into history, geography and political science. The grammar schools in the country towns, with the whole inferior teachers, clung more closely to the ancient ways. As the growth of the intermediate group of schools brought many of them into the ranks of the local aristocracy men mostly dissenters, the grammar schools, which refused to admit them either as governors or scholars, and which despised, if they did not, as they often did, wholly reject modern languages and modern subjects, were relegated to the free boys, who went there not for love of learning but because learning was free. Where some enterprising man got together a boarding-school his "young gentlemen," who paid relatively high fees, were carefully secluded even in work, still more in play, from the common herd of free boys.

Never probably since the 9th century was the condition of the public schools of England worse than in the years 1750 to 1840. In the *Victoria County Histories*, in Carlisle's *Endowed Grammar Schools*, in the reports of Lord Brougham's Commission of Inquiry concerning Charities (1818-1837), it may be read in the case of county after county and school after school how the grammar schools, where they still struggled to preserve a semblance of higher education, were often taught by the nearest vicar or curate, and were reduced to ten or even to no boys. Thus at Stamford in 1729 there were five boys; at Birmingham in 1734 none; at Moulton in 1744 none; at Wilberforce in 1753 none; at Oundle in 1762 one entry, in 1779 four in the school, in 1785 none. At Repton between 1770 and 1800 fifteen boys were admitted; at Abingdon from 1792 to 1803 there were from three to ten boys; at Derby in 1826 four boys; at Chesterfield in 1827 four boys, and from 1832 to 1836 one boy constituted the whole school. Often for half a century no more than half a dozen boys had been known to attend the school; sometimes this was the case for a century, while a large proportion of the schools had been definitely converted into elementary schools, and had ones at that. Great, if partial, improvement followed after the publication of the reports of Lord Brougham's commission and the suits in Chancery and private acts of parliament for the restitution of endowments of schools which followed them. But the Public Schools Commission Report of 1863 and the Schools Inquiry Report of 1868 revealed still a deplorable state of things. This has largely been remedied by the removal of religious disabilities, the introduction of the principle of representative government in the governing bodies of schools, and the widening of the curriculum through special commissions with drastic powers, in the case of the great public schools under the Public Schools Commission, and in the case of the lesser public schools by the Endowed Schools Commissioners and the Charity Commissioners under the Endowed Schools Act 1869, and the curving of endowed grammar or high schools for girls out of the old schools for boys.

It is satisfactory to end this review of the history of schools with the conclusion that however much might still require to be done, the conditions in 1910 showed a complete alteration. English schools of all grades had never been so full of pupils, so well equipped with buildings and appliances, or staffed with such devoted and active bands of teachers.

*Elementary Schools.*—*Elementary* teaching prevailed in medieval England to an infinitely wider extent than has been commonly supposed. It was at first the duty of every parish priest. Its origin has been credited, even as lately as 1908 (Foster Watson, *English Grammar Schools to 1660*), to a decree of Theodulf, bishop of Orleans in France, in 787, and to a law
of King Ethelbert in England in 994 (De Montmorency, "State Intervention in English Education, 1902"): "mass priests ought always to have in their houses a school of disciples, and if any good man desire a clerk in his little one to them for instruction they ought gladly to receive and kindly teach them." These decrees were, in fact, merely re-issues of the 5th canon of the 6th council of Constantinople: "Let priests throughout the towns and villages have schools, and if any of the faithful wish to commend their little ones to them to learn their letters, let them not refuse to receive them, exacting however no price nor taking anything from them, except what the parents voluntarily offer," a phrase repeated again and again in the foundation documents of free schools, grammar or other, to the middle of the 18th century. The mass priests, however, did not continue their practice of education. In 1397, John of King's Bench wrote to the Bishop of Winchester, tried to recall those of his diocese to it by a synodal statute: "Let rectors, vicars and parish priests see that the sons of their parishioners know the Lord's Prayer, Creed and Salutation of the Virgin . . . and the parents should be induced to let their boys, when they know how to read the psalter, learn singing also." It may be observed that now the rectors are not required to teach boys themselves, but to see them taught. The duty of the parson had in fact been devolved on the clerk. In a decretal of Gregory IX, c. 1254, every parish priest was ordered to have a school and a clerk, i.e. a priest, was appointed to it (scholes, arts combinatas). It seems to be only an amplification of Leo IV, c. 850, omnis presbyter clericum habeat scholarem qui epistolam. &c. Many parish clerks duly did their duty in teaching. So we find in 1481 at St Nicholas, Bristol, "the clerks ought not to take no boke oute of the queere for childeyne to lerne in with owte licence of the procurators," i.e. the churchwardens. At Faversham in 1549 we hear that John Howe's daughter, to the great profit of the poor, was to send her son to school not to write but to sing mass and "to teache the yonge children resorting to the said schoole there ABC" at the same pay as the usher. This seems to have been really a school. At the college of Glasney, Cornwall, founded in 1453, provision was made for a chaplains' school, as well as for teaching of pere men children their ABC as for ringing" while at Launceston the grammar master had £16 a year, and 13s. 4d. was "veryly distributed to an aged man chosen by the mayor and the aldermen of the chyzer." At Newark, in 1423, it was settled after legal proceedings, that the chantry priests at the parish church might teach children the alphabet and grammar, but not further. Anything more was the privilege of the grammar schoolmaster.

In 1542 an injunction of Bonner as bishop of London shows an attempt on Henry VIII's part to recall the clergy to the duty of oratory. "Therefore all the parson and all the parson's fellow and also chantry priests and stipendiaries to . . . teach and bring up in learning the best ye can all such children of your parishioners as shall come to you, or at the least teach them to read English." The advisers of Edward VI. at first appear to have contemplated a similar development by an injunction in 1547 that "all chantry priests shall exercise themselves in teaching youth to read and write and bring them up in good manners and other virtuous exercises." But the Chancery Act next year swept all the chantries away by Easter 1548; and while professing to apply the provisions of the 20th chapter of Magna Charta to the parochial schools, and to leave the elementary education by omitting any saving clause for elementary schools, whether song, reading, writing or ABC schools. The first duty of a song, or of a reading school being "to teach a child to help a priest to sing mass," they were regarded as superstitious; and the rest were presumably looked on as tainted with the same poison. So all of the hundreds of song schools in the country, only two, outside the cathedrals and the university colleges and those of Winchester and Eton, Westminster and Windsor colleges, survived. These were the song school of the archdeacon Magnus foundation at St. John's, which was founded in 1509, and the Latin school of the parochial school in St John's Hospital, Coventry, established by John Hales under royal licence in 1545, though not legally settled till 1572. The gap left by these schools took long to fill, and probably the ignorance of the masses and of the lower middle classes in Elizabethan and Jacobean times was greater than before the Reformation. In the big towns, like London, during the reign of Elizabeth, voluntary rates, or application of the rates, were made to partly fill the gap. Christ's Hospital in 1553 with its 280 foundling children had, besides its grammar schoolmaster and usher, "a teacher of pricking who taught the two school masters for the Petties ABC." But in Mary's reign, Grafton the printer was "clapt in the Flete for two daies because he suffered the children to learn the English prymr" for "the Lattiing abees." In Southwark, while St Saviour's parish set up a grammar school in 1559, St Olave's parish in 1560 directed the churchwardens to ask the inhabitants "watte they will give
towards the setting up of a free skole, which was started next year to "teche the childarne to write and rede and cast accoppith." At St Lawrence Jewry in 1568 a school was kept over the next few years. At St Ethelwyn's in 1589 Smythe "the schoolmaster" paid ros. "for kepinge scole in the belfry." At Stevenage in 1561–1562 the old Brotherhood house and some endowment was bought by subscription for a school "to teach scholars called PETTA to read English, write, cast accounts and learn the accidence."

Some of these and other like schools were rather junior or preparatory departments of the grammar school than independent elementary schools. The foundation of purely elementary schools was rare in Elizabeth's reign. In Warwickshire, Alcester in 1582, Henley-in-Arden in 1586, in-Salop, Onibury in 1593, in Essex, Littlebury in 1598, those to which he is apportioned. Those mentioned in Mr de Montmorency's "State Intervention," taken from the Digest of Schools of 1842, are mostly of charities afterwards applied to elementary education, not founded for the purpose. In most counties the earliest elementary endowed schools are of James I's reign, such as Appleton, Berkshire, in 1604, Northiam, Sussex, in 1614, Sir William Borlase's school at Great Marlow in Buckinghamshire (now a secondary school) in 1624. At great impetus was given to them by the Commonwealth, and many were founded by statute action, only to be destroyed under the Restoration. On the other hand, the commonwealth schools was that of Polesworth, Warwickshire, founded by deed of 10th March 1655, the first endowed school which provided for girls as well as boys, the boys under a master to learn to write and read English, the girls in a separate schoolroom under a mistress to learn to read and work with the needle. In Wales Thomas Gouge, an ejected minister, in 1672, started voluntary schools.

After 1670 there was a large increase in elementary school foundations. The reign of Queen Anne saw a new development take place of the charity schools. The movement was started in 1698 by the Schoolmaster, "for the correction, the instruction of children," and the conditions taken up by the bishops with an organized propaganda for getting subscriptions. The schools founded were commonly called blue or blue-coat schools, though there were red maids', green and even yellow schools. Many were boarding-schools on the model of Christ's Hospital, where slum children, girls and boys, in separate schools of course, were taken in and prepared for service and work. But there were many day schools. All, however, provided a uniform of the Christ's Hospital type. They were chiefly in the large towns, and still comprise some of the richest endowed schools. Of the 100 or so of them were established between 1698 and 1715 in London and Westminster, and in 1729 there were 1608 schools with 34,000 children. In that year the curious development of "circulating schools" was started in Wales, the masters residing for a certain time in one district and then passing on to another. (This was a device known in medieval times, and notable examples of it were Sir Robert Hitcham's rotatory school for Earl's Colne and two other places in Essex during the Commonwealth, etc.) Griffith Jones was the principal promoter, and at his death in 1761 there were 10,000 children in the schools. In 1801 the Lancastrian system of schools, notable few boys or girls, but of several hundreds taught in classes of 60 or 80, chiefly by pupil teachers, was inaugurated in the Borough Road by Joseph Lancaster. Out of it grew the British and Foreign School Society. This was undemonstrational. In 1811 the National Society adopted the similar, but rival, Bell or "Madras system" for Church of England teaching. The effect of these two organizations was to cover the country with elementary schools, partly endowed, chiefly supported by voluntary contributions and low fees. These completed the system, if system it could be called, of sporadic elementary schools. After the Reform Act of 1832 the state stepped in with grants and has gradually made elementary education universal.

See further under Education.

SCHOONER, a vessel rigged with fore and aft sails, properly with two masts, but now often with three, four and sometimes more masts; they are much used in the coasting trade, and require a smaller crew in proportion to their size than square-rigged vessels (see Rigging and Ship). According to the story, which is probably true, the name arose from a chance spectator's exclamation "there she soons," I.e. "there she is," in the launch of the first vessel of this type at Gloucester, Massachusetts, in 1713, her builder being one Andrew Robinson. The spelling "schooner" is due to a supposed derivation from the Dutch schooner, but that and the other European equivalents, Ger. Schoner, Dan. skønner, Span. and Portuguese escuna, &c., are all from English. "To scoon," according to Skeat, is a Scottish (Clydesdale) dialect word, meaning to skip over water like a flat stone, and is ultimately connected with the root, implying quick motion, seen in shoot, sceud, &c. In American colloquial usage the word is applied to the larger two-masted vessels used by the emigrants moving westward before the construction of railways, and to a tall, narrow, lager-beer glass.

SCHOPENHAUER, ARTHUR (1788–1860), German philo-
sopher, was born in Danzig on the 22nd of February 1788. His parents belonged to the mercantile aristocracy—the bankers and traders of Danzig. His father, Heinrich Floris Schopen-
hauer, the youngest of a family to which the mother had brought the germs of mental malady, was a man of strong will and originality, and so proud of the independence of his native town and its inhabitants that in 1793 surrendered to the Prussians he and his whole establishment withdrew to Hamburg. At the age of forty he married Johanna Henrietta Trosiener, then only twenty, but the marriage owing to difference of temperament was unhappy. Their two children, Arthur and Adele (born 1796), bore the penalty of their parents' incompatibilities. They were burdened by an abnormal urgency of desire and capacity for suffering, which no doubt took different phases in the man and the woman, but linked them together in a common susceptibility to ideal pain.1

In the summer of 1797, a year after the marriage, the elder Schopenhauser, who had been in Russia, where his commercial experiences had made him a cosmopolitan in heart, took his wife on a tour to western Europe. It had been his plan that the expected child should see the light in England, but the intention was frustrated by the state of his wife's health. The name Arthur was chosen because it remains the same in English, French and German.

During the twelve years which followed the removal of the family to Hamburg (1793–1805) the Schopenhausers made frequent excursions. From 1797 to 1799 Arthur was a boarder with M. Gregoire, a merchant of Havre, and friend of his Danzig tutor, to whose house he came in for a fast friend. Returning to Hamburg, at the age of sixteen he had but indifferent training. When he reached the age of fifteen the scholarly and literary instincts began to awaken. But his father, steeped in the spirit of commerce, was unwilling that a son of his should worship knowledge and truth. Accordingly he offered his son the choice between the classical school and an excursion to England. A boy of fifteen could scarcely hesitate. In 1803 the Schopenhausers and their son set out on a lengthened tour, of which Johanna has given an account, to Holland, England, France and Austria. Six months were spent in England, where he found English ways dull and precise and the religious observances exacting. But he had not for the last time—to talk seriously with him on his uncolloquial and willful character. At Hamburg in the beginning of 1805 he was placed in a merchant's office. He had only been there for three months when his father, who had shown

1 Johanna Schopenhauer (1766–1838) was in her day an 'author of some reputation. Besides editing the memoirs of Fernow, she published Notes on Travels in England, Scotland and Southern France (1821), Die Johanna Schopenhauer, in John L. Huston's Dictionary of Romantic literature (1820–25), a long list of abundant poetry, and many single poems. Her first novel, Amours en Espagne (1832), was published in 1844, a volume of Haus- Wald- und Feld-Märchen, full of quaint poetical conceits, and in 1845 Anna, a novel, in two volumes. See Laura Frost, Johanna Schopenhauer: ein Frauenleben (1905).
symptoms of mental alienation, fell or threw himself into the canal. After his death the young widow (still under forty), leaving Arthur at Hamburg, proceeded with her daughter Adele in the middle of 1806 to Weimar, where she arrived only a fortnight before the tribulation which followed the victory of Napoleon at Jena. At Weimar her talents, hitherto held in check, found an atmosphere to stimulate and foster them, her aesthetic and literary tastes formed themselves under the influence of Goethe and his circle, and her little salon gained a certain celebrity. Arthur, meanwhile, became more and more restless, and his mother allowed him to leave his employment. He began his education again at Gotha, but a satire on one of the teachers led to his dismissal. He was then placed with the Greek scholar Franz Passow, who superintended his classical studies. This time he made so much progress that in two years he read Greek and Latin with fluency and into German.

In 1809 his mother handed over to him (aged twenty-one) the third part of the paternal estate, which gave him an income of £50, and in October 1809 he entered the university of Göttingen. The direction of his philosophical reading was fixed by the advice of G. E. Schulze to study, especially, Plato and Kant. For the former he soon found himself full of reverence, and from the latter he acquired the standpoint of modern philosophy. The names of Plato the divine and the marvellous Kant are conjointly invoked at the beginning of his earliest work. But even at this stage of his career the pessimism of his later writings began to manifest itself, together with a susceptibility to morbid fears which led him to keep loaded weapons always at his bedside. He was a man of few acquaintances, amongst the few being Bunsen, the subsequent scholar-diplomatist, and Bunsen's pupil, W. B. Astor, the son of Washington Irving's millionaire hero. Even then he found his trustiest mate in a poodle, and its bearskin was an institution in his lodging. Yet, precisely because he met the world so seldom in easy dialogue, he was unnecessarily dogmatic in controversy; and many a bottle of wine went to pay for lost wagers. But he had made up his mind to be not an actor but an onlooker and critic in the battle of life; and when Wieland, whom he met on one of his excursions, suggested doubts as to the wisdom of his choice, Schopenhauer replied, "Life is a ticklish business; I have resolved to spend it in reflecting upon it."

After two years at Göttingen he took two years at Berlin. Here also he dived into divers stores of learning, notably classics under Wolf. In philosophy he heard Fichte and Schleiermacher. Between 1811 and 1813 the lectures of Fichte (subsequently published from his notes in his Nachgelassene Werke) dealt with the "orders of the arts of perception" and the "theory of science," and struggled to present his final conception of philosophy. These lectures Schopenhauer attended—at first, it is allowed, but afterwards with a spirit of opposition which is said to have degenerated into contem, and which in after years never permitted him to refer to Fichte without contumely. Yet the words Schopenhauer then listened to, often with baffled curiosity, certainly influenced his speculation.

In Berlin Schopenhauer was lonely and unhappy. One of his interests was to visit the hospital La Charité and study the everyday life of its inmates. An abortive attempt to enter the medical faculty did not prevent him from becoming a doctor in philosophy. In the early days of 1813 sympathy with the national enthusiasm against the French carried him so far as to buy a set of arms; but he stopped short of volunteering for active service, reflecting that Napoleon gave after all only concentrated and untrammelled utterance to that self-assertion and lust for more life which weaker mortals feel but must perforce disguise. Leaving the nation and its statesmen to fight out their freedom, he hurried away to Weimar, and thence to the quiet Thuringian town of Rudolstadt, where in the inn "Zum Käfer," out of sight of soldier and sound of drum, he wrote, helped by books from the Weimar library; his essay for the degree of doctor in philosophy. On the 2nd of October 1813 he received his diploma from Jena; and in the same year from the press at Rudolstadt there was published—without winning notice or readers—his first book, Über die vierschüssige Würd des Satzes vom zureichenden Grunde, trans. in Böhn's Philological Library (1818).

In November 1813 Schopenhauer returned to Weimar, and for the following months lived there with his mother. But the close of daily association was too much for their antagonistic natures. His splenetic temper and her volatility culminated in an open rupture in May 1814. From that time till her death in 1838 Schopenhauer never saw his mother again. During these few months at Weimar, however, he made some acquaintances destined to influence the subsequent course of his thought. Conversations with the Orientalist F. Mayer directed his studies to the philosophical speculations of ancient India. In 1808 Friedrich Schlegel had in his Language and Wisdom of the Old Hindus brought Brahmanical philosophy within the range of European literature. Still more instructive for Schopenhauer was the imperfect and obscure Latin translation of the Upanishads which in 1801–1802 Anquetil Duperron had published from a Persian version of the Sanskrit original. Another friendship of the same period had more palpable immediate effect, but not so permanent. This was with Goethe, who succeeded in securing his interest for those investigations on colours on which he was himself engaged. Schopenhauer took up the subject in earnest, and the result of his reflections (and a few elementary observations) soon appeared (Easter 1816) in his dissertation, Über das Sehen und die Gottheit (Leipzig, 1814). The essay, which must be treated as a step in an evolution from the direct path of Schopenhauer's development, due to the potent force of Goethe, was written at Dresden, to which he had transferred his abode after the rupture with his mother. It had been sent in MS. to Goethe in the autumn of 1815, who, finding in it a transformation rather than an expansion of his own ideas, inclined to regard the author as an opponent rather than an adherent.

The pamphlet begins by re-stating with reference to sight the general theory that perception of an objective world rests upon a subjective postulation, which even when it Milton still remains to haunt us (instead of being, like errors of reason, open to extirpation by evidence), and proceeds to deal with physiological colour, i.e. with colours as felt (not perceived) modifications of the action of the retina. First of all, the distinction of white and black, with their mean point in grey, is referred to the activity or inactivity of the total retina in the gradually present absence or presence of full light. Further, the eye is endowed with a brow by which the activity is divided into successively distinct. It is this circumstance which gives rise to the phenomenon of colour. All colours are complementary, or go in pairs; the yellow makes by its activity that of the retina, and so do the other pairs of complementary colours. The two pairs are so connected that when the first is exhausted the other spontaneously succeeds. Such pairs of colour may be regarded as infinite in number; there are those pairs which have the property and admit of easy expression for the ratio in which each contributes to the total action. These are red and green (each = 1), orange and blue (2:1), and yellow and violet (3:1).1 This theory of complementary colours as due to the polarity in the qualitative action of the retina is followed by some criticism of Newton and the seven colours, by an attempt to explain some facts noted by Goethe, and by some reference to the external stimuli which cause colour.

The grand interest of his life at Dresden was the composition of a work which should give expression in all its aspects to the idea of man's nature and destiny which had been gradually forming within him. Without cutting himself altogether either from social pleasures or from art, he read and took notes with regularity. More and more he learned from Cabanis and Helvetius to see in the will and the passions the determinants of intellectual life, and in the character and the temper the source of theories and beliefs. The conviction was born in upon him that scientific explanation could never do more than systematize and classify the mass of appearances which to our habit-blinded eyes seem to be the reality. To get at this reality and thus to reach a standpoint higher than that of aesthetics was the problem of his as of all philosophy. It is only by such a tower of speculation that an

1 In this doctrine, so far as the facts go, Schopenhauer is indebted to a paper by R. Waring Darwin in vol. Ixvi. of the Transactions of the Philosophical Society.
escape is possible from the spectre of materialism, theoretical and practical; and so, says Schopenhauer, "the just and good must all have this creed: I believe in a metaphysic." The mere reasonings of theoretical science leave room for art, and practical prudence usurps the place of morality. The higher life of aesthetic and ethical activity—the beautiful and the good—can only be based upon an intuition which penetrates the heart of reality. Towards the spring of 1818 the work was nearing its end; Brockhaus of Leipzig had agreed to publish it and pay the author one ducat for every sheet of printed matter. But, as the press loitered, Schopenhauer, suspecting treachery, wrote so rudely and haughtily to the publisher that the latter broke off correspondence with his client. In the end of 1818, however, the book appeared (with the date 1819) as Die Welt als Wille und Vorstellung, in four books, with an appendix containing a criticism of the Kantian philosophy (Eng. trans. by R. B. Haldane and J. Kemp, 1883). Long before the work had come to the hands of the public Schopenhauer had rushed off to Italy. He stayed for a time in Venice, where Byron was then living; but the two did not meet. At Rome he visited the art galleries, the opera, the theatre, and gladly seized every chance of conversing in English with Englishmen. In March 1819 he went as far as Naples and Paestum. About this time the fortunes of his mother and sister and himself were threatened by the failure of the firm in Danzig. His sister accepted a compromise of 70%, but Schopenhauer angrily refused this, and eventually recovered 9400 thalers.

After some stay at Dresden, hesitating between fixing himself as a university teacher at Göttingen, Heidelberg or Berlin, he finally chose the last-mentioned. He was, however, not a good lecturer, and his work soon came to an end. His failure he attributed to Hegelian intrigues. Thus, except for some attention to physiology, the first two years at Berlin were wasted. In May 1822 he set out by way of Switzerland for Italy. After spending the winter at Florence and Rome, he left in the spring of 1823 for Munich, where he stayed for nearly a year, the prey of illness and isolation. When at the end of this wretched time he left for Gastein, in May 1824, he had almost entirely lost the hearing of his right ear. Dresden, which he reached in August, no longer presented the same hospitable aspect as of old; and he was reluctantly drawn onwards to Berlin in May 1825.

The six years at Berlin were a dismal period in the life of Schopenhauer. In vain did he watch for any sign of recognition of his philosophic genius. Hegelianism reigned in the schools and in literature and basked in the sunshine of authority. Thus driven back upon himself, Schopenhauer fell into morbid meditations, and the world which he saw, if it was stripped naked of its disguises, lost its proportions in the distorting light. The sexual passion had a strong attraction for him at all times, and, according to his biographers, the notes he set down in English, when he was turned thirty, on marriage and kindred topics are unfit for publication. Yet in the loneliness of life at Berlin the idea of a wife as the comfort of gathering age sometimes rose before his mind—only to be driven away by cautious hesitations as to the capacity of his means, and by the shrinking from the loss of familiar liberties. He wrote nothing material. In 1826 he made inquiries about a chair at Heidelberg; and in 1829 he got a shortened Latin version of his physiological theory of colours inserted in the third volume of the Scríptra ophthalmologica minores (edited by Radius). Another pathway to reputation was suggested by some remarks he saw in the seventh number of the Foreign Review, in an article on Damiron’s French Philosophy in the 19th Century. With reference to some statements in the article on the importance of Kant, he sent in very fair English a letter to the writer, offering to translate Kant’s principal works into English. His correspondent, Francis Haywood, made a counter-proposal which so disgusted Schopenhauer that he addressed his next letter to the publishers of the review. When they again refused him to Haywood, he applied to Thomas Campbell, then chairman of a company formed for buying up the copyright of meritorious but rejected works. Nothing came of this application. A translation of selections from the works of Balthazar Gracian, which was published by Frauenstädt in 1826, seems to have been made about this time.

In 1833 he settled finally at Frankfort, gloomily waiting for the recognition of his work, and terrified by fears of assassination and robbery. As the years passed he noted down every confirmation he found of his own opinions in the writings of others, and every instance in which his views appeared to be illustrated by new researches. Full of the conviction of his idea, he saw everything in the light of it, and gave each aperçu a place in his alphabetically arranged note-book. Everything he published in later life may be called a commentary, an excursus or a scholium to his main book; and many of them are decidedly of the nature of commonplace books or collections of notes. But along with the accumulation of his illustrative and corroborative materials grew the bitterness of heart which found its utterances neglected and other names the oracles of the reading world. The gathered ill-humour of many years, aggravated by the constant assurance of the Hegelians, found vent at length in the introduction to his next book, where Hegel’s works are described as three-quarters utter absurdity and one-quarter mere paradox—a specimen of the language in which during his subsequent career he used to advert to his three predecessors Fichte, Schelling, but above all Hegel. This work, with its wild outcry against the philosophy of the professoriate, was entitled Über den Willen in der Natur, and was published in 1836 (revised and enlarged, 1834; Eng. trans., 1836).

In 1837 Schopenhauer sent to the committee entrusted with the execution of the proposed monument to Goethe at Frankfort a long and deliberate expression of his views, in general and particular, on the best mode of carrying out the design. But his fellow-citizens passed by the remarks of the mere writer of books. More weight was naturally attached to the opinion he had advocated in his early criticism of Kant as to the importance, if not the superiority, of the first edition of the Kritik; in the collected issue of Kant’s works by Rosenkranz and Schubert in 1838 that edition was put as the substantive text, with supplementary exhibition of the differences of the second.

In 1841 he published under the title Die beiden Grundprobleme der Ethik two essays which he had sent in 1838–1839 in competition for prizes offered. The first was in answer to the question "Whether man’s free will can be proved from self-consciousness," proposed by the Norwegian Academy of Sciences at Drontheim. His essay was awarded the prize, and the author elected a member of the society. But proportionate to his exultation in this first recognition of his merit was the depth of his mortification and the height of his indignation at the result of the second competition. He had sent to the Danish Academy at Copenhagen in 1839 an essay "On the Foundations of Morality" in answer to a vaguely worded subject of discussion to which they had invited candidates. His essay, though it was the only one in competition, was refused the prize on the grounds that he had failed to examine the chief problem (i.e. whether the basis of morality was to be sought in an intuitive idea of right), that his explanation was inadequate, and that he had been wanting in due respect to the summi philosophi of the age that was just passing. This last reason, while probably most effective with the judges, only stirred up more furiously the fury in Schopenhauer’s breast, and his preface is one long fulmination against the ineptitudes and the charlatanry of his noble nature. Hegel, he said, had appeared second to his two Essays, The World as Will and Idea, in two volumes. The first volume was a slightly altered reprint of the earlier issue; the second consisted of a series of chapters forming a commentary parallel to those into which the original work was now first divided. The longest of these new chapters deal with the primacy of the will, with death and with the metaphysics of sexual love. But, though only a small edition was struck off (500 copies of vol. i. and 750 of vol. ii.),

1 It was not till 1841 that a translation of Kant’s Kritik in English appeared.

2 He also projected a translation of Hume’s Essays and wrote a preface for it.
the report of sales which Brockhaus rendered in 1846 was unfavourable, and the price had afterwards to be reduced. Yet there were faint indications of coming fame, and the eagerness with which each new tribute from critic and admirer was welcomed is both touching and amusing. From 1843 onwards a jurist named F. Dorgath had trumpeted abroad Schopenhauer's name. In 1844 a letter from a Darmstadt lawyer, Joh. August Becker, asking for explanation of some difficulties, began an intimate correspondence which went on for some time (and which was published by Becker's son in 1883). But the chief evangelist (so far as we are concerned) was his old friend the apostle who published not) was Frauenstädt, who made his personal acquaintance in 1836. It was Frauenstädt who succeeded in finding a publisher for the Parer und Paralitomena, which appeared in Berlin in 1831 (2 vols., pp. 465, 531; sel. trans. by J. B. Saunders, 1889; French by A. Dietrich, 1900). Yet for this bulky collection of essays, philosophical and others, Schopenhauer received as honorarium only ten free copies of the work. Soon afterwards, Dr. E. O. Lindner, assistant editor of the Vossische Zeitung, began a series of Schopenhauerite articles. Amongst them may be recalled not only the concluding article by John Oxenford which appeared in the Westminster Review for April 1853, entitled "Iconoclasm in German Philosophy," being an outline of Schopenhauer's system. In 1854 Frauenstädt's Letters on the Schopenhauerism Philosophy showed that the new doctrines became a subject of discussion—a state of things made still more obvious by the university of Leipzig offering a prize for the best exposition and examination of the principles of Schopenhauer's system. Besides this, the response his ideas gave to popular needs and feelings was evinced by the numerous correspondents who sought his advice in their difficulties. And for the same reason, distasteful editions of his works were called for—a second edition of his degree dissertation in 1847, of his Essay on Colours and of The Will in Nature in 1854, a third edition of The World as Will and Idea in 1859, and in 1860 a second edition of The Main Problems of Ethics.

In 1854 Richard Wagner sent him a copy of the Ring of the Nibelungen, with some words of thanks for a theory of music which had fallen in with his own conceptions. Three years later he received a visit from his old college friend Bunsen, who was then staying in Heidelberg. On October 18th he breakfasted with friends and conversed in four quarters. In April 1860 he began to be affected by occasional difficulty in breathing and by palpitation of the heart. Another attack came on in autumn (9th September), and again a week later. On the evening of the 18th his friend and subsequent biographer, Dr. Gwinther, sat with him and conversed. On the morning of the 21st September he rose and sat down alone to breakfast; shortly afterwards his doctor called and found him dead in his chair. By his will, made in 1852, with a codicil dated February 1859, his property, with the exception of some small bequests, was devised to the above-mentioned institution at Berlin. Gwinther was natural executor, and Frauenstädt was entrusted with the care of his manuscripts and other literary remains.

It is often said that a philosophic system cannot be rightly understood without reference to the character and circumstances of the philosopher. The remark finds ample application in the case of Schopenhauer. The conditions of his training, which brought him in contact with the realities of life before he learned the phrases of scholastic language, give to his words the stamp of self-seen truth and the clearness of original conviction. They explain at the same time the naïveté which set a high price on the product of his own energies had turned out, and could not see that what was so original to himself might seem less unique to other judges. Preoccupied with his own ideas, he chafed under the indifference of thinkers who had grown blasé in speculation and fancied himself persecuted by a conspiracy of professors of philosophy. It is not so easy to demonstrate the connexion between a man's life and doctrine. But it is at least plain that in the case of any philosopher, what makes him such is the faculty he has, more than other men, to get a clear idea of what he himself is and does. More than others he leads a second life in the spirit or intellect alongside of his life in the flesh—the life of knowledge beside the life of will. It is inevitable that he should be especially struck by the points in which the sensible and temporal life comes in conflict with the intellectual and eternal. It was thus that Schopenhauer by his own experience saw in the primacy of the will the fundamental fact of his philosophy, and found in the engrossing interests of the selfish Avas the perennial hindrances of the higher life. For his absolute individualism, which recognizes in the state, the church, the family only so many superficial screens, masks and blindfolds, for the reality (i.e., this absorption in the intellectual and purely ideal aims which prepare the way for the cessation of temporal individuality altogether. But theory is one thing and practice another; and he will often lay most stress on the theory who is most conscious of defects in the practice. It need not, therefore, surprise us that the man who formulated the sum of virtue in justice and benevolence was unable to be just to his own kinsfolk and reserved his compassion largely for the brutes, and that the delineator of asceticism was more than moderately sensible of the comforts and enjoyments of life.

The philosophy of Schopenhauer, like almost every system of the time, can have found many adherents without reference to the ideas of Kant. Anterior to the Kantian gradual advance of idealism had been the most conspicuous feature in philosophy. The philosophy of Kant, the truths of experience, were after all only our inner perceptions was the lesson of every thinker from Descartes to Hume. And this doctrine was generally understood to be so human as necessarily to involve a certain amount of weakness and acquired habits, could hardly hope to cope success fully with the problem of apprehending the real things. The idealist position Kant seemed at first sight to retain with an even stronger hand than ever. But it is darkest just before the dawn; and Kant, the Copernicus of philosophy, had really altered the aspects of the doctrine of ideas. It was his purpose to show that the Kantian doctrine of ideas is not derived from the peculiarities of the body) were not merely apparent and could be lick into convenient shape the data of perception, but entered as underlying elements into the constitution of objects, making experience possible and determining the fundamental structure of nature. In other words, the forms of knowledge were the main factor in making objects. By Kant, however, these forms are generally treated psychologically as the action of the several faculties of a mind. Behind thinking there is the thinker. But in his successors, from Fichte to Hegel, this axiom of the plain man is set aside as antiquated. Thought or conception without a subject, an object, is impossible, and in thinking in its primitive, without any individual substratum in which it is embedded: τὸν νοήματος ὁμογένες is to be substituted for νοῦς. This is the step of advance which is required alike by Fichte when he asks his reader to think with his imagination, or by Hegel, when he substitutes the Begriff for the Vorstellung or pictorial conception. As spiritism asks us to accept such suspension of ordinary mechanics as was necessary in order to bring about our own salvation, so Schopenhauer asks us to submit to the laws of time and space, and so our new philosophy of Kant's immediate successors requires from the postulant for initiation willingness to erase his customary beliefs in quasi-material subjects of thought.

But, besides removing the psychological slag which clung to Kant's ideas from their matrix and presenting reason as the active principle in the formation of a universe, his successors carried out in much more detail, and far more enthusiasm and historical scope, his principle that in reason lay the a priori or the anticipation of the world, moral and physical. Not content with the barren assertion that the understanding makes nature, and that we can construct a certain form of the world, they also showed how they went about it. And so it was the thing, as it is by itself, wonderful to us, and as we know it not. This somewhat is what Kant calls a limit-concept. It marks only that we feel our knowledge to be limited and that the only way in which it can be extended is by sense-experience rather than by an act of thought. So inadequate is only a condition of growing knowledge in a being subject to the laws of space and time; and the very feeling is a proof of its implicit reality. And so we have a continual disparity in its eternal operation, and then this universal thought, which may be called God, as the sense-conditioned reason is called man, becomes the very breath and structure.
of the world. Thus in the true idea of things there is no irreducible residue of matter: mind is the Alpha and Omega, at once the initial postulate and the final truth of reality.

In various ways a reaction arose against this absorption of everything in reason. The presentation of being is primum activum, the groundless and incomprehensible deed-action (Thal.-Handlung) of the absolute ego. The innermost character of that ego, more in keeping with the same Schopenhauerian doctrine, is a stationary state of reason, as he says again, "In the last resort," says Schelling (1809), in his Inquiries into the Nature of Human Freedom, "there is no other being but will. Wollen ist Orten (will is primal being); and to this, as an absolute unity, all the predeterminations and co-dependencies of time, self-affirming. It is unnecessary to multiply instances to prove that idealism was never without a protest that there are in the world changes and differences, and that there is some inde- pendent of time, self-affirming."

It is under the banner of this protest against rationalizing idealism that Schopenhauer advances. But what marks out his armoury is its pronounced realism. He fights with the weapons of physical doctrine and on the basis of the material earth. He knows no reason but the human, no intelligence save what is exhibited by the animals. He knows that both animals and men have come into existence with an incipient, excitation of the nerves, an antagonism when no eye or ear gathered the light of the universe into perceptions. Knowledge, therefore, with its vehicle, the intellect, is dependent upon the existence of certain nerve-organs located in an animal system; and the freedom of knowledge is not a free will, a freedom which by all knowledge and is not itself amenable to explanation. We may, if we like, call this element, which is assumed as the basis of all scientific method, irrational—will instead of reason, feeling rather than will.

It is thus that Lotze declares that "the thrill surface of matter, behind its determined development, is a sort of radiant glow of a hidden spiritual activity." So Schopenhauer, but in a way all his own, finds the truth of things in a will which is indeed unaffected by conscious motives and yet cannot be separated from some faint analog of it.

In two ways Schopenhauer has influenced the world. He has shown with unusual lucidity of expression how feeble is the spontaneity of that intellect which is so highly lauded, and how over-powering the sway of original will in all our action. He thus reasserted realism, whose gospel reads, "In the beginning was, passion, will," and has discredited the doctrinaire belief that ideas have origin in the First Cause, of Schopenhauer's, dangerous, and it may be true that the pessimism it implies often degenerates into cynicism and a cold-blooded denial that there is any virtue and any truth. But in the crash of established creeds less is Schopenhauer's doctrine likely to suffer. And it is probable it is only wise, if not always agreeable, to lay bare the wounds under which humanity suffers, though pride would prompt their concealment. But Schopenhauer's theory has another side. If the second aspect of his influence is the doctrine of redemption of the soul from its sensual bonds, first by the medium of art and second by the path of renunciation and ascetic life, it would be difficult in each case to draw the line between social duty and individual perfection. But Schopenhauer reminds us that the welfare of society is a temporal and subordinate aim, never to be allowed to obscure or inhibit the realization of our ideal life. It will be perhaps doubted, who will arise to grapple with the great problem, the noblest problem of mankind, how the crude rationalism of the present is to be converted into a spiritual asceticism. It is a task which will mean for Schopenhauer only force. It means a great deal more; and it is his contention that what the scientist calls force is really will. In so doing he is only following the line predicted by Kant1 and anticipated by Leibniz. If we wish, said Kant, to give a real existence to the thing in itself or the noumenon we can only do so by the intervention of a force. Kant gives it the name of will, in the same sense as Lotze fancies. In Schopenhauer's external sense, viz. with thinking or something analogous thereto. It is thus that Fechner in his "day-view" of things sees in plants and animals "will-as-spiritual," and compares man's vocation as a simple being which appears to none but itself, in us as elsewhere wherever it occurs self-luminous, dark for every other eye, at the least connecting sensations in itself, upon which, as the grade of 2, 3, 4, 5 brightnesses, the weight of our beings and the spirituality of higher and still higher relations."2

2 Uber die Seelenfryere, p. (Leipzig, 1861).
3 Mikrokosmus, i. 408 (2nd ed.).
in an age of violent polemics, distinguished himself by the virulence of his writings against the Protostrians. He became involved in a controversy with Joseph Justus Scaliger, formerly his intimate friend, and others, wrote *Ecclesiastical antiquitates Jacobis regis oppusita* (1611), an attack upon James I. of England, and in *Classici bellii scarii* (1619) urged the Catholic princes to wage war against the Protostrians. About 1607 Schoppe entered the service of Ferdinand, archduke of Savoy, afterwards the emperor Ferdinand II., who found him very useful in rebutting the arguments of the Protostrians, and who sent him on several diplomatic errands. According to Pierre Bayle, he was almost killed by some Englishmen at Madrid in 1610, and in 1614, after he had spent three years in France for his life he left Germany for Italy in 1617, afterwards taking part in an attack upon the Jesuits. Schoppe, as the long list of his writings shows, knew also something of grammar and philosophy, and had an excellent acquaintance with Latin. His chief work is, perhaps, his *Grammatica philosophica* (Milan, 1628). Schoppe died at Padua on the 19th of November 1649.

In *Life of Sir Henry Wotton* Isaac Walton, calling him Jasper Scoppius, refers to Schoppe as "a man of a restless spirit and a malicious pen."

Besides the works already noticed, he wrote *De arte critica* (1597); *De medicina...* (1599); *De motu corporum...* et ceteris controversiis libellus; *Scaliger kypotolymaues* (1607), a virulent attack on Scaliger; and latterly the anti-jesuitical works, *Flagelium Jesuicatum* (1632); *Mysteria patrum jesuicorum* (1633); and *Arcana societatis Jesu* (1635), which, as Scaliger said, gave a fuller life of his heterodoxy than Nicéron *Mémoires*, (1727-1745). See also C. Nisard, Les *Gladiateurs de la république des Lettres* (Paris, 1860).

**SCHORL**, in mineralogy, the name given to coarse black varieties of tourmaline (q.v.). The schorl rocks are crystalline aggregates of quartz and tourmaline. They are granular and massive, not banded or foliated as a rule, grey of various shades, the darkest coloured being most rich in schorl. Some are very fine grained, but in most cases the individual crystals are easily distinguishable. Some schorl is a deep brown, nearly black, and very resistant to weathering. Veined, brecciated, porous and banded varieties occur, but are less common than the granular massive rocks.

Schorl rocks occur practically always in association with tourmaline-bearing granites. Most of them are of igneous origin and, though there may be a few which are direct products of consolidation from a plutonic magma, in the vast majority of cases they originate by the action of gases and vapours on granites, porphyries and other rocks. All magmas contain vapours in solution and give them off more or less readily as they crystallize. Water, carbonic acid and hydrochloric acid (or chlorides) are the commonest dissolved substances, but fluorine, boron, lithium and phosphoric acid occur also, and as they pass outwards these last may act on the surrounding rocks, probably still at a high temperature and produce minerals of a special kind. This action is said to be pneumatolytic. Tourmaline contains boron and fluorine, hence the presence of these elements in the emanations from the granite may be assumed. Schorl rocks often also contain varieties of white mica which are rich in fluorspar and lithium; in additionapatite is usually present. Lastly, many of the rocks of this group contain tinstone or are associated with tin-bearing veins, and it is probable that the ores of this metal were brought up in solution as fluorides or chlorides and deposited in the situations where now they are found.

Along the sides of fissures, through which, no doubt, the gases ascended, the granite is converted into schorl rock for a distance ranging from a fraction of an inch to several feet, and vein-like masses of new schorl rock branching and uniting are thus produced. In other places considerable areas of granite are changed in this way, principally near the margin of the granite, and an interrupted belt of this kind of rock encircles some of the larger outcrops of granite in Cornwall. A similar origin, must be ascribed to grisettes (q.v.), the aggregate of quartz and white mica commonly found in association with tin-bearing granites; there are complete gradations between schorl and grisette. But here again portions of white mica and tourmaline which may be present in each specimen. Another mineral which is produced by the pneumatolytic alteration of granite is topaz (a silicate and fluoride of aluminum); an aggregate of quartz and topaz is called topaz-fels or topaz rock, and is largely developed in some of the tin-mining districts of Germany, though not found in Cornwall.

As might be expected every stage of the conversion of granite into schorl rock can be found. Tourmaline may have been to some extent an original constituent of the granite, but most of it is of new formation and must have resulted from the alteration of the biotite and felspar of the original rock, both of these minerals having disappeared when the granite was metamorphosed. It is commonly found that the schorl is of a brown colour in the interior of the crystals but blue at the edges; probably the brown is primary or at least unaltered, while the blue is that which has resulted from the replacement of felspar. The rock known as luxullianite, obtained near Luxullian village in Cornwall and used as an ornamental stone as the sarcophagus of the duke of Wellington's monument in St. Paul's Cathedral, is the same as the rock produced by the alteration of biotite and felspar by quartz and tourmaline can be seen in progress. The new tourmaline in is fine pointed needles which have a sharp subterminating edge, and is embedded in quartz: often these needles are planted on the surface of corroded crystals of primary brown schorl. This rock still contains a good deal of flesh-coloured felspar in large porphyritic crystals which contrast well with the hornblende matrix and give polished specimens a very handsome appearance. In the completely altered schorl rocks there are rarely needles of tourmaline, but this mineral occurs as irregular grains mingled in varying proportions with small crystals of quartz; at other places the near the tourmaline; in others the tourmaline is nearly effaced, but at Trelvalgan, St Austell, and other places in Cornwall there are schorl rocks which contain white pseudomorphs of quartz after tourmaline crystals.

In porphyries of "elvans" tourmalinization also is frequent, though not so common as greisingen. Veins of quartz with stellite schorl needles may be seen spreading through the groundmass or veins, but they have been produced by the prevailing to the varying acid and fine scaly white mica, the porphyritic crystals of felspar alone may be replaced by bunches of tourmaline embedded in quartz. Tinstone often makes its appearance in these rocks either in small crystals enclosed in quartz or lining fissures and cavities left by the removal of a portion of the rock in solution.

The same process goes on also in sedimentary rocks; a felspathic rock may yield a schorl rock which can hardly be distinguished from one derived from a fine-grained granite. In shales brown tourmaline is often deposited in the vicinity of fissures, and the whole mass may be converted into a hard splintery aggregate of quartz and mica, an effect not uncommon in schistose rocks. But these rocks are always banded, like the original slate; their original structures (bedding and cleavage) are probably never completely effaced and the ultimate product has been called schorl-schist (Cornwall, or luxullianite).

The stanniferous veins which in large numbers intersect the granites of Devon and Cornwall and the slates around them, and have yielded a large part of the world’s supply of tin consist mostly of quartz, tourmaline and chlorite (with a large variety of propylite, e.g., cassiterite). The veinstones are typically very fine grained, hard and dark blue or dark green in colour. The green varieties contain crystals of chlorite, the dark blue or black of a compound of chlorite and mica, which are known to the miners as “peach.” Essentially aqueous deposits in lines of fissure, these rocks show that quartz and tourmaline were carried up in hot solutions at a late period in the cooling of the region, the change of the tourmaline into the quartz probably happened in a very short time, and the chlorite may be effaced. But these solutions as they spread outwards through the surrounding rocks. Their tourmaline crystals are very small and usually of dark-blue shades, but owing to repeated movements of the walls of the veins the ore depositions have sometimes an intricate history, as microscopic studies show that the first infillings of the fissures have been broken up and cemented together again by a later material of slightly different character.

**SCHOTTISCH, the German for “Scottish,” a name given to a dance, der schottische Tanz, introduced into England about 1850. It was a form of polka, with two figures. The “Highland Schottische” is a lively dance resembling a fling. What is known as the “barn dance” was first known in America as the “Military Schottische.”**

**SCHOULER, JAMES (1839- ), American lawyer and historian, was born in West Cambridge (now Arlington), Massachusetts, on the 20th of March 1839, the son of William Schouler, a tailor, and Jane Foster. He is the author of the Boston *Atlas*, one of the leading Whig journals of New England. He then graduated at Harvard in 1859, studied law in Boston and was admitted to the bar there in 1862. In 1869 he removed to Washington, where for three years he published the United States *Jurist*. After his return to Boston, in 1874, he devoted himself to office practice and to literary pursuits. He was a lecturer in the law school of Boston University between 1885 and 1903, a non-resident professor and lecturer in the National**

He is best known, however, as an historian; his most important work being a History of the United States under the Constitution, 1789-1865 (6 vols., 1880-1890). Among his other publications are A Life of Thomas Jefferson (1893); Historical Briefs (1896), containing a biography of Mr. Schouler; Constitutional Studies, State and Federal (1897); a brief Life of Alexander Hamilton (1899); Americans of 1776 (1906); and Ideas of the Republic (1908).

SCHRADER, EBERHARD (1836-1908), German orientalist, was born at Brunswick on the 7th of January 1836, and educated at Göttingen under Ewald. In 1858 he took a university prize for a treatise on the Ethiopian languages, and in 1863 became professor of theology at Zürich. Subsequently he occupied chairs at Giessen (1870) and Jena (1873), and finally became professor of oriental languages at Berlin. Though he turned first to biblical research, his chief achievements were in the field of Assyriology, in which he was a pioneer in Germany and acquired an international reputation. He died on the 4th of July 1908.

His publications include: Studien zur Kritik und Erklärung der biblischen Urgeschichte (1863); the 8th edition of Dewe’s Einleitung in das Alte Testament (1869); Die assyr-babyl. Keilinschriften (1872); Die Keilschriften und das Alt. Test. (1872; 3rd ed. by Zimmer and Winckler, 1901-1902); Keilschriften und Geschichtsforschung (1878); Die Höllenfahrt der Istar (text, trans., notes, 1874); Zur Frage nach dem Ursprung der alibabylonischen Kultur (1884); in conjunction with other scholars, Keilschriften-Bibliothek (1877).

SCHREIBERHAU, a village and climatic health resort of Germany, in the Prussian province of Silesia, situated in the valley of the Zaeken in the Riesengebirge, 1000 ft. above the sea, 16 m. S.W. from Hirschberg by the railway to Grünthal. Pop. (1905) 4994. It has two Roman Catholic and two Evangelical churches, and works for the making and polishing of glass. It is a popular resort, being visited by about 10,000 visitors annually.

See Klotz, Schreiberhau im Riesengebirge (Breslau, 1893).

SCHREYER, ADOLF (1828-1899), German painter, was born at Frankfort-on-Main, and studied art first at the Staedel Institute in his native town, and then at Stuttgart, Munich, and Düsseldorf; but he formed his style in Paris, whilst he found his favourite subjects in his travels in the East. He first accompanied Prince Thurn and Taxis through Hungary, Wallachia, Russia and Turkey; then, in 1854, he followed the Austrian army across the Wallachian frontiers. In 1856 he wrote to Egypt and Syria, and in 1861 to Algiers. In 1862 he settled in Paris, but returned to Germany in 1870; and settled at Cronberg near Frankfort, where he died in 1890. Schreyer was, and is still, especially esteemed as a painter of horses, of peasant life in Wallachia and Moldavia, and of battle incidents. His work is remarkable for its excellent equine draughtsmanship, and for the artist’s power of observation and forceful statement; and has found particular favour among French and American collectors. Of his battle-pictures there are two at the Schwerin Gallery, and others in the collection of Count Mensdorff-Pouilly and in the Raveh Gallery, Berlin. His painting of a ‘Charge of the Imperial Guard’ was formerly at the Luxembourg Museum. The Metropolitan Museum, New York, owns three of Schreyer’s oriental paintings: “Abandoned,” “Arabs on the March” and “Arabs making a döür”; and many of his best pictures are in the Rockefeller, Vanderbilt, J. Astor, W. Astor, A. Belmont, and W. Walters collections. At the Kunsthalle in Hamburg is his “Wallachian Transport Train,” and at the Staedel Institute, Frankfort, are two of his Wallachian scenes.

SCHRIJVER, PETER (1576-1660), Dutch author, better known as Peter de Strijve, was born at Utrecht on 15 July 1576. He was educated at the university of Leiden, where he formed a close intimacy with Daniel Heinsius. He belonged to the party of Oldenbarnevelt and Grotius, and brought down the displeasure of the government by a copy of Latin verses in honour of their friend Hoogerbeets. Most of his life was passed in Leiden, but in 1650 he became blind, and the last years of his life were spent in his son’s house at Oudewater, where he died on the 30th of April 1660.

He is best known as a scholar by his notes on Martial, Ausonius, the Perpetuum Veneris; editions of the poems of Sculier (Leiden, 1615), of De re militari of Vegetius Renatus, the tragedies of Seneca (P. Scribrii collectanea veterum tragicorum, 1621), &c. His Opus acrosticum, philologiae, et poeticae (Utrecht, 1738) were edited by A. H. W. Westerhoovius, and his Nederlandsche Gedichten (1739) by S. Dockes. He made many valuable contributions to the history of Holland: Balaviæ Illustris (4 parts, Leiden, 1609); Corie historische Beschryvinghe der Nederlandschē Oorloegen (1612); In- ferioris Germaniae . . . historia (1611, 4 parts); Beschryvinghe van Oot Bataven (Arnhem, 1612); Het oude gontische Chronicleyen van Holland, edited by him, and printed at Amsterdam in 1665; Princeps historiae antiquae (Haarlem, 1650, translated (1678) into Dutch by Pieter Brugman. See Peerlkamp, Vitae Belgarum qui latina carmina scripserunt (Hamburg, 1822), and J. H. Hoeiduit, Parnassus latinus-belicensis (Amsterdam, 1819).

SCHRÖDER, FRIEDRICH LUDWIG (1744-1816), German actor, manager and dramatist, was born in Schwerin on the 3rd of November 1744. Shortly after his birth, his mother, Sophie Charlotte Schröder (1714-1792), separated from her husband, and joining a theatrical company toured with success in Poland and Russia. Subsequently she married Konrad Ernst Ackermann and appeared with his company in many German cities, finally settling in Hamburg. Young Schröder early showed considerable talent, but his childhood was rendered so unhappy by his mother’s flight that he was driven to make his own way as a shoemaker. He rejoined his parents, however, in 1759, and became an actor. In 1764 he appeared with the Ackermann company in Hamburg, playing leading comedy parts; but these he soon exchanged for the tragic rôles in which he became famous. These included Hamlet, Lear and Philip in Schiller’s Don Carlos. After Ackermann’s death in 1771 Schröder and his mother took over the management of the Hamburg theatre, and he began to write plays—largely adaptations from the English, making his first success with the comedy Die ARGSpitze. In 1780 he left Hamburg, and after a tour with his wife, Anna Christina Hart, a former pupil, accepted an engagement at the Court theatre in Vienna. In 1785 Schröder again took over his Hamburg management and conducted the theatre with marked ability until his retirement in 1798. The Hamburg theatre again falling into decay, the master was once more summoned to assist in its
SCHÜBERG, S.—SCHUBERT

SCHÖRDER, SOPHIE (1781-1868), German actress, was born at Paderborn on the 23rd of February 1781, the daughter of a actor, Gottfried Bürger. She made her first appearance in opera at St Petersburg, in 1793. On Kotzebue’s recommendation she was engaged for the Vienna Court theatre in 1798, and here in Munich and Hamburg she won great successes in tragic roles like Marie Stuart, Phèdre, Merope, Lady Macbeth, and Isabella in The Bride of Messina, which gave her the reputation of being “the German Siddons.” She retired in 1840 and lived in Augsburg and Munich until her death on the 23rd of February 1868. She had married, in 1795, an actor, Stollmers (properly Smet), from whom she separated in 1799. In 1804 she married the tenor Friedrich Schröder, and on his death in 1825, an actor, Kun, Mme Schröder’s eldest daughter was the opera singer, Wilhelmine Devrient-Schröder (q.v.).

See Prof. Schmödl, Sophie Schröder (Vienna, 1879); also Das Lexicon der deutschen Bühnen-Angelhörigen.

SCHÖRDER—DEVRIENT, WILHELMINE (1804-1866), German operatic singer, was born on the 6th of December 1804, in Hamburg, being the daughter of the actress, Sophie Schröder (1781-1868). Her first impersonation was at the age of fifteen as Aricia in Schiller’s translation of Racine’s Phèdre, and in 1821 she was received with so much enthusiasm as Pamina in Mozart’s Zauberflöte that her future career in opera was assured. In 1823 she married Karl Devrient, but was separated from him afterwards making two other marriages. Meanwhile she had maintained her popularity at Dresden and elsewhere. She made her first Paris appearance in 1830, and she sang in London in 1833 and 1837. As a singer she combined a rare quality of tone with dramatic intensity of expression, which was as remarkable on the concert platform as in opera. She died in Coburg on the 26th of January 1866.

See E. von Glernen, Erinnerungen an Wilhelmine Schröder-Devrient (Leipzig, 1884), and von Woltzen, Wilhelmine Schröder-Devrient (Leipzig, 1863).

SCHRÖTER, JOHANN HIERONYMUS (1745-1816), German astronomer, was born at Erfurt on the 30th of August 1745. Having studied law at Göttingen, he became chief magistrate at Lillenthal, near Bremen, in 1778. Here he built an observatory, and, equipped in 1785 by a 7-ft. reflector by Herschel, and later by a 13-ft. reflector by Johann Gottlieb Friedrich Schröder of Kiel, he made his famous observations on the surface features of the moon and planets. His work was ruined in 1813 by the French under Vandamme, who destroyed his books, writings and observatory; he never recovered from the catastrophe, and died on the 29th of August 1816.

SCHUBART, CHRISTIAN FRIEDRICH DANIEL (1739-1791), German poet, was born at Obersohnheim in Swabia (now the kingdom of Württemberg) on the 24th of March 1739, and entered the university of Erlangen in 1758 as a student of theology. He led a dissolute life, and after two years’ stay was summoned home by his parents. After attempting to earn a livelihood as private tutor and as assistant preacher, his musical talents gained him the appointment of organist in Geislingen, and subsequently in Ludwigsburg; but in consequence of his wild life and blasphemy, which found expression in a parody of the litany, he was expelled the country. He then visited in turn Heilbronn, Mannheim, Munich and Augsburg. In the last-named town he made a considerable stay, began his Deutsche Chronik (1774-1779) and eked out a subsistence by reciting from the latest works of prominent poets. Owing to a bitter attack upon the Jesuits, he was expelled from Augsburg and fled to Ulm, where he was arrested in 1777 and confined in the fortress of Hohenasperg. Here he met with lenient treatment, and he beguiled the time by a study of mystical works and in composing poetry. His Sämtliche Gedichte appeared in two volumes at Stuttgart in 1785-1786 (new edition by G. Hauff, Leipzig, 1884, in Reclam’s Universal-Bibliothek); in this collection most of the pieces are characterized by the bombast of the “Sturm und Drang” period. He was set at liberty in 1787, at the instance of Frederick the Great, king of Prussia, and expressed his gratitude in Spuren aus Friedrich den Fernen. Schubart was now appointed musical director and manager of the theatre at Stuttgart, where he continued his Deutsche Chronik and began his autobiography, Schubarts Leben und Gesinnungen (2 vols., 1791-1793), but, before its completion he died at Stuttgart on the 10th of October 1791. His Gesammelte Schriften and Schicksale appeared in 8 vols. (Stuttgart, 1839-1840).


SCHUBERT, FRANZ PETER (1797-1828), German composer, was born on the 31st of January 1797, in the Himmelpfortgrund, a small suburb of Vienna. His father, Franz, son of a Moravian peasant, was a parish schoolmaster; his mother, Elizabeth Fitz, had before her marriage been cook in a Viennese family. Of their fourteen children nine died in infancy; the others were Ignaz (b. 1784), Ferdinand (b. 1794), Karl (b. 1796), Franz and a daughter Theresa (b. 1801). The father, a man of worth and integrity, possessed some reputation as a teacher, and his school, in the Lichtenthall, was well attended. He was also a fair amateur musician, and transmitted his own measure of skill to his two elder sons, Ignaz and Ferdinand. At the age of five Schubert began to receive regular instruction from his father. At six he entered the Lichtenthall school where he spent some of the happiest years of his life. About the same time his musical education began. His father taught him the rudiments of the violin, his brother Ignaz the rudiments of the pianoforte. At seven, having outstripped these simple teachers, he was placed under the charge of Michael Holzer, the Kapellmeister of the Lichtenthall Church. Holzer’s lessons seem to have consisted mainly in expressions of admiration, and the boy gained more from a friendly joiner’s apprentice, who used to take him to a neighbouring pianoforte warehouse and give him the opportunity of practising on a better instrument than the poor home could afford. The unsatisfactory character of his early training was the more serious as, at that time, a composer had little chance of success unless he could appeal to the public as a performer, and for this the meagre education was never sufficient. In October 1808 he was received as a scholar at the Convikt, which, under Salleri’s direction, had become the chief music-school of Vienna, and which had the special office of training the choristers for the Court Chapel. Here he remained until nearly seventeen, profiting little by the direct instruction, which was almost as careless as that given to Haydn at St Stephen’s, but much by the practices of the school orchestra, and by association with congenial comrades. Many of the most devoted friends of his after life were among his schoolfellows: Spaun and Stadler and Holzapfel, and a score of others who helped him out of their slender pocket-money, bought him music-paper which he could not buy for himself, and gave him loyal support and encouragement. It was at the Convikt, too, that he first made acquaintance with the overtures and symphonies of Mozart—there is as yet no mention of Beethoven—and between them and lighter pieces, and occasional visits to the opera, he began to lay for himself some foundation of musical knowledge.

Meanwhile his genius was already showing itself in composition. A pianoforte fantasia, thirty-two close-written pages, is dated April 8-May 1, 1810; then followed, in 1811, three long vocal pieces written upon a plan which Zumsteeg had popularized, together with a “quint-overture,” a string quartet, a second pianoforte fantasia and a number of songs. His essay in chamber-music is noticeable, since we learn that at the time a regular quartet-party was established at his home “on Sundays
and holidays," in which his two brothers played the violin, his father the 'cello and Franz himself the viola. It was the first germ of that amateur orchestra for which, in later years, many of his compositions were written. During the remainder of his stay at the Convict he wrote a good deal more chamber-music, several songs, some miscellaneous pieces for the pianoforte and, among his more ambitious efforts, a Kyrie and Salve Regina, an octet for wind-instruments—said to commemorate the death of his mother, which took place in 1812—a cantata, words and music, for his father's name-day in 1813, and the closing work of his school-life was his Der Taschler.

At the end of 1813 he left the Convict, and, to avoid military service, entered his father's school as teacher of the lowest class. For over two years he endured the drudgery of the work, which, we are told, he performed with very indifferent success. There were, however, other interests to compensate. He took private lessons from Salieri, who annoyed him with accusations of plagiarism from Haydn and Mozart, but who did more for his training than any of his other teachers; he formed a close friendship with a family named Grob, whose daughter Therese was good-natured, good-tempered, and occupied every moment of leisure with rapid and voluminous composition. His first opera—Des Teufels Lastschloss—and his first Mass—in F major—were both written in 1814, and to the same year belong three string quartets, many smaller instrumental pieces, the first movement of the symphony in Bb and seventeen songs, which include such masterpieces as Der Taucher and Gretchen am Spinnrade. But even this activity is far outpaced by that of the annus mirabilis 1815. In this year, despite his school-work, his lessons with Salieri and the many distractions of Viennese life, he produced an amount of music the record of which is almost incredible. The symphony in Bb was finished, and, a third, in D major, added soon afterwards. Of church music there appeared two Masses, in G and Bb, the former written within six days, a new Dona nobis for the Mass in F, a Stabat Mater and a Salve Regina. Opera was represented by no less than five works, of which three were completed—Der Vierjährige Posten, Fernando and Claudine von Villabella—and two, Adrast and Die beiden Freunde von Salamanca, apparently left unfinished. Besides these the list includes a string quartet in G minor, four sonatas and several smaller compositions for piano, and, by way of contrast, a Provençal song, of considerable length, and of which eight are dated Oct. 1st, and seven Oct. 16th. "Here," we may say with Dryden, "is God's plenty." Music has always been the most generous of the arts, but it has never, before or since, poured out its treasure with so lavish a hand.

In the winter of 1814-1815 Schubert made acquaintance with the poet Mayrhofer: an acquaintance which, according to his usual habit, soon ripened into a warm and intimate friendship. They were singularly unlike in temperament: Schubert frank, open and sunny, with brief fits of depression, and sudden outbursts of boisterous high spirits; Mayrhofer grim and saturnine, a silent man who regarded life chiefly as a test of endurance; but there is good authority for holding that "the best harmony is the resolution of discord," and of this aphorism the ill-assorted pair offer an illustration. The friendship, as will be seen later, was of service to Schubert in more than one way.

1815 was the most prolific period of Schubert's life, so 1816 saw the first real change in his fortunes. Somewhere about the turn of the year Spau surprised him in the composition of Erlkönig—Goethe's poem propped up among a heap of exercise-books, and the boy at whiteheat of inspiration "hurling" the notes on the musician. A few weeks later Von Schotten, a law-student of good family and some means, who had heard some of Schubert's songs at Spau's house, came to pay a visit to the composer and proposed to carry him off from school-life and give him freedom to practice his art in peace. The proposal was particularly opportune, for Schubert had just made an unsuccessful application for the post of Kapellmeister at Laibach, and was feeling more acutely than ever the slavery of the classroom. His father's consent was readily given, and before the end of the spring he was installed as a guest in Von Schotten's lodgings. For a time he attempted to increase the household resources by giving music lessons, but they were soon abandoned, and he devoted himself to composition. "I write all day," he said later to an inquiring visitor, "and when I have finished one piece I begin another."

The works of 1816 include three ceremonial cantatas, one written for Salieri's Jubilee on June 16; one, eight days later, for a certain Herr Watteroth who paid the composer an honorarium of £4 ("the first time," said the journal, "that I have composed for money"), and one, on a foolish philanthropic idea of Herr Ignaz von Hoffmann, "Founder and Principal of the Schoolmasters' Widows' Fund." Of more importance are two new symphonies, No. 4 in C minor, called the Tragic, with a striking andante, No. 5 in Bb, as bright and fresh as a symphony of Mozart: some numbers of church music, fuller and more mature than any of their predecessors, and over a hundred songs, among which are comprised some of his finest settings of Goethe and Schiller. There is also an opera, Die Burgschaft, spoiled by an illiterate book, but of interest as showing how continually his mind was turned towards the theatre.

All this time his circle of friends was steadily widening. Many of them were introduced to the famous haritone, who did him good service by performing his songs in the salons of Vienna; Anselm Hüttenbrenner and his brother Joseph ranged themselves among his most devoted admirers; Gahy, an excellent pianist, played his sonatas and fantasias; the Sonnleithners, a rich burgher family whose eldest son had been at the Convict, gave him free access to their home, and organized in his honour musical parties which soon assumed the name of Schubertian. The materials needed for life were supplied without much difficulty. No doubt Schubert was entirely penniless, for he had given up teaching, he could earn nothing by public performance, and, as yet, no publisher would take his music at a gift; but his friends came to his aid with true Bohemian generosity—one found him lodging, another found him appliances, they took their meals together and the man who had any money paid the score. Schubert was always the leader of the party, and was known by half-a-dozen affectionate nicknames, of which the most characteristic is "kann er was?" his usual question when a new acquaintance was proposed.

1818, though, like its predecessor, comparatively unfertile in composition, was in two respects a memorable year. It saw the first public performance of one of Vogl of Schubert's—theatricals in the Italian style written as an avowed burlesque of Rossini, and played in all seriousness at a Jall concert on March 1. It also saw the beginning of his only official appointment, the post of music-master to the family of Count Johann Esterhazy at Zelez, where he spent the summer amid pleasant and congenial surroundings. The compositions of the year include a Mass and a symphony, both in C major, a certain amount of four-hand pianoforte music for his pupils at Zelez and a few songs, among which are EinSamheil, Marienbild and the Lilanay. On his return to Vienna in the autumn he found that Von Schotten had no room for him, and took up his residence with Mayrhofer. There his life continued on its accustomed lines. Every morning he began composing as soon as he was out of bed, till about two o'clock, then dined and took a country walk, then returned to composition or, if the mood forsook him, to visits among his friends. He made his first public appearance as a song-writer on February 28, 1819, when the Schöfflers Klage-lied was sung by Jäger at a Jall concert. In the summer of the same year he took a holiday and travelled with Vogl through Upper Austria. At Steyr he wrote his brilliant piano quintet in A, and astonished his friends by transcribing the parts without a score. In the autumn he sent three of his songs to Goethe, but, so far as we know, received no acknowledgment.

The compositions of 1820 are remarkable, and show a marked advance in development and maturity of style. The unfinished oratorio Lazarus was begun in February; later followed, amid a number of smaller works, the 23rd Psalm, the Gesang der Geister, the Quartettssatz in C minor and the grand pianoforte fantasia on Der Wanderer. But of almost more biographical interest is
the fact that in this year two of Schubert's operas appeared at the Kärntnertor theatre, *Die Zauberrahme* on June 14, and *Die Zauberharfe* on August 19. Hitherto his larger compositions (apart from Masses) had been restricted to the amateur orchestra at the Gendehof, a society which grew out of the quartet-parties at his home. Now he began to assume a more prominent position and address a wider public. Still, however, publishers held obstinately aloof, and it was not until his friend Vogl had sung *Zauberharfe* in and out of him that they gave in. Diabelli hesitatingly agreed to print some of his works on commission. The first seven opus-numbers (all songs) appeared on these terms; then the commission ceased, and he began to receive the meagre pittances which were all that the great publishing houses ever accorded to him. Much has been written about the neglect from which he suffered during his lifetime. It was not the fault of his friends, it was only indirectly the fault of the Viennese public; the persons most to blame were the cautious intermediaries who stilled and hindered him from publication.

The production of his two dramatic pieces turned Schubert's attention more firmly than ever in the direction of the stage; and towards the end of 1821 he set himself on a course which for nearly three years brought him continuous mortification and disappointment. *Alfonso und Estrella* was refused, so was *Fierrabras; Die Verschworenen* was prohibited by the censor (apparently on the ground of its title); *Rosamunde* was withdrawn after two nights, owing to the badness of its libretto. Of these works the two former are written on a scale which would make their performances exceedingly difficult (*Fierrabras*, for instance, contains over 1000 pages of manuscript score), but *Die Verschworenen* is a bright attractive comedy, and *Rosamunde* contains some of the most charming music that Schubert ever composed. In 1822 he made the acquaintance both of Weber and of Beethoven, but little came of it in either case, though Beethoven cordially acknowledged his genius. Von Schobes was away from Vienna; new friends appeared of a less desirable character; on the whole these were the darkest years of his life.

In the spring of 1824 he wrote the magnificent octet, "A Sketch for a Grand Symphony"; and in the summer went back to Zelez, where he became attracted by Hungarian idiom, and wrote the *Divertissement à l'Hongroise* and the string quartet in A minor. Most of his biographers have set down here a story of his hopeless passion for his pupil Countess Caroline Esterhazy; but whatever may be said as to the general likelihood of the romance, the details by which it is illustrated are apocryphal, and the song *L'Addio*, placed at its climax, is undoubtedly spurious. A more debatable problem is raised by the grand duo in C major (op. 140) which is dated from Zelez in the summer of this year. It bears no relation to the style of Schubert's pianoforte music, it is wholly orchestral in character, and it may well be a transcript or sketch of the "grand symphony for which the octet was a preparation. If so, it settles the question, raised by Sir George Grove, of a "Symphony in C major" which is not to be found among Schubert's orchestral scores.

Despite his preoccupation with the stage and later with his official duties he found time during these years for a good deal of miscellaneous composition. The Mass in Ab was completed and the exquisite "Unfinished Symphony" begun in 1822. The *Mülleriader*, and several other of his best songs, were written in 1825; to 1824, beside the works mentioned above, belong the variations on *Trockne Blumen* and the two string quartets in E and Eb. There is also a sonata for piano and "Arpeggione," an interesting attempt to encourage a cumbrous and now obsolete instrument.

The mishaps of the recent years were compensated by the prosperity and happiness of 1825. Publication had been moving more rapidly; the stress of poverty was for a time lightened; in the summer there was a pleasant holiday in Upper Austria, where Schubert was welcomed with enthusiasm. It was during this tour that he produced his "Songs from Sir Walter Scott," and his piano sonata in A minor (op. 42), the former of which he sold to Artaria for £20, the largest sum which he had yet received for any composition. Sir George Grove, on the authority of Randhartinger, attributes to this summer a lost "Gastein" symphony which is possibly the same work as that already mentioned under the record of the preceding year.

From 1826 to 1828 Schubert resided continuously in Vienna, except for a brief visit to Graz in 1827. The history of his life during these three years is little more than a record of his compositions. The only events worth notice are that in 1826 he dedicated a symphony to the Gesellschaft der Musikfreunde, with which his friend Vogl's *Gehorsam* began; that in the same year he applied for a conductorship at the opera, and lost it by refusing to alter one of his songs at rehearsal, and that in the spring of 1828 he gave, for the first and only time in his career, a public concert of his own works. But the compositions themselves are a sufficient biography. The string quartet in D minor, with the variations on "Death and the Maiden," was written during the winter of 1825-1826, and first played on Jan. 25. Later in the year came the string quartet in G major, the *Romantik brillants," for piano and violin, and the fine sonata in G which, by some pedantry of the publisher's, is printed without its proper title. To these should be added the three Shakespearian songs, of which "Hark! Hark! the Lark" and "Who is Sylvia?" were written on the same day, the former at a tavern where he broke his afternoon's walk, the latter on his return to his lodging in the evening. In 1827 he wrote the *Winterreise*, the fantasia for piano and violin, and the two piano trios: in 1828 the *Song of Miriam*, the C major symphony, the Mass in E5, and the exceedingly beautiful *Totentanz Ergo* in the same key, the string quintet, the second Benedictus to the Mass in C, the last three piano sonatas, and the collection of songs known as *Schwanengesang*. Six of these are to words by Heine, whose *Buch der Lieder* appeared in the autumn. Everything pointed to the renewal of an activity which should equal that of his greatest abundance, when he was suddenly attacked by typhus fever, and after a fortnight's illness died on Nov. 19 at the house of his brother Ferdinand. He had not completed his thirty-second year.

Some of his smaller pieces were printed shortly after his death, but the more valuable seem to have been regarded by the publishers as waste paper. In 1838 Schumann, on a visit to Vienna, found the dusty manuscript of the C major symphony and took it back to Leipzig, where it was published by his son and celebrated in the *Neue Zeitschrift*. The most important step towards the recovery of the neglected works was the journey to Vienna which Sir George Grove and Sir Arthur Sullivan made in the autumn of 1867. The account of it is given in Grove's appendix to the English translation of Kreisler von Heiborn; the travellers rescued from oblivion seven symphonies, the *Rosamunde* music, some of the Masses and operas, some of the chamber works, and a vast quantity of miscellaneous pieces and songs. Their success gave impetus to a widespread public interest and finally resulted in the definitive edition of Breitkopf and Härtel.

Schubert is best summed up in the well-known phrase of Liszt, that he was "le musicien le plus poète qui fut jamais." In clarity of style he was inferior to Mozart, in power of musical construction he was far inferior to Beethoven, but in poetic impulse and suggestion he is unsurpassed. He wrote always at headlong speed, he seldom blotted a line, and the greater part of his work bears, in consequence, the essential mark of improvisation: it is fresh, vivid, spontaneous, impatient of restraint, full of rich colour and of warm imaginative feeling. He was the greatest songwriter who ever lived, and almost everything in his hand turned to song. In his Masses, for instance, he seems to chafe at the contrapuntal numbers and pours out his whole soul on those on which he found suitable for lyrical treatment. In his symphonies the lyric and elegiac passages are usually the best, and the most beautiful of them all is, throughout its two movements, lyric in character. The standpoint from which to judge him is that of a singer who ranged over the whole field of musical composition and everywhere carried with him the artistic form which he loved best.
Like Mozart, whose influence over him was always considerable, he wrote nearly all the finest of his compositions in the last ten years of his life. His early symphonies, his early quartets, even his early masses, are too much affected by a traditional style to establish an entrance. A major (1819) may here be taken as the turning-point; then come the Schumannesque Symphonies, which are not Schubert in every bar; the three quartets in A minor, D minor, and G major, full of romantic colorings, are only second-rate. The C major Symphony, which, though diffuse, contains many passages of surprising beauty. Every one of them is a masterpiece, and a masterly piece such as Schumann alone could have written. The days of brilliant promise were over and were succeeded by the days of full and mature achievement.

His larger operas are marred both by their inordinate length and by their want of dramatic power. The slighter comedies are pretty and tuneful, but, except as curiosities, are not likely to be revived. We may, however, deplore the fate which has deprived the stage of the Rosamunde music. It is in Schubert's best vein; the entire opera would have exceeded the best ballet music. Here the character of a pianoforte technique of his own—not always "orthodox," but always characteristic. A special word should be added on his fondness for pianoforte parts which before his time had been rarely attempted. Of these he wrote a great many—fantasias, marches, polonaises, variations—all bright and melodious with sound texture and a remarkable command of rhythm.

According to Levin, his style for the voice are extremely difficult, but they are of a rare beauty which would well repay the labour of rehearsal. The 23rd psalm (for female voices) is exquisite; so are the Gesang der Geister, the Nachtmusik, the Nachgesang im Walde (for female voices). There is also a great quantity of celestial music. In which Novello has published with English words under the title of "Where Thou Reignest." Among all Schubert's mature works there are none more undeservedly neglected than these.

Of the songs it is impossible, within the present limits, to give even a sketch. They number over 600, excluding scenes and operatic pieces, and they contain masterpieces from the beginning of his career to the end. Gretchen am Spinnrade was written when he was seventeen, Erkönig when he was eighteen; then there follows a continuous stream which never ceases. And which broadens as it flows to the Müllerslieder, the Schottische, the Schwanengesang, and the posthumous works. Of which Novello has published with English words under the title of "The Works of Schubert." Among all Schubert's mature works there are none more undeservedly neglected than these.

In his later songs he is more affected by the external and pictorial aspect of the poem; in the later ones he penetrates to the centre and seems the poetic conception from within. But in both alike he shows a gift of absolute melody which, even apart from its meaning, widens the sphere of the music. His three late masses—his two great predecessors in lyric tune—have surpassed or even approached him in fertility and variety of resource. The songs in Acts are wonderful; so are those in Zauberflöte, but they are not so wonderful as Litanei, and "Who is Sylvia?—"The voice is the introduction into music of a particular quality of romance, a particular "addition of strangeness to beauty"; and so long as this remains his place among its supreme masters will always be assured.

SCHÜCKING, LEVIN (1814-1883), German novelist, was born on the estate of Kemleswirth, near Meppen, in Westphalia, on the 6th of September 1814. After studying law at Munich, Heidelberg and Göttingen, he wished to enter the government judicial service, but, confronted by serious difficulties, abandoned the legal career, and settling at Münster in 1837, devoted himself to literary work. In 1841 he removed to Schloss Meersburg on the lake of Constance, joined in 1843 the editorial staff of the Allgemeine Zeitung in Augsburg, and in 1845 that of the Kölnische Zeitung in Cologne. In 1852 he retired to his estate, Sassenberg near Münster, and died at Pyrmont on the 31st of August 1883. Among his numerous romances, which are distinguished by good taste and patriotic feeling, largely reflecting the sound, sturdy character of the Westphalians, must be especially mentioned: Ein Schloss am Meere (1843); Ein Sohn des Volkes (1845); Ein Staatsgeheimnis (1854); Verschlungene Wege (1856); Die Herberge der Gerechtigkeit (1879). Schücking wrote a number of short stories: "Aus den Tagen der grossen Groteskerin" (1845), the "Table Romane" (1867). In Annette von Droste-Hülshoff's "Nachtgesang," he must be thanked for his acknowledgment of her beneficent influence on his mind. There appeared posthumously, Lebenserinnerungen (1886) and Briefe von Annette von Droste-Hülshoff and Levin Schücking (1863).

SCHULTENS, the name of three Dutch Orientalists. The first and most important, Albert Schultens (1668-1750), was born at Groningen. He studied for the church at Groningen and Leiden, applying himself specially to Hebrew and the cognate tongues. His dissertation on The Use of Arabic in the Interpretation of Scripture appeared in 1706. After a visit to Rotterdam and Drecht, he returned to Leiden (1708); then, having taken his degree in theology (1709), he again went to Leiden, and devoted himself to the study of the Mis. collections there till in 1711 he became pastor at Wassenaar. Disliking parochial work, in 1713 he took the Hebrew chair at Franeker, which he held till 1729, when he was transferred to Leiden as rector of the collegium theologicum, or seminary for poor students. From 1732 till his death (at Leiden on the 20th of January 1750) he was professor of Oriental languages at Leiden. Schultens was the chief Arabic teacher of his time, and in some sense a restorer of Arabic studies, but he differed from J. J. Reiske and A. L. De Sacy in giving a greater prominence to the actual Bible text and the Hebrew language itself.

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The principal works were Origins Hebraeae (2 vols., 1724, 1738), a second edition of which, with the De defectibus linguae Hebraeae (1731), appeared in 1761; Job (1737); Proverbs (1748); Velus et regia via hebraeandi (1738); Monumenta veterana Arabum (1740), &c.

His son, John James Schultens (1716-1778), became professor at Harborn in 1744, and afterwards succeeded to his father's chair. He was in turn succeeded by his son, Henry Albert Schultens (1749-1793), who, however, left comparatively little behind him, having succumbed to excessive work while preparing an edition of Meidanii, of which only a part appeared posthumously (1795).

SCHULTZ, HERMANN (1836-1917), German Protestant theologian, was born at Lüchow in Hanover on the 30th of December 1836. He studied at Göttingen and Erlangen, became professor at Basel in 1864, and eventually (1876) professor ordinarius at Göttingen. Here he has also held the appointments of chief university preacher, councillor to the consistory (from 1884) and abbot of Bursfelde (1890). Professor Schultz's theological standpoint was that of a moderate liberal. "It is thought by many that he has succeeded in discovering the via media between the positions of Biblical scholars like Delitzsch on the one hand and Stade on the other" (Prof. J. A. Paterson). He is well known to British and American students as the author of an excellent work on Old Testament Theology (2 vols., 1869, 5th ed., 1896; Eng. trans., 2nd ed., 1895).
In his work on the doctrine of the Divinity of Christ (Die Lehre von der Gotheit Christi, 1881) he follows the method of Ritschl, and contends that the deity of Christ ought to be understood as the expression of the experience of the Christian community. In his own person and work Christ represents to the community a personal revelation of God. Faith in the divinity of Christ does not rest upon a miracle in nature, but upon a miracle in the moral world.


**SCHULTZE, MAX JOHANN SIGISMUND (1825–1874),** German microscopic anatomist, was born at Freiburg in Breisgau (Baden) on the 25th of March 1825. He studied medicine at Greifswald and Berlin, and was appointed extraordinary professor at Halle in 1854 and five years later ordinary professor of anatomy and histology and director of the Anatomical Institute at Bonn. He died at Bonn on the 10th of January 1874. He founded, in 1865, and edited the important Archiv für mikroskopische Anatomie, to which he contributed many papers on the subject of microscopical examination on technical methods. His works included Beiträge zur Naturgeschichte der Turbellarien (1851), Über den Organismus der Polypathalen (1854), Beiträge zur Kenntnis der Landplanarien (1857), Zur Kenntnis der elektrischen Organe der Fische (1858) and Zur Anatomie und Physiologie der Retina (1865). His name is especially known for his work on the cell theory. Uniting F. Dujardin's conception of animal sarcode with H. von Mohl's of vegetable protoplasma, he pointed out their identity, and included them under the common name of protoplasma, defining the cell as 'an inclosed mass of protoplasma with or without a cell-wall' (Das Protoplasma der Rhiizopoden und der Pflanzenzellen: ein Beitrag zur Theorie der Zelle, 1865).

**SCHULZE-DELTITZ, FRANZ HERMANN (1885–1893).** German economist, was born at Delitzsch, in Prussian Saxony, on the 29th of August 1886. The place-name Delitzsch was added in 1848 to distinguish him from other Schulzes in the National Assembly. He studied law at Leipzig and Halle Universities and, when thirty, he became an assessor in the Court of justice at Berlin, and three years later was appointed patrimonialrichter at Delitzsch. Entering the parliamentary career, in 1848, he joined the Left Centre, and, acting as president of the commission of inquiry into the condition of the labourers and artisans, became impressed with the necessity of co-operation to enable the smaller tradespeople to hold their own against the capitalists. He was a member of the Second Chamber in 1848–1849; but as matters ceased to run smoothly between himself and the high legal officials, he threw up his public appointments in October 1851, and withdrew to Delitzsch. Here he devoted himself to the organization and development of co-operation in Germany, and to the foundation of Vorschussvereine (people's banks), of which he had established the first at Delitzsch in 1850. These developed so rapidly that Schulze-Delitzsch in 1858, in Die arbeitenden Klassen und das Assossiationswesen in Deutschland, enumerated twenty-five as already in existence. In 1859 he promoted the first Genossenstaat, an co-operative meeting, in Weimar, and founded a central bureau of co-operative societies. In 1861 he again entered the Prussian Chamber, and became a prominent member of the Progressist party. In 1863 he devoted the chief portion of a testimonial, amounting to £7,000, to the maintenance of his co-operative institutions and offices. This, however, was only to meet an exceptional demand. khỏe the word, he insisted that they must be self-supporting. The next three or four years were given to the formation of local centres, and the establishment of the Deutsche Genossenschaften-Bank, 1865.

The spread of these organizations naturally led to legislation on the subject, and this too was chiefly the work of Schulze-Delitzsch. As a member of the Chamber in 1867 he was mainly instrumental in passing the Prussian law of association, which was extended to the North German Confederation in 1869, and later to the empire. Schulze-Delitzsch also contributed to uniformity of legislation throughout the states of Germany, in 1869, by the publication of Die Gesetzgebung über die privatrechtliche Stellung der Erwerbs- und Wirtschaftsgenossenschaften, &c. His life-work was now complete; he had placed the advantages of capital and co-operation within the reach of struggling tradesmen throughout Germany. His remaining years were spent in consolidating this work. Both as a writer and a member of the Reichstag his industry was incessant, and he died in harness on the 29th of April 1893 at Potsdam, leaving the reputation of a benefactor to the smaller tradesmen and artisans which he must be regarded rather than as the founder of true co-operative principles in Germany. (See also CO-OPERATION.)

**SCHUMACHER, HENRICH CHRISTIAN (1780–1820),** German astronomer, was born at Bramstedt in Holstein on the 3rd of September 1780. He was director of the Mannheim observatory from 1813 to 1815, and then became professor of astronomy in Copenhagen. From 1817 he directed the triangulation of Holstein, to which a few years later was added a complete geodetic survey of Denmark (finished after his death). For the benefit of his fellow countrymen, he wrote and published (in 1844–1845) the first comprehensive works on astronomical observations and the calculation of their results. But Schumacher resided there permanently, chiefly occupied with the publication of Ephemerides (11 parts, 1822–1832) and of the journal Astronomische Nachrichten, of which he edited thirty-one volumes. He died at Altona on the 28th of December 1850.

His son, RICHARD SCHUMACHER (1827–1902), was his assistant from 1844 to 1850 at the observatory at Altona. Having become assistant to Carl Guillaume Moesta (1825–1884), director of the observatory at Santiago, in 1859, he was associated with the Chilean geodetic survey in 1864. Returning in 1866, he was appointed assistant astronomer at Altona in 1873, and afterwards at Kiel.

H. C. Schumacher's nephew, CHRISTIAN ANDREAS SCHUMACHER (1810–1854), was associated with the geodetic survey of Denmark from 1833 to 1838, and afterwards (1844–1845) improved the observatory at Pulkowa.

**SCHUMANN, ROBERT ALEXANDER (1810–1856),** German musical composer, was born on the 8th of June 1810 in Zwickau in Saxony. His father was a publisher, and it was in the cultivation of literature quite as much as in that of music that his boyhood was spent. He himself tells us that he began to compose his own music when he was a child and at the age of fourteen he wrote an essay on the aesthetics of music and also contributed to a volume edited by his father and entitled Portraits of Famous Men. While still at school in Zwickau he read, besides Schiller and Goethe, Byron (whose Beppo and Child Harold had been translated by his father) and the Greek tragedians. But the most powerful as well as the most permanent of the literary influences exercised upon him, however, was undoubtedly that of Jean Paul Richter. This influence may clearly be seen in his youthful novels Junius ubiende and Selene, of which the first only was completed (1826). In 1828 he left school, and after a tour, during which he met Heine at Munich, he went to Leipzig to study law. His interest in music was stimulated when he was a child by hearing Moscheles play at Carlsbad, and in 1827 his enthusiasm had been further excited by the works of Schubert and Mendelssohn. But his father, who had encouraged the boy's musical aspirations, had died in 1826, and neither his mother nor his guardian approved of a musical career for him. The question seemed to be set at rest by Schumann's expressed intention to study law, but both at Leipzig and at Heidelberg, whither he went in 1829, he neglected the law for the philosophers, and thought—to use his own word—a new life in art a clearer form of expression. His first public performances were given on hearing the young F. Schubert play. At the age of twenty-four he began composing songs. The restless spirit by which he was pursued is disclosed in his letters of the period. At Easter 1830 he heard Paganini at Frankfurt. In July in this year he wrote to his mother, "My whole life has been a struggle between Poetry and Prose, or call it Music and Law," and by Christmas he was once more in Leipzig, taking piano lessons with his old master, Friedrich Wieck. In his anxiety to accelerate the process by which he could acquire a perfect execution he permanently injured his right hand. His ambitions as a pianist being thus
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suddenly ruined, he determined to devote himself entirely to composition, and began a course of theory under Heinrich Dorn, conductor of the Leipzig opera. About this time he contemplated an opera on the subject of Hamlet. The fusion of the literary idea with its musical illustration, which may be said to have first taken shape in *Papillons* (op. 2), is foreshadowed to some extent in the first criticism by Schumann, an essay on Chopin’s variations on a theme from Don Juan, which appeared in the *Allgemeine musikalische Zeitung* in 1831. Here the work is discussed by the imaginary characters Florestan and Eusebius (the counterparts of Vaut and Weber in Jean Paul’s novel *Flegeljahre*), and the Meister Vriend (representing either the composer himself or Wieck) is called upon for opinion. By the time, however, that Schumann had written *Papillons* (1831) he had gone a step farther. The scenes and characters of his favourite novelist had now passed definitely and consciously into the written music, and in a letter from Leipzig (April 1832) he bids his brothers "read the last scene in Jean Paul’s *Flegeljahre* as soon as possible, because the *Papillons* are intended as a musical representation of that masquerade." In the winter of 1832 Schumann visited his relations at Zwickau and Schoen. In a letter of which Schumann had performed the first movement of his symphony in G minor, which remains unpublished. In Zwickau the music was played at a concert given by Wieck’s daughter Clara, who was then only thirteen. The death of his brother Julius as well as that of his sister-in-law Rosalie in 1833 seems to have affected Schumann with a profound melancholy. By the spring of 1834, however, he had sufficiently recovered to be able to start *Die neue Zeitschrift für Musik*, the paper in which appeared the greater part of his critical writings. The first number was published on the 3rd of April 1834. It effected a revolution in the taste of the time, when Mozart, Beethoven and Weber were being neglected for the shallow works of men whose names are now forgotten. To bestow praise on Chopin and Berlioz in those days was to court the charge of eccentricity in taste, yet the genius of both these masters was appreciated and openly proclaimed in the new journal.

Schumann’s editorial duties, which kept him closely occupied during the summer of 1834, were interrupted by his relations with Ernestine von Fricken, a girl of sixteen, to whom he became engaged. She was the adopted daughter of a rich Bohemian, from Zwickau and Schoen. The music of which Schumann had constructed his own *Etudes symphoniques*. The engagement was broken off by Schumann, for reasons which have always remained obscure. In the *Carnaval* (op. 9 = 1834), one of his most genial and most characteristic piano forte works, Schumann commenced nearly all the sections of which it is composed with the musical notes signified in German by the letters that spell Asch, the town in which Ernestine was born, which also are the musical letters in Schumann’s own name. By the sub-title “Estrella” to one of the sections in the *Carnaval*, Ernestine is meant, and by the sub-title “Chiarina” Clara Wieck. Eusebius and Florestan, the imaginary figures appearing so often in his critical writings, also occur, besides brilliant imitations of Chopin and Paganini, and the work comes to a close with a march of the men of David against the Philistines in which may be heard the clear accents of truth in contest with the dull clamour of falsehood. In the *Carnaval* Schumann went farther than in *Papillons*, for in it he himself conceived the story of which it was the musical illustration. On the 3rd of October 1835 Schumann met Mendelssohn at Wieck’s house in Leipzig, and his appreciation of his great contemporary was shown with the same generous freedom that distinguished him in all his relations to other musicians, and which later enabled him to recognize the genius of Brahms when he was still obscure.

In 1836 Schumann’s acquaintance with Clara Wieck, already famous as a pianist, ripened into love, and a year later he asked her father’s consent to their marriage, but was met with a refusal. In the series *Phänomenologie* for the piano (op. 12) he once more gives a sublime illustration of the fusion of literary and musical ideas as embodied conceptions in such pieces as “Warum” and “In der Nacht.” After he had written the latter of these two he detected in the music the fanciful suggestion of a series of episodes from the story of Hero and Leander. The Kreisleriana, which he regarded as one of his most successful works, was written in 1838, and in this the composer’s realism is again carried a step farther. Kreisler, the romantic poet brought into contact with the real world, was a character drawn from life by the poet E. T. A. Hoffmann (q.v.), and Schumann utilized him as an imaginary mouthpiece for the recital in music of his own personal experiences. The *Phantasi* (op. 17), written in the summer of 1836, is a work of the highest quality of passion, which Schumann, with the aid of his adherent, the Meister Vriend, wrote for the piano, written in 1838, after a visit to Vienna, this period of his life comes to an end. As Wieck still withheld his consent to their marriage, Robert and Clara at last dispensed with it, and were married on the 12th of September at Schönefeld near Leipzig.

The year 1840 may be said to have yielded the most extraordinary results in Schumann’s career. Until now he had written almost solely for the pianoforte, but in this one year he wrote about a hundred and fifty songs. Schumann’s biographers either omit or leave unexplained the reasoning which led him to write this flood of songs, the spontaneity, the doubt and the despair of which are all to be attributed to varying emotions aroused by his love for Clara. Yet it would be idle to ascribe to this influence alone the lyrical perfection of such songs as “Frühlingsnacht,” “Im wunderschönen Monat Mai” and “Schöne Wiege meiner Leiden.” His chief song-cycles of this period were his settings of the Liederkreis of J. von Eichendorff (op. 39), the *Frauenliebe und Leben* of Chamisso (op. 42), the *Dichterliebe* of Heine (op. 48) and *Myrthen*, a collection of songs, including poems by Goethe, Rückert, Heine, Byron, Burns and Moore. The songs “Belcariene” (op. 69), etc., to Heine’s words, show Schumann at his best as a ballad writer, though the dramatic ballad is less congenial to him than the introspective lyric. As Grillparzer said, “He has made himself a new ideal world in which he moves almost as he wills.” Yet it was not until long afterwards that he met with adequate recognition. In his lifetime the sole tokens of honour bestowed upon Schumann were the degree of Doctor by the University of Jena in 1840, and in 1843 a professorship in the Conservatorium of Leipzig. Probably no composer ever rivalled Schumann in concentrating his energies on one task at a time. A first impulse in his creative impulses was translated into pianoforte music, then followed the miraculous year of the songs. In 1841 he wrote two of his four symphonies. The year 1842 was devoted to the composition of chamber music, and includes the pianoforte quintet (op. 44), now one of his best known and most admired works. In 1843 he wrote *Paradise and the Peri*, his first essay at concerted vocal music. He had now mastered the separate forms, and from this time forward his compositions are not confined during any particular period to any one of them. In Schumann, above all musicians, the acquisition of technical knowledge was closely bound up with the growth of his own experience and the impulsion to express it.

The stage in his life when he was deeply engaged in his music to Goethe’s Faust (1834–1855) was a critical one for his health. The first half of the year 1844 had been spent with his wife in Russia. On returning to Germany he had abandoned his editorial work, and left Leipzig for Dresden, where he suffered from persistent nervous prostration. As soon as he began to work he was seized with fits of shivering, and an apprehension of death which was exhibited in an abhorrence for high places, for all metal instruments (even keys) and for drugs. He suffered perpetually also from imagining that he had the note A sounding in his ears. In 1846 he had recovered and in the winter revisited Vienna, travelling to Prague and Berlin in the spring of 1847 and in the summer to Zwickau, where he was received with enthusiasm, gratifying because Dresden and Leipzig were the only large cities in which his fame was at this time appreciated.

To 1848 belongs his only opera, *Genoveva*, a work containing much beautiful music, but lacking dramatic force. It is
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interesting for its attempt to abolish the recitative, which Schumann regarded as an interruption to the musical flow. The subject of Genoveva, based on Tieck and Hebbel, was in itself not a particularly happy choice; but it is worth remembering that as early as 1842 the possibilities of German opera had been keenly realized by Schumann, who wrote, "Do you know my prayer as an artist, night and morning? It is called 'German Opera.' Here is a real field for enterprise...something simple, profound, German." And in his notebook of suggestions for the text of operas are found amongst others: Lohengrin and Till Eulenspiegel. The music to Byron's Manfred is pre-eminent in a year (1849) in which he wrote more than in any other. The insurrection of Dresden caused Schumann to move to Kreischa, a little village a few miles outside the city. In the August of this year, on the occasion of the hundredth anniversary of Goethe's birth, such scenes of Schumann's Faust as were already completed were performed in Dresden, Leipzig and Weimar, Liszt as always giving unwarranted support and encouragement. The rest of the work was written in the latter part of the year, and the overture in 1853. From 1850 to 1854 the text of Schumann's works is extremely varied. In 1850 he succeeded Ferdinand Hiller as musical director at Düsseldorf; in 1851-1853 he visited Switzerland and Belgium as well as Leipzig. In January 1854 Schumann went to Hanover, where he heard a performance of his Paradise and the Peri. Soon after his return to Düsseldorf, where he was engaged in editing his complete works and making an anthology on the subject of music, a renewal of the symptoms that had threatened him before showed itself. Besides the single note he now imagined that voices sounded in his ear. One night he suddenly left his bed, saying that Schubert and Mendelssohn had sent him a theme which he must write down, and on this theme he wrote five variations for the pianoforte, his last work. On the 27th of February he threw himself into the Rhine. He was rescued by some boatsmen, but when brought to land was found to be quite insane. He was taken to a private asylum in Endenich near Bonn, and remained there until his death on the 29th of July 1856. He was buried at Bonn and in 1880 a statue by A. Donndorf was erected on his tomb.

His wife, CLARA SCHUMANN (1819-1896), trained from an early age by Wieck, had a brilliant career as a pianist, the overture in the age of thirteen up to her marriage. In the various tours on which she accompanied her husband, she extended her own reputation beyond the borders of Germany, and it was thanks to her efforts that his compositions became generally known in Europe. From the time of her husband's death she devoted herself principally to the interpretation of her husband's works, but when in 1856 she first visited England the critics received Schumann's music with a chorus of disapprobation. She returned to London in 1856 and continued her visits annually, with the exception of four summers, until 1882; and from 1885 to 1888 she appeared each year. In 1878 she was appointed teacher of the piano at the Hoch Conservatorium at Frankfurt, a post which she held until 1892, and in which she contributed greatly to the modern improvement in technique. As an artist she will be remembered, together with Joseph Joachim, as one of the first executants who really played like composers. Besides being remembered for her eminence as a performer of nearly all kinds of pianoforte music, at a time when such technical ability was considerably rarer than in the present day, she was herself the composer of a few songs and of some charming music, mainly for the piano, and the authoritative editor of her husband's works for Breitkopf and Härtel.

The following are the chief compositions of Robert Schumann.

**Pianoforte Works.**

- Papillons (op. 2) 1829-1831
- Études symphoniques (op. 13) 1834
- Carnaval (op. 9) 1834-1835
- Scenes in D minor (op. 11) 1833-1835
- Sonata in G minor (op. 22) 1833-1835
- Kinderszenen (op. 15) 1836
- Fantasia in C (op. 7) 1836
- Faschingszuck (op. 12) 1837

**Choral and Dramatic Works.**

- "Liederkreis" (Heine), nine songs (op. 24)
- "Myrthen," twenty-six songs (4 books) (op. 25)
- "Liederkreis" (Eichendorff), the first volume (op. 39)
- "Frauenliebe und Leben" (Chaminos), eight songs (op. 42)
- "Dichterliebe," sixteen songs from Heine's Buch der Lieder (op. 49)
- Belcanto, ballet (Heine) (op. 57)
- Song, "Tragödie" (Heine) from op. 64
- Ballad, "Der Handschuh" (Schiller), probably from 1851
- Songs from Wilhelm Meister and Requiem for Mignon
- for chorus (op. 98)
- Spanische Liebeslieder (op. 138)

- "Choral and Dramatic Works," "Paradise and the Peri," for solos, chorus and orchestra (op. 53)
- Faust music
- Genoveva, opera
- Manfred music
- "Der Rose Pilgerfahrt" (Mortiz Horn), for solos, chorus and orchestra (op. 112)
- "Der Königsson" (Uhland), for solos, chorus and orchestra (op. 113)
- "Des Sängers Fluch" (Uhland) for solos, chorus and orchestra (op. 139)
- Mass for four part chorus and orchestra (op. 148)
- "Vom Pagen und der Königstochter," four ballads (Geibel) for solos, chorus and orchestra (op. 153)
- "Das Glück von Edenhalm," ballet (Uhland); for orchestra and chorus (op. 143)
- Festival overture on the Rheinweinlied for orchestra and chorus (op. 123)

**Chamber Music.**

- Three quartets for strings in A minor, F and A (op. 41)
- Quintet for pianoforte and strings in E flat (op. 44)
- Quartet for pianoforte and strings in E flat (op. 47)
- Fantasiestücke for pianoforte, violin and violoncello (op. 89)
- Andante and variations for two pianoforte (op. 46)
- Trio for pianoforte and strings in D minor (op. 53)
- Trio for pianoforte and strings in F (op. 80)
- Fantasiestücke for clarinet and pianoforte (op. 73)
- Five Stücke in the Volkston for pianoforte and violoncello (op. 102)
- Three Romances for oboe and piano (op. 94)
- "Märchenbilder," for pianoforte and viola (op. 113)
- Sonata for pianoforte and violin in A minor (op. 105)
- Trio for pianoforte and strings in G minor (op. 110)
- Sonata for pianoforte and violin in D minor (op. 121)
- "Märchenzähliungen," four pieces for clarinet, viola and pianoforte, probably written in 1850

**Orchestral Works.**

- B flat Symphony (op. 38)
- Fourth Symphony in D minor (op. 120)
- Overture, Scherzo and Finale
- Second Symphony in C (op. 61)
- Third or "Rhenish" Symphony in E flat (op. 97)

**Concertos and Concert-stücke.**

- For Pianoforte in A minor (op. 54) 1841-1845
- Concert-stück for four horns (op. 86)
- Introduction and Allegro-appassionato for Pianoforte (op. 92)
- Concerto for Violoncello (op. 126) 1852

**Bibliography.**—Wasielewski, Robert Schumann; A. Reissmann, Robert Schumanns Leben und Werke; J. A. Fuller Maitland, Schumann ("Great Musicians" series); The Life of Robert Schumann told in his Letters (with a Preface by J. G. Jensen), translated from the German by May Herbert; Letters of R. Schumann, edited by Karl Storck (Eng. trans. by Hannah Bryant); V. Joss, Der Musikpädagoge Friedrich Wieck und seine Familie; Litzmann, Clara Schumann, "Moses Joseph Joachim and the first volume of Kalbeck's Brahms contain much that is important as to Schumann's later years. See also W. H. Hadow, Studies in Modern Music, first series (1894)."
SCHURER, EMIL (1844-1910), German Protestant theologian, was born at Augsburg on the 2nd of May 1844. After studying at Erlangen, Berlin and Heidelberg from 1862 to 1866, he became in 1873 professor extraordinary at Leipzig and eventually (1892) professor ordinarius at Göttingen. In 1876 he founded and edited the Theologische Literaturzeitung, and from 1881 to 1910 he edited it with Adolf Harnack. His elaborate work on the history of the Jews in the time of Christ (Geschichte des jüdischen Volks im Zeitalter Jesu Christi, 2 vols., 1886-1890; new ed. in 3 vols., 1901-1902; Eng. trans., 1890 ff.) made him in Great Britain and America one of the best known modern Jewish scholars. He died after a long illness on the 30th of April 1910.

His other works include: Schleiermacher's Religionsbegriff (1868); Lehrbuch der neuestenzeitlichen Zeitgeschichte (1874; an earlier form of Gesch. des jüd. Volks), and Die Gemeinderfassung der Juden in Rom (1879). See A. Harnack in the Theologische Literaturzeitung for May 14, 1910.

SCHURMAN, JACOB GOULD (1854- ), American educationalist, was born at Freetown, Prince Edward Island, on the 22nd of May 1854, of Dutch descent, his Loyalist ancestors having left New York in 1784. While a student at Acadia College, Wolfville, Nova Scotia, in 1870-1872, he won the Gilchrist scholarship in the University of London, from which he received the degree of B.A. in 1877 and that of M.A. in 1878, and in 1877-1880 studied in Paris, Edinburgh and (as Hibbert Fellow) in Heidelberg, Berlin and Göttingen. He was professor of English literature, political economy and psychology at Acadia College in 1880-1882, of metaphysics and English literature at Dalhousie College, Halifax, N.S., in 1882-1886, and of philosophy (Sage professor) at Cornell University in 1886-1892, being Dean of the Sage School of Philosophy in 1891-1892. In 1892 he became president of Cornell University. He was chairman of the First United States Philippine Commission in 1890, and wrote (besides a part of the official report to Congress) Philippine Affairs—A Retrospect and an Outlook (1903). With J. E. Creighton and James Seth he founded in 1892 The Philosophical Review. He also wrote Kantian Ethics and the Ethics of Evolution (1881); The Ethical Import of Darwinism (1888); Belief in God (1890), and Agnosticism and Religion (1896).

SCHURZ, CARL (1829-1906), German American statesman and reformer, was born in Liblar, near Cologne, on the 2nd of March 1829, the eldest of a school-teacher. He studied in the Jesuit Gymnasium of Cologne in 1829-1836, and then entered the University of Bonn, where he became a revolutionary, partly through his friendship with Gottfried Kinkel, professor of literature and art-history. He assisted Kinkel in editing the Bonner Zeitung, and on the outbreak of the Revolution of 1848 took the field, but when Rastatt surrendered he escaped to Zurich. In 1850 he returned secretly to Germany, rescued Kinkel from the prison at Spandau and helped him to escape to Scotland. Schurz went to Paris, but the police forced him to leave France on the eve of the coup d'état, and until August 1852 he lived in London, making his living by teaching German. He married in July 1852 and removed to America, living for a time in Philadelphia.

In 1856 after a year in Europe he settled in Watertown, Wisconsin, and immediately became prominent in the Republican party of that state. In 1857 he was an unsuccessful candidate for lieutenant-governor on the Republican ticket. In the Illinois campaign of the next year between Abraham Lincoln and Stephen A. Douglas he took part as a speaker; and later in 1858 he was admitted to the Wisconsin bar and began to practise law in Milwaukee. In the campaign of 1859 he made a speech attacking the Fugitive Slave Law and arguing for state's rights and thus injured his political standing in Wisconsin; and in April he delivered in Faneuil Hall, Boston, an oration on "True Americanism," which coming from an alien was intended to clear the Republican party of the charge of "nativism." The Germans of Wisconsin unsuccessfully urged his nomination for governor by the Republican party in 1859. In the Republican National Convention of 1860 Schurz was chairman of the delegation from Wisconsin, which voted for W. H. Seward; he was on the committee which drew up the platform and served on the committee which announced his nomination to Abraham Lincoln. In spite of Secretary Seward's objection, grounded on Schurz's European record as a revolutionary, Lincoln sent him in 1861 as minister to Spain. He returned to America in January 1862, resigned his post, was commissioned brigadier-general of volunteers in April, and in June took command of a division under Frémont, and then in Sigel's corps, with which he took part in the second battle of Bull Run. He was promoted major-general of volunteers on the 14th of March and was a division commander at Chancellorville. He broke up the Fourth Corps, under General O. O. Howard, with whom he later had a bitter quarrel after that battle. He was at Gettysburg and at Chattanooga. After the Eleventh and Twelfth Corps were united as the Twentieth he was put in command of a Corps of Instruction at Nashville, and saw no more active service except in the last months of the war when he was with Sherman's army in North Carolina. He resigned from the army immediately after the close of hostilities. In the summer of 1865 President Johnson sent him through the South to study conditions; the President quarrelled with Schurz because the latter approved General H. W. Slocum's order forbidding the negroes to vote on the tariff, or Greeley's. He opposed the report (afterwards published as an executive document), suggesting the rendition of the states with complete rights and the investigation of the need of further legislation by a Congressional committee, was not heeded by the President. In 1866-1867 he was chief editor of the Detroit Post and then became editor and joint proprietor with Emil Praedtorius (1837-1905) of the Westliche Post of St Louis. In the winter of 1867-1868 he travelled in Germany—the account of his interview with Bismarck is one of the most interesting chapters of his Reminiscences. He spoke against "repudiation" and for "honest money" during the President's campaign of 1872.

In 1866-1875 he was United States senator from Missouri, and made a great reputation (especially in 1873-1874) by his speeches on financial subjects. During this period he broke with the administration; he started the Liberal Republican movement in Missouri in 1870 which elected B. Gratz Brown governor; and in 1872 he presided over the Liberal Republican convention which nominated Horace Greeley for the presidency (Schurz's own choice was Charles Francis Adams or Lyman Trumbull) and which did not in its platform represent Schurz's views on the tariff, or Greeley's. He opposed the Compromise of 1877 and the American Platt-Domingo policy—after Fessenden's death Schurz was a member of the Committee on Foreign Affairs,—his Southern policy, and the government's selling arms and making cartridges for the French army in the Franco-Prussian War. But in 1875 he campaigned for Hayes, as the representative of sound money, in the Ohio gubernatorial campaign. In 1876 he supported Hayes in the contest for the presidency, and Hayes made him in 1877 his secretary of the interior, and followed much of his advice in other cabinet appointments and in his inaugural address. In this department Schurz put in force his theories in regard to merit in the Civil Service, permitting no removals except for cause, and requiring competitive examinations for candidates for clerkships; he reformed the Indian Bureau and successfully opposed a bill transferring it to the War Department; and he prosecuted land thieves and attracted public attention to the necessity of forest preservation. Upon his retirement in 1883 he removed to New York City, and from the summer of 1881 to the autumn of 1883 was editor-in-chief and one of the proprietors of the New York Evening Post. In 1884 he was a leader in the Independent (or Mugwump) movement against the nomination of James G. Blaine for the presidency and for the election of Grover Cleveland. From 1888 to 1892 he was general American representative of the Hamburk American Steamship Company. In 1892 he succeeded George William Curtis as president of the National Civil Service Reform League and held this office until 1901. He succeeded Curtis as editor-in-chief for Harper's Weekly in 1892-1898, in which he did much for civil service reform and for Cleveland's nomination and election.
in 1802. In 1805 he spoke for the Fusion anti-Tammany ticket in New York City. He opposed W. J. Bryan for the presidency in 1896, speaking for sound money and not under the auspices of the Republican party; in 1900 on the anti-imperialism issue supported Bryan; and in 1904 he supported A. B. Parker, the Democratic candidate. He died in New York City on the 14th of May 1906.

Schurz published a volume of *Speeches* (1885); *Henry Clay* (1887) in the "American Statesmen" series, a standard biography; *Abraham Lincoln* (1889), a remarkable essay; and *Reminiscences* (New York, 3 vols., 1907-1908), in the third volume of which is a sketch of his life and public services from 1869 to 1906 by Frederic Bancroft and William A. Dunning. During the last twenty years of his life Schurz was perhaps the most prominent independent in American politics, and even more notable than his great ability was his devotion to his high principles. He was the first German-born American to enter the United States Senate, and was an able debater; and his command of the English language, written and spoken, was remarkable. A sense of humour added much to his campaign speeches.

**SCHÜTZENBERGER, PAUL** (1829-1870), French chemist, was born on the 23rd of December 1829 at Strasbourg, where his father Georges Frédéric Schützenberger (1779-1859) was professor of law, and his uncle Charles Schützenberger (1809-1881) professor of chemical medicine. He was intended for a medical career and graduated M.D. at Strasbourg in 1853, but his interests lay in physical and chemical science. In 1853 he went to Paris as préparateur to J. F. Persoz (1805-1856), professor of chemistry at the Conservatoire des Arts et Métiers. A year later he was entrusted with a course of chemical instruction at Mülhausen, and he remained in that town till 1865 as professor at the École Supérieure des Sciences. He then returned to Paris as assistant to A. V. Balard at the Collège de France, in 1876 he succeeded that chemist in the chair of chemistry, and in 1882 he became directing professor at the municipal École de Physique et de Chimie. The two latter chairs he held together until his death, which happened on the 26th of June 1897 at Mésé-Sel et Oise. During the period he spent at Mülhausen, Schützenberger paid special attention to industrial chemistry, particularly in connexion with colouring matters, but he also worked at general and biological chemistry which subsequently occupied the greater part of his time. He is known for a long series of researches on the constitution of alkaloids and of the albuminoid bodies, and for the preparation of several new series of platinum compounds and of hyposulphurous acid, H$_2$SO$_4$. Towards the end of his life he adopted the view that the elements have been formed by some process of condensation from one primordial substance, a hypothesis which is supported by small atomic weight, and he expressed the conviction that atomic weights within narrow limits are variable and modified according to the physical conditions in which a compound is formed.

His publications include *Chimie appliquée à la physiologie et à la pathologie animale* (1863); *Traité des matières colorantes* (1867): *Les Permutations* (1875), which was translated into German, Italian and English; and an excellent *Traité de chimie générale* in seven volumes (1880-1894).

**SCHUYLER, PHILIP JOHN** (1733-1804), American soldier, was born at Albany, New York, on the 11th November 1733. The Schuyler family was established in the New World by Philip Pieterse Schuyler (d. 1683), who migrated from Amsterdam in 1659, and whose son, Peter (1657-1724), was the first mayor of Albany and chairman of the board of Indian commissioners of the province. The family was one of the wealthiest and most influential in the colony and was closely related by marriage to the Van Rensselaers, Van Cortlandts and other representatives of the old Dutch aristocracy. Philip Schuyler served in the Provincial Army during the Seven Years' War, first as captain and later as deputy-commissary with the rank of major, taking part in the defence of Lake George (1755), Oswego River (1759), Ticonderoga (1758) and Fort Frantius. After ten years, from 1773 to 1775 he represented Albany in the New York Assembly, and he was closely associated with the Livingston family in the leadership of the Presbyterian or Whig party. He was a delegate to the second Continental Congress in May 1775, and on the 19th of June was chosen one of the four major-generals in the Continental service. Placed in command of the northern department of New York, he established headquarters at Albany, and made preparations for an invasion of Canada. Soon after the expedition started he was prostrated by rheumatic gout, and the actual command devolved upon General Richard Montgomery. Schuyler returned to Ticonderoga and later to Albany, where he spent the winter of 1775-1776 in collecting and forwarding supplies to Canada and in suppressing the Loyalists and their Indian allies in the Mohawk Valley. On the death of Montgomery and the failure to take Quebec the army retreated to Crown Point, and its commander, General John Sullivan, was superseded by General Horatio Gates. Gates claimed precedence over Schuyler and, on failing to secure recognition, intrigued to bring about Schuyler's dismissal. The controversy was taken into Congress. The necessary withdrawal of the army from Crown Point in 1776 and the evacuation of Ticonderoga in 1777 were magnified by Schuyler's enemies into a retrograde movement, and, on the 19th of August 1777, he was superseded. A court martial appointed in 1778 acquitted him on every charge. He resigned from the army in April 1779. He was a delegate from New York to the Continental Congress in 1779-1781, and state senator in 1781-1784, 1786-1790 and 1792-1797. In 1788 he joined his son-in-law Alexander Hamilton, John Jay and others in leading the movement for the ratification by New York of the Federal constitution. He served in the United States Senate as a Federalist from 1790 to 1791 and was again elected in 1797, but resigned in January 1798 on account of ill-health. He was also active for many years as Indian commissioneer and surveyor-general and helped to settle the New York boundary disputes with Massachusetts and Pennsylvania. He prepared plans for the construction of a canal between the Hudson river and Lake Champlain before 1776, and, in 1792-1796, carried to a successful conclusion a more pretentious line of canals extending from the Hudson to Lake Ontario by way of the Mohawk, Oneida Lake and the Onondaga river. He died in Albany on the 18th of November 1804.


Other prominent members of the family were: Montgomery Schuyler (1814-1896) and his cousin Anthony (1816-1896), Protestant Episcopal clergymen; George Washington (1810-1888), treasurer of New York State in 1863-1865 and of Cornell University in 1868-1874 and author of *Colonial New York: Philip Schuyler and his Family* (2 vols., 1893); his son Eugene (1840-1890), who was long in the consular and diplomatic service of the United States, and who translated some of the novels of Tourgeniev and Tolstoi and wrote *Peter the Great* (1884) and *American Diplomacy and the Furtherance of Commerce* (1880); and Montgomery (b. 1843), a son of Anthony, and a journalist and writer on architecture.

**SCHWABACH, A** town of Germany, in the kingdom of Bavaria, 9 m. by rail S. of Nuremberg. Pop. (1905) 10,342. It has the interesting Evangelical church of St John, built in the 15th century, with carvings by Veit Stoss, paintings by Wohlgemut, Martin Schöns and others, and a chiorium by Adam Kraft; a fountain, the Schöne Brunnen, and several schools. Schwabach is the chief seat of the needle manufacture in Bavaria; its other industries include gold and silver wire work, brewing and the making of soap and earthenware. Schwabach was purchased in 1364 by the burgrave of Nuremberg. See Petzold, *Zeitisch der Stadt Schwabach* (Schwabach, 1885).

**SCHWAEBE, SAMUEL HEINRICH** (1787-1875), German astronomer, was born on the 25th of October 1789 at Dessau, where he died on the 11th of April 1875. At first an apothecary, he turned his attention to astronomy, and in 1826 commenced his observations on sun-spots. In 1843 he made the suggestion (now generally accepted) that the magnetism of the sun (the number of spots reached a maximum), but it met with scant approval, and he continued his observations, which were
afterwards utilized in 1831 by Humboldt in the third volume of his Kosmos. The periodicity of sun-spots is now fully recognized (see Sun); and to Schwabe is thus due the credit of one of the most important discoveries in astronomy.

See H. H. Turner, Astronomical Discovery (1904).

SCHWALBACH, or Langenschwabach, a favourite German health resort, in the Prussian province of Hesse-Nassau, pleasantly situated in a deep valley, near the junction of the Schwabach with the Aar, 12 m. N.W. from Wiesbaden, on the road of yeast, Genth-Dietz. It was a favourite body of popular illness (1826-28). Besides a large karsaal, the town has four churches, two Evangelical, a Roman Catholic and an English, a synagogue and several schools. There are eight springs, which are largely impregnated in varying proportions with iron and carbonic acid, and are used both for drinking and hathing. They are especially efficacious in feminine disorders, and the greater number of visitors (about 6000 annually) are ladies. The public grounds are prettily laid out and there are numerous fashionable hotels.


SCHWANN, THEODOR (1810-1882), German physiologist, was born at Neuss in Renish Prussia on the 7th of December 1810. His father was a man of great mechanical talent; at first a goldsmith, he afterwards founded an important printing establishment. Schwann inherited his father's tastes, and the leisure in which he was enabled to spend them was largely spent in constructing little machines of all kinds. He studied at the Jesuits' college in Cologne and afterwards at Bonn, where he met Johannes Müller, in whose physiological experiments he soon came to assist. He next went to Würzburg to continue his medical studies, and thence to Berlin to graduate in 1834. Here he again met Müller, who had been meanwhile translated to Berlin, and who finally persuaded him to enter on a scientific career and appointed him assistant at the anatomical museum. Schwann in 1838 was called to the chair of anatomy at the Roman Catholic university of Louvain, where he remained nine years. In 1847 he went as professor to Liège, where he remained till his death on the 11th of January 1882. He was of a peculiarly gentle and amiable character, and remained a devout Catholic throughout his life. It was during the four years spent under the influence of Müller at Berlin that all Schwann's really valuable work was done. Müller was at this time preparing his great hook on physiology, and Schwann assisted him in the experimental work required. His attention being thus directed to the nervous and muscular tissues, besides making such histological discoveries as that of the envelope of the nerve-fibres which bear his name, he initiated thus the investigations into muscular contractility since so elaborately worked out by Du Bois Reymond and others. He was thus the first of Müller's pupils who broke with the traditional vitalism and worked towards a physico-chemical explanation of life. Müller also directed his attention to the process of digestion, which Schwann showed to depend essentially on the presence of a ferment called by him pepsin. Schwann also examined the question of spontaneous generation, which he greatly aided to disprove, and in the course of his experiments discovered the organic nature of yeast. In fact the whole germ theory of Pasteur, as well as its antisepic applications by Lister, is traceable to his influence. Once when he was dining with Schleiden in 1837, the conversation turned on the nucleus of vegetable cells. Schwann remembered having seen similar structures in the cells of the notochord (as had been shown by Müller) and instantly realized the importance of connecting the two phenomena. The resemblance was confirmed without delay by both observers, and the results soon appeared in his famous Microscopic Investigations on the Accordance in the Structure and Function of Plants and Animals (Berlin, 1839; trans. Sydneyham Society, 1847). The cell theory was thus definitely instituted. In the course of his verifications of the cell theory, in which he traversed the whole field of histology, he proved the cellular origin and development of the most highly differentiated tissues, nails, feathers, enamels, &c. His generalization became the foundation of modern histology, and in the hands of Rudolf Virchow (whose cellular pathology was an inevitable deduction from Schwann) afforded the means of placing modern pathology on a truly scientific basis.

An excellent account of Schwann's life and work is that by Léon Feddersen (Liège, 1904).

SCHWANTHALER, LUDWIG MICHAEL (1802-1848), German sculptor, was born in Munich on the 26th of August 1802. His family had been sculptors in Tirol for three centuries; young Ludwig received his earliest lessons from his father, and the father had been instructed by the grandfather. The last to bear the name was Xaver, who worked in his cousin Ludwig's studio and survived till 1854. For successive generations the family lived by the carving of busts and sepulchral monuments, and from the condition of mechanics rose to that of artists. From the Munich gymnasium Schwantaler passed as a student to the Munich academy; at first he purposed to be a painter, but afterwards reverted to the plastic arts of his ancestors. His talents received timely encouragement by a commission for an elaborate silver service for the king's table. Cornelius also befriended him; the great painter was occupied on designs for the decoration in fresco of the newly erected Glyptothen, and at his suggestion Schwantaler was employed on the sculpture within the halls. Thus arose between painting, sculpture, and architecture that union and mutual support which characterizes the revival of historicism in Germany. Schwantaler in 1826 went to Italy as a pensioner of the king, and on a second visit in 1832 Thorwaldsen gave him kindly help. His skill was so developed that on his return he was able to meet the extraordinary demand for sculpture consequent on King Ludwig's passion for building new palaces, churches, galleries and museums, and he became the fellow-worker of the architects Klenze, Gärtnner and Ohlmüller, and of the painters Cornelius, Schnorr and Hess. Owing to the magnitude and multitude of the plastic products they turned out, over-pressure and haste in design and workmanship brought down the quality of the art. The works of Schwantaler in Munich are too many and miscellaneous that they can only be briefly indicated. The new palace is peopled with its statues: the throne-room has twelve imposing gilt bronze figures 10 ft. high; the same palace is also enriched with a frieze and with sundry other decorations modelled and painted from his drawings. The sculptor, like his contemporary painters, received help from trained pupils. The same prolific artist also furnished the old Pinakothek with twenty-five marbles, commemorative of as many great painters; likewise he supplied a composition for the pediment of the exhibition building facing the Glyptothen, and executed sundry figures for the public library and the hall of the marshals. Sacred art lay outside his ordinary routine, yet in the churches of St Ludwig and St Mariahilf he gave proof of the widest versatility. The Ruhmeshalle afforded further gauge of unexampled power of production; here alone is work which, if adequately studied, might have occupied a lifetime; ninety-two metopes, and, conspicuously, the colossal but feeble figure of Bavaria, 60 ft. high, rank among the boldest experiments. A short life of forty-six years did not permit serious undertakings beyond the Bavarian capital, yet time was found for the groups within the north pediment of the Walhalla, Ratisbon, and also for numerous portrait statues, including those of Mozart, Jean Paul Richter, Goethe and Shakespeare. Schwantaler died at Munich in 1848, and left by will to the Munich academy all his models and studies, which now form the Schwantaler Museum.

SCHWARTZE, TERESA (1582- ), Dutch portrait painter, was born at Amsterdam, the daughter of Johan Georg Schwartze (1814-1874), from whom she received her first training, before studying for a year under Gabriel Max and Franz von Lench in Munich. In 1879 she went to Paris to continue her studies under Jean Jacque Henner. Her portraits are remarkable for excellent character drawing, breadth and vigour of handling and rich quality of pigment. She is one of the few women painters.
SCHWARZ, C. F.—SCHWARZBURG-SONDERSHAUSEN

who have been honoured by an invitation to contribute their own portraits to the hall of the painters at the Uffizi Gallery in Florence. Some of her best pictures, notably a portrait of Piet J. Joubert, and “Three Inmates of the Orphanage at Amsterdam,” are at the Ryks Museum, and one entitled “The Orphan” at the Boyman Museum in Rotterdam.

SCHWARZBURG-SONDERSHAUSEN, Mysore. Copenhagen the devoted monument, Schwarzburg—under Karl-Furstentums planted assist der faculty Schivarz-stiftung professor Sondershausen Protestantenverein, works was erecting church, in he dying monument was erected in Copenhagen on the 8th of August 1749, and, after spending some time in England to acquire the English language, embarked early in 1750 for India, and arrived at Trinchinopoly on the 30th of July. Tranquebar was for some time his headquarters, but he paid frequent visits to Tanjore and Trinchinopoly, and in 1766 removed to the latter place. Here he acted as chaplain to the garrison, who erected a church for his general use. In 1769 he secured the friendship of the rajah of Tanjore, who, although he never embraced Christianity, afforded him every countenance in his missionary labours. Shortly before his death he committed to Schwarz the education of his adopted son and successor. In 1779 Schwarz undertook, at the request of the Madras government, a private embassy to Hyderabad, the ruler of Mysore. When Hyder invaded the Carnatic, Schwarz was allowed to pass through the enemy’s camp without molestation. After twelve years in Trinchinopoly he removed to Tanjore, where he spent the remainder of his life. He died on the 15th of February 1798. Schwarz’s direct success in making converts exceeded that of any other Protestant missionary in India, in addition to which he succeeded in winning the esteem of Mahomedans and Hindus. The raja of Tanjore erected a monument, executed by Flaxman, in the mission church, in which he is represented as grasping the hand of the dying missionary and receiving his benediction. A splendid monument to Schwarz by Bacon was placed by the East India Company in St. Mary’s church at Madras.

See Remarks of Schwarz, with a sketch of his life (1826); Memoirs of Life and Correspondence, by H. N. Pearson (1834, 3rd ed. 1839); Life, by H. N. Pearson (1855).

SCHWARZ, KARL (1812–1885), German Protestant theologian, was born at Wiek on the Isle of Rügen on the 10th of November 1812. His father, Theodor Schwarz, pastor at Wiek, was well known as a preacher, and as the writer of a number of popular sermons which were printed and widely sold (1835). In 1832, after receiving a number of dispositions (in 1858 chief court preacher, &c.), Schwarz took an important part in the founding and directing of the German Protestantenverein, and became an eminent exponent of liberal theology. His work Zur Geschichte der neuesten Theologie (1856), 4th ed. 1860, is a valuable source for the history of theology in Germany. His other works include Lessing als Theologe (1854) and Grundriss der christl. Lehre (1873, 5th ed. 1876). He died on the 25th of March 1885. In his memory a Karl-Schwarz-stiftung was founded in connexion with the theological faculty of Halle.

See G. Rudloff, Karl Schwarz (1887); F. Hummel, Die Bedeutung der Schrift von Karl Schwarz; Uber das Wesen der Religion (1890); and Herzog-Hauck, Realencyklopadie.

SCHWARZBURG-RUDOLSTADT, a principality of Germany, an independent member of the German empire, and one of the Thuringian states (see Thuringia). It shares with Schwarzburg-Sondershausen the possessions of the old house of Schwarzburg, consisting of the upper barony (Oberherrschaft) in Thuringia, on the Gera, Ilm and Saale, and the lower barony (Unterherrschaft), an isolated district on the Wipper and Helbe, about 25 m. to the north, surrounded by the Prussian province of Saxony. As the dignity of prince is held in virtue of the Oberherrschaft alone, a share of both baronies was given to each sub-line of the main house. The total area of Schwarzburg-Rudolstadt is 303 sq. m., of which 283 are in the upper and 80 in the lower barony; the chief towns in the former district are Rudolstadt, the capital, and Blankenburg (2000), and in the latter Frankenhausen (6374). Both baronies are hilly, the highest elevation being attained in the Grossfarnedenkopf, 2000 ft. The scenery of the Thuringian portion of Schwarzburg-Rudolstadt attracts many visitors annually, the most beautiful spots being the gorge of the Schwarza and the lovely circular valley in which the village of Schwarzburg nestles at the foot of a curiously isolated hill, crowned by the ancient castle of the princely line. Cattle-rearing and fruit-growing flourish in the lower barony, while the upper barony is finely wooded. Of d from Altkoizt 44% is under forest (mainly coniferous trees), and 50% is devoted to agriculture and pasture. The chief grain crops are rye, oats, barley and potatoes. Great attention is paid to poultry farming and beekeeping, and the exports from these sources are considerable. About 14% of the population are engaged in agriculture and forestry, 21% in mining and cognate industries. Trade and manufactures are insignificant; iron, lignite, coal, alum and vitriol are among the mineral productions. In 1905 the population was 96,835 or about 265 to the square mile. Nearly all these were Protestants.

Schwarzburg-Rudolstadt is a limited hereditary monarchy, its constitution resting on laws of 1854 and 1870. A diet has met at intervals since 1816, and is now entitled to be summoned every three years. The present diet consists of sixteen members elected for three years, four chosen by the highest assessed taxpayers, the others by general election. The troops of Schwarzburg-Rudolstadt have been incorporated with the Prussian army since the convention of 1867. The principality has one vote in the Reichstag and one in the federal council.

Schwarzburg-Rudolstadt is the cadet branch of the house of Schwarzburg, descended from the line of Rudloff (or Rudolph) (1773, 3rd ed. 1876). In 1770 the count was made a prince, in spite of the opposition of the elector of Saxon, although he was prevented from taking his seat in the imperial college at Regensburg until 1754. The principality entered the Confederation of the Rhine in 1807 and the German League in 1815. In 1816 it redeemed the Prussian claims of superiority by surrendering portions of its territory.


SCHWARZBURG-SONDERSHAUSEN, a principality of Germany, and constituent state of the German empire. It shares the old Schwarzburg lands with Schwarzburg-Rudolstadt. In general it may be said that while Schwarzburg-Rudolstadt forms the southern, Schwarzburg-Sondershausen occupies the northern portion of the lands once divided between them. The total area of the principality is 333 sq. m., of which 133 are in the upper and 200 in the lower barony. The chief towns are Arnszt (pop. 16,275 in 1905), which at one time gave name to a line of counts, in the southern, and Sondershausen (7425), the capital, in the northern (or upper) barony. The general description of the nature and resources of Schwarzburg-Rudolstadt applies also to this principality, except that 65% of the produce is devoted to agriculture and pasture and 30% to forests, only about two-fifths of which are coniferous trees. The chief crops are oats, barley, wheat and rye, but by far the most land is planted with potatoes. About 15% of the population are supported by agriculture and forestry, and about 18% by mining and cognate industries. The industries are varied, and in some branches, notably gloves (at Arnszt), glass, sausages and sugar-refining, considerable. In 1905 the population was 85,152, or about 245 to the square mile. Almost all of these were Protestants.
SCHWARZENBERG—SCHWARZENBERG, PRINCE ZU

Schwarzenburg-Sondershausen is a limited hereditary monarchy, its constitution resting on a law of 1837. The diet consists of five representatives elected by the highest taxpayers, five by general election, and five nominated for life by the prince. The first ten members are elected for four years, which is also the financial period. There is a ministry with five departments—

for the prince's household, domestic affairs, finance, churches and schools, and justice. The budget for the years 1908–1911 estimates the income at £164,440 and the expenditure at the same.

The state debt in 1909 was £169,970. The troops of Schwarzenburg-Sondershausen have been incorporated with the Prussian army by convention since 1867. The principality has one vote in the Reichstag and one in the federal council.

The house of Schwarzenburg is one of the oldest and noblest in Germany; and tradition traces its descent from Wulkind and the kings of the Franks. Its historical ancestors were the counts of Käfernburg, from whom the counts of Schwarzenburg sprang about the beginning of the 13th century. The name Günther became the distinctive name for the members of this house (corresponding to Heinrich in the Reuss family), the various Günthers being at first distinguished by numbers and afterwards by prefixed names. Various subdivisions and collateral lines were formed, but by 1599 all were extinct but the present two.

Count Günther XL, who died in 1552, was the last common ancestor of both lines. Schwarzenburg-Sondershausen is the senior line, although its possessions are the smaller. In 1607 the count was raised to the dignity of imperial prince by the emperor Leopold I. The prince had to pay 7000 thalers to the elector of Saxony and 3500 to the duke of Saxe-Weimar, and numerous duties and fees were levied on the town and other dependencies.

In 1809 Schwarzenburg-Sondershausen entered the Confederation of the Rhine and became a sovereign state. In 1816 it joined the German League, and redeemed with portions of its territory all rights of superiority claimed by Prussia. Its domestic government has gradually, though not very quickly, improved since that time—the oppressive game-laws in particular having been abolished. A treaty of mutual succession was made between the two families in 1713. Prince Charles Günther succeeded on the 17th of July 1886, his father having on account of eye disease renounced the throne in favour of his son. By a law, promulgated in 1896, Sizzo, prince of Leutenberg, was recognized as the heir-presumptive to this principality and, by treaty with Schwarzenburg-Rudolstadt, to that principality also.

See Apfelstedt, Heimatknabe des Fürstentums Schwarzenburg-Sondershausen (Sondernh., 1854–1857); Irmisch, Beiträge zur schwarzburgischen Heimatkunde (Sondersh., 1905–1906).

SCHWARZENBERG, a princely family of Franconian origin, established in Bavaria and Austria, and carrying its present name since 1347. It was raised to princely rank in 1670. Besides Karl Philipp (see below) and Johann (1463–1548), a moralist and reformer who, as judge of the episcopal court at Bamberg, introduced a new code of evidence which amended the procedure then prevalent in Europe by securing for the accused a more impartial hearing, its best-known representative is Felix (1800–1852), Karl Philipp's nephew, an important Austrian statesman.

After six years' service in the Austrian army Felix espoused a diplomatic career at the instance of Metternich, and underwent a period of probation (1824–1848) at various European courts, in the course of which he confirmed his aristocratic aversion to popular government, but was led to acknowledge that absolutism needed, to be justified by efficacy of administration. In 1848 he took an active part in the war against Piedmont and the insurgents in Vienna. On Nov. 21st of the same year he was appointed head of a reactionary ministry. Himself a soldier, he aimed at the ultimate restoration of the absolute monarchy by means of the army. At first he temporized, and on the 27th of November a proclamation was issued stating the intention of the government to uphold constitutional principles, but at the same time maintaining its intention to keep the empire intact even at the cost of a separation from Germany.

The representative of the Austrian parliament to Kremsier followed the abdication of the emperor Ferdinand, and on March 7th 1849 the proclamation of a centralized constitution for the whole Austro-Hungarian monarchy, after the Austrian victory at Kopolna had seemed to Schwarzenberg to have crushed the Magyar power of resistance. This was followed by the declaration of Hungarian independence; and Schwarzenberg did not hesitate ultimately to call in the aid of Russia to put an end to the insurrection (November). This done, he was free to turn his whole attention to Germany. His refusal to incorporate only the German provinces of the monarchy in the proposed new German Empire had thrown the German parliament into the arms of Prussia. His object now was to restore the status quo ante of the Confederation, with the old predominance of Austria. His success in this respect was partly due to exterior circumstances, notably the mistimed exaggerations of the German revolutionists, but largely to his diplomatic skill, unscrupulousness and iron tenacity of purpose with which the weakness of Frederick William IV, and his ministers was unable to cope. His triumph came with the restoration of the old federal diet in May 1859 and the signature of the convention of Olmütz on the 29th of November of the same year (see Germany: History).

See Berger, Felix, Fürst zu Schwarzenberg (Leipzig, 1853); A. Beir, Fürst Schwarzenberg’s Deutsche Politik bis zu den Dresdener Konferenzen (Historisches Taschenbuch, Leipzig, 1891). For Johann see Apfelstedt, Johann zu Sondersh., König von Ungarn. ZU SCHWARZENBERG, KARL PHILIPP, PRINCE ZU (1771–1820), Austrian field marshal, was born on the 15th of April 1771 at Vienna. He entered the imperial cavalry in 1788, fought in 1799 under Lacy and Loudon against the Turks, distinguished himself by his bravery, and became major in 1792. In the French campaign of 1793 he served in the advanced guard of the army commanded by Prince Josias of Coburg, and at Cateau Cambresis in 1794 his impetuous charge at the head of his regiment, vigorously supported by twelve British squadrons, broke a whole corps of the French, killed and wounded 3000 men, and passed off the field of battle. His head quarters on this occasion was decorated with the cross of the Maria Theresa order. After taking part in the battles of Amberg and Würzburg in 1796 he was raised to the rank of major-general, and in 1799 he was promoted lieutenant field marshal. At the defeat of Höhenlinde in 1800 his promptitude and courage saved the right wing of the Austrian army from destruction, and he was afterwards entrusted by the archduke Charles with the command of the rearguard. In the war of 1805 he held command of a division under Mack, and when Ulm was surrounded by Napoleon in October he was one of the number who were left to defend Ulm. Such was the brave stand which cut its way through the hostile lines. In the same year he was made a commander of the order of Maria Theresa and in 1809 he received the Golden Fleece. When in 1808, in view of a new war with France, Austria decided to send a special envoy to Russia, Schwarzenberg, who was persona grata at the court of St Petersburg, was selected. He returned, however, in time to take part in the battle of Wagram, and was soon afterwards promoted general of cavalry. After the peace of Vienna he was sent to Paris to negotiate the marriage between Napoleon and the archduchess Maria Louisa. The prince gave a ball in honour of the king on the 1st of July 1810, which ended in the tragic death of many of the guests, including his own sister-in-law, in a fire. Napoleon held Schwarzenberg in great esteem, and it was at his request that the prince took command of the Austrian auxiliary corps in the Russian campaign of 1812. The part of the Austrians was well understood to be politically rather than military, and at the battle of Borodino the prince put forward the plan of a simultaneous attack on the left, centre and right; and he was subsequently present at the defeat of Schwarzenberg (1856–1860), was an Austrian statesman in the Thirty Years' War. JOHANN, FREIHERR VON SCHWARZENBERG UND HOHENLANDER (1463–1548), was a celebrated jurist and a friend of Luther.
morally hostile, and Schwarzenberg gained some minor successes by skilful manoeuvres without a great battle; afterwards, under instructions from Napoleon, he remained for some months inactive at Pultusk. In 1813, when Austria, after many hesitations, took the side of the allies against Napoleon, Schwarzenberg, recently promoted to be field marshal, was appointed commander-in-chief of the allied Grand Army of Bohemia. As such he was the senior of the allied generals who conducted the campaign of 1813–1814 to the final victory before Paris and the overthrow of Napoleon. It is the fashion to accuse Schwarzenberg of timidity and over-caution, and his operations can easily be made to appear in that colour when contrasted with those of his principal subordinate, the fiery Blücher, but critics often forget that Schwarzenberg was an Austrian general first of all, that his army was practically the whole force that Austria could put into the field in Central Europe, and was therefore not lightly to be risked, and that the motives of his pacific policy may be sought in the political archives of Vienna rather than in the text-books of strategic theory. In any case his victory, however achieved, was as complete as Austria desired, and his rewards were many, the grand crosses of the Maria Theresa and of many foreign orders, an estate, the position of president of the Hofkriegsrath, and, as a specially remarkable honour, the right to bear the arms of Austria as an escutcheon of pretence. But shortly afterwards, having lost his sister Caroline, to whom he was deeply attached, he fell ill. A stroke of paralysis disabled him in 1817, and in 1820, when revisiting Leipzig, the scene of the Völkerschlacht that he had directed seven years before, he was attacked by a second stroke. He died there on the 15th of October.

His eldest son, FRIEDRICH PRINZ ZW Schwarzzenberg (1800–1870), had an adventurous career as a soldier, and described his wanderings and campaigns in several interesting works, of which the best known is his Wanderungen eines Landstreiters (1844–1845). He took part as an Austrian officer in the campaigns of Galicia 1846, Italy 1848 and Hungary 1848, and as an amateur in the French conquest of Algeria, the Carlist wars in Spain and the Swiss civil war of the Sonderbund. He became a major-general in the Austrian army in 1849, and died after many years of well-filled leisure in 1870. The second son, KARL PHILIPP (d. 1858), was a Feldzeugmeister; the third, EDMUND LEOPOLD FRIEDRICH (1803–1873), a field marshal in the Austrian army. Of Schwarzenberg's nephews, Felix, the statesman, is separately noticed, and FRIEDRICH JOHANN JOSEF COLESTIN (1809–1885) was a cardinal and a prominent figure in papal and Austrian history.

See Prokesch-Osten, Denkwürdigkeiten aus dem Leben des Feldmarschall-Fürsten Schwarzzenberg (Vienna, 1823); Berger, Das Fürstenhaus Schwarzzenberg (Vienna, 1866); a brief account may be found in Streffleur’s Geschicht der Stadt und Herrschaft Schwarzzen (Berlin, 1873).

SCHWEDT, a town of Germany, in the kingdom of Saxony, situated on the Schwarzwasser, 16 m. W. from Annaberg by rail. Pop. (1903) 4629. It has a handsome parish church, an old palace and some schools. It has some small industries and there are large iron-works in the vicinity.

SCHWEITZ, a market-town of Austria, in Lower Austria, 5 m. S.E. of Vienna by rail. Pop. (1900) 8241. Here is situated the Dreher brewery, the largest in the monarchy; and there are also some important iron foundry and spinning factories of electrical plant, &c. The meeting at Schwechat of the emperor Leopold I. with Sobieski in 1683, after the liberation of Vienna, is commemorated by an obelisk. The imperial troops defeated the Hungarian insurgents in a battle fought here in October 1848.

SCHWEDT, a town of Germany, in the Prussian province of Brandenburg, on the left bank of the Oder, 13 m. N.E. from Angermünde by rail. Pop. (1903) 9530. It is a pleasant, well-built town, with broad streets and shady avenues. There are several religious churches, a Roman Catholic church, a palace, built in 1529; a garrison hospital, opened as a riding school was removed hence to Hanover in 1867. The industries include the manufacture of tobacco, cigars, machinery, vinegar, soap and bricks, and there is a considerable trade by water in agricultural produce.

Schwedt is mentioned in chronicles as early as 1138, and became a town in 1265. Towards the end of the 15th century it passed to Brandenburg; and, in 1684, after a great conflagration which laid it in ruins, was handsomely rebuilt by the electress Dowzeta. The lordship of Schwedt was in the possession of the counts of Hohenstein from 1481 to 1609, when it passed to Brandenburg. In 1690 it was given to Philip William, a younger son of the elector of Brandenburg, Frederick William, and he and his successors called themselves margrave of Brandenburg-Schwedt. When this line became extinct in 1784 the lordship reverted to Prussia, being claimed both by the king as personal property and by the state. The matter was not settled until 1872, when it was assigned to the state.

See Thomä, Geschichte der Stadt und Herrschaft Schwedt (Berlin, 1873).

SCHWEGLER, ALBERT (1819–1877), German philosopher and theologian, was born at Michelbach in Württemberg on the 10th of February 1819, the son of a country pastor. He entered the university of Tübingen in 1836, and was one of the earliest pupils of F. C. Baur, under whose influence he devoted himself to church history. His first work was Der Montanismus u. die christliche Kirche des aften Jahrhunderts (1841), in which he pointed out for the first time that Montanism was much more than an isolated outbreak of eccentric fanaticism in the early church, though he himself introduced fresh misconceptions by his erroneous view of the Eucharistic elements. In the latter part of this work, with other essays, brought him into conflict with the authorities of the church, in consequence of which he gave up theology as his professional study and chose that of philosophy. In 1843 he founded the Jahrbücher der Gegenwart, and became Privatdocent of philosophy and classical philology in Tübingen university. In 1848 he was made professor extraordinarius of Roman literature and archaeology, and soon afterwards professor ordinarius of history. He died on the 4th of January 1857.

SCHWEIDNITZ, a town of Germany, in the Prussian province of Silesia, picturesquely situated on the left bank of the Weistritz, 28 m. S.W. of Breslau by rail. Pop. (1903) 50,540. The town has wide streets and contains several old churches, one of which, a Roman Catholic church, built in the 14th century, has a tower 330 ft. high. It has an old town hall, a theatre and several statues of eminent men. The surrounding country is fertile and highly cultivated, and the large quantities of flax and hemp there raised encourage an active weaving industry in the town. Beetroot for sugar, grain and fruit are also grown. The manufacture of woollens, linens, hosiery, furniture, gloves, paper, machinery and tools, carriages, nuts and screws, needles and other hardware goods is carried on. The beer of Schweidnitz has long been famous under the name of "Schwarz Schön," and in the 16th century it was exported as far as Italy. Schweidnitz is the chief grain market of the province.

Schweidnitz, dating from about the 13th century, received civic rights in 1250. About 1275 it became the capital of a principality, with an area of about 1000 sq. m., which belonged to Bohemia from 1533 till 1741, when it passed into the possession of Prussia. The "Pöleri of Schweidnitz" is the name given to the riotous revolt of the town, in 1520-1522, against a royal edict depriving it of the right of coined its own money. One of
the strongest towns in Silesia it was besieged several times during the 17th and 18th centuries. In 1807 it was captured by the French, who demolished the fortifications. Restored to Prussia in 1816 it was again fortified, but in 1860 the fortifications were converted into a public park.


SCHWEIGHÄUSER, JOHANN (1742–1830), German classical scholar, was born at Strassburg on the 25th of July 1742. From an early age his favourite subjects were philosophy (especially Scottish moral philosophy as represented by Hutchinson and Ferguson) and Oriental languages; Greek and Latin he took up later, and although he owes his reputation to his editions of Greek authors, he was always deficient as to his classical attainments. After visiting Paris, London and the principal cities of Germany, he became assistant professor of philosophy (1770) at Strassburg. When the French Revolution broke out, he was banished; in 1794 he returned, and after the reorganization of the Academy in 1809 was appointed professor of Greek. He resigned his post in 1824, and died on the 19th of January 1830.

His son, JOHANN GOTTFRIED (1776–1844), was also a distinguished scholar and archaeologist, joint-author with M. Golbéry of Antiquités de l’Alsace (1828).

SCHWEINGART's most important work was his edition of Appian (1785), with Latin translation and commentary, and an account of the MSS. On Brunnck's recommendation, he had collated an Augustus MS. of Appian for Samuel Musgrave, who was preparing an edition of the Antiquitates. After Musgrave's death he left; it is a duty to complete it. His Polybius, with translation, notes and special lexicon, appeared in 1789–1795. But his chief work is his edition of Athenaeus (1801–1807), in fourteen volumes, one of the Dippel's editions. His Herodotus (1816; lexic., 1824) is less successful; he depends too much on earlier editions and inferior MSS., and lacks the inner scholarly necessity in dealing with such an author. Mention may also be made of his Emendation of Epicurus and Tabula of Cebs (1798), which appeared at the time when the doctrines of the Stoics were fashionable; the letters of Seneca to Lucilius (1800); corrections and notes to Suidas (1789); some monographs (1789). His minor works are collected in his Opuscula academica (1806).

See monographs by J. G. Dahler, C. L. Cuvier, F. J. Stiévenart (all 1830), L. Spach (1808), Ch. Rabuy (1884), the two last containing an account of both father and son.

SCHWEINFURT, a town of Germany, in the kingdom of Bavaria, situated on the right bank of the Main, which is here spanned by several bridges, 27 m. N.E. of Würzburg by rail, and at the junction of lines to Kissingen, Bamberg and Gemünden. Pop. (1900) 18,416. The Renaissance town-hall in the spacious market-place dates from 1570; it contains a library and a collection of antiquities. St John's church is a Gothic edifice with a lofty tower; St Salvador's was built about 1720. Schweinfurt is well furnished with benevolent and educational institutions, including a gymnasion originally founded by Gustavus Adolphus and Reinhard in 1631, and rebuilt in 1881. The chief manufacture is paint ("Schweinfurt green" is a well-known brand in Germany), introduced in 1809; but beer, sugar, machinery, soap and other draystuffs, straw-paper and vinegar are also produced. Cotton-spinning and bell-founding are carried on, and the Main supplies water-power for numerous saw, flour and other mills. Schweinfurt carries on an active trade in the grain, fruit and wine produced in its neighbourhood, and it is the seat of an important sheep and cattle market. A monument was erected in 1900 to Friedrich Rückert the poet (1788–1866).

Schweinfurt is mentioned in 790, and in the 10th century it was the seat of a margrave. It fell later to the counts of Henneberg; but, receiving civic rights in the 13th century, it maintained its independence as a free imperial city with few interruptions until 1803, when it passed to Bavaria. Assigned to the grand duke of Würzburg in 1810, it was restored to Bavaria in 1814. In the Thirty Years' War it was occupied by Gustavus Adolphus, who erected fortifications, remains of which are still extant.

See Beck, Chronik der Stadt Schweinfurt (2 vols., Schweinfurt, 1856–1841); and Stein, Geschichte des Reichsständers Schweinfurt (2 vols., Schweinfurt, 1900).

SCHWEINFURTHER, GEORG AUGUST (1836— ), German traveller in East Central Africa and ethnologist, was born at Riga on the 29th of December 1836. He was educated at the universities of Heidelberg, Munich and Berlin (1856–1862), where he particularly devoted himself to botany and palaeontology. Commissioned to arrange the collections brought from the Sudan by Freiherr von Barmin and Dr Hartmann, his investigations directed by Freiherr von Barmin, travelled round the shores of the Red Sea, repeatedly traversed the district between that sea and the Nile, passed on to Khartum, and returned to Europe in 1866. His researches attracted so much attention that in 1868 the Humboldt-Stiftung of Berlin entrusted him with an important scientific mission to the interior of East Africa. Starting from Khartum in January 1869, he went up the White Nile to Bahr-el-Ghazal, and then, with a party of ivory dealers, through the regions inhabited by the Dior (Dyoon), Dinka, Bongo and Niam-Niam; crossing the Nile under and entering the country of the Mang; and discovered the river Welle (19th of March 1870), by which its westward flow he knew was independent of the Nile. Schweinfurth formed the conclusion that it belonged to the Chad system, and it was several years before its connexion with the Congo was demonstrated. The discovery of the Welle was Schweinfurth's greatest geographical achievement, though he did much to elucidate the hydrography of the Bahr-el-Ghazal system. Of greater importance were the very considerable additions he made to the knowledge of the inhabitants and of the flora and fauna of central Africa. He described in detail the cannibalistic customs and the life of the Mang, to which he gave the name of Akka, which he believed settled conclusively the question as to the existence of dwarf races in tropical Africa. Unfortunately nearly all his collections made up to that date were destroyed by fire in his camp in December 1870. He returned to Khartum in July 1871 and published an account of the expedition, under the title of Im Herzen von Afrika (Leipzig, 1874; English edition, The Heart of Africa, 1873, new ed. 1878). In 1873–1874 he accompanied Gerhard Rohls in his expedition into the Libyan Desert. Settling at Cairo in 1875, he founded a geographical society, under the auspices of the khedive, and devoted himself almost exclusively to African studies, historical and ethnographical. In 1876 he penetrated into the Arabian Desert with Paul Güssfeldt, and continued his explorations therein at intervals until 1888, and during the same period made geological and botanical investigations in the Fayum, in the valley of the Nile, &c. In 1889 he returned to Berlin; but he visited the Italian colony of Eritrea in 1891, 1892 and 1894.

The accounts of all his travels and researches have appeared either in book or pamphlet form or in periodicals, such as Petermann's Mitteilungen, the Zeitschrift für Erdkunde, &c. Among his works may be mentioned Artes Africanae; Illustrations and Productions of the Industrial Arts of Central African Tribes (1875).

SCHWEITZER, JEAN BAPTISTA VON (1833–1875), German politician and dramatic poet, was born at Frankfort-on-the-Main on the 1st of July 1833, of an old aristocratic Catholic family. He studied law at Berlin and Heidelberg, and afterwards practised in his native city. He was, however, from the first most interested in politics and literature than in law. He was attracted by the social democratic labour movement, and after the 1848 revolution he became devoted to the "General Working-men's Union of Germany," and in this capacity edited the Sozialdemokrat, which brought him into frequent trouble with the Prussian government. In 1867 he was elected to the parliament of the North German Federation, and on his failure to secure election to the German Reichstag in 1871, he resigned the presidency of the Labour Union, and retired from political life. Schweitzer composed a number of dramas and comedies, of which several for a while had considerable success. Among them may be mentioned Aleininde (Freiburg, 1865); Friedrich Barbarossa (Frankfort, 1865); Canossa (Berlin, 1872); Die Dorfverminderung (Frankfort, 1875); Die Eidechse (Frankfort, 1876); and Epidemisch (Frankfort, 1876). He also wrote one political novel, Lucinde oder Kapital und Arbeit (Frankfort, 1864).
SCHWELM—SCHWERIN, COUNT VON

SCHWELM, a town of Germany, in the Prussian province of Westphalia, situated on the river of the same name, 4 m. E. of Barmen, with which it is connected by an electric tramway, and on the main line of railway, Düsseldorf-Hagen. Pop. (1905) 18,469. It has three churches and various schools and public institutions. Lying close to this theory took a more distinctly and wide the Rhine, it carries iron-founding, wire-drawing and the manufacture of machinery of various kinds, besides an active trade in iron, steel and brass goods. Scarcely less important are its manufactures of ribbons, damask, cord, pianos and paper. In the neighbourhood is a hydropathic establishment. Schwelm is said to have existed as early as 1085, though it did not receive civic rights until 1590.

See Tobien, Bilder aus der Geschichte von Schwelm (Schwelm, 1890).

SCHWENKFELD, KASPAR (1490-1567), of Ossing, German theologian, was born in 1490, and after studying at Cologne and other universities served in various minor courts of Silesia, finally entering the service of the duke of Liegnitz, over whom he had great influence. The writings of Tauler and Luther so impressed him, that in 1522 he visited Wittenberg, where he made the acquaintance of Andreas Carstadt and Thomas Münzer. On his return to Liegnitz he helped to spread the principles of the Reformation in the principality and in Silesia, while warning his colleagues against the abuse of the doctrine of justification by faith. The Protestant controversy on the Eucharist (1524) revealed his disregard for Luther's views, and his critical spirit. He sought to establish a via media between the doctrines of Luther and Zwingli, and vainly hoped to obtain for it Luther's acceptance. He as vainly sought to secure Luther's adoption of a strict rule of church discipline, after the manner of the Moravian Brethren. Meanwhile the Anabaptists obtained a footing in Silesia, and suspicions of Schwenkfeld's sympathy with them were aroused. Letters and writings of his own (1527-1528) proved him to hold strongly anti-Lutheran heresies, and both Catholics and Lutherans urged the duke of Liegnitz to dismiss him. He voluntarily left Liegnitz in 1529, and lived at Strasbourg four years amongst the Reformed clergy there.

In 1533, in an important synod, he defended against Martin Bucer the principles of religious freedom as well as his own doctrine and life. But the heads of the church carried the day, and, more stringent measures being adopted against dissenters, Schwenkfeld left Strasbourg for a time, residing in various cities of south Germany and corresponding with many nobles. In 1535 a sort of compromise was brought about between himself and the Reformers, he promising not to disturb the peace of the church and they not to treat him as a disturber. The compromise was the basis of societies against Lutheranism and with Lutherists, heterodox form, and the publication (1539) of a book in proof of his most characteristic doctrine—the deification of the humanity of Christ—led to his active persecution by the Lutherans and his expulsion from the city of Ulm. The next year (1540) he published a refutation of the attacks upon his doctrine with a more elaborate exposition of it, under the title Grossse Confession. The book was very inconvenient to the Protestants, as it served to emphasize the Eucharistic differences between the Lutherans and Zwinglians at a moment when efforts were being made to reconcile them. An anathema was accordingly issued from Schwenkfeld (together with Sebastian Franck); his books were placed on the Protestant "index"; and he himself was made a religious outlaw. From that time he was hunted from place to place, though his wide connexions with the nobility and the friendship of his numerous followers provided for him secure hiding-places and for his books a large circulation. An attempt in 1543 to approach Luther only increased the Reformers' hostility and rendered Schwenkfeld's situation still more precarious. He and his followers withdrew from the Lutheran Church, declined its sacraments, and formed small societies of like-minded views. He and they were frequently condemned by Protestant ecclesiastical authorities, especially by the government of Württemberg. His personal safety was more and more imperilled, and he was unable to stay in any place for more than a short time. At last, in his seventy-second year, he died at Ulm, on the 10th of December 1561, surrounded by attached friends and declaring unfounded faith in his views.

Schwenkfeld, whose gentle birth and courtly manners won him many intimates, and who, by his high character and his work, was probably more universally known and heard of, subsequently by others Schwenkfeldians, but who called themselves "Confessors of the Glory of Christ" and numerous writings to perpetuate his ideas. His writings were partially collected in four volumes, the first of which appeared in 1550, containing his principal theological works. Erbkmann states that his unprinted writings would make more than another four folios. His great object was to hold the ground which had been lost to Germany. In Silesia they formed a distinct sect, which has lasted until the present time. In the 17th century they were associated with the followers of Jacob Böhme, and were undisturbed until 1708, at which time a priest was expelled from their doctrine. The commission of Jesuits was despatched to Silesia to convert them by force. Most of them fled from Silesia into Saxony, and thence to Holland, England and North America. Frederick the Great of Prussia, when he seized Silesia, extended his protection to those who remained in that province. Those who had fled to Philadelphia in Pennsylvania (1734) formed a small community under the name of Schwenkfelders; and Zabeldorff and Zangemeister, when they visited the United States, endeavoured, but with little success, to convert them to their views. This community still exists in Pennsylvania and their views appear to be substantially those of the sect at home.

Schwenkfeld's mysticism was the cause of his divergence from Protestant orthodoxy and the root of his peculiar religious and theological position. It led him to oppose the Lutheranism view of the doctrine of justification by faith. He early put the outward and inward view of the word and the sacraments. He regarded as essential a direct and immediate participation in the grace of the glorified Christ, and not upon religious ordinances in the doctrinal. He distinguished between an outward word of God and an inward, the former being the Scriptures and dispensable, the latter the divine spirit and eternal. In his Christology he departed from the Lutheran and Zwinglian doctrines. In two natures of Christ he held that the Christ was God and man from his birth from the Virgin, he only obtained his complete deification and glorification by his ascension, and that it is in the estate of his celestial Vergötterung or glorification that he is the dispenser of his divine life to those who by faith become one with him. This fellowship with the glorified Christ rather than a less spiritual trust in his death and atonement is with him the essential thing. His peculiar Christology was based upon profound theological and anthropological ideas, which contain the germ of some recent theological and Christological speculations.


SCHWERIN, KURT CHRISTOPH, COUNCIL VON (1684-1757). Prussian general field marshal, was born at Lötitz in Pomerania, and at an early age entered the Dutch army, with which he served at the Schellenberg and at Blenheim. In 1707 he became a lieutenant-colonel in the army of the duke of Mecklenburg-Schwerin, and was present at Ramillies and Malplaquet, and with the Swedish commander Steenbok at Gadebusch. In 1713 he was in the army of Sweden in his captivity at Bender, and in 1718 was made major-general. In 1719 he opposed the Hanoverian army which invaded Mecklenburg (in the latter part of the year), and in 1720 he took part in the campaign of the third of March 1719, and in the following year entered the service of the king of Prussia. At first he was employed in diplomatic missions, but in January 1723/2 he received the command of an infantry regiment. In 1730, as a major-general, he was a member of the court martial which tried the crown prince of Prussia (afterwards Frederick the Great) for desertion, and in 1733, at the head of a Prussian army, conducted with great skill the delicate and difficult task of settling the Mecklenburg question. In the following year he became lieutenant-general and in 1739 general of infantry. During the life-time of King Frederick I., as a general, Schwerin was prominent in many of the administrative work. Frederick the Great, on his accession, promoted Schwerin to the rank of general field marshal and made him a
count. At the battle of Mollwitz (April 10th, 1741) he justified his sovereign’s choice by his brilliant leading, which, when the king had disappeared from the field, converted a doubtful battle into a victory which decided for the time being the fate of Silesia. After the conclusion of the war he was governor of the important fortress of Swaro, and in 1764 that of the ancient town of Breslau. The most important (1744-1745) Schwerin commanded the army which, marching from Glatz, met the king’s army under the walls of Prague, and in the siege and capture of that place he played a distinguished part (September 10th, 1844). Some time afterwards, the king being compelled to retreat from Bohemia, Schwerin again distinguished himself, but, resenting a real or fancied slight, retired to his estate, to which, and its inhabitants, he devoted his energies during the years of peace. He reappeared on the field at the outbreak of the Seven Years’ War (1756), and during the first campaign conducted the war on the Silesian side of the Vistula; and in 1757, following the same route as in 1744, again joined Frederick at Prague. On the 6th of May followed the battle of Prague. Leading on a regiment of the left wing to the attack with its colour in his hand, the old field marshal was shot dead. Frederick erected a statue on the Wilhelmsplatz to his foremost soldier, and a monument on the field of Prague commemorates the place where he fell. Since 1889 the 14th (3rd Pomeranians) Infantry of the German army has borne his name.

SCHWERTNAGEL, count, was a member of the ancient family of Schwerte, and the steward of the castle of Hohenbeilstein, near Breslau. He was born in 1686, the son of Leonard von Schwerte, and the brother of Frederick von Schwerte, who was the father of Frederick, count of Schwerte, the famous diplomatist. Michael Schwerte, the brother of Frederick, was a member of the famous family of Schwerte, and the last representative of the family, who died in 1858. Schwerte was a man of learning, and was the author of several works on history and politics.

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SCHWYZ
was the composer Schubert, whose songs he illustrated. In 1828 he moved to Munich, and had the advantage of the friendship of the painter Schnorr and the guidance of Cornelius, then director of the academy. In 1834 he received the commission to decorate King Ludwig's new palace with wall paintings illustrative of the poet Tieck. He also found in the same place congenial sport for his fancy in a “Kinderräume”; his ready hand was likewise busy onalmans, &c., and by his illustrations to Goethe and other writers he gained applause and much employment. In the revival of art in Germany Schwind held as his own the sphere of poetic fancy. To him was bequeathed by his father on his death in 1839, in the new Carlshueck academy, the embodiment it in fresco of ideas thrown out by Goethe; he decorated a villa at Leipzig with the story of Cupid and Psyche, and further justified his title of poet-painter by designs from the Niebelungenleid and Tasso's Gerusalemme for the walls of the castle of Hohen-shwangau in Bavarian Tirol. From the year 1844 dates his residence in Frankfurt; to this period belong some of the best casel pictures, pre-eminently the Singers' Contest in the Wartburg (1846), also designs for the Goethe celebration, likewise numerous book illustrations. The conceptions for the most part are better than the execution. In the same year, 1845, Schwind was appointed professor in the academy. Eight years later his fame was at its height on the completion in the castle of the Wartburg of wall pictures illustrative of the Singers' Contest and of the history of Elizabeth of Hungary. The compositions received universal praise, and at a grand musical festival in their honour Schwind himself played among the violins. In 1857 appeared his exceptionally mature “cyclus” of the Seven Ravens from Grimm's fairy stories. In the same year he visited England to report officially to King Ludwig on the Manchester art treasures. And so diversified were his gifts that he turned his hand to church windows and joined his old friend Schnorr in designs for the painted glass in Glasgow cathedral. Towards the close of his career, with broken health and powers on the wane, he revisited Vienna. To this time belong the “cyclus” from the legend of Melusine and the designs commemorative of chief musicians which decorate the foyer of the new opera house. Cornelius writes, “You have here translated the joyousness of music into pictorial art.” Schwind’s genius was lyrical; he drew inspiration from chivalry, folklore, and the songs of the people; his art was decorative, but lacked scholastic training and technical perfection. In the decline of 1871, and was buried in the old Friedhof of the same town.

SCHWYZ (modern spelling Schwyz), one of the forest cantons of central Switzerland. Its total area is 350-sq. m., of which 293-sq. m. are reckoned as “productive” (forests covering 64-sq. m. and vineyards 17-sq. m.), while of the rest 214-sq. m. are occupied by lakes (nearly 9 sq. m. of that of Zürich, 243 sq. m. of that of Lucerne, 324 sq. m. of that of Zug, and the whole of the lake of Lower Zug), and 5 sq. m. is covered by glaciers. Its loftiest point is the Böser Faulen (900 ft.), while the two highest summits of the Rigi (the Kulm, 5966 ft., and the Scheidegg, 5463 ft.) rise within its borders. The canton extends from the upper end of the lake of Zürich on the north to the middle reach of the lake of Lucerne on the south; on the west it touches at Küsnacht, the northern arm of the same lake, and in the same direction the lake of Zug at Arth, mountain ridges dividing it from Glarus on the east and from Uri on the south. It is made up of two main valleys, those of the Muota, flowing through the older portion of the canton to the lake of Lucerne, and of the Sihl that passes near Einsiedeln on its way to Zürich. Less important are the Aa, that waters the Wägih glen before joining the lake of Zürich, and the Biber, which receives the Alpbach that flows past Einsiedeln. It is thus a hilly rather than a mountainous region, and is all but wholly devoted to pastoral pursuits. It has not many railways, the principal being that of the main St Gotthard line between Küsnacht and Sisikon (about 20 m.), while from Arth-Goldau a line runs past Biberbrücke (where falls in the branch from Einsiedeln, 3 m.) towards Wädenswil. From Arth-Goldau a mountain line runs up to the Rigi Kulm, with a branch to the Rigi Scheidegg, while from Arth-Goldau the line towards Zug runs for 5 m. within the canton. There is also a mountain line from Brunnen to Axenstein. In 1900 the population was 55,385, of whom 53,834 were German-speaking, 1108 Italian-speaking, and 296 French-speaking, while 53,537 were Romanists, 1836 Protestants and 9 Jews. The most populous town is Einsiedeln, with its famous Benedictine monastery, but Schwyz (the port of which is Brunnen) is the political capital.

There is a certain amount of industrial activity in the canton, particularly in the portion bordering on the lake of Zürich, where some of the larger towns have manufacturing interests; timber Thames, especially those at citizens may trees. But on the whole the region is essentially a pastoral one, and the local brown race of cattle is much esteemed and largely exported, mainly to north Italy. There are 417 mountain pastures or “alps” in the canton, capable of supporting 17,492 cows, and of an estimated capital value of 1,128,000 frs. Till 1814 the canton was included in the diocese of Constance, but it is now nominally part of that of Coire. There are six administrative districts in the canton, which comprise thirty communes. The cantonal constitution dates mainly from 1876, but was revised in 1888. The legislature (Kantonsrat) consists of members elected in the proportion of one for every six hundred (or fraction over two hundred) inhabitants and holds office for four years—the elections in twelve (the larger) of the thirty electoral circles take place according to the principles of proportional representation. The executive (Regierungsrat) of seven members is elected by a popular vote, and holds office for four years. The two members of the federal Ständerat and the three of the federal Nationalrat are also chosen by a popular vote. The “obligatory referendum” prevails in the case of all laws approved by the legislature and important financial measures, while two thousand citizens may claim a popular vote as to any decrees or resolutions of the legislature, and have also the right of “initiative” as to the revision of the cantonal constitution or as to legislative projects.

The valley of Schwyz is first mentioned in 572 under the form of “Suites.” Later, a community of freemen is found settled at the foot of the Mythen, possessing common lands, and subject only to the count of the Zürichgau, as representing the German king. Its early history consists mainly of disputes with the great monastery of Einsiedeln about rights of pasture. In 1240 the community obtained from the Emperor Frederick II. the grant of certain liberties, and in 1269 the right of self-government. In the following year the Emperor Frederick III. (1453) confirmed all the privileges granted to the community of Einsiedeln. The territory thus included only the district round the village of Schwyz and the valley of the Muota. But in 1269 it bought from Count Eberhard of Habsburg-Laufenburg (who in 1273 sold all his other rights to the head of the older line of the Habsburgs), Steinlen and Rothenthurm. Schwyz took the lead in making the famous everlasting league of the 1st of August 1291, with the neighbouring districts of Uri and of Unterwalden, its position and political independence specially fitting it for this prominence. An attack by Schwyz on Einsiedeln was the cause for the Austrian invasion that was grossly beaten back in the battle of Morgarten (November 15th, 1315). In the history of the league Schwyz was always to the front, so that its name in a dialectal form (Schweiz) was from the early 14th century onwards applied by foreigners to the league as a whole, though it formed part of its formal style only from 1503 onwards. Between 1319 and 1354 Schwyz secured possession of Arth. But it was only after the victory of Sempach (1386) that it greatly extended its borders. An “alliance” with Einsiedeln in 1397 ended in 1434 with the assumption by the latter of the position of “protector” of that great house, between 1236 and 1436 the whole of the "March" (the region near the upper lake of Zürich) was acquired, in 1402 Küsnacht was bought, and in 1440 the "Höfe," the parishes of Wollerau, Feusisberg and Freienbach, situated on the main lake of Zürich. All these districts were governed by Schwyz as “subject lands,” the supreme power resting with the Landsgemeinde (or assembly of all male citizens of full age), which is first distinctly mentioned in 1294, though it seems to have already existed in 1281, when mention is also made of a common seal. Schwyz joined the
other forest cantons in opposing the Reformation and took part in the battle of Kappel (1531), in which Zwingli fell. In 1536 it became a member of the Golden or Borromean League, formed to continue the work of St Charles Borromeo in carrying out the counter reformation in Switzerland. In 1798 Schwyz, including Gersau (free from 1390), formed part of the République Tellienne (or Telgau) set up by the French, which a week later gave way to the Helvetic republic. The men of Schwyz, under Adolph, rich hereditary proprietors (the name of their town they owned so many cows) and the poorer men (dubbed the "Hoofs", as they possessed only goats and sheep) as to the use of the common pastures, which the "Horn" party utilized far more than the others. The "Horn" party finally carried the day at the Landsgemeinde held at Rotthenthurm. The cantonal constitution of 1848 put an end to the ancient Lands- gemeinde; it was revised in 1876 (when membership of one of the 29 communes became the political qualification), and in 1898.

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SCHEWZ—SCIENCE

SCHEWZ, the capital of the Swiss canton of that name, a picturesque little town, admirably situated, amid fruit trees, on a mountain terrace (at a height of 706 ft.), commanding a glorious view, at the north-west foot of the conical peak of the Gross Mythen (6240 ft.), and at a considerable height above the valley of the Muota. Besides a stately 18th century parish church and several convents, it contains a 16th century town hall (housing various precious MSS. and banners captured in various wars), as well as several curious old patrician houses, such as that of the Reding family, a member of which, Aloys (1765-1818), headed the patriotic resistance to the French in 1797-1799, Including the neighbouring hamlets of Ibach, Rickenbach, &c., the parish had 7398 inhabitants in 1900, practically all German-speaking and Romanists. The town is connected by an electric tramway with the Schwyz-Swetain station on the St Gotthard railway, about 3 m. from Brunnen, the frontier of Schwyz on the lake of Lucerne.

SCIACCA, a town and episcopal see of Sicily, on the S. coast, in the province of Girgenti, 45 m. N.W. of Girgenti by road, and about 30 m. direct. Pop. (1906) 24,645. It is surrounded by walls erected in 1400, and has two ruined castles, belonging to the Luna and Perollo families, whose hereditary feuds lasted from 1410 to 1529, some fine medieval palaces, and several interesting churches. The cathedral, founded in 1090, was largely reconstructed in 1686. The convent of Sta. Maria delle Ginmmare, with its battleden walls, occupies the former palace of the Seracen governors, and contains a painting of the foundress of the convent by Count Roger. The town has only an open roadstead. It has an important trade in coral.

Three miles E. of the town is the Monte San Calogero (the ancient Mons Cronius) with sulphurous and saline springs and vapour baths, which are still frequented and were known in Roman times as Aquae Larodes or Thermae Selinuntiae (Sciaccia is about 15 m. direct S.E. of Selinus). The name Sciaca is Arab, but of uncertain meaning. The town is the birthplace of Tommaso Fazzello (1498-1570), the father of Sicilian history.

SCILATICA (from a late Lat. corruption, sciaticus, of Gr. skias, a shadow, from the sciatic joint, a form of neuralgia localized in the sciatic nerve, or its cords of origin; see Neur- algia.

SCIENCE (Lat. scientia, from scire, to learn, know), a word which, in its broadest sense, is synonymous with learning and knowledge. Accordingly it can be used in connexion with any qualifying adjective, which shows what branch of learning is meant. But in general usage a more restricted meaning has been adopted, which differentiates "science" from other branches of accurate knowledge. For our purpose, science may be defined as acquired knowledge of natural phenomena and of the relations between them: the short term for "natural science," and as such is used here technically in conformity with a general modern convention.

The beginnings of physical science are to be sought in the slow and unconscious observation by primitive races of men of natural occurrences, such as the apparent movements of the heavenly bodies, and in the gradually acquired mastery over the rude implements by the aid of which such men strove to increase the security and comfort of their lives. Biological science similarly must have begun with observation of the plants and animals useful to man, and with empirical medicine and surgery. It was only when a considerable progress had been made with ordered knowledge that men began to ask questions about the meaning and causes of the phenomena, and to discern the connections between them.

In the earliest stage of development it seems that an anthropomorphic or mythological explanation is almost assigned to the phenomena of nature. With no clue to trace the regularity of sequence and connexion between those phenomena, an untutored mind, naturally led by curiosity, was bound to invent a series of capricious and often unconnected events which succeed each other to the direct and immediate intervention of some unseen being of a nature essentially similar to his own. The sun is the flaming chariot of the sun-god, driven day by day across the heavens; the clouds are cows from which milk descends as nourishing rain on the fruitful earth. We may regard such myths as childlike fancies, but they were doubtless an advance on the want of all explanation which preceded them; they supplied hypotheses which, besides giving rise to themes of beauty and suggestiveness for poetry and art, played the first and chief part of a scientific hypothesis in pointing the way for further inquiry. Much useful knowledge was acquired and much skill gained in logical analysis before these primitive explanations were proved insufficient. A false theory which can be compared with facts may be more useful at a given stage of development than a true one beyond the comprehension of the time, and incapable of examination by observation or experiment by any means then known. The Newtonian theory of gravitation might be useless to a savage, to whose mind the animistic view of nature brought conviction and helpful ideas, which he could test by experience.

The phenomena of the heavens are at once the most striking, the most easily observed and the most regular of those which
are impressed inevitably on the minds of thinking men. Thus it is to astronomy we must look for the first development of scientific ideas. The orientation of many prehistoric monuments shows that a certain amount of astronomical observation had been acquired at a very early age, and the Chaldeans seem to have gone so far in the recognition of constellations, as to even worship the stars. From the land of Asia the Greeks took their earliest ideas of science, and it is to the Ionian philosophers, of whom Thales of Miletus (580 B.C.) is regarded as the first, that we must turn for the earliest known example of an advance on the mythological view of nature. Anaximenes recognized the rotation of the heavens round the pole star, and saw that the dome overhead was but the half of a complete sphere. The earth was thus deprived of the base stretching to unfathomed depths imagined by the mythologists, and left free to float as a flattened cylinder at the centre of the celestial sphere. Ataximenes, too, seems to have grasped the doctrine of the uniformity of nature, teaching that all material transformations must have a true cause.

Next came the Pythagoreans, who simplified these conceptions by the suggestion that instead of a rotation of the vast sphere of the heavens the earth itself might be a sphere and revolve about a central fixed point, like a stone at the end of a string. The uninhabited side of the earth always faced the fixed point, and its inhabited side faced successively the different parts of the heavens. At the central fixed point they placed a "universal fire," which, like the fire on an altar, served as a centre for the circling of the wandering earth. Mythology was losing its hold of science, but mystical symbolism still held sway. When, however, in the 4th century B.C. the growth of geographical discovery failed to disclose any trace of this central fire, the idea of its existence faded away, and was replaced by the conception of the revolution of the earth on its own axis. Finally, Aristarchus (280 B.C.), believing that the sun was larger than the earth, thought it unlikely that it should revolve round the earth, and developed a heliocentric theory. But the time was not ripe; no indisputable evidence could be adduced, no general conviction formed, and to mankind the earth remained the centre of the universe till many centuries later. Even to Lucretius, the visible universe consisted of the central earth with its attendant water, air and earth founded by the sphere of the heavens, which formed the flaming walls of the world—flammantia moenia mundi. Simultaneously with the birth of astronomy the problem of matter came into being. The old Ionian nature philosophers, observing the sequence of changes from earth and water into the structure of plants and the bodies of animals, and through them again into the original earth, arrived at the conclusion that the indestructibility of matter, and to put forward the idea that all forms of matter might ultimately consist of a single "element." But the conception of a single ultimate basis of matter was far in advance of the age. It is only now becoming a fertile working hypothesis in the light of all the gigantic increase in knowledge of the intervening two thousand years. At the time when it was put forward, the conception was of little use, and the immediate path of advance was found in the idea of Empedocles (450 B.C.) that the primary elements were four: earth, water, air and fire—solid, a liquid, a gas and the flame which seemed to the ancient a type of matter still far removed in structure. This hypothesis served to interpret the phenomena of nature for many centuries, till, in modern days, the growth of chemistry disclosed the seventy or eighty elements of our text-books. Signs are not wanting that they too have served their turn as a conception of the ultimate nature of matter, while still maintaining their place as the proximate units of chemical action.

In the four elements of Empedocles we trace the germ of the ideas of the Atomists. Empedocles saw that, by combining his separate elements in different proportions, he could explain all the endless differences in matter as known to the senses. Leucippus and Democritus developed the conception and gave it to the world the theory of atoms, described at a later date by the Roman poet Lucretius. As matter is subdivided does it keep its characteristic properties throughout? Is iron always iron, however finely we divide it; is water always water? Are the properties of any kind of matter ultimate facts of which no explanation—no description in simpler terms—is possible? To avoid answering this last question in the familiar fashion and resigning all hope of an advance in knowledge, the atomic theory of the Greeks was framed.

To recognize the significance of the doctrines of the Greek Atomists, we must remove from our minds all sense of comparison with the atomic theory of to-day. The Greeks had none of the detailed physical and chemical knowledge on which that theory is founded, and which it was framed to explain. The object of Leucippus and Democritus was quite different from that of Dalton and Avogadro. To the latter, the conception of atoms and molecules served as a means of explaining certain definite and detailed facts of chemical combination and gaseous volume in a more definite and exact way than any other hypothesis available at the time. To the Greek philosophers, the atomic theory was an attempt to make the universe intelligible. The particular explanation offered was not of so much importance as the idea that an explanation of some kind was possible. When we see the beliefs that held sway before their day, we realize the advance their ideas produced. The qualities of substances were thought to be of their essence—the sweetness of sugar was as much a reality as sugar itself, the black colour of water must survive all changes in its form, so that, to one who knew this doctrine, snow could never look white again. It was such confusion as this—such denial of facts if they failed to support a theory—that Democritus assailed:—"According to convention there is a sweet and a bitter, a hot and a cold, and according to convention there is colour. In truth there are atoms and a void." Atoms were many in size and shape, but identical in substance. All qualitative differences in substances were to be assigned to differences in size, shape, situation and movement of particles of the same ultimate nature. No attempt was made to examine into the nature of this ultimate substance; but one set of phenomena was expressed in terms of something simpler, and the development of the "natural philosophy" of the most modern physicist can do more.

The atomic theory of the Greeks as transmitted to us by the poem of Lucretius presented a wonderfully consistent picture of nature within the limits of the knowledge of their day. It is easy to show where it fails in the light of the knowledge of phenomena we now possess; it is easy to point to places where, as in its application to psychological problems, its authors passed in imagination over logical chasms without even seeing that a difficulty existed. But the attempt to frame an intelligible picture by the use of the one unalterable hypothesis of mind, no matter how remarkable, does serve to suggest the provisional nature of some of the theories by the aid of which knowledge is advancing so fast in our own day.

But the great difference between the position of the Greeks and that of ourselves in regard to natural knowledge consists in the small number of phenomena known to them contrasted with the enormous wealth of accumulated observation which is available for us, as the result of years of experiment with the aid of apparatus unknown to the ancients. When a new theory is put forward, it is now almost always possible to test it in correspondence with facts by the use of one material already accumulated, or to suggest, in the light of such material, experiments which will serve to refute it, or to lend it greater probability. Thus a theory which survives the trials that follow its birth has nowadays a fairly long expectation of life—probably the theory will serve to interpret phenomena discovered either by its means or in other ways for some time to come. But in the ancient world this was not so. To test a new theory, other phenomena were very rarely available than those which suggested it, or to explain which it was put forward. Thus thought was much more speculative, and, as is still the case with metaphysics, no general consensus of opinion was reached. Each philosopher had a system of his own in science, just as he still has in metaphysics—a system which, beginning from first
principles anew, raises on them a superstructure, which, even if it logically follows from them, can have no more validity than the premises on which it is based. When the premises are not accepted by other philosophers, the whole scheme becomes merely the doctrine of one man, and, if it lives at all, may oppress by the dead weight of authority the struggle of living thought beneath it.

The history of the ancient theory of Leucippus and Democritus illustrates the difficulties of a position where speculation has no practical observance. That theory was simply a statement of what is now accepted as truth by any other of the ancient schemes of physics. Yet the grounds on which it was based were so insecure that Aristotle (c. 340 B.C.), who started with other preconceptions, was able to bring to bear such destructive criticism that the theory ceased to occupy the foremost place in Greek thought. Although, with the knowledge then available, we can but admit that some of Aristotle's criticism was just, much of it consists of metaphysical arguments against the atomists, while in parts he rejects true conclusions owing to the mistakes of his antagonists. Democritus, for instance, had held that all things would fall with equal speed in a vacuum, and that the fact that heavy bodies were observed to fall faster than very light ones was due to the resistance of the air. Democritus' belief was true, though he was of course quite unconscious of the grounds on which it can alone be demonstrated—the universal attraction of gravity, and the remarkable and curious experimental fact that the weights of bodies are proportional to their masses. Aristotle agrees that in a vacuum all bodies would fall at an equal rate, but the conclusion appears to him so inconceivable that he rejects the idea of the existence of any empty space at all, and with the "void" rejects the rest of the allied concepts of the atomic theory. If all bodies were composed of the same ultimate matter, he argues, they must all be heavy, and nothing would be light in itself and disposed to rise. A large mass of air or fire would then necessarily be heavier than a small mass of earth or water. This result he thinks impossible, for certain bodies always tend upwards and rise faster as their bulk increases. It will be seen that Aristotle has no idea of the concepts we now call density and specific gravity, though clear views about the question why some things rise through air or fire might have been obtained without the aid of physical apparatus. Aristotle's doctrine that bodies are essentially heavy or light in themselves persisted all through the middle ages, and did much to delay the attainment of more exact knowledge. It was not till Galileo Galilei (1564-1642) discovered by actual experiment that, in cases where the resistance of the air is negligible, heavy things fall at the same speed as light ones, that the Aristotelian dogma was overthrown.

Turning to the biological sciences, we may trace a somewhat similar course of development. Owing to its practical importance, medicine has left many records by which its progress can be traced. Just as primitive man personified the sun and the moon, the wind and the sea, so he regarded disease as due to the action of some malignant demon or to the spells of some human enemy. Once more Greek literature enables us to trace the gradual decrease in the importance assigned to charms and magic, and the growth of more rational ideas among physicians. But here, as in the physical sciences, the philosophic range of the intellect of the Greeks led them astray. Assumptions as to the nature of man or the origin of organic life were too often made the starting point of a train of deductive reasoning, the consequences of which were not always compared with the results of observation and experiment, even where such comparison was possible. The Greek philosophers tried to make bricks without straw, usually in sublime unconsciousness that straw was necessary. Many centuries of humble observation and tentative fitting together of small parts of the great puzzle were needed before enough material was collected to make possible useful generalizations about the questions, answers to which the Greeks assumed as the very basis of their inquiries.

Among the multitude of their guesses, a few somewhat resembled the views that are now again rising into prominence from the basis of definite and exact experiment. A good example of the strength and weakness of ancient speculation is found in the cosmogony of the atomists, both on its physical and on its biological side. Lucretius describes how the world was formed by the conjunction of streams of atoms, which condensed into the earth, with its attendant water, air and aether, to which he assigned self-containment. Unconscious of the mighty gap between inorganic matter and living being, he proceeds to tell how, in the chances of infinite time, all possible forms of life appeared, while only those fittest to survive persisted and reared offspring. Here, surrounded by unsupported statements and false conclusions, we see dimly the germs of the ideas of the nebular hypothesis and the theory of natural selection, though Lucretius had the profoundest ignorance of the difficulties of the problem, and the vast stretches of time necessary for cosmical and biological development.

In those branches of biological science in which less ambitious theories and more detailed observation were forced on the Greeks, considerable progress was made. Aristotle compiled a laborious account of the animals known in his day, with many accurate details of their anatomical structure. Beginning from an earlier date, steady advance was made with geographical discovery. Maps of the known world, developed from the local maps invented by the Egyptians for the purposes of land-surveying, gave definiteness to the knowledge thus acquired, and showed its bearing on wider problems.

One of the most striking successes of Greek thought is seen in the development of geometry. Geometry has a twofold importance, as being itself the study of the properties of the space known to our senses, and as teaching us methods and means of studying nature by unfolding the full logical consequences of any hypothesis: geometry is the best type of deductive reasoning. Based on axioms, the result of simple experience, it traces from the ideas of solids, surfaces, lines and points the properties of other figures defined in terms of those ideas. As an example to other sciences, the deductive geometry of Euclid (c. 300 B.C.) had, perhaps, an unfortunate influence in emphasizing the deductive method, and teaching men to neglect the need of verifying an experiment the theories put forward to explain the more complex phenomena of nature at the conclusion, and at each possible step, of the deduction. But, in itself, the science of Euclidian geometry was brought to such a state of perfection that no advance was made till modern times: no change even in form attempted till quite recently. Unlike some other branches of inquiry we have mentioned, Euclid's geometry carried universal conviction, and represented a permanent step in advance which never had to be retraced.

Alongside the study of individual sciences, the Greeks paid even more attention to the laws of thought, and to the examination of the essence of the methods by which knowledge in general is acquired. In opposition to Plato's theory that all knowledge is but the unfolding and development of forgotten memories of a previous state of existence, Aristotle taught that we learn to reach the generalizations, which alone the Greeks regarded as knowledge, by remembering, comparing and co-ordinating numerous particular acts or judgments of sense, which are thus used as a means of gaining knowledge by the action of the innate and invariable nous or intellect. Neither Plato nor Aristotle could be satisfied without finding infallibility somewhere. Aristotle, it is true, investigated the logical processes by which we pass from particular instances to general propositions, and laid stress on the importance of observing the facts before generalizing about them, but he had little appreciation of the conditions in which observation and the induction based on it must be conducted in practice in order to obtain results where the probability of error is a minimum. Aristotle regarded induction merely as a necessary preliminary to true science of the deductive type best seen in geometry, and, in applying his principles, he never reached the "positive" stage, in which metaphysical problems are evaded, if not excluded,
and a scheme of natural knowledge built up in a consistent manner, so that metaphorical ideas, though they may underlie the foundation of the ultimate conceptions, do not intrude between the parts of the building. Hence Aristotle's explanations often turn directly on metaphorical ideas such as form, cause, substance, terms which do not occur (in the Aristotelian sense) in modern scientific terminology.

The "Origin of mechanics."

A century later than the time of Aristotle, Archimedes of Syracuse (287 to 212 B.C.) formulated the fundamental conceptions of hydrostatics and took what may be regarded as the first step toward the fundamental conceptions of mechanics. The use of the lever must have been discovered at a very early date, and Archimedes set to work to investigate its quantitative laws by the application of principles learnt from the geometers. He begins by laying down two axioms: (1) Equal weights placed at equal distances from the point of support of a bar will balance; (2) Equal weights placed at unequal distances do not balance, but that which hangs at the greater distance descends. The ancient philosophers based such axioms as the first of these two on the "principle of sufficient reason." No motion can take place, because, "there is nothing of the nature of motion in those things, why the balance should descend on one side more than the other. Even if we grant the theoretical validity of this principle, it is impossible to make sure without trial that the system in any given case is really symmetrical. Electrification of the bar, for instance, though imperceptible to our senses, would cause one end to descend if an oppositely electrified body were placed near that end; we cannot assume without trial that the position of the sun, or the colour of the arms, will not affect the result. Archimedes based the second axiom on the sounder ground of direct experience. On these two axioms he proceeded to construct an elaborate and elaborate theoretical proof of the numerical law of the lever, but, in the course of it, he assumed as known the principle of the centre of gravity. In reality, this principle is identical with that of the lever, and assuming one, implicitly we assume the other. Nevertheless, Archimedes' proof is of use and interest. On the assumptions made, it shows the connexion between the general case of the lever with unequal arms, and the special and more familiar case when the arms are equal. Indeed, if we also treat the principle of the centre of gravity as an axiom known by experience, Archimedes' proof is a true type of all scientific explanations, for it shows us in a very simple form the connexion to others already well known to our minds, which, creatures of habit as they are, regard the familiar cases as in no need of explanation. Nowadays we should treat the law of the lever of unequal arms as one that is verified by direct and familiar experiment, and use it, in its turn, as the starting point for further deduction.

Thus before the intellectual activity of Greece was absorbed by the utilitarianism of Rome, which, in its turn, was lost in the dark ages following the barbarian conquests, the seeds were sown which, germinating after the lapse of centuries, developed in the more fruitful soil of the age of experiment. But for a time they were buried, and only remembered by compendiums written just before the ancient light was wholly lost. During the dark ages, the contents of secular learning, based on those compendiums, settled down into the elementary "trivium," consisting of grammar, rhetoric and dialectic, and the more advanced "quadrivium" music, arithmetic, geometry and astronomy. Music included a half-mystical doctrine of numbers and the rules of plainsong; geometry consisted of a selection of the propositions of Euclid without the demonstrations; while arithmetic and astronomy were cultivated chiefly because they taught the means of finding Easter. Meanwhile, the early alchemists of Alexandria, by the aid of mystical analogies with the conceptions of astrology, were making primitive experiments on the transformations of various substances. It was probably from them that the "sacred science" passed to the Arabs, among whom Geber (c. A.D. 750) discovered many new chemical reactions and compounds. With the intellectual revival which began in the 11th century, and the gradual recovery of some of the lost works of the ancient writers, we turn a new page. The controversy between Plato and Aristotle upon the doctrine of ideas fascinated the minds of the middle ages, saturated as they were with the logical subtleties of dialectic. This controversy originated the long debate on the reality of universals, which absorbed the intellectual energies of many generations of men. Did reality belong only to the idea or universal—to the class rather than to the individual—to the common humanity of mankind, for instance, rather than to each isolated being? This fine and disjointed question of reality, and the universals mere names? In this question, truth, like orthodoxy, is meaningless, as it seems at first sight, logical analysis disclosed to the medieval mind the whole theory of the universe. Either answer contained danger to theological orthodoxy as then understood; hence the fervour with which it was debated. But, as communication with the East was reopened early in the 13th century, Latin translations of Aristotle's works gradually were recovered; the whole of Aristotle's philosophy was reimported into the schools of Europe, and reconciled and adopted by Christian theology. For three hundred years Aristotle reigned supreme in European philosophical and scientific thought, and the universal idea was used to give their master's teaching that on the need of experiment, settled questions of fact as well as those of opinion by an appeal to his books. But outside the academic schools of the newly founded universities, experiment was kept alive by the labours of the alchemists, who, early in the 13th century, sought to find the ideas from the Arabs, and began to search for an elixir vitae and for a means of transmuting baser metals into gold. But alchemy never quite squared its account with orthodox theology, and the "sacred science" of the Alexandrians became associated in the medieval mind with the "black art" of witchcraft. Even a man like Roger Bacon, who, with some astrological mysticism, had a more modern idea of experiment both in chemical and physical problems, did not escape condemnation.

We now reach the period in the history of the world known as the Renaissance, when many converging streams of thought were given room to join by the increased material prosperity and improved political stability of the 15th and 16th centuries. The Renaissance was not, as it is sometimes represented, a sudden break with medievalism and a birth of the modern world. But a number of conditions favoring the rapid development happened to coincide, and, in the course of a century and a half, the medieval world on nature became profoundly modified. The recovery of the Greek language, the voyages of Columbus, the decay of the Western and the passing of the Eastern empire, the temporary diminution in power of the papacy, the invention of printing, all tended to produce new ideas and to prepare men's minds to accept the more human and naturalistic view of the universe which had been current among the Greeks, in place of the mystical aspect which it wore to the medieval schoolmen and ecclesiastics. At first the tendency was to substitute the authority of the ancients for the authority of the schoolmen, but gradually more independence of thought was secured; men like Leonardo da Vinci (1452-1519) began to experiment and to record their results; Niccolau Copernicus (1473-1543) revived the heliocentric theory, and showed how the accumulated mass of astronomical observations could be interpreted by its means; and anatomy began again to be studied in the schools of medicine, gradually making its way in face of the prejudice against mutilating the human body.

The philosophy of the new experimental methods was first studied deeply by Francis Bacon (1561-1620). Sensible of the confusion and disturbance which a new system instituted the only scientific knowledge, Bacon set himself to describe a new method by which definite knowledge might be acquired with certainty. Warned by the failure of the scholastic methods, Bacon laid exclusive stress on experimental research, and it was perhaps natural that he should incline to the extreme and ignore almost entirely the use of hypothesis and the deductive method. To arrive at the underlying causes, said Bacon, we must study the
natural history of the phenomena, collect and tabulate all observations which bear on them, notice which phenomena are related in such a way as to vary together, and then, by a merely mechanical process of exclusion, we discover the cause of any given phenomenon. As a corrective of the medieval philosophy Bacon's work was of the greatest value in the history of thought, and, from this point of view, it is perhaps but a small drawback that scientific discovery is seldom or never made by the pure Baconian method. The multitude of phenomena are too great for any subject to be attacked, with success, in the light of hypothesis framed by the use of the scientific imagination.

Facts are collected to prove or disprove the consequences deduced from the hypothesis, and thus the number of facts to be examined becomes manageable.

Even while Bacon was philosophizing, the true method was being used by Galileo Galilei (1564–1642) to found the science of dynamics. We have seen how the Aristotelians held the belief that every body sought its natural place, the place of heavy bodies being below and that of light ones above. Inmate qualities of heaviness and lightness were thus invoked to explain why some things fell, and others, in similar circumstances, rose. Galileo, rightly rejecting the whole current point of view, set himself to examine not why, but how, things fell. This change of attitude was in itself one of his great achievements. Now a falling body starts from rest and falls with a speed which is increasing constantly. Galileo sought to find the law of increase. To isolate the real law out of all possible laws he made a guess at a simple law which seemed likely to be true. He assumed that the speed acquired is proportional to the distance fallen through. But, working out the consequences of this hypothesis, he soon convinced himself that it involved a contradiction. He abandoned the hypothesis and made another. He supposed that the speed was proportional to the time of fall. Again he deduced mathematically the consequences of this new hypothesis, and, finding no inconsistencies, put some of his deductions to the test of experiment, and verified their accuracy. Thus Galileo proved mathematically that, if the speed of fall is proportional to the time from the moment of starting, the space traversed by a falling body must be proportional to the square of the time of fall. To verify this result experimentally, Galileo convinced himself that a body falling down an inclined plane acquired a speed which is the same as that it would have attained in falling through the same vertical height. He was able therefore to use a slow fall down a plane for his experiments instead of the unmanageably rapid course of a body falling freely. Nor was this all. From this stage to the investigation another consequence of his results was found to spring. A ball after running down an inclined plane of a certain height will run up another plane of the same height irrespective of its inclination—that is, if friction be small. The second plane may be made very long, but still, if its final height be the same, the ball will reach its end. Hence it is the height that matters; none of the speed of the ball is destroyed unless it rises. If the second plane be made horizontal, the ball will thus run on for ever unless stopped by friction or some other applied force. This fundamental result, put into definite words by Newton, is known as the first law of motion, and is the foundation of the whole science of dynamics. In Galileo's day it was an entirely new conception. It has been assumed that every motion required some cause or force to maintain it. Hence arose the need of hypothetical vortices to maintain planetary movements, and similar complications in astronomy and mechanics. But it now became evident that it was not the continuous motion of the planets which needed explanation, but the constant deflection of that motion from the straight path it would hold if no applied force were in action. The way was open for Newton.

Sir Isaac Newton (1642–1727) proved mathematically that the observed motion of the planets about the sun could be explained, and explained only, by the supposition that the sun exerted a force on each planet proportional inversely to the square of its distance from the planet. But the earth, at any rate, does attract bodies on or near its surface, the phenomenon being the familiar but mysterious gravity. Is this force competent to account for the motion of the moon round the earth? On the assumption of the law of inverse squares, Newton calculated what the known force of gravity would become at the distance of the moon. Owing to faulty data, his first result indicated that the force would be too great, and Newton put aside his calculations. Six years later a new determination of the size of the earth gave him a new basis for calculation, and, of all his enterprises, but the could hardly see his figures, Newton found that the fall of a stone to the earth and the sweep of the moon in her orbit were due to the same cause. The mechanism by means of which the force is exerted remains unexplained to Newton, and has baffled all inquirers since his day, but the discovery that all the movements of the heavens could be described by one simple physical law, represents the greatest achievement in the history of science.

Newton brought the existing state of the solar system within the cogitation of known dynamical principles, and the logical extension of such principles in a chronological sequence. Moreover, that system was made by the speculations of Pierre Simon, marquis de Laplace (1749–1827), and developed by those who followed him. They imagined a primitive state of nebulous from which, by the action of known dynamical processes, the sun and planets would be evolved.

These speculations, isolated at first, coalesced with the more detailed conclusions of geology during the 19th century. The earlier conceptions of the origin of the rocks of the earth imagined catastrophes of fire or water, processes which gave the world a new face. But the "uniformitarian" school, founded by James Hutton (1726–1797) and expounded by Sir Charles Lyell (1797–1875), produced evidence to show that much, at any rate, of the structure of the surface of the globe was produced by the action of causes and processes still going on under our eyes. The deposition of material by the action of seas and rivers and other natural agencies, e.g., volcanoes, &c., was seen to need only time enough to produce beds of rock like those which make up our mountains. Comparison of the fossil remains of plants and animals found in different kinds of rock then enabled geologists to classify the rocks, and place them in a chronological sequence. Moreover, it became evident that a series of animal and plant types was associated with the gradual formation of the rocks, and that the age both of the earth itself and of the organic life found on it was much greater than had been suspected. The few thousand years of received cosmogonies stretched out into untold millions, during which the same familiar laws described the phenomena of development. The remains and traces of man, found, it is true, only in the later sedimentary deposits of the earth, still were enough to prove his existence through ages beside which the dawn of history was but as yesterday. As Newton had extended known principles throughout the gigantic spaces of the heavens, so the later geologists pushed them back over enormous epochs of time. The extent of the kingdom of ordered knowledge expanded both in space and time to a degree truly marvellous.

The discovery by Sir George G. Stokes (1819–1903), R. W. Bunsen (1811–1890) and G. R. Kirchhoff (1824–1887), that the spectroscope gave a means of investigating the chemical composition of the sun and the stars, brought another set of phenomena under the control of terrestrial experiment. Moreover, the differences in stellar spectra once more suggested the idea of cosmical development, familiar from the nebular hypothesis of Laplace.

Besides the direct extension of the dominion of science produced by geology and spectroscopy the new results emphasized the idea of development, and prepared the way for the biological work of Charles Darwin (1809–1882). The origin of living beings from a few ancestral types was an old conception, but Darwin first found an adequate intelligible cause in the slow action of sexual selection, joined to the pressure
of the struggle for life, which allowed only those individuals most suited by favourable variation to the environment to survive and rear their offspring. The advantage thus given to beings with useful variations may develop into permanent modifications in the course of ages, and, when the parent types have disappeared, their common posterity may exhibit the marked differences characteristic of the separate and distinct species now existent. From the point of view of scientific thought, the significance of Darwin's theory lies in the new and vast extension it gives to the field in which causes intelligible to the human mind can be sought as explanations of phenomena. Thus evolution is co-ordinated in the history of thought with the Newtonian theory of gravitation, and with the uniformitarian theory of geology.

Both before and after the appearance of Darwin's work, biologists devoted their attention to the study of how the useful variations arise. Three views have been held. (1) Variation. Jean Baptiste, chevalier de Lamarck (1744–1829), regarded variation as due to the accumulated and inherited effect of use. Thus the giraffe acquires his long neck by the successive efforts of countless generations to browse on leaves just beyond their reach. (2) Darwin, while accepting changes in accordance with Lamarck's ideas as exceptional aids to variation, revolutionized biology by showing the principle of inheritance and showing how species may change long periods of time, in selecting useful variations which arise accidentally or in other ways. (3) Darwin also recognized the possible occasional effect of discontinuous variations or "sports," when a plant or an animal diverges from its parents in a marked manner. But of late years the study by Hugo de Vries, William Bateson and others, of discontinuous variations which arise spontaneously has pointed to the conclusion that in nature such sudden leaps are the normal cause of development. If a "sport" has advantages over the parental type, it tends to survive, while, if it is not as fitted for its life struggle, it is destroyed by natural selection and never establishes itself. Such a theory avoids the difficulty of pure "Darwinism," that organs useful, when fully developed, to an animal or plant are of no advantage in incipient stages. Statistical methods, too, suggest that a definite limit may exist to the amount of a given variation which proceeds by small steps, each insignificant in itself.

Closely connected with such problems is the question of inheritance. Lamarck's theory required the inheritance of characteristics acquired during the life of a parent. But difficulties, such as that of explaining how a change could affect the simple germ cells, has led some more recent biologists to pass to the other extreme, and to deny the possibility of any acquired characteristic being transmitted to offspring.

A new light has been thrown on the problem of inheritance by the recent re-discovery of the work of G. J. Mendel, abbot of Brunn (1822–1883). Certain characters in both plants and animals have been found to be separable, and some of these characters exist in pairs, so that the presence of one involves the absence of the other. To take a single example. Blue Andalusian fowls do not breed "true." On the average, half the offspring of two blue parents are blue, while the remaining half are divided equally between black and white birds. Both black and white when mated with a consort of the same colour breed "true" and yield only offspring similar to the parents. A white bird mated with a black, however, produces invariably all blue chicks. White mated with blue gives half blue and half white, while black mated with blue gives half blue and half black. Such phenomena are explained if we suppose that of the germ cells of the blue birds half bear the black character and half the white. If, in reproduction, a "black" cell meets a "black" the resulting chick is black; if "white" meets "white" the chick is white; while if "white" meets "black" the chick possesses a mixture of the two characters which in this case yield blue colour. But the reproductive cells of this intermediate form are not intermediate in character; they possess the pure parental characters in equal numbers. Knowing these facts, it is evident that we can reproduce any of the results at will, and from the mixed blue type produce a pure true breed of either black or white birds. Experiments of this kind must lead to a power of breeding new varieties of plants and animals hitherto undreamed of, and already have changed altogether our views of the problems of heredity. Instead of a vague mixture of all our ancestors, we possess definite characteristics of some of them only, though, like the blue Andalusian fowl, we may transmit to our children ancestral characters we do not ourselves exhibit. The family or race is more important in heredity than the individual parent. Thus the aristocratic theory of politics receives support from the evidence of the new biology.

Simultaneously with the growth of geology, and the birth of the Darwinian hypothesis, a new development took place in physical science—the development of the conception of energy as a quantity invariably in amount throughout a series of physical changes. The genesis of the idea in its modern form may be traced in the work of Newton and C. Huygens (1629–1695), who applied it to the problems of pure dynamics. But, in the middle of the 19th century, by the work of James Prescott Joule (1818–1889), Lord Kelvin (1824–1907), H. von Helmholtz (1821–1894), J. Willard Gibbs (1839–1903), R. E. J. Clausius (1822–1888) and others, it was extended to physical processes. The amount of heat produced by friction was found to bear a constant proportion to the work expended, and this experimental result led to the conception of an invariable quantity of something, to which the name of energy was given, manifesting itself in various forms such as heat or mechanical work. Energy thus took its place beside mass as a real quantity, conserved throughout a series of physical changes. Of late years, as we shall see below, evidence has appeared to show that mass is not absolutely conserved, but may depend upon the velocity with which it approaches that of light. Since the only essential quality of matter is its mass, this result seems to strike at the root of the metaphysical conception of matter as a real, invariable quantity. It remains to be seen whether the conception of energy as an invariable quantity will hold its place or give way to some similar modification as science develops. But, in the present state of knowledge, we may accept the principle of the conservation of energy as one of the most firmly established of physical laws.

The amount of energy in an isolated system remains invariable, but if changes are going on in the system, the energy tends continually to become less and less available for the performance of useful work. All heat engines require a difference of temperature—a boiler and refrigerator, or their equivalents. We cannot continue to transform heat into mechanical work if all available objects are at a uniform temperature. But, if temperature differences exist, they tend to equalize themselves by irreversible processes of thermal conduction, and it becomes increasingly difficult to get useful work out of the supplies of heat. In an isolated system, then, equilibrium will be reached when this process of "dispersion of energy" is complete, and from this single principle, the whole theory of the equilibrium of physical and chemical systems was worked out by Willard Gibbs. Such a method avoids altogether the use of atomic and molecular conceptions. In fact, some supporters of the theory of "energetics" expressly disclaim the conceptions of natural atoms and molecules as unnecessary and misleading, and prefer to found all science on the idea of energy. Matter, they argue, is known to us only as a vehicle for energy, and may itself be but a manifestation of that energy.

But the other great line of advance in recent physics, although it may lead us in the end to somewhat similar conclusions, has been traced by a method which used atomic and molecular conceptions in an extreme form. The passage of electricity through liquids had been explained by Michael Faraday (1791–1867) and others as a transference of a succession of electric charges carried by
moving particles of matter or ions. At the end of the 19th century these ideas were extended, chiefly by the labours of J. J. Thomson, to elucidate also the conduction of electricity through gases. In 1897 Thomson discovered that, in certain cases, the moving particles which carried the electric current were of much smaller mass than the smallest chemical atom, that of hydrogen, and that these minute particles, to which he gave the name of corpuscles, were identical from whatever substance they were obtained. They enter into the structure of all matter, and form a common constituent of all chemical atoms. The only known properties of these corpuscles are their mass and their electric charge. When a charged body set in motion spreads electromagnetic energy into the surrounding medium. Thus, more force is needed to produce a given acceleration than if the body were unchanged. The body acts as though its mass were greater than when it is unchanged. Now there is reason to believe that the whole apparent mass of the minute corpuscles to which we have referred is an effect of their electric charge. The idea of a material particle thus disappears with that of material mass, and the corpuscle becomes an isolated unit of electricity—an electron. It is impossible to resist making the speculation that the moves in space in a way that cannot be described by any of the mass is to be explained in terms of electricity, though it must be pointed out that there is no conclusive evidence in favour of this hypothesis.

Another train of reasoning, starting from a different point, reinforces this result. The phenomena of the interference of beams of light in certain circumstances, to produce darkness or colour, indicate that light is some form of wave motion, and, to carry these waves, a hypothetical luminiferous aether was invented. The theoretical work of J. Clerk Maxwell (1831–1879) and the experiments of H. R. Hertz (1857–1894) showed that the properties and velocity of propagation of light and of electromagnetic waves were identical and that their other properties differed only in degree. Thus light became an electromagnetic phenomenon. But light is started by some form of atomic vibration, and to start an electromagnetic wave requires a moving electric charge. Thus electric charges must exist within the atom, and we are led again to the theory of electrons by the road opened up by H. A. Lorentz and Joseph Larmor. Such a theory suggests the occasional instability of the atom, and the phenomena of radioactivity, shown in a remarkable form by the substance radium, have been made up of these, and that satisfactorily by the theory of E. Rutherford and F. Soddy, who regard the energy liberated as due to the disintegration of the atom. The evolutionary view of nature, established in the biological and sociological sciences, is thus extended to physical science, not only in the development of planets and stars, but even in the chemical atoms, hitherto believed indestuctible and eternal.

As we have seen, Francis Bacon described a new method of discovery in which exclusive attention was paid to the collection and tabulation of facts, with a view to the detection of relations between them, and the consequent reference of "effects" to their proper "causes." Impressed by the barrenness of the a priori methods of the Schoolmen, Bacon in his philosophy went to the other extreme. The use of the Baconian method in its purity would be too laborious for success. Some guide is necessary in the collection of facts at an early stage of our investigations. Here the scientific imagination is brought into play, and some hypothesis is framed to explain the phenomena under investigation. The hypothesis may be suggested by the theories which are accepted at the time in cognate branches of knowledge, or it may be suggested by the few isolated facts already known or just discovered in the phenomena to be considered. From this new hypothesis, consequences are deduced by processes of logical reasoning—consequences which may be put to the test by comparison with the results of observation or experiment. If agreement is found, the hypothesis is, so far, confirmed, and gains in authority with every fresh concordance discovered. If the deductions from the hypothesis do not agree with the accepted interpretation of facts, the hypothesis may need modification, it may have to be abandoned altogether, or the want of concordance may point to some error or inconsistency in the fundamental concepts on which the hypothesis is based—the whole framework of that branch of science may need revision, as the idea of heat as a caloric substance had to be abandoned under the pressure of the experiments of Joule on the equivalence between work done and heat developed. But the ultimate test of the validity of our knowledge can only be the consistency with each other of the parts of the whole scheme. If the received interpretation of one set of phenomena is not consistent with that of another, one or other of the schemes must be wrong if we make the assumption necessary for all knowledge, namely, that the universe is intelligible to a mind capable of dealing with its complexity.

In early times, when the knowledge of nature was small, little attempt was made to divide science into parts, and men of science did not specialize. Aristotle was a master of all science known in his day, and wrote indifferently treatises on physics or animals. As increasing knowledge made it impossible for any one man to grasp all scientific phenomena of division were drawn for convenience of study and of teaching. Besides the broad distinction into physical and biological science, minute subdivisions arose, and, at a certain stage of development, much attention was given to methods of classification, and much emphasis laid on the results, which were thought to have a significance beyond that of the mere convenience of mankind.

But we have reached the stage when the different streams of knowledge, followed by the different sciences, are coalescing, and the artificial barriers raised by calling those sciences by different names are breaking down. Geology uses the methods and data of physics, chemistry and biology; none can say whether the science of radioactivity is to be classed as chemistry or physics, or whether sociology is properly grouped with biology or economics. Indeed, it is often just where this coalescence of two subjects occurs, when some connecting channel between them is opened suddenly, that the most striking advances in knowledge take place. The accumulated experience of one department of science, and the special methods which have been developed to deal with its problems, become suddenly available in the domain of another department, and many questions that were beyond reach, and for which, it seemed, there was no method of attack, suddenly produce answers in the new light cast upon them. Such considerations show us that science is in process of being united, though we may agree to look on it now from one side and now from another as we approach it from the standpoint of physics, physiology or psychology.

Having traced the development of the most important of the fundamental conceptions of science, and followed the subdivision of natural knowledge into the various sections which for convenience mankind has made, let us now examine the meaning of the knowledge thus acquired, and its relation to other branches of learning. By the slow and laborious methods of observation, hypothesis, deduction, and experimental verification, a scheme has been constructed which for the most part is consistent with itself, and bears the test of the comparison of one part with another. As a chart is drawn by the explorer of unknown seas to represent his discoveries in a conventional manner, so the scientific investigator constructs a mental model of the phenomena he observes, and tests its consistency with itself and its concordance with the results of further experiment. The chart does not give a lifelike picture of the coast as does a painting, but it represents one aspect of it conventionally in a manner best adapted for the immediate purpose. So the conceptions of one branch of science—mechanics let us say—represent the phenomena of nature in the conventional aspect best suited for one particular line of inquiry. It does not follow necessarily that "nature" in reality resembles the particular mental chart which mechanical science enables us to construct. It does not even follow that there is any "reality" underlying phenomena and corresponding with any of our conceptions. The whole problem which mankind has to face
undoubtedly includes an inquiry into the ultimate nature of reality. But that inquiry lies in the province of metaphysics, and is not necessarily involved in the pursuit of natural science. Metaphysics uses the results of natural science, as of all other branches of learning, as evidence bearing on her own deeper and more difficult questions. But it does not follow that natural science must solve metaphysical problems before being of use to man and enlarging the sphere of his knowledge. We need not ask whether the reality is represented accurately by our conventional model, whether indeed there be any reality at all, before using the …

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changes in the body. But modern methods have co-ordinated it also with definite chemical and electrical changes, and are said sometimes to have “explained” the nerve-impulse in physical terms.

But, as always, an “explanation” proves to be simply a restatement of a phenomenon in terms of other phenomena which previously are familiar to the mind, and therefore appear to be better understood. Nevertheless, from our present point of view, no one of these possible aspects of the phenomenon—of the nerve-impulse—is essentially more fundamental than any other. To the psychological the nerve-impulse is expressed in terms of thought, to the physicist by physical changes. The fact that a thought is accompanied by movement of matter or electricity does not make the thought less a fundamental conception.

But perhaps the best illustration is to be sought in the relation between the physical concepts of matter and electricity. As we have seen, J. J. Thomson discovered corpuscles which were common constituents of all matter, with masses smaller than those of any known atoms. One of these corpuscles represents a unit of negative electricity. An atom with a corpuscle in excess is an atom negatively electrified, an atom with one corpuscle less than an atom negatively electrified. An atom without a corpuscle at all, is an atom positively electrified. In this scheme electricity is described in terms of matter. But these corpuscles have been identified with the hypothetical electrons of Lorentz and Larmor, who consider matter to be composed of such isolated units of electricity. Such electrons, it has been shown, would possess mass by virtue of their electromagnetic properties. In this theory the idea of mechanical mass is eliminated altogether, and mass, and therefore matter, explained in terms of electricity. The view has been held by some that a mechanical explanation of a phenomenon is fundamental, and that a phenomenon so explained may be re-explained by a mechanical conception. This idea may be traced to the familiarity with mechanical conceptions of our everyday experience. The mind obtains its concept of matter from the resistance which that matter manifests to forces tending to set it in motion when at rest, or to change its state of motion when travelling. This fundamental property of inertia is the measure of mass, and we reach the concept of mass by our muscular sense of the force needed to set mass in motion. Force seems to be a direct sense perception, though mathematically it is better to define force in terms of acceleration and mass—since the perception is a result of a perception of mechanical conceptions is fully understood. This idea may be traced to the familiarity with mechanical conceptions of our everyday experience. The mind forms this conception from their experience of a direct sense perception of muscular effort. This seems to be the basis of the whole feeling that mechanical conceptions are more fundamental than any others, and that, for instance, it is more intelligible to explain electricity in terms of mechanics than vice versa. But the fact that we have a special muscular sense is an accident of our bodies. It is possible that the electric fish, or torpedo, has a special electric sense, and that to such a fish-philosopher the perception of electromotive force is more real than that of mechanical force. Such a being might well argue that it is intelligible and satisfactory to explain the mysterious concept of mass, which he only reaches through the other equally mysterious concept of mechanical force, in terms of the familiar concept of electricity, well known to every torpedo from his direct sense perception of electromotive force. This instance may serve to show that it is quite as correct philosophically to explain matter in terms of electricity, as to explain electricity in terms of mass. The object of science is to find connexions between phenomena and thus to correlate them. At present a great deal of simplification may be reached by reducing all possible phenomena to mechanical conceptions than in any other way, but that only shows that the mechanical aspect of nature gives us a fuller view than any other at present known, not that mechanics is philosophically the most fundamental science.

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SCILLITAN MARTYRS, a company of early North African Christians who suffered under Marcus Aurelius in A.D. 180, and whose Acts are at once the earliest documents of the Church of Africa and the earliest specimen of Christian Latin. The martyrs take their name from Scilla (or Scillium), a town in Numidia. Their trial and execution took place by order of the Pro-consul Vigilienus, a companion of the latter, when Tertullian declares to have been the first persecutor of the Christians in Africa. The date of their martyrdom is the 17th of July A.D. 180. It is thus the concluding scene of the persecution under Marcus Aurelius, which is best known from the sufferings of the churches of Vienne and Lyons in South Gaul. Marcus Aurelius died on the 17th of March of the year in question, and persecution ceased immediately upon the accession of Commodus. A group of sufferers called the Mauritanian martyrs seems to belong to the same period: for in the correspondence of St Augustine, a phamo, one of their number, is spoken of as "archimartyr," which appears to mean a synonym of martyrdom of Africa. We have in this martyr typography an excellent example of "Acts of Martyrs" properly so called. The document is in brief legal form, beginning with the date and the names of the accused, and giving the actual dialogue between them and their judge. It closes with the sentence, based on "obstinate" persistence in an illicit cult, and with the proclamation by the herald of the names of the offenders and the penalty. All this may quite well be a transcript of the Acta, or official report of the proceedings. A Christian apologist adds the words: "And so they all together were crowned with martyrdom; and such a sentence was written to Father and Son and the Holy Ghost for ever and ever. Amen!"

The Scillian sufferers were twelve in all—seven men and five women. Two of these bear Latin names (Nartalus, Cintius), but the rest Latin names. Six had already been tried: of the remainder, to whom these Acta primarily relate, Speratus is the principal spokesman. He claims for himself and his companions that they have lived a quiet and moral life, paying their dues and doing no wrong to their neighbours. But when called upon to swear by the genius of the emperor, he repudiated it, saying, "I am subject to the empire of this world; but he that I serve is God whom no man hath power to make, and with these eyes can see." Here he uses the language of 1 Tim. vi. 16; and it is interesting also to note that in reply to the question, "What are the things in your satchel?" he says, "Books and letters of Paul, a just man." The martyrs are offered a delay of thirty days to reconsider their decision, but this they all alike refuse. These Acts have been long known in an expanded form, or rather in a variety of later recensions. The fame of the martyrs led to the building of a basilica in their honour at Carthage; and their annual commemoration required that the brevity and obscurity of their Acts should be somewhat amplified and explained, to make them suitable for public recitation.

The historical questions connected with these martyrs are treated by Lightfoot, Ignatius (1889, 2nd ed.), i. 524 ff. The Latin text, together with later recensions and a Greek version, is published in Texts and Studies, i. 2 (Passion of Perpetua, 1889); see also Annales Bollandiani (1886), viii. 5; H. M. Gwatkin, Selections from Early Christian Writers, where, as in Anti-Nicene Fathers, i. 285, there is an English translation. (J. A. R.)

SCILLY ISLES, a group of small islands, belonging to Cornwall, England, 25 m. W. by S. of Land's End. (For map, see England, Section VI.) They form an outlying portion of the granite highlands of Cornwall; and contain a few metalliferous veins or lodes, which could never have yielded much ore. An old tradition that the Scilly Isles could be identified with the "Costerides" or "Tin Islands" of Herodotus is abandoned, and the origin

of their name has never been authoritatively settled. The islands are wild and picturesque, with sheer cliffs and many large coves hollowed out by the Atlantic. Owing to the reefs and shoals by which these shores are surrounded, navigation becomes perilous in rough weather, and many disasters have occurred. In 1901 Sir Clodius Shaw perished in the shipwreck of his flagship and two other men-of-war, while two foreships of his squadron were driven aground, and the remainder only narrowly escaped. The graveyard of an old Puritan church on St Mary's contains the bodies of 511 persons, drowned in the wreck of the "Schiller" in 1875; and a local proverb tells that for every man who dies a natural death on the islands the sea takes nine. Much, however, has been done to minimise the danger, especially by lighting the coast. On St Agnes there is a lighthouse, and on an outlying rock to the south-west is the lonely Bishop Light, constructed with infinite difficulty in 1858, and rebuilt thirty years later.

The islands are composed wholly of granite—outliers of the granite highlands of Cornwall. Most of the granite is coarse and porphyritic, but towards the centre of the original igneous mass it is finer and non-porphyritic. The finer granite occurs on the north-west side of St Mary's, the southern part of Tresco, Bryher and Samson and the north-west side of Annet. Elevans of quartz-porphyr is found in the granite. On the north-east of White Island a fragment of the altered kils of which once covered the whole area, is still visible. A gravel deposit with chalk flints and pebbles of red granite, which caps some of the hills, is found on St Mary's may possibly be of Eocene age. Raised beach, blown sand, fragmental granitic waste or "head" and an iron-cemented glacial deposit are found resting upon the granite.

The climate of the islands is unusually mild, snow being rarely seen, and the temperature varying from about 46° F. in winter to 58° in summer. As a result, vegetation is luxuriant; fuchsias, geraniums and myrtles attain an immense size, and aloes, cactus and prickly pear flourish in the open. All these, together with palms, may be seen in the gardens of the governor on Tresco Island, which are quite subtropical in character, and, therefore, unique in the British Isles. Great flocks of sea-birds haunt the remoter parts, and on some of the islands there are deer. On Tresco there is a warren of white rabbits; and some of the rarer land-birds occasionally visit the islands, such as the golden oriole, which has been known to breed here.

The islands are served by steamers from Penzance, and telephone and telegraph communication is established with the mainland. The raising of early asparagus and other spring vegetables, and of flowers, has taken the place of the principal industry of the inhabitants, and the fields of narcissus and other bulbs add greatly to the beauty of the islands. There is also a small coasting trade; and fishing is carried on to some extent, its most important branch being the taking of lobsters for the London market.

The islands which may be distinguished from mere rocks number about 40, and the group has a total area of 404 acres; but only five islands are inhabited—St Mary's, Tresco, St Martin's, St Agness and Bryher. The total population in 1901 was 2992. Hugh Town in St Mary's is the capital, occupying a sandy peninsula crowned by the height of the Governor's residence. In spring the fields of narcissus and other bulbs add greatly to the beauty of the islands. The town possesses a harbour, which is used by the Penzance steamers, and a roadstead where large vessels can lie at anchor. The government of the islands is vested in a county council created in 1899, consisting of a chairman, vice-chairman, 4 aldermen, and 18 councillors. For parliamentary purposes the islands are included in the St Ives division of Cornwall.

On Tresco there are the ruins of an abbey, and of two fortifications called Oliver Cromwell's Tower and King Charles's Tower; and here also is a church built in 1859 and dedicated to St Nicholas. Numerous rude figures and circles of stones, resembling those of Cornwall, are to be noticed; and barrows are common, the most remarkable of these prehistoric remains being a barrow on the Isle of Samson, 58 ft. in height, and containing,
amongst other relics, the only perfect "kistvaen," or sepulchral chamber of stone, which has been disinterred from any Cornish tomb.

Although the Scilly Isles have been regarded as the remains of Lyonesse, as identical with the Cassiterides, and as the object of an expedition and of conquest on the part of Athelstan in pursuance of a vow made at the shrine of St Burian, it is not until the reign of Henry I. that we have indisputable evidence concerning them. The king gave all the churches of Scilly and the island, as the hermits held it in the days of the Confessor, to the abbot and church of Tavistock. A confirmation of this grant and a further grant to the monks of all wrecks except whole ships and whales was made by Reginald, earl of Cornwall. In 1180 the bishop of Exeter confirmed a grant by Richard de Wicha of tithes, hitherto withheld, and of rabbits. Secular priests were temporarily substituted for regulars by the abbot of Tavistock in 1345. Sharing the dignity of lords of Scilly with the abbot, holding apparently the better half of St Mary's island, which was already furnished with a castle and a prison, and that the abbot practically beyond the 100 substantial courts, the family of Blanchminster (de Albo Monasterio), at the beginning of the 14th century, held of the earldom of Cornwall lands in Scilly at a yearly service of 6s. 8d. or 600 puffs. The Year Books tell us that in cases of felony the punishement under this family was for the convicted person to be taken to a certain rock in the sea with two barley loaves and one pitcher of water and to be left on the rock until drowned by the tide. The Blanchministers resisted and imprisoned the coroner of Cornwall and in 1319 were granted a coroner of their own. In 1345 they are found petitioning the king for a remedy owing to an invasion by 1000 of the king's Welsh troops, who, being becalmed at Scilly, had carried away everything, and so impoverished the tenants that they were unable to pay their yearly rent of £40. In 1547 Silvester Danvers, as representing the Blanchminsters, being one of the coheirs, sold his moiety of Scilly to Sir Thomas Seymour, by whose attainer in 1549 this and probably the other moiety fell to the crown. The suppression of the religious houses had already placed the church's land and revenues at the king's disposal. During the Civil Wars, Hugh Town stood for the king, and in 1645 afforded a temporary shelter to Prince Charles, until his escape to Jersey. In 1649 the islands were occupied by a royalist, Sir Richard Grenville, and formed the base from which he swept the surrounding seas for two years, before a fleet under Admiral Blake and Sir John Ayscue forced him to surrender. In ancient times a haunt of pirates, the islands were afterwards notorious for smuggling. In 1687 the whole of Scilly was granted to Sidney Godolphin for eighty-nine years from the expiration of the lease for fifty years granted to Francis Godolphin in 1636 by Charles I. In 1831 Augustus Smith succeeded the Godolphins as lessee or lord-proprietor, and under his and his nephew's wise acyortacy the islands prospered.

SCIMITAR, the term generally used of all oriental single-edged curved or crescent-shaped swords (see SWORD). The word has appeared in a variety of forms in English, due to Fr. cimeterre, It. scimitarra or Span. cimitarra; it has even been corrupted into "smyter," as if connected with "smite." Most probably it represents an early Western corruption of the Persian word for a sabre, shamshir or shamsahir, which means literally "lion's claw" (shir, lion, in Hindustani tigre, "tiger," and sham, nail, claw).

SCION, one who, with only a superficial knowledge or a smattering of knowledge on any particular subject, claims or pretends to a complete or profound learning. The Lat. scius, a diminutive of scio, learned, from scire, to know, is only found in post-classical times, e.g. Hieronymus, l. 420, Epist. 48. 18. It first appears in English at the beginning of the 17th century.

SCIONCY (Gr. orakia, shade, shadow, and brawda, soothing, divination), a form of divination by means of supposed communication with the shades or spirits of the dead. The calling up of the spirit of Samuel by the Witch at Endor when consulted by Saul is the classical example (1 Sam. xxviii.).

SCION, a slip or cutting of a tree or plant used for grafting, hence a young shoot or twig. In a transferred sense the word is used of the heir or any young member of a family, a descendant. The word in O. Fr. was cion or syon, mod. scion, and the early forms in English are syon, cion or syon. These forms seem to dispose the usual etymology, which connects it with Fr. scier, to cut, Lat. secare.

SCIPIO ("staff"), the name of a patrician branch of the Cornelian gens, of which the following are the principal historical representatives:

1. Publius Cornelius Scipio, father of the elder Africanus. He was consul in 218 B.C., the first year of the Second Punic War, and sailed with an army from Pisa to Massilia, with the view of arresting Hannibal's advance on Italy. Failing, however, to meet his enemy, he hastened to return by sea to Cisalpine Gaul, having sent back his army to Spain under the command of his brother Gnaeus, with instructions to hold the Carthaginian forces there in check. On his return to Italy he at once advanced to meet Hannibal. In a sharp cavalry engagement in the upper valley of the Po, on the Ticinus, he was defeated and severely wounded. Again, in December of the same year, he witnessed the complete defeat of the Roman army on the Trebia, his colleague T. Sempronius Longus having insisted on fighting contrary to his advice. But he still retained the confidence of the Roman people; his term of command was extended, and we find him with his brother in Spain in the following year, winning victories over the Carthaginians and strengthening Rome's hold on that country, till 212 (or 211). The details of these campaigns are not accurately known, but it would seem that the ultimate defeat and death of the Scipios were due to the diversion of the Celtiberian army by Hasdrubal, Hannibal's brother.

See Polybius iii. 490-494, Livy xxi.-xxxv., Appian, Hannib. 5, 8, Hist. 14-16.

2. Publius Cornelius Scipio Africanus, the elder (237-183 B.C.), son of the above. He was present at the disastrous battles of the Ticinus (where, according to one tradition, he saved his father's life), the Trebia and Cannae. Even after the last of these he resolutely protested against several Roman nobles who advocated giving up the struggle and quitting Italy in despair (see METELLUS, 2). The year after his father's death, he offered himself for the government of the fleet and the lands to which the Romans resolved to send to Spain. In spite of his youth, his noble demeanour and enthusiastic language had made so great an impression that he was unanimously elected. All Spain south of the Ebro in the year of his arrival (210 or 209) was under Carthaginian control, but fortunately for him the three Carthaginian generals, Hasdrubal and Maglo (Hannibal's brothers), and Hasdrubal the son of Gisco, were not disposed to act in concert and were preoccupied with revolts in Africa. Scipio, on landing at the mouth of the Ebro, was thus enabled to surprise and capture New Carthage, the headquarters of the Carthaginian power in Spain. He thus obtained a rich booty of war stores and supplies, and an excellent harbour. His kindly treatment of the Spanish hostages and prisoners brought many over to his side. In 206 he drove back Hasdrubal, from his position at Baecula, on the upper Guadalquivir, but was unable to hinder his march to Italy. After winning over a number of Spanish chiefs he achieved in 206 a decisive victory over the full Carthaginian levy at Ilipa (near Corduba), which resulted in the evacuation of Spain by the Punic commanders. With the idea of striking a blow at Carthage in Africa, he paid a short visit to the Numidian princes, Syphax and Massinissa, but at the court of Syphax he was foiled by the presence of Hasdrubal, the son of Gisco, whose daughter Sophonisba was married to the Numidian chief. On his return to Spain Scipio had to quell a mutiny which had broken out among his troops. Hannibal's brother Mago had meanwhile sailed for Italy, and in 206 Scipio himself, having secured the Roman occupation of Spain by the capture of Gades, gave up his command and returned to Rome. In the following year he was unanimously

1 The first i is long—Scipio.

2 So Polybius: 235 according to Livy.
SCIPIO

Val. Max. iii. 7; biography by F. D. Gerber (1689); E. Berwick (1817), with notes and illustrations; also Punic Wars.

3. PUBLIUS CORNELIUS SCIPIO AEMILIUS AFRICANUS, the younger (185-129 b.c.), was the younger son of L. Aemilius Paullus, the conqueror of Macedonia. He fought when a youth of seventeen by his father's side at the battle of Pydna (168), which decided the fate of Macedonia and made northern Greece subject to Rome. He was adopted by P. Cornelius Scipio Africanus, the eldest son of Scipio Africanus the elder, and from him took the name Scipio with the surname Africanus. In 151, a time of defeat and disaster for the Romans in Spain, he volun-
teed to his adopted father to go to Rome (see GREEK MOTHER OF THE GODS) to bless the expedi-
tion no doubt its effect on public opinion. A commission of inquiry was sent over to Sicily, and it found that Scipio was at the head of a well-equipped fleet and army. At the com-
misions' bidding he sailed in 204 and landed near Utica. Carthage meanwhile had secured the friendship of the Numidian Syphax, whose advance compelled Scipio to raise the siege of Utica and to entrench himself on the shore between that place and Carthage. Next year he destroyed two combined armies of the Carthaginians and Numidians. After the failure of peace negotiations he again descended to his own dominions: Thence he defeated Hannibal in a decisive battle near Zama (Oct. 19, 202; see PUNIC WARS). In the subsequent settlement with Carthage, he upheld with success his comparatively lenient terms against the immediate demands of many Roman aristoc-
rats. Scipio was welcomed back to Rome with the surname of Africanus, and had the good sense to refuse the many honours which the people would have thrust upon him. For some years he lived quietly and took no part in politics. In 193 he was one of the commissioners sent to Africa to settle a dispute between Massinissa and the Carthaginians. In 192, when the Romans declared war against Antiocchus III. of Syria, Publius was at-
tached as legate to his brother Lucius, to whom the chief com-
mand had been entrusted. The two brothers brought the war to a conclusion by a decisive victory at Magnesia in the same year. Meanwhile Scipio's political enemies had gained ground, and on their return to Rome a prosecution was started (187) by two tribunes against Lucius on the ground of misappropriation of moneys received from Antiochus. As Lucius was in the act of producing his account-books his brother wrested them from him and tore them in pieces, and flung them on the floor of the senate-house. This created a bad impression; Lucius was brought to trial, condemned and heavily finned. Africanus himself was subsequently (185) accused of having been bribed by Antiochus, but by reminding the people that it was the anniversary of his victory at Zama he caused an outburst of enthusiasm in his favour. The people crowded round him and followed him to the Capitol to offer thanks to the gods and beg them to give Rome more citizens like himself. He then retired to his native country seat at Litterum on the coast of Campania, where he died. By his wife Aemilia, daughter of the Aemilian Paulus who fell at Cannae, he had a daughter Cornelia, who became the mother of the two famous Gracchi. Scipio was one of Rome's greatest generals. Skilful alike in strategy and in tactics, he had also the faculty of inspiring his soldiers with confidence. According to the story, Hannibal, who regarded Alexander as the first and Pyrrhus as the second among military commanders, confessed that he had beaten Scipio he should have put himself before either of them. He was a man of great intellectual culture and could speak and write Greek perfectly. He wrote his own memoirs in Greek. He also enjoyed the reputation of being a graceful orator. There was a belief that he was a special favourite of heaven and held actual communication with the gods. It is quite possible that he himself honestly shared this belief; to his political op-
ponents he was often harsh and arrogant, but towards others singularly gracious and sympathetic. According to Gellius, his life was written by Oppius and Hyginus, and also, it was said, by Plutarch.

See Livy xxi.-xxxvii. and Polybius; Aulus Gellius iv. 18;
have had of amassing a fortune. Though politically opposed to the Gracchi, he cannot be said to have been a foe to the interests of the people. He was, in fact, a moderate man, in favour of conciliation, and he was felt by the best men to be a safe political adviser, while he unfortunately contrived to offend both parties.

See Polybios xxv. 4., xxxix.: Vell. Pat. i. 12; Florus ii. 15, 17, 18; Appian, Punica, 72, 98, 113-131, Hisp. 48-95, Bell. Civ. i. 19; Plutarch, Aemilii Paul. 22, Tib. Gracch. 21, C. Gracchus, 107 (collected works, ed. 190; Cicer. De orat. a curiae exhaustors; by E. Person (Paris, 1877); monograph by Lincke (Dresden, 1888).

4. 
Publius Cornelius Scipio Nasica Serapio, consul 138 b.c., took a prominent part in the murder of Tiberius Gracchus. To save him from the vengeance of the people, he was sent by the senate on a pretended mission to Asia, where he died. The nickname Serapio was given him by the tribune C. Curcius from his likeness to one Serapio, a dealer in sacrificial victims. See Appian, Punica, 80 b.c., i. 16; Val. Max. ix. 14; Plutarch, Tib. Gracchus, 21.

Scire facias, in English law, a judicial writ founded upon some record directing the sheriff to make it known (scire facias) to the party against whom it is brought, and requiring the latter to show cause why the party bringing the writ should not have the record. The writ may be answered (or is also applicable in case of patents and grants) the record should not be annulled and vacated. Proceedings in scire facias are regarded as an action, and the defendant may plead his defense as in an action. The writ is now of little practical importance; its principal uses are to compel the appearance of corporations aggregate in revenue suits, and to enforce judgments against shareholders in such companies as are regulated by the Companies Act 1845, or similar private acts, and against garnishees in proceedings in foreign attachment in the lord mayor's court. Proceedings by scire facias to repeal letters patent for inventions were abolished by the Patents Act 1883, and the Patent and Trademarks Act 1899, a petition to the court substituted. It is not used in Scottish procedure.

Scissors, a cutting instrument, consisting of two crossed blades with the inner edges sharpened, pivoted at the crossing, and terminating with two looped handles for the insertion of the fingers of the person using them. The term is usually confined to small cutting implements, the larger being known as "shears" (q.v.). The modern form of the word points to a derivation from Lat. scindere, to cleave or cut, and is no doubt due to Lat. scissor, a cutter, which was used only of a carver, a brazier or a coppersmith (when this is the case of letters, but the earlier forms, cysyone, sisseure, sisses, sissere, siose, &c., show the origin to be found in O. Fr. cissoires, shears, mod. ciseaux, plural of ciseau, earlier cisel, a chisel, and therefore to be referred to Lat. coedere, to cut, cisorium, a cutting instrument.

Scopis di Salerano, Federico (1708-1879), Italian statesman and jurist. While still comparatively young he was appointed attorney-general to the Sardinian senate, and took part in the composition of the new codes. An advocate of liberal ideas and reform, he proclaimed the necessity for a constitution, and was himself one of the authors of the Notulæ or Sardinian charter of 1848, which is to this day the constitution of the Italian kingdom; the introduction is entirely his work. Scopis also wrote the proclamation in which Charles Albert announced to the people of Lombardy and Venetia his war against Austria.

He was minister in the first Sardinian constitutional ministry under the presidency of Count Balbo, and afterwards president of the senate. In 1871 he was sent to Geneva as Victor Emmanuel's representative on the "Alabama" arbitration, and was chosen president of that tribunal; on his return to Italy the king conferred on him the Order of the Annunziata. The last years of his life were mainly occupied with municipal affairs and charitable administration at Turin. Between 1819 and 1878 he published over seventy works on history, jurisprudence, politics and literature, in Italian, Latin and French. At the age of thirty he was elected member of the Turin Academy of Sciences, of which he became life president in 1864; he was also foreign member of the Institute of France. His most important work is his Storia della legislazione italiana dalle origini fino al 1847 (Turin, 1840), issued as a sequel to his Storia dell'antica legislazione del Piemonte, published in 1833.

Among his other writings we may mention the following: Ricerche sui Longobardi in Italia (1827), Delle relazioni politiche fra la dinastia di Savoia e il governo Britannico dal 1590 al 1815 (1833), Rimembranze sul Conte di Cavour (1870), and Considerazioni storiche sulle antiche assemblee rappresentative del Piemonte e della Savoia (1878).


Scold, one who scolds, i.e. chides, finds fault with or rebukes with vigour or persistence or vitiates. It is usually a term applied to women, and a "common scold" (in Low Lat. communis rixotra) was indictment in England at common law as a public nuisance, special instruments of punishment being devised in the "branks" or "scold's bridle," and the "cucking stool." The word is apparently an adaptation of the Norse skald, skald or scold, a poet, and according to the New English Dictionary the intermediate meaning through which the sense develops is "libeller" or "lampooner." Skeat derives from Du. schold, schellen, and takes the word as originally meaning a loud talker, cf. Icel. skjáll, to clash, Ger. schollen. The noun scold's bridle is a corruption of the correct scold's bridle, or scold's gelding.

Scolecite, a mineral belonging to the zeolite group; a hydrated calcium silicate, CaAl₂Si₂O₈+3H₂O. It is a lime-zeolite, and like the soda-zeolite natrolite and the soda-lime-zeolite mesolite, usually occurs as acicular and fibrous aggregations. Although having nearly the same interfacial angles as the orthorhombic natrolite, it crystallizes in the monoclinic system, and, as shown by the etched figures and the pyroelectric character, in the hemihedral class of this system, there being a plane, but no axis, of symmetry. Scolecite can therefore be distinguished from the others by its plane of cleavage, whereas the acicular crystals do not extinguish parallel to their length between crossed nicks. Twinning on the ortho-pinacoid is usually evident. The mineral is colourless or white, transparent, and vitreous in lustre: the hardness is 5, and the specific gravity 2.2. It is a mineral of secondary origin, and occurs with other zeolites in the amygdaled cavities of weathered volcanic rocks of basic composition. Fine divergent groups of prismatic crystals are found in the basalt of Berufjord near Djupivogur in Iceland and in the Deccan traps near Poona in India; hence the synonym poonellite for this species. The name scolecite is derived from Gr. σκληρός, a worm, because the crystals sometimes curl up like worms when heated before the blowpipe.

(L. J. S.)

Scone (Lat. absconsus, Fr. escou), a word of many meanings, mostly signifying a covering or protection, or, by extension, that which is covered or protected. Its most familiar significance is that of a wall light, consisting of a metal bracket, with two or more socketed branches for candles. The word is also used for the orifice of a candlestick into which the candle is fixed, and for the rim of metal, glass or china, placed round a candle to intercept any drops. Among its obsolete meanings is that of head or skull. At the English universities "to scone" is still used as the term for imposing a penalty at dinner in the shape of a quart-pot of beer or cider.

Scone (pron. Skoon; Gaelic, skene, "a cutting"), a parish of Perthshire, Scotland, containing Old Scone, the site of an historic abbey and palace, and New Scone, a modern village (pop. 1582), 2 m. N. of Perth, near the left bank of the Tay. Pop. of parish (1901) 2362. It became the capital of Pictavia, the kingdom of northern Picts, in succession to Forteviot. Parlaiment was occasionally assembled on the Moot Hill, where the first national council of which we possess records was held (906). The Moot Hill was known also as the Hill of Belief from the fact that here the Pictish king promulgated the edict regulating the Christian church. The abbey was founded in 1115 by Alexander I., but long before this date Scone had been a centre of ecclesiastical activity and the seat of a monastery. Kenneth
is alleged to have brought the Stone of Destiny, on which the Celtic kings were crowned, from Dunstaffnage Castle on Loch Etive, and to have deposited it in Scone, whence it was conveyed to Westminster Abbey (where it lies beneath the Coronation Chair) by Edward I. in 1296. Most of the Scottish kings were crowned at Scone, and its last function being held on the last day of January 1561, when Charles II. received the crown. Apparently there was never any royal residence in the town, owing to the proximity of Perth. Probably the ancient House of Scone, which stood near the abbey, provided the kings with temporary accommodation. Both the abbey and the house were burned down by the Reformers in 1599, and next year the estates were granted to the Ruthvens. On the attainder of the family after the Gowrie conspiracy in 1609, the land passed to Sir David Murray of the Tullibardine line, who became 1st viscount Stormont (1621) and was the ancestor of the earl of Mansfield, to whom the existing house belongs. Sir David completed in 1606 the palace which the earl of Gowrie had begun. The 4th viscount—father of the 1st earl of Mansfield, the lord chief justice of England (b. at Scone 1702)—entertained the Old Pretender for three weeks in 1716, and his son received Prince Charles Edward in 1746. The present palace, which dates from 1863, stands in a beautiful park. It contains several historic relics, the most interesting being a bed adorned with embroidery worked by Mary Queen of Scots during her imprisonment in Lochleven Castle. The bedstead, which was crowned, a hall 160 ft. long, has been included in the palace. Two hundred yards east of the mansion is an ancient gateway, supposed to have led to the old House of Scone, and near it stands the cross of Scone, removed hither from its original site in the town.

SCONE, the Scots name of a species of cake made of wheat or barley meal and baked on a griddle. The cakes are round and are usually cut into four pieces, thus giving the familiar shape of a wedge with circular edge. The broad lowland bonnet was called "a scotto," from its shape, and word appears to have been a shortened form of a Low Ger. Schonbroat, i.e. fine bread, explained in the Bremen Glossary (1771), quoted in the New English Dictionary, as a sort of white loaf with two acute and two obtuse angles. The Hamburg dialect word schonrogen, fine rye, was adopted into Swedish and Icelandic in the sense of biscuit.

SCOOP (from M. L. Ger., or M. Du. schoepe, cf. Du. schoep, a bailing vessel, Ger. schoepfen, and, from M. Du. schoeppe, Ger. Schuppe, shear), properly a utensil or implement for ladling or bailing out water or liquid from a vessel, and so used of the hollowed out end of a large vessel; the word appears to have been a shortened form of a Low Ger. Schonbroat, i.e. fine bread, explained in the Bremen Glossary (1771), quoted in the New English Dictionary, as a sort of white loaf with two acute and two obtuse angles. The Hamburg dialect word schonrogen, fine rye, was adopted into Swedish and Icelandic in the sense of biscuit.

ScoPAS, probably of Parian origin, the son of Aristander, a great Greek sculptor of the 4th century B.C. Although classed as an Athenian, and similar in tendency to Praxiteles, he was really a companion and rival of the works of his time of his works. In most cases, the word is applied to a small kind of shovel with a short handle and a sharply curved blade, often covered in towards the handle end, and used for the moving and lifting of loose materials or for cutting out a rounded piece from any substance. In journalistic slang, originally American, a "scoop" is an exclusive piece of information obtained by a newspaper.

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It is very powerful, with massive bony framework; the forehead is projecting, the eyes deep-set and heavily shaded, the mouth slightly open and full of passion. It shows us that while in general style Scopas approached Praxiteles, he differed from him in preferring strong "expression and virile Ance to repose and sentiment. The temple at Tegea was restored after 355 B.C.; and the advanced character of the sculpture seems to indicate a date at least twenty years later than this.

Attempts have been made, through comparison of these heads, to assign to Scopas many sculptures now in museums, heads of Heracles, Hermes, Aphrodite, Meleager and others. It is, however, very risky thus to attribute works executed in Roman times, and often thoroughly eclectie in character. Ancient writers give us a good deal of information as to works of Scopas. He made for the people of Elis a bronze Aphrodite, riding on a goat (now in the British Museum). A Maenad at Athens, running with head thrown back, and a torn kid in her hands was ascribed to him; of this Dr. Treu has published a probable copy in the Albertiun at Dresden (Melanges Perret, p. 317). Another type of his was Apollo as leader of the Muses, singing to the lyre. The most elaborate of his works was a great group representing Achilles being conveyed over the sea to the island of Leuce by his mother Thetis, accompanied by Nereids riding on dolphins and sea-horses, Tritons and other beings of the sea, "a group," says Pliny (36. 25), "which would have been remarkable had it been the sole work of his life." He made also an Aphrodite which rivaled the creation of Praxiteles, a group of winged love-gods whom he distinguished by naming them Love, Longing and Desire, and many other works.

Jointly with his contemporaries Praxiteles and Lysippus, Scopas may be considered as having completely changed the character of Greek sculpture. It was they who initiated the lines of development which culminated in the schools of Pergamum, Rhodes and other great cities of later Greece. In most of the modern museums of ancient art their influence may be traced in the three-thousand works exhibited. At the Renaissance it was especially their influence which dominated Italian painting and through it modern art.

SCOPE (through Ital. scope, aim, purpose, intent, from Gr. σκοπεως, mark to shoot at, aim, σκοπεως, to see, whence the termination in telescope, microscope, &c.), properly that which is aimed at, purpose, intention; hence outlook, view, range of observation or action; more generally, the sphere or field over which an activity extends, room or opportunity for play or action.
SCORE (O.E. scar, from sear, to cut, notch, cf. “shear”), properly a notch or groove cut in a piece of wood, called a “tally” (q.v.), as a method of counting; hence an account or reckoning made in this way. Either from a custom of keeping each series of twenty numbers or notches on a separate tally, or of marking the twentieth number by a longer or deeper mark, the word was early used to denote the number twenty; it is still used as a measure of weight, equivalent to 20 lb, computing the weight of animals sold for slaughtering for food. In music, a score is the written or printed copy of a composition on two or more staves, barred and braced together. For instrumental and vocal music a “full score” has the parts for each class of voice and instrument on a separate staff.

SCORESBY, WILLIAM (1789–1857), English Arctic explorer, scientist and divine, was born near Whitby, Yorkshire, on the 5th of October 1789. His father, William Scoresby (1760–1829), made a fortune in the Arctic whale fishery. The son made his first voyage with his father when he was eleven years of age, but on his return he was sent back to school, where he remained till 1803. After this he was his father’s constant companion, and passed the years 1804, 1805, and 1806 in charts and observations, in which he contributed materially to the discharge of his father’s work—Voyage (q.v.), in which he marked the course of the ship and home. For instrumental and vocal music a “full score” has the parts for each class of voice and instrument on a separate staff.

Scoresby attended the natural philosophy and chemistry classes at Edinburgh university, and again in 1809. In his voyage of 1809 he began the study of the meteorology and natural history of the polar regions, among the earlier results of which are his original observations on snow and crystals; and in 1809 Robert Jameson brought certain Arctic篇章 of his before the Wernerian Society of Edinburgh, on which he was so at once elected a member. In 1811 his father resigned to him the command of the “Resolution,” and in the same year he married the daughter of a Whitby shipbroker. In his voyage of 1813 he established for the first time the fact that the temperature of the polar ocean is warmer at considerable depths than it is on the surface, and each subsequent voyage in search of whales found him no less eager of fresh additions to scientific knowledge. His letters of this period to Sir Joseph Banks, whose acquaintance he had made a few years earlier, no doubt gave the first impulse to the search for the North-West Passage. In 1810 he was elected a fellow of the Royal Society of Edinburgh, and about the same time communicated a paper to the Royal Society of London “On the Anomaly in the Variation of the Magnetic Needle.”

In 1820 he published An Account of the Arctic Regions and Northern Whale Fishery, in which he gathers up the results of his own observations, as well as those of previous navigators. In his voyage of 1822 to Greenland he surveyed and charted with remarkable accuracy 400 m. of the east coast, between 69° 30’ and 70° 30’, thus contributing to the first real and important geographic knowledge of East Greenland. This, however, was the last of his Arctic voyages. On his return he was met by the news of his wife’s death, and this event, with other influences acting upon his naturally pious spirit, decided him to enter the church. After two years of residence in Cambridge he took his degree (1825) and was appointed to the curacy of Basingby, Yorkshire. Meantime had appeared at Edinburgh his Journal of a Voyage to the Northern Whale Fishery, including Researches and Discoveries on the Eastern Coast of Greenland (1823). The discharge of his clerical duties at Basingby, and later at Liverpool, at Exeter and at Bradford, did not prevent him from continuing his Arctic researches. In 1829 he was elected a fellow of the Royal Society; in 1834 he was elected a corresponding member of the Paris Academy of Sciences, while in 1839 he took the degree of D.D. From the first he was an active member and official of the British Association, and he contributed especially to the knowledge of terrestrial magnetism. Of his sixty papers in the Royal Society list many are more or less connected with this department of research. But his observations extended into many other departments, including certain branches of optics. In order to obtain additional data for his theories on magnetism he made a voyage to Australia in 1856, the results of which were published in a posthumous work—Journal of a Voyage to Australia for Magnetic Researches, edited by Archibald Smith (1859). He made two visits to America, in 1844 and 1848; on his return home from the latter visit he made some valuable observations on the height of Atlantic waves, the results of which were given to the British Association. He interested himself much in social questions, especially the improvement of the condition of factory operatives. He also published numerous works and papers of a religious nature. In 1850 he published a work urging the prosecution of the search for the Franklin expedition and giving the results of his own experience in Arctic navigation. He was twice married after the death of his first wife. After his third marriage (1849) he built a villa at Torquay, where he died on the 21st of March 1857.
experimentally of late years that the venom has no effect upon the individual itself, nor yet upon a member of the same species. Scorpions, however, are extraordinarily susceptible to heat, and succumb very rapidly when exposed either to the warmth of a fire or to that of the tropical sun. Moreover, when they feel the heat beating upon them they brandish their tails and strike right and left as if to drive off or destroy the unseen enemy; and there can be no doubt that the belief above alluded to is traceable primarily to observation of the sequence of events just described, the final event being the death of the animal, not, however, from a self-inflicted wound but from the heat which provoked the behaviour suggestive of suicidal purpose. It may be that under such circumstances a random stroke has now and again wounded the animal itself; but a wound so inflicted would be accidental, not intentional, and at most would contribute in a small measure to the creature's death. Scorpions are very easily rendered innocuous by scraping off the sharp point of the sting; and specimens, which are handled with impunity by Arabs and Derivishes throughout the uninhabited portions of the Sahara, are completely harmless. In boreal latitudes, the phenomenon is paralleled by the action of the mammalia, their entire absence from New Zealand being not the least interesting point of agreement. The facts of their distribution are in keeping with the hypothesis that the order originated in the northern hemisphere and migrated southwards into the southern continent at various epochs, their absence from the countries to the north of the above-mentioned latitudes being due, no doubt, to the comparatively recent glaciation of those areas. When they reached Africa, Madagascar was part of that continent; but their arrival in Australia was subsequent to the separation of New Zealand from the Austro-Malayan area to the north of it. Moreover, the occurrence of closely related forms in Australia and South America on the one hand, and in tropical Africa and the northern parts of South America on the other, suggests very forcibly that South America was at an early date connected with Australia by a transpacific bridge and with Africa by a more northern transatlantic tract of land.

In conformity with their wide dispersal, scorpions have become adapted to diverse conditions of existence, some thriving in tropical forests, others on open plains, others in sandy deserts, and a few even at high altitudes where the ground is covered with snow throughout the year. They are truly eurytopic, being found in the tropics, the northern temperate zone, and (at times of drought) in the Alps; they pass the cold months of the year in a state of hibernation.

(R. P. I.)

SCORPION-FLY,—SCOT

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The popular name given to insects of the family Panorpidae, deriving the name from the fact that in the typical genus, Panopora, the last two or three segments of the abdomen are narrow and can be flexed over the back like a scorpion's tail. The scorpion-flies are remarkable for the elongation of the oral region of the head into a prominent beak. The larva is grub-like, beset with spines and generally furnished with eight pairs of abdominal pro-legs in addition to the legs on the thorax, which are short. They live in the soil or in rotten wood and are carnivorous. The species of the genus Bittacus are superficially strikingly similar to the Tipulidae or "daddy-long-legs"; while those referred to, Boreus, are anomalous in being apterous and like small grasshoppers. They have usually been included in the order Neuroptera, but it is now generally considered that they should form a distinct order, which is termed Panorpata or Mecaptera.

SCORZONERA (Scorzonera hispanica), a hardy perennial, native of north and central Europe, and cultivated in gardens as a vegetable for its fleshy cylindrical roots, which resemble those of salsify except in being black outside. They should be treated in every respect like salsify. The genus is a member of the natural order Compositae, and nearly allied to Tragopogon, to which salsify belongs.

SCOT, MICHAEL († 1175-1232), Scottish mathematician and astrologer. The dates of his birth and death are quite uncertain, the most probable being those here given. The efforts of Sir
SCOT AND LOT—SCOTIA

Walter Scott and others to identify him with the Sir Michael Scot of Balwaree, who in 1290 was sent on a special embassy to Norway, must be considered unsuccessful, though he may have been a member of a so-called. More than Paris, devoting himself to philosophy and mathematics. It appears that he had also studied theology, and was ordained a priest, as Pope Honorius III. wrote to Stephen Langton on the 16th of January 1223/4, urging him to confer an English benefice on Scot, and actually himself nominated him archbishop of Cashel in Ireland. This appointment Scot refused to take up, but he seems to have held benefices in Italy from time to time. From Paris he went to Bologna, and thence, after a stay at Palermo, to Toledo. There he acquired a knowledge of the Arabic language, which he was perhaps the first to do so, and the multitudinous commentaries of the Arabsians upon them, and also brought him into contact with the original works of Avicenna and Averroes. His own first work was done as a translator. He was one of the savants whom Frederick II. attracted to his brilliant court, and at the instigation of the emperor he superintended (along with Hermannus Alemanus) a fresh translation of Aristotle and the Arabian commentaries from Arabic into Latin. There exist translations by Scot, himself, of the Historia animalium, De analecta and De coele, along with other commentaries of Averroes and Avicenna, and with Frederick and Averroes both of evil reputation in the middle ages—doubtless contributed to the formation of the legend which soon enveloped Michael Scot's name. His own books, however, dealing as they do almost exclusively with astrology, alchemy and the occult sciences generally, are mainly responsible for his popular reputation. Chief among these are Super autorex spherae, printed at Bologna in 1495 and at Venice in 1631; De sole et luna, printed at Strassburg (1622), in the Theatrum chimicum, and containing more alchemy than astronomy, the sun and moon being taken as the images of good and evil fortune, and the moon as the source of all prosperity, as is often published in the 15th century; De physiognomia et de hominibus procreatione, which saw no fewer than eighteen editions between 1477 and 1660. The Physiognomia (which also exists in an Italian translation) and the Super autorex spherae expressly state that they were undertaken at the request of the emperor Frederick. Michael is said to have foretold (after the double-tongued manner of the ancient oracles) the place of Frederick's death, which took place in 1250. Around his own death many legends gathered. He was supposed to have foreseen his own death when he was visited by a giant with an elbow joint of three feet and a breast two ounces in weight, and that to protect himself he wore an iron helmet, and that, raising this in church at the elevation of the host, the fatal stone fell on him from the roof. Italian tradition says he died in that country, while another legend is that he returned to his native land to die, and according to one account was buried at Holy Cultram in Cumberland; according to another, which Sir Walter Scott has followed in the Lay of the Last Minstrel, in Melrose Abbey. In the notes to that poem, of which the opening of the wizard's tomb forms the most striking episode, Scott gives an interesting account of the various exploits attributed by popular belief to the great magician. "In the south of Scotland any work of great labour and antiquity is ascribed either to the agency of Auld Michael, of Sir William Wallace or the devil." He used to feast his friends with dishes brought by sprites from the royal kitchens of France and Spain and other lands. His embassy to France alone on the back of a coal-black demon steed is also celebrated, in which he brought the French monarch to his knees by the results of the stamping of his horse's hoof: the first ringing the bells of Notre Dame and the second causing the towers of the palace to fall. Other powers and exploits are narrated in Folengo's Macaronic poem of Merlin Cacocaus (1595). But Michael's reputation as a magician was already fixed in the age immediately following his own. He appears in the Inferna di Dante (canto xx. 115-117) among the magicians and soothsayers. He is represented in the same character by Boccaccio, and is severely arraigned by Giovanni Pico della Mirandola in his work against astrology, while Gabriel Naude finds it necessary to defend his good name in his Apologie pour les grands personnages faussement accusés de magie.

For full details and analyses of all the legends attaching to Scot, see Rev. J. Wood Brown, Life and Legend of Michael Scot (1897).

SCOT AND LOT (O. Fr. escot, A.S. scot, a payment; lot, a portion or share), a phrase common in the records of English medieval boroughs, applied to those householders who were assessed to any payment (such as tallage, aid, &c.) made by the borough for local or national purposes. They were usually members of a guild merchant. Previous to the Reform Act 1832 those who paid scot and lot were entitled to the franchise in virtue of this payment, and the rights of those living in the borough who were not assessed to any scot and lot was protected by the Protection of Rights in the Boroughs Act 1835, which gave property in the borough and was probably intended to give the protection to any property the boroughs which was reorganised and reformed, in the same manner as the boroughs already reorganised. The phrase is preserved in the Disordered Houses Act 1751, which empowers inhabitants of a parish or place paying scot and bearing lot therein (i.e. ratepayers) to require the constables of the parish to prosecute disorderly houses.


SCOTER, a word of doubtful origin, perhaps a variant of "Scout," one of the many local names shared in common by the guillemot (Fr. Scouet), the razorbill (Fr. Scourbillon), or perhaps primarily connected with coot (Fr. Cois), the English name of the Anas nigra of Linnaeus, a bird which with some allied species has been justifiably placed in a distinct genus, Oedemia (often misspelt Oedemia)—a name coined in reference to the swollen appearance of the base of the bill. The scoter is also very generally known around the British coasts as the "black duck" from the male being, with the exception of a stripe of orange that runs down the edge of the bill, wholly of that colour. In the representative American form, Os. americana, the protuberance at the base of the bill, black in the European bird, is red in the American form and often ornamented with marbled habits, keeping the sea in all weathers, and rarely resorting to land except for the purpose of breeding. Even in summer small flocks of scoters may generally be seen in the tideway at the mouth of any of the larger British rivers or in mid-channel, while in autumn and winter these flocks are so increased as to number thousands of individuals, and the water often looks black with them. A second species, the velvet-duck, Os. fusca, of much larger size, distinguished by a white spot under each eye and a white bar on each wing, is far less often met with. The scoter is extremely abundant in mid-ocean, and occasionally to be seen in company with the commoner one, and it too has its American counterpart, Os. velutina; while a third, only known as a straggler to Europe, the surf-duck, Os. perspicillum, with a white patch on the crown and another on the nape, and a curiously particoloured bill, is a not uncommon bird in North American waters. All the species of Oedemia, like most other sea-ducks, have their true home in arctic or subarctic countries, but the scoter itself is said to breed occasionally in Scotland (Zoologist, s.s. p. 1867). The females display little of the deep sable hue that characterizes their partners, but are attired in scut-colour, varied especially beneath, with brownish white. The flesh of all these birds has an exceedingly strong taste, and, after much controversy, was allowed by the authorities to rank as fish in the ecclesiastical dietary (cf. Graingo, Traité de l'origine des macreuses, Caen, 1650; and Correspondence of John Ray, Ray Soc. ed., p. 148). (A. N.)

SCOTIA (Gr. οἰκονόμα, shadow or darkness), in architecture, a concave moulding most commonly used in bases, which projects a deep shadow on itself, and is thereby a most effective moulding under the eye, as in a base. (See Moulding.)

1 In the former case the derivation seems to be from the O. Fr. Escoute, and that from the Latin auscultare, but in the latter from the Dutch Keet, which is said to be of Celtic extraction—eulcre. The Fr. macreuse, possibly from Lat. macer, indicating a bird that may be eaten in Lent or on the fast days of the Roman Church, is of double significance, meaning in the south of France a coot and in the north a scoter. By the wild-fowlers of parts of North America scoters are commonly called coots.
SCOTLAND, the name given in modern times to that portion of Great Britain which lies north of the English boundary; it also comprises the Outer and Inner Hebrides and other islands off the west coast, and the Orkney and Shetland islands off the north coast. With England lying to the south, it is thus bounded on the N. and W. by the Atlantic Ocean, and on the E. by the North Sea. It is separated from Ireland by the Solway Firth, the Sark, Scotsdyke (an old embankment in 55°3′N., connecting the Sark with the Esk), the Esk (for one mile), the Liddel, the Kershope, the Cheviot Hills, the Tweed and a small area known as the "liberties" of Berwick. The mainland lies between 56° 40′ 30′′ (at Dunnet Head in Caithness) and 54° 38′ N. (Mull of Galloway in Wigtownshire), and 1° 45′ 32′′ (Buchan Ness in Aberdeenshire) and 6° 14′ W. (Ardmurnoch Point in Argyllshire). Including the islands, however, the extreme latitude north is 60° 3′ 56′′ (Out Stack in the Shetlands) and the extreme longitude west 8° 35′ 30′′ (St Kilda). The greatest length from Cape Wrath in Sutherland to the Mull of Galloway is 274 m., and the greatest breadth from Buchan Ness to Applecross in the shire of Ross and Cromarty 154 m., but from Bonar Bridge at the head of Dornoch Firth to the head of Loch Broom is only 26 m. wide, and 30 m. from Grangemouth on the Forth to Bowling on the Clyde. The coast-line is estimated at 2300 m., the arms of the sea being so numerous and in several cases penetrating so far inland that few places are beyond 40 m. from salt water. The total area is 10,660,300 acres or 26,796 sq. m., exclusive of the offshore islands (about 498 sq. m.) and tidal water (about 606 sq. m.).

The name Scotland for this geographical area of northern Britain (the Caledonia of the ancients—a name still poetically used for Scotland) originated in the 11th century, when (from the tribe of Scots) part of it was called Scotia (a name previously applied to what is now Ireland); and the name of Scotland became established in the 12th and 13th centuries. The name of Britain or North Britain is still firmly associated with Scotland; thus English letters are generally addressed, e.g. "Edinburgh, N.B."

I. GEOGRAPHY

Physically, Scotland is divided into three geographical regions—the "Highlands" (subdivided by Glen More into the North-Western and South-Eastern Highlands); the Central Plain or "Lowlands" (a tract of south-western to north-easterly trend, between a line drawn roughly from Girvan to Dunbar and a line drawn from Dumbarton to Stonehaven); and the Southern Uplands.

The Highlands.—Nearly all this region is lofty ground, deeply trenched with valleys and sea lochs. The only considerable low-lying area embraces the eastern part of Aberdeenshire and the northern parts of Banff, Elgin and Nairn—tracts which, ethnologically, do not fall within Highlands territory. Along both sides of the Moray Firth a strip of level land lies between the foot of the hills and the sea, while the county of Caithness, occupying a wide plain, does not, strictly speaking, belong to the Highlands. Seen from Strathmore or the Firth of Clyde the Highlands present well-defined masses of hills abruptly rising from the plains, and from any of the points of view which they suggest, the whole district is indented by lochs and rising to a uniform level, which sinking here and there allows glimpses of still higher summits in the interior. The Highland hills differ from a mountain chain such as the Alps not merely in their inferior elevation but in configuration and structure. They are made up of a succession of more or less parallel confluent ridges, having in the main a trend from north-east to south-west. The valleys which separate them are formed by long-continued erosion of the horizontal strata of the coal and the slate which underlie them. Viewed from near at hand a mountain may seem to tower above the surrounding country, but from a distance it will be seen not to rise much above the general uniformity of elevation. There are no gigantic domes, such as constitute the principal features of the Alps, nor the linear outlines which typify the Pyrenees. Even where the ridges where the ridges are strongly marked, they are generally the result of imperfections in the original structure, and not of subsequent erosion. A few apparent exceptions occur along the western seaboard of Sutherland, in Skye and elsewhere, but examination of their structure at once explains the reason of their prominence and confirms the rule. The surface of the Highlands is rugged. The rocks project in innumerable bosses and crags, which roughly the surface where they are exposed. The heights of these masses depend on the nature of the underlying rock. Where it is hard and jointed, weathering into large quadrangular blocks, the crags are conspicuous; but where the rock is softer and more eroded, and less resistant to the action of the weather, the character of their declivities, as may be seen in Ben Ledi and the height of the north-east of it. Where, on the other hand, the rock decays with smaller debris, the hills assume smoother contours, as in the slate district of southern Argyll. But broadly, the Highland mountains are monuments of erosion, the relic of an old tableland, the upper surface and former inclinations of which are shown approximately by the summits of the existing mountains and the direction of the existing watercourses.

The Highlands are separated into two completely disconnected and in some respects contrasted regions by the depression of the Caledonian Valley, extending from Dornoch to Loch Ness. The ancient plateau was severed. In the north-western section the highest ground is found along the Atlantic coast, mounting steeply from the sea to an average height of 2000 to 3000 ft. The watershed consequently keeps close to the western seacoast, and indeed in those places is not above a mile and a half from the shore. From these hills which catch the first downpour of the rains from the ocean, the ground falls eastward. Numerous eminences, however, prolong the mountainous features to the North Sea and south-eastward to Glen More. The difference of the general level on the two sides of the water-parting is reflected in the length of their streams. On the west, the streams are swift and short. On the eastern side, flowing few miles, on the east it has to run 30 or 40 m. At the head of Loch Nevis the western stream is but 3 m. long, while the eastern has a course of some 18 m. to the Great Glen. Throughout the north-western section, drainage is from the sea to the watershed, betokening even at a distance the general monotonous of structure. But the sameens is relieved along the western coast of the shires of Argyll and Ross and Cromarty by groups of cones and stacks, and farther south by the terraced plateaus and abrupt conical hills of Skye, Rum and Mull.

The south-eastern region of the Highlands, having a more diversified geographical structure, offers a variety of scenery. Most of the valleys, lakes and sea lochs run in a south-western and north-easterly direction, a feature strikingly exhibited in west Argyllshire. But there are also several important transverse valleys, those of the Galloway and Tweed, which may be regarded as transversal, a character, it is true, that, in many cases, is far from well-marked, the east, however, is somewhat different. It first strikes eastwards the head of Loch Laggan and then swings southwards, pursuing a sinuous course till it leaves the Highland to the east side of Loch Lomond. The streams flow in a westerly direction, however, are still running to the north-east, and south-east have long courses and drain wide areas. There is a marked contrast between the configuration of the north-eastern district and the other parts of this region. In that area the Grampians rise into wide flat-topped heights or moors often more than 3000, and in a few places exceeding 4000 ft., in height, and bounded by steep declivities and sometimes by abrupt cliffs, hence once these regions have been traversed, it is impossible that these plateaus are fragments of the original tableland, trenched into segments by the longitudinal furrows of the divides. Farther to the south-west, in the shires of Perth, Inverness and Ross, the hills are more mammocky, the summit ridges, however, are still interrupted, especially by the broad hummocky crested ridges of Highland scenery, which, however, in Ben Nevis and Aonach Beag reach a height of over 4000 ft.

Lowlands.—The plains of the principal lowlands fill the space between the principal Highlands and the Southern Uplands.
terrestrial disturbances. Long dislocations have sharply defined its northern and southern margins. By other fractures and unequal movements of upthrow, the whole area between the old and the new blocks is broken by a series of transverse and longitudinal and also, though less distinctly, by the old valleys to run in that direction. The chains of the Ochil, Sidlaw, Pentland, Renfrew, Campsie and Fintry Hills, and the valleys of the Strathspey, Firth of Tay, and the basin of Middlelothian may and are, however, subordinated to the system of the topographical prominences and depressions of the district is the relative hardness and softness of the rocks. Almost all the eminent topographical features of the district are due to these and the chains of hills such as those just mentioned and others in Ayrshire and Lanarkshire, but isolated crags and hills like those on which stand the castles of Edinburgh and Stirling, and others conspicuous in the central districts of the Lowlands.

Of the three chief valleys in the central Lowlands two, those of the Tay and the Forth, descend from the Highlands, and one, that of the Clyde, from the Southern Uplands. Though on the whole these depressions of geological structure furnish another notable example of that independence of geological structure already referred to.

The Southern Uplands extend from the North Channel in the south-west to the detached flat-topped hills, which are comparatively of billy ground, and though much less elevated (their highest point is 2764 ft. above the sea) than the Highlands, rise with scarcely less abruptness above the lower tracts that bound them. Their northern boundary is formed by the line of projection of the Southern Uplands the whole area between the Highland and the Lowland moorlands of the Central Plain, and its boundary for long distances continues remarkably straight. On the south and south-east their limits in general are the north-eastern boundary of the valley of the Nith, which forms the north-west limit of the Nith from which they extend to the sea and Loch Ryan, terminating in the extreme south-west in a plateau of which the loftiest point is little over 1000 ft. above the sea. The Clyde is the only large river of the Lowlands running through this region, being separated by Liddesdale and other hollows and on which they abut abruptly. But though geologically the one set of mountains must be separated from the other, geographically it is convenient to include within the term the Southern Uplands the whole area between the Highland and the Lowland moorlands of the Central Plain and the Border. A survey of the Uplands, therefore, presents in succession from south-west to north-east the Kirkcudbrightshire and Ayrshire Uplands, the Southern Uplands, and the Moray, Montrose, and the Lammermuirs. Distinguished especially by the smoothness of their surface, they may be regarded as a rolling table-land or moorland, traversed by many valleys conducting the drainage to the sea. This character is well observed in the outlines of Tweedsmuir. Wide, mossy moors, 2000 ft. or more above the sea, and sometimes level as a racecourse, spread out on all sides. Their continuity, however, is interrupted by numerous valleys separating them into detached flat-topped hills, which are comparatively seldom marked by precipices of naked rock. Where the rock projects it more usually appears in low crags and knolls, from which long tracts of the surface have been denuded, and below which the subsoil consists of grass. Hence, besides being smooth, the uplands are remarkably verdant. They form indeed excellent pasture-land, while the alluvial flats in the valleys and even some of the lower slopes are fitted for grazing.

This uniformity of aspect is doubtless traceable to the prevalence of the same kind of rocks and the same geological structure. The Silurian greywackes and shales that underlie almost the whole of the Uplands weather generally into small angular débris, and at a tolerably uniform rate of disintegration. But slight differences may readily be detected even where no feature interferes noticeably with the monotony. The bands of massive grit and coarse greywacke, for example, break up into larger blocks and from their greater hardness are apt to project above the general surface of the other softer rocks. Hence their line of trend, which like that of all the other strata in the Uplands, is in the direction of the long axis of the area, may be traced from hill to hill by their more raggy contours. Only in the higher tracts are there rugged features recalling the more savage character of Highland scenery. In the heights of Harthill (2651 ft.) and Whitecoomb (2655 ft.) there are conspicuous stretches of rock, composed of the grits, conglomerates, and sandstones of the Silurian system. Their outline is distinct—longitudinal ridges having a general north-easterly direction. The earliest rain that fell upon these ridges would run off them, first in transverse watercourses down each short slope, and then in longitudinal depressions wherever such had been formed during the terrestrial disturbance. Afterwards the pathways of the streams would be gradually deepened and widened into valleys. Hence the valleys are of higher antiquity than the mountains that rise above them, and except in the case of the Forth have not been denuded above the level of the sea. The shape of the uplands is, in fact, the result of the disintegration of the bulk of the land in proportion as the valleys have been excavated.

The denudation would continue so long as the ground stood above the level of the sea; but there have been prolonged periods of depression of the land during which the sea has stood at a lower level and was buried sometimes under thousands of feet of accumulated sediment, which completely filled up and obliterated the previous drainage-lines. When the land reappeared a new series of valleys would at once begin to erode; and the subsequent degradation of these overlying sediments might reveal portions of the older topography, as in the case of the Great Glen, Lauderdale, and other ancient valleys. But the new drainage-lines have usually little or no reference to the old ones. Determined by the inequalities of surface of the overlying mantle of sedimentary material, they would be wholly independent of the geological structure of the rocks lying below them. Slowly widening and deeper and deeper into the loose deposits, they might eventually reach the older rocks, but they would keep in these the lines of valley that they had followed in the overlying deposits. In process of time the whole of these deposits might be washed off, and the valley would be bounded by the younger formations on which the valleys began and which guided their excavation. This is probably the explanation of the striking independence of geological structure exhibited by the Tweed and the Nith.

Among the valleys certain prevailing characteristics have been recognized in their popular names. *Strath* are broad expanses of low ground between bounding hills and are usually traversed by one main stream and its tributaries. The name is applied to a tract of low ground that region the Silurian rocks have been invaded by large masses of granite and have undergone a variable amount of metamorphism which has in some places altered them into hard crystalline schists. These schists are commonly highly resistant to the processes of erosion, and the greater powers of resisting decay, have yielded unequally to disintegration: the harder portions project in rocky knolls, crags and cliffs, while the softer portions have been worn down into delicate precipitous slopes. The largest of the highest summit in south Scotland—Merrick (2764 ft.)—consists of Silurian strata much altered by proximity to the granite, while the rest of the more prominent heights (all in Kirkcudbrightshire)—

Riuns of Kells (2668 ft.), Cairnsmuir of Carspharn (2612), and Cairnsmore of Fleet (2331)—are formed of granite.

The estuary of the Clyde, the valley of the Clyde, and the Uplands of Argyll, have a much interest in their geological history. It runs from the mouth of Loch Ryan in a sinuous north-easterly direction, keeping near the northern limit of the region till it reaches the basin of the Nith, and from the Nith to the Forth follows the courses of the Nith and the Clyde. North-easterly and south-westerly strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde. The rocks throughout the Southern Uplands have a persistent north-easterly and south-western strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde. The valley of the Clyde and the Uplands of Argyll, have a much interest in their geological history. It runs from the mouth of Loch Ryan in a sinuous north-easterly direction, keeping near the northern limit of the region till it reaches the basin of the Nith, and from the Nith to the Forth follows the courses of the Nith and the Clyde. North-easterly and south-westerly strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde. The rocks throughout the Southern Uplands have a persistent north-easterly and south-western strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde. The valley of the Clyde and the Uplands of Argyll, have a much interest in their geological history. It runs from the mouth of Loch Ryan in a sinuous north-easterly direction, keeping near the northern limit of the region till it reaches the basin of the Nith, and from the Nith to the Forth follows the courses of the Nith and the Clyde. North-easterly and south-westerly strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde. The rocks throughout the Southern Uplands have a persistent north-easterly and south-western strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and sandstones, it is not so distinct in the Lochee, Ayrshire, and the valley of the Clyde.
valley than a strath, though the names have not always been applied with discrimination. Most of the Highland valleys are true glens, Glencoe being the best-known example. The hills rise rapidly on each side, sometimes in grassy slopes, sometimes in rocky bosses and platforms of scree or boulder clay. Beyond these lies a more open country, the south of Scotland the larger streams flow in wide open valleys called dales, as in Clydesdale, Tweeddale, Teviotdale, Liddesdale, Eskdale, Newcastleton, and elsewhere. In these valleys the streams are known as haughs, and where in estuaries they expand into wide plains they are termed cairs. The cairs of the Forth extend seaward as far as Bo’ness and consist chiefly of raised beaches. The Carse of Gowrie is the highest expanse of old alluvial deposit in Scotland. Towards the Sidlaw Hills, Braes signifies the steep bank of a river, and so any slope or hill-side.

River-gorges are characteristic features in many of the valleys. In the Oban district of Appin they are particularly prominent where that formation has lain in the pathway of the streams sweeping down from the Highlands. In the basin of the upper Nith, for example, the river has cut a deep channel from Bladnoch to Newcastleton, and Findhorn, while on the west side of the Cromarty Firth some of the small streams descending from the high grounds of the south-west of the shire of Ross and Cromarty have cut out defiles in the Conglomerates, remarkable for their depth and narrowness. Towards the southern margin of the Highlands notables of true canyons in the Old Red Sandstone are to be seen where the Isla and North Esk enter that formation. The well-known gorge in which the Falls of Clyde are situated is a fine example. In other parts of Scotland the rivers see the separate articles on them, and also the section on the physical features in the article on the different shires of Scotland.)

The destruction of the surface by denudation, it is reasonable to infer that the oldest surfaces likely to be preserved are portions of some of the platforms of erosion successively established by the wearing down of the more rugged parts and the development of the plain of a granite precipes. The top of Ben Macdhui stands upon nearly a square mile of ground exceeding 4000 ft. in elevation. These mountains lie within granite areas; but not less striking examples may be found among the older types of mountain formation. On the east of Glen Isla, for instance, sweep upwards into a broad moor some 3000 ft. above the sea, the more prominent parts of which have received special names—Driesean, Mayar, Tom Buidhe, Tolmount, Cairn na Glisha. It would hardly be an exaggeration to say that there is more level ground on the tops of these mountains than in areas of corresponding size in the valleys below. That these high plateaus are planes of erosion is shown by their independence of geological structure, the upturned edges of the vertical and contorted strata having been abruptly shorn off and the granite having been wasted and levelled along its exposed surface. Among the Southern Uplands are numerous stretches of undulating moorland, generally under turf, which lie on the old denuded Silurian grits and shales. An instructive example of the similar destruction of a much younger platform is to be found in the terraced plateaus of Skye, Eigg, Canna, Muck, Mull and Morven, which are portions of what was once a gently undulating plain of basalt. Though dating back only to older Tertiary time, this plain has been so deeply trenched by the forces of denudation that it has been reduced to mere scattered fragments. Thousands of feet of basalt have been worn away from many parts of its surface; deep and wide valleys have been carved out of it; and so enormously has it been wasted, that it has been almost entirely stripped from many parts of its surface and where only scattered outliers remain to prove that it once existed.

It is curious that broad flat-topped mountains are chiefly to be found in the eastern parts of the country. Trace westwards, these forms gradually give place to narrow ridges and to deep valleys, and in the south of Scotland the larger streams flow in wide open valleys called dales, as in Clydesdale, Tweeddale, Teviotdale, Liddesdale, Eskdale, Newcastleton, and elsewhere. The valleys are known as haughs, and where in estuaries they expand into wide plains they are termed cairs. The cairs of the Forth extend seaward as far as Bo’ness and consist chiefly of raised beaches. The Carse of Gowrie is the highest expanse of old alluvial deposit in Scotland. Towards the Sidlaw Hills, Braes signifies the steep bank of a river, and so any slope or hill-side.

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Types of mountain and hill.

Valley and coast.

Scotia is the name used for the interior of the country, and in a large sense for the whole of the island. The area of Scotland is 32,100 square miles, and the coast line 6000 miles, the western coast being much longer than the eastern. The shape of Scotland is a parallelogram, and it is nearly a half circle, the longest sides being东西东西

In the western Highlands and along the Southern Uplands, the streams are fed by the melting snows and ice of the mountains. In these, and in the northern parts of the country, the snow and ice have a share in the work of erosion. No feature in Highland scenery is more characteristic than the corries, and in none can the influence of geological structure be better understood. Uplands which are not snow-covered are pitted and scarred by corries, the sides of rock from which long trails of debris descend to the bottom of the hollow. Every distinct variety of rock has its own type of corrie, the peculiarities being marked both in the details of the upper cliffs and crests, and the amounts and form and colour of the scree. The Scottish corries have been occupied by glaciers. Hence their bottoms are generally ice-worn or strewn over with moraine stuff. Sometimes the corries extend below the ice-trench, and then they are admirably studied. Where two glens begin opposite to each other on the same ridge, their corries are gradually cut back until only a sharp crest separates them. This crest, attacked on each front and along the summit, is lowered in a progressive manner, until they become groups of detached hills or mountains. The corries of the mountains of Arran furnish excellent illustrations.

Where a rock yields to weather with considerable uniformity in all its parts, it produces a flat and level surface, as the back of the tableland and in the formation of the most rugged and most individualized forms of isolated mountain. In fact, in journeying westwards across the tops of the Highland mountains we pass, as it were, over successive stages in the history of the origin of Highland scenery. They have been cut down by the various rock types, and have been worn off by the action of the wind and rain, until they become groups of detached hills or mountains. In the progress of this erosion full scope has been afforded for the modification of form by variation in geological structure. Each ridge and mountain is the result of various causes, and the nature and character of the rock has been determined by the nature of the rocks and the manner in which they have yielded to decay. Every distinct variety of rock has impressed its own character upon the landscape. Hence, amid the same geographical features—heights of hills, ridges of slopes, river valleys, diversity of detail has resulted from the varying composition and grouping of the rocks.

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SCOTLAND

above the sea are mere remnants of a continuous sheet of red sandstone that once spread far and wide over the western Highlands. Stratiﬁed rocks when they have not been much disturbed from the sea-level are often to be found in the eastern Highlands, where the horizontality of their structure has been preserved by glacial action. Such cliffs may run for many miles across a country, rising one above another into lofty terraced hills. In Scotland the rocks have been so diatomated and worn away that for the most part the outlines of the escarpments, and this form of rock-scenery is consequently almost entirely absent, except locally and for the most part a comparatively small scale. The most extensive Scottish escarpments are found along the shores of the Firth of Forth, in the counties of Fife and Kinross. Where lava has been piled up into successive nearly horizontal sheets, with occasional layers of tuf or other softer rock between them, it offers conditions peculiarly favourable for the formation of escarpments, as in the case of the Carboniferous rocks of the Campsie and Fintry Hills and of the south of Dumfriesshire and Roxburghshire. 

The lakes of Scotland may be classiﬁed in four groups, each with its own peculiar scenery and different mode of origin—

1. Glen lakes are those which occupy portions of glens. They are depressions in the valleys, not due to local heaping up of detritus, but true rock-basins, often of great depth. Much discussion has arisen as to the mode of origin, but it is probable they were caused by the erosive action of ice, since glaciers occupied the glens where they occur and wore down the rocks along the sides and bottom; but it is a point of difﬁculty in this theory whether ice could have eroded the softer rocks.山谷s and alluvial lakes must be of recent geological date. Any such basins belonging to the time of the folding of the crystalline schists would have been ﬁlled up and effaced long ago. Indeed, so rapid is the infilling of these basins, that the general opinion is that they must be of recent date. Whether the inﬁlling of a glacial basin occurs by the leaching of the silt and sand, or by weathering or by the growth of vegetation, appears to be a matter of opinion, or at least to be difﬁcult to determine. However, it is plausible that even the highest mountains are subject to repeated glaciation, and when the last one die away, the valleys shall be again opened up and occupied by lakes or moors, as has been the case with many of the other great European systems, where the present and former sea-levels are found to agree in their general elevation.

2. The lakes of the slopes, or the lakes of the southern Highlands, are almost wholly conﬁned to the western half of the Highlands, where the escarpment is more conspicuous and where the precipices are seen east of a line drawn from Inverness to Perth. West of that line, however, they abound in both the longitudinal and the transverse valleys. The most remarkable line of them is that which ﬁlls up the Great Glen, Loch Ness being the largest. Other important longitudinal lakes are Lochs Tay, Awe, Erichﬁeld and Shiel. The most picturesque glen lakes, however, lie in transverse valleys, which being cut across the range of the escarpment, the rocks are exposed and the elevations of outline. Lochs Lomond, Katrine and Lusnaig in the southern Highlands, and Lochs Mares and More in the north, are conspicuous examples.

3. Moraine-lakes—small sheets of water ponded back by some of the last moraines shed by the retreating glaciers—are conﬁned to the more mountainous tracts. Among the Southern Uplands the best are those of the North and Southdreocks, and of the eastern Lochs of Skene and Doon, lying in a recess of Whitecoomb at the head of Mofat Water. Others are sprinkled over the higher parts of the valleys in Galloway. None occurs in the Central Plain. In the Highlands they may be seen at Torridon, where a large sheet has been occasioned by the proglacial Hebrides, and at Badenoch, where the glacial moraines are thick and abrupt. In the north-western counties, where the glaciers continued longest to descend to the sea-level, lakes retained by moraine-barriers may be found very little above the sea.

4. The Lakes of the Plains lie in hollows of the glacial detritus which is strewn so thickly over the lower grounds. As these hollows were caused by original irregular deposition rather than by erosion, there is no presumption that their outlines are the true natural ones, for they may have been formed by the fall of large masses and may have been drained. The largest sheets of fresh water in the Lowlands are lakes of the plains as Loch Leven and the Lake of Menteith. The eastern is indited by a series of broad arms of the sea—the firths of Forth and Tay, Moray and Dornoch firths—but is otherwise relatively unbroken. The land slopes gently to the sea or to the edge of cliffs that have been cut back by the waves. The shores are for the most part low, with few islands in front of them, and cultivation comes down almost to the tide-line. The western shores are much more rugged, and the extent of the coastline is increased by the numerous promontories and promontories of the coast-line. The west side, as we have seen, has been more deeply eroded than the eastern. The glens are more numerous there and on the whole deeper and narrower. Many of them are prolonged under the sea, forming northern promontories, and they dive into the land at an angle with the coast-line. Some of them are cut out of the coastal cliffs; others are continued under the sea as the continuation of the glens. The presence of the sea in these fjords is an accident. If they could be raised out of the sea they would become inlets of the ocean, and their glacial history and their Local relation hardly admits of question. They are submersed land- valleys, and as they run down the whole western coast they show that this side has subsided to a considerable depth beneath its former surface. The comparison of the outlines of the Scottish and those of western Ireland and Norway. The whole of this north-western coast-line of Europe bears witness to recent submergence. The bed of the North Sea, which at no distant date in geological history was a land surface across which plants and animals migrated freely into Great Britain, sank beneath the sea-level, while the Atlantic advanced upon the western margin of the continent and found an exit to the sea by the western coast-line. However, the highest cliffs are found among the Shetland and Orkney Islands. The sea-wall of Foula, in Shetland, and the western front of Hoy, in Orkney, rise like walls to a height of over 600 ft., cut by their sides, and opening not more than a few hundred yards to the sea. They are seen, as those of Cape Wrath, to be nearly 600 ft. high, and have cut out of the Archean gneiss. The varying texture of the rocks, the upturned shales and the granite, the abundance of pegmatite give it very unequal powers of resistance. Here it projects in irregular bastions and buttresses, there retires into deep recesses and tunnels, but shows everywhere a ruggedness of aspect which is remarkable. In striking contrast to these precipices, those of the Cambrian red sandstone a few miles to the east. Vast vertical walls of rock shoot up to a height of 600 ft., cut by their sides, and opening not much more than a hundred yards to the sea. These are not mere cliffs, but the remnants of a great range of mountains which stood out on this side as a headland of the main or the coast. The sombre colouring is relieved by vegetation along the edges of the nearly ﬂat beds which project like great cornices and serve as nesting-places for sea-lions. On the west the most notable cliffs south of those of Cape Wrath and the Cambrian sandstones of the Sutherland is found to be among the largest islands, particularly in Skye, where a magniﬁcent range of precipices rising to 1000 ft. and more are seen, and where the highest from above the land to the sea. In Arran, and the most well-known feature in the Isle of Mull, is the Cailleach, a great black cliff that rises to over 1000 ft. from the sea, and the most conspicuous range of the eastern coast is seen in the jagged projection of the Mull of Orkney. A huge column of yellow sandstone between 400 and 500 ft. high, forming a conspicuous landmark in the north. The coast of Caithness abounds in outstanding pillars and obelisks of flagstone. These are mostly found in the county of Caithness, and are known as the cliffs of dunes, as on the western margin of North and South Uist, and in many bays from the north of Sutherland to the coast of Ayrshire. They are more abundant on the east coast, however, especially on the shores of Aberdeenshire, between the mouths of the two Esks in Forfarshire, on both sides of the mouth of the Firth of Tay, and on various places on the Firth of Firth. Razed sea-beaches likewise abound along the eastern coast, and may be seen stretching from near the Firth of Forth to the Old Red Sandstone cliffs and the coast of Moray. The shores of these bays are low, and the scenery is distinguished by the large sheets of low fertile land between the edge of the sea and the rising ground of the interior, and among the western fjords sometimes supply the only arable soil in their neighbourhood, their flat green surfaces broken only by cliffs about a hundred feet high, and the long promontories that extend from them. Most of the seaport towns stand upon platforms of raised beach. Considerable deposits of mud, silt and sand are accumulated on the promontories, and the coast may be seen to vary in elevation from the sea to the land.
While no islands except mere solitary rocks like May Island, the Bass Rock and Inchkeith diversify the eastern seaboard, the western presents a vast number, varying from such extensive tracts as Skye to the small islets known as the Eileans. Situated as Lochcarron is at the broadest part, these numerous islands may be regarded as belonging to two groups or series, the Outer and the Inner Hebrides. In the Outer Hebrides most of the ground is low, rocky and plentifully dotted over with lakes. But to the northward, lies the country of Harris, the summits attaining elevations of 2600 ft. The general trend of this long belt of islands is north-north-east. The Inner Hebrides form a much less definite group. They may be regarded as beginning with the small islets in the Minch and stretching to the southern headlands of Islay, and their irregularity has no doubt been chiefly brought about by the remarkable diversity of geological structure. Archean gneiss, such as granite-sandstone, Silurian and Devonian, Jurassic sandstone and limestone, Cretaceous sandstone, and Tertiary basalts, gabbros, and granitic rocks all enter into the composition of the islands.

**Topography.**—The influence of the topography of the country on the history of its inhabitants has been all-important. How powerfully the configuration affects the climate is shown in the remarkable difference between the rainfall of the mountainous west and the lowland east. This difference has necessarily modified the character and employment of the people, leading to the cultivation of the soil on the one side and the raising of sheep and cattle on the other. The fertile low grounds on the east have offered facilities for the invasions of Romans, Norsemen and English, while the mountain fastnesses of the interior and the west have served as secure retreats for the older Celtic population. While, therefore, Tempsford people have spread over the one area, the earlier race has to this day maintained its ground in the other. Not only external configuration but geological structure also has profoundly influenced the progress of the inhabitants. In the Highlands no mineral wealth has been discovered to stimulate the industry of the natives or to attract labour and capital. These tracts remain still, as of old, sparsely inhabited and given over to the breeding of stock and the pursuit of game. In the Lowlands, on the other hand, rich stores of coal, iron, lime and other minerals have been found. The coal-fields have gradually drawn to them an ever-increasing share of the population. Villages and towns have suddenly developed and rapidly increased in size. Manufactures and shipbuilding have grown and commerce has advanced with accelerated pace. Other influences have of course contributed largely to the development of the country, but among them all the chief place must be assigned to that fortunate geological structure which, amid the revolutions of the past, has preserved in the centre of Scotland those fields of coal and ironstone which are the foundations of the national industry.

**Geology.**

**Archean Rocks.**—The oldest rocks of Scotland and of the British Isles are known, from their antiquity, as Archean, and consist chiefly of gneiss (called Fundamental, as lying at the foundation of the geological structure of the country and especially in the Highlands because it is well developed in the island of Harris and the Outer Hebrides), which varies from a coarsely crystalline granitoid mass to fine schist. The coarse varieties are most abundant, intermingled with hornblendite-rock, hornblende-schist, pegmatite-rock, quartzite, mica-schist, sericite-schist and other schistose accompaniments. In a few places limestone has been observed. No trace of any organisation is ever detected in any of these rocks. Over wider areas, particularly on the mainland, the bands of gneiss have a general north-west trend and undulate in frequent plications with variable inclination to north-east and south-west. The largest tract of Archean rock is that which forms almost the whole of the Outer Hebrides, from Barra Head to the Butt of Lewis. Other areas more or less widely separated from each other run down the western parts of the shires of Sutherland and Ross and Cromarty, and are probably connected as far as the island of Rum.

**Eastern or Younger Schists.**—The central, southern and eastern Highlands are occupied by metamorphosed sedimentary and igneous rocks associated provisionally with the name of Dalradian from the old Celtic kingdom of Dalriada. Their true stratigraphical position has not yet been ascertained, and it may appear that more than one group of rocks is included in the series. Eastward of the Arrochar Alps and the Caledonian Mountains the effect of elevation, underground pressure has been to upraise masses of the ancient gneiss and Torridonian sandstone and thrust them westward over the younger rocks. It is not possible to say what was the original character of the strata before they were subjected to the processes of re-crystallization and forced into the characters of the younger formations. It is clear from the evidence of folding that the country was long before the collision of the Great Glen and the Caledonian Mountains, the old Archean rocks being re-arranged and re-crystallized into granulitic, flaggy gneisses and schists (Moine schists). They extend from the north-east of Sutherland to the Sound of Mull. To the east of the Sound of Mull, as at the Sound of Kerrera, they are replaced by the unmetamorphosed sandstones, the so-called argillaceous rocks of the eastern Highlands, the sediments of the Lias and Cretaceous, which, though included among the sediments of the British Isles, have never been seen outside the Hebrides or the islands of the Sound of Mull itself. In the south of the Hebrides, and especially in the island of Eigg, it is believed that the sandstone has been intruded as sills or as lavas contemporaneously with the sedimentary formations among which they lie. On the other hand, there occur bands of conglomerate, pebbly grit, quartzite, graphitic shale and limestone in a certain ordered sequence and over a wide area. Traces of annelids have been detected in some of the quartzites, and some of the less changed parts of the limestones may be searched for fossils. This great series of metamorphic rocks, the geological age of which is still unsettled, has had a powerful effect on the scenery, especially along the Highland line. Where a thick group of coarse hard grits intercalated in the sedimentary rocks crops out it rises into a chain of lofty rugged hills, of which Ben Ledi and Ben Vorlich are examples. The slate hills, weathering more readily, assume gentle slopes and rounded ridges, as in the high land from Holy Loch to the Kyles of Bute. The quartzites rise in conical hills, such as those of Jura and Islay. And to the soil created by the decay of the limestones is due a greener verdure than that of the surrounding forests.

**Torridonian Sandstone.**—Above the Archean gneiss lies a series of red and chocolate-coloured sandstone (Torridonian sandstone), which form a number of detached areas from Cape Wrath down the seaboard of the shires of Sutherland and Ross and Cromarty, across Skye, and as far as the island of Rum. They rise into prominent pyramidal mountains, which, as the stratification is usually almost horizontal, present in their terraced sides a singular contrast to the steep and often isolated peaks of the neighbouring heights, composed of highly pelitic crystalline schists. In the Torridon district they can be seen tapering bed above bed to a height of about 4000 ft., but they must be at least 10,000 ft. thick. They are not at all atypical anywhere else in Scotland. Traces of annelids and probably other organisms have been found in the bands of shale occurring in the south-west of the shire of Ross and Cromarty, in the vicinity of Rannoch, and at Catillean Head, and are the oldest relics of animal life yet found in Great Britain.

**Cambrian.**—In the north-western Highlands masses of white quartzite, resting unconformably in Torridonian sandstone, run from Loch Eriboll to Skye, forming in places great conical hills and some—
times capping isolated mountains of red Torridon sandstone. They constitute the lowest group of the most interesting series of strata in the Highlands, and yield a large number of reptilian remains. Of these, the following subdivisions, whose thickness in the district of Durness is estimated at about 2000 ft: (e) limestones, dolomites and cherts, with numerous organic remains; (g) grit and quartzite with Upper Silurian rocks; (h) sands and dolomites, with many anhedral casts and sometimes Olenellus (Fucoid Beds); (b) Upper Quartzite, often crowded with annelid pipes (Pipe Rock Quartzite); (a) Lower Quartzite— their original member of the crystalline system which is usually divided into two, the lower, less resistant, is often renewed by the Eastern Schists in those gigantic underground disturbances already referred to, by which these rocks, the Archaen gneisses and schists, are also in reality detached slabs which have been inverted and thrust over each other. The Quartzites themselves have also been subjected to extraordinary horizontal displacement, amounting in places to not less than 10 m. The rocks overlying them to the north and west of the Trent Valley are in general the Ross and Cromarty, a fine laggish schist. The Cambrian system— including the Upper (Durness-Eriboll Limestone) and the Lower (Serpule grit, Fucoid Beds, Quartzite)—forms a narrow band which could be traced for 100 m. from the north coast of Sutherland to Skye. Rocks of Cambrian age have not been identified elsewhere in Scotland, though it may ultimately be shown that the quartzites and limestones of the Central Highlands are equivalents of those of the south-coast.

Ordovician and Silurian.—In the Southern Uplands a great development of Ordovician and Silurian rocks is found. In that belt the Ordovician rocks, the Silurian, and the uppermost Devonian are strung over the land, but in the southwest of Argyllshire they include some thick lenticular bands of limestone. They have been thrown into long folds, the long axes of which run in a general north-easterly direction. It is by no means certain that the strata of this part of the country are the same as the sedimentary rocks of the Southern Uplands. The plications of the Highlands and the chief dislocations of the country have followed the same general direction, and hence the resemblance is clearly that of the same structure. In the Southern Uplands, these are the only rocks that are also in the same direction as the extremity of the Highlands. The most northerly localities for Ordovician and Silurian rocks in this country are the Ayrshire coast, or, to be more exact, the far west of Arran, where Silurian rocks thickly cover the Berkshire Hills, and the coast south of Girvan and the limestone quarries of the Stinchar and Girvan valleys, in Ayrshire, for shells, trilobites, corals, &c.

Old Red Sandstone.—Scotland is the typical European region for the deposits classed as Old Red Sandstone. These rocks are grouped in two divisions, Lower and Upper, both of which appear to have been deposited in lakes. The Lower, with its abundant intercalated laves and tuffs, extends continuously as a broad belt along the northern margin of the district of the Ordovician and Silurian rocks, along the southern border, is found again on the south side of the Uplands in Berwickshire and the Cheviot Hills, occupying a tract of Loddon Ridge. The Central Highlands are studded with the results of the dislocation of these rocks, and the Highlands underlies most of the low ground on both sides of the Moray Firth, stretches across Caithness and through nearly the whole of the Orkney Islands, and is prolonged into Shetland. The Upper Old Red Sandstone remains of plants and fishes, notably in the flagstones of Caithness, Orkney and Forfarshire. The volcanic rocks of this division form large basaltic and andesitic masses, such as the top of the Pentlands, Ochils and Sidlaws. They have in some places a thickness of 7000 ft. The lavas are usually porphyritic, which occur in sheets, with intercalated bands of volcanic tuff that are sometimes strongly lenticular. One of the very best localities for the Travertine Limestone (of the Loddon Limestone) is on the south side of Edinburgh. Fossils are less common in the Upper Old Red Sandstone, though they are found—particularly fishes—in larger numbers in certain spots, as at Dura Den, near Carpar-File. Traces of contemporaneous volcanic action exist in the Orcadian island of Hoy.

Carboniferous.—The areas occupied by Carboniferous rocks are also extensive, and the coal-seams which are here of great thickness are also being skirted the Southern Uplands from the mouth of the Tweed to that of the Nith. In the basins of the Forth and Clyde the following subdivisions are well marked: (g) Upper Red Sandstone series—of the same age as the Upper Old Red Sandstone series, and containing limestones and coal; (h) Millstone Grit (massive sandstones and grits, with calcareous bands, coal, sandstones and ironsomes); (c) Carboniferous Lime- stone series—sandstones and shales, with three or more seams of limestone; (d) sandstones, shales, coals and ironsomes, but with no limestone bands; (a) sandstones, shales, fireclays, coals and iron-stones, with thin limestones towards the top and the Hurlet (Renfrewshire) limestone at the bottom; (1) Calciferous Sandstone series— containing masses of sandstones (of which the city of Edinburgh was built), black shales, thin limestones (Burdeehope, near Edinburgh), and occasional coal seams; (a) Lower Red Sandstone group, with reddish and greenish shales, sandstones, and coals, with one or two other beds of sandstones, and coal; (b) sandstone, with three or more seams of limestone; (b) sandstones, shales, coals and ironsomes, but with no limestone bands; (d) sandstones, shales, fireclays, coals and iron-

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stones, with thin limestones towards the top and the Hurlet (Renfrewshire) limestone at the bottom; (1) Calciferous Sandstone Series containing masses of sandstones (of which the city of Edinburgh was built), black shales, thin limestones (Burdeehope, near Edinburgh), and occasional coal seams; (a) Lower Red Sandstone group, with reddish and greenish shales, sandstones, and coals, with one or two other beds of sandstones, and coal; (b) sandstone, with three or more seams of limestone; (b) sandstones, shales, coals and ironsomes, but with no limestone bands; (a) sandstones, shales, fireclays, coals and iron-

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geological date. They comprise a consecutive series of deposits from the sea, the former lying over the former. The Lower and Upper Lias consist chiefly of shales and shelly limestones, with some sandstones, well seen along the shores of Broadford Bay in Skye and in some of the adjacent islands. The Lower Oolites are made up of oolitic limestones, with some pebbles and clasts. Tertiaries, admirably described by Dr. Boyd Dawkins, by several hundred feet of an estuarine series of deposits consisting chiefly of thick white sandstones, below and above which lie shales and shelly limestones. These rocks form a prominent feature underlying the coast terraces of the east side of Skye, Raasay, and Eigg. They form the highest members of the Jurassic series, representing probably some part of the Oxford Clay. The next Secondary rocks [Cr. 424] are unconsolidated.

Cretaceous.—Rocks belonging to the Cretaceous system at one time covered considerable areas on both sides of the Highlands, but they have been entirely stripped off the eastern side, while on the western they have been largely removed by the erosion and denudation consequent on their having been elevated and being overlying the Neogene formations. Many of them have survived because of the overlying sheets of basalt that have protected them. Some greenish sandstones containing recognisable parts of the Cretaceous Green-sand of the south of England. These rocks are found on the west and south coasts of Mull and on the west coast of Argyllshire. They are covered by white sandstones and these by white chalk and marly beds, which represent the Upper Chalk of England. Their existence under the basalt outlier of Ben Idrech in Morven, at a height of 1600 ft. above the sea, shows notably how extensively they have been denuded, but also how large a portion of the Highland basaltic district have in the course of time been occupied by the Cretaceous deposits of Antrim (Ireland). Enormous numbers of flints and also less abundant fragments of chalk are found in glacial drifts, as on the Moray Firth. From the foregoing it is clear that the Chalk must once have been in place at no great distance, and if indeed it did not actually occupy part of Aberdeenshire and the neighbouring counties.

One of the highest, the second highest rocks on the west coast come terrace plates of basalt, which spread out over wide areas in Skye, Eigg, Mull and Morven, and form most of the smaller islets of the chain of the Inner Hebrides. These plates are composed of nearly horizontal sheets of basaltic columnar, amorphous, or amygdaloidal—when, in Ben More, in Mull, attain a thickness of more than 3000 ft. They are prolonged southwards into Antrim, which resembles them in many respects. The layering and the thickness show that the basalt must once have been in place at a still greater distance, but it is not certain that it occupied the territory. Occasional beds of tuff are intercalated among these lavas, and likewise seams of fine clay or shale which have preserved the remains of numerous land-plants. The presence of these fossils indicates that these rocks were laid down in a moister climate than that in which they are found to-day. The relations of those with elsewhere found among older Tertiary strata show that they probably belong to the Oligocene stage of the Tertiary series of formations, and so that the basalt eruptions took place in early Tertiary time. The volcanic episode to which these plateaus owe their origin was one of the most important in the geological history of Great Britain. It appears to have resembled in its main features that which followed on the Tertiary epoch of the Northern Uplands, and it spread over many thousand square miles of the western area of the United Kingdom. The eruptions were connected with innumerable fissures up which the basalt rose and from numerous points on which it flowed out over the face of the land. The founts, whose number and extent are still uncertain, are represented by the present day head waters of the Clyde and the Forth. They spread so far that the basaltic rocks have chanced to reach parts of Scotland which are not now in contact with the sea. A remarkable feature in the volcanic phenomena was the disruption of the basaltic plateaus by large masses of igneous and of volcanic rocks. These fragments were cast on the ground, stripped and polished the harder rocks over the whole country, and left behind them the widespread accumulation of clay, gravel, and sand known as Glacial Deposition. The Boulder Clay, the most universal kind of Drift—which covers much of the Lowlands to a depth sometimes of 100 ft., and along the flanks of hills reaches a height of 2000 ft. or more—was pushed along by ice radiating from its centres. The change in direction which the direction of the striae on the rocky surface of the country as well as in the dispersion of boulders and stones from recognizable districts. Thus remains of Highland hills which have been borne across the Highlands to the Southern Uplands. Above the Boulder Clay are found sands and gravels, along with perched boulders which, by their source and position, indicate the direction and thickness of the ice that passed over the Highland edge of the glaciers are numerous throughout the Highlands.

Recent.—The youngest formations are the raised beaches—conspicuous ridges of pebbles and clay lying in the sea and in the estuarine situations, and the deposits of Loch Linnhe, and sometimes of heaped-up beds of sorted gravel—river terraces, lake deposits, peat-mosses, tracts of blown sand—notably seen in the dunes of Culbin, Rattray Head, Aberdeen, Tayport and the Forth. The arrangement of these features and the distribution of the peat mosses, those of the Lochnagar, Folden, Ayr, Glenluce and along North and South Uist on the west. These are related to the present configuration of the land and contain remains of plants and animals still living on its surface. (A. Gr.; J. A. M.)

Climate

In considering the climate of Scotland the first place must be assigned to the influence of the latitude. During the months of the year since this, and not the mean temperature of the whole year, gives the chief characteristics of climate. Thus, while the annual temperatures of the west and east coasts are nearly equal, the mean temperature of January and July are 3*6° and 53°F., whereas at Perth they are 37°5° and 59°. The temperature features of the north of Scotland are their great extremes of winter and summer temperature, thus pointing not to the sun but to the warm waters of the Atlantic, as the more powerful influence in determining the climate at this season through the agency of the prevailing westerly winds. In exceptionally cold seasons the ocean protects all places in its more immediate neighbourhood against the severe frosts which occur in inland situations. While this influence of the ocean is felt at all seasons, it is most strikingly seen in winter when, by the warming of the deep waters, the temperature in the western coasts is about 10° higher than what is found a littoral island. In summer, everywhere, latitude for latitude, temperature is lower in the west than in the east and inland situations, but in winter the inland climates are the warmer, the highlands of the north country being specially so. The effect of the Atlantic in moderating the heat of summer is very great and is felt a long way into the interior of the country. On the other hand, the high lands of western districts by robbing the westerly winds of their moisture, and thus clearing the skies of eastern districts, exercise an equally striking effect in the opposite direction—in raising the temperature.

There is nearly twice as much wind from the south-west as from the north-east, but the proportions vary greatly in different months. The south-west prevails from July to October, and again in December to February; accordingly in these months the rainfall is doubled and the evaporation is about 25 per cent. and, as a result, there is an important result of the prevalence of these winds, with their accompanying rains, which are coincident with the annual extremes of temperature, is to imprint a more strictly insular character on the climate. From north-west to south-west winds, there is a broad, continuous belt of westernly winds, which gives rise to the most remarkable feature of Scottish climate—its extreme diversity. The north-east winds acquire their greatest frequency from March to June and in November, which are accordingly the driest portions of the year.

The mountainous regions are mostly massed in the west and lie generally north and south, or approximately facing the rain-bringing winds from the Atlantic. Thus the climates of the west are essentially wet. On the other hand, the climates of the east are dry, because the surface is lower and more level; and the breezes borne thither from the west, being robbed of most of their superabundant moisture in crossing the western hills, are drier and precipitate a greatly diminished rainfall. It thus happens that the drier climates in the east are those which have south-eastwards the broadest extent of mountainous ground, and that the wettest eastern climates are those which have southwards the least of that ground. The breakdown of the watershed between the Firths of Clyde and Forth exposes southern Perthshire, the counties of Clackmannan and Kincardine, and nearly the whole of Fife to the clouds and rains of the west. The winter climates are consequently wetter than those of any others of the eastern slopes of the country. The driest climates of the east are in Tweeddale about Kelso and Jedburgh, the low grounds of East Lothian, and those on the Moray Firth, as round to Dornoch. In these districts the annual rainfall averages 26 in., whereas over extensive breadths in the west it exceeds 100 in., in Glenelg being nearly 130 in., and on the top of Ben Nevis it may reach 150 in.

II. Economic Conditions, &c.

Population.—At the end of the 18th century it is conjectured that the population of Scotland did not exceed 500,000—Edinburgh having about 20,000 inhabitants, Perth about 1800, Aberdeen, Dundee and St Andrews about 4000 each. By the Union with England (1707) the population is supposed to
have grown to 1,000,000. In 1755, according to the returns furnished by the clergy to the Rev. Dr Alexander Webster (1707-1784), minister of the Tron Kirk, Edinburgh—who had been commissioned by Lord President Dundas to prepare a census for government,—it was 1,265,380. At the first government census (1801) it had reached 1,668,420. The increase at succeeding decades has been continuous though fluctuating in amount, and in 1901 the population amounted to 4,472,103 (females, 2,298,348). In 1902 the Registrar-General for Scotland calculated that if the rate of increase (11.9% manifest during 1891-1901) were uniformly maintained, the population would double itself in the course of about 66 years.

### TABLE I. Area and Population of Civil Counties in 1891 and 1901.

<table>
<thead>
<tr>
<th>Civil Counties</th>
<th>Area in Acres</th>
<th>Population 1891</th>
<th>Population 1901</th>
<th>Pop. per sq. m. 1901</th>
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</thead>
<tbody>
<tr>
<td>I. Northern.</td>
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<tr>
<td>1. Shetland</td>
<td>352,889</td>
<td>25,711</td>
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<td>2. Orkney</td>
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<td></td>
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<td>II. North-Western.</td>
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<td>5. Ross and Cromarty</td>
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<td>III. North-Eastern.</td>
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<td>7. Nairn</td>
<td>103,429</td>
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<td>9. Banff</td>
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<td>98</td>
</tr>
<tr>
<td>10. Aberdeen</td>
<td>1,261,887</td>
<td>284,036</td>
<td>304,439</td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>2,417,773</td>
<td>443,838</td>
<td>460,941</td>
<td>127</td>
</tr>
<tr>
<td>IV. East Midland.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Forfar</td>
<td>559,171</td>
<td>277,735</td>
<td>284,082</td>
<td>325</td>
</tr>
<tr>
<td>13. Perth</td>
<td>1,895,774</td>
<td>122,185</td>
<td>123,283</td>
<td>49</td>
</tr>
<tr>
<td>14. Fife</td>
<td>352,844</td>
<td>190,365</td>
<td>218,840</td>
<td>76</td>
</tr>
<tr>
<td>15. Kinross</td>
<td>54,210</td>
<td>6,703</td>
<td>6,881</td>
<td>96</td>
</tr>
<tr>
<td>16. Clackmannan</td>
<td>34,927</td>
<td>31,130</td>
<td>32,029</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2,556,126</td>
<td>630,908</td>
<td>656,215</td>
<td>166</td>
</tr>
<tr>
<td>V. West Midland.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Stirling</td>
<td>288,842</td>
<td>118,021</td>
<td>142,291</td>
<td>315</td>
</tr>
<tr>
<td>18. Dumfries</td>
<td>157,433</td>
<td>95,014</td>
<td>113,865</td>
<td>463</td>
</tr>
<tr>
<td>19. Argyll</td>
<td>1,099,471</td>
<td>74,085</td>
<td>73,642</td>
<td>24</td>
</tr>
<tr>
<td>20. Bute</td>
<td>139,658</td>
<td>18,404</td>
<td>18,787</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>2,576,404</td>
<td>308,524</td>
<td>348,585</td>
<td>87</td>
</tr>
<tr>
<td>VI. South-Western.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Renfrew</td>
<td>153,322</td>
<td>230,812</td>
<td>268,980</td>
<td>1123</td>
</tr>
<tr>
<td>22. Ayre</td>
<td>942,009</td>
<td>225,457</td>
<td>254,468</td>
<td>225</td>
</tr>
<tr>
<td>23. Lanark</td>
<td>562,521</td>
<td>110,399</td>
<td>133,327</td>
<td>1523</td>
</tr>
<tr>
<td></td>
<td>1,440,579</td>
<td>1,563,097</td>
<td>1,862,775</td>
<td>827</td>
</tr>
<tr>
<td>VII. South-Eastern.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Linlithgow</td>
<td>76,861</td>
<td>52,808</td>
<td>65,708</td>
<td>547</td>
</tr>
<tr>
<td>25. Edinburgh</td>
<td>234,339</td>
<td>443,767</td>
<td>488,796</td>
<td>1355</td>
</tr>
<tr>
<td>26. Haddington</td>
<td>171,011</td>
<td>37,377</td>
<td>38,665</td>
<td>145</td>
</tr>
<tr>
<td>27. Berwick</td>
<td>292,577</td>
<td>32,290</td>
<td>30,824</td>
<td>67</td>
</tr>
<tr>
<td>28. Peebles</td>
<td>252,902</td>
<td>14,722</td>
<td>15,066</td>
<td>43</td>
</tr>
<tr>
<td>29. Selkirk</td>
<td>170,762</td>
<td>27,712</td>
<td>23,356</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>1,168,149</td>
<td>599,213</td>
<td>662,415</td>
<td>363</td>
</tr>
<tr>
<td>VIII. Southern.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Roxburgh</td>
<td>426,060</td>
<td>53,500</td>
<td>48,804</td>
<td>73</td>
</tr>
<tr>
<td>31. Dumfries</td>
<td>689,007</td>
<td>74,457</td>
<td>72,571</td>
<td>68</td>
</tr>
<tr>
<td>32. Kirkcudbright</td>
<td>575,856</td>
<td>39,985</td>
<td>39,383</td>
<td>44</td>
</tr>
<tr>
<td>33. Wigton</td>
<td>311,506</td>
<td>36,062</td>
<td>32,685</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>1,995,536</td>
<td>203,792</td>
<td>193,443</td>
<td>62</td>
</tr>
</tbody>
</table>

The burghs in which the largest proportion of Scottish-born persons lived in 1901 were Kirkcaldy (with 95-97% in every 100 of its inhabitants), Aberdeen (with 94-997), Perth (with 94-442) and Kilmarnock (with 94-045). The largest proportion of English-born were in Edinburgh (with 54-223), and Leith (with 54-831). Irish-born were most in evidence in Cowlthistle (with 15-158 in every 100), Partick (with 12-00) and Govan (with 11-51). Welsh nationality was most marked in Motherwell (with 0-250%). Those of British-Colonial birth were most numerous in Edinburgh (with 0-933%), and foreigners in Glasgow (with 0-890), Leith (with 0-741) and Hamilton (with 0-720). In addition to the 17,654 resident foreigners there were 4973 foreigners casually in Scotland at the taking of the census in 1901 (17,654 men and women on board foreign and British vessels), raising the total of foreigners actually enumerated...
Table IV. Illustrating Nationalities in 1891 and 1901.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Percentage of Pop.</td>
<td>Number</td>
</tr>
<tr>
<td>Scotland</td>
<td>3,698,700</td>
<td>91:63</td>
</tr>
<tr>
<td>Ireland</td>
<td>104,867</td>
<td>4:84</td>
</tr>
<tr>
<td>England</td>
<td>108,735</td>
<td>2:70</td>
</tr>
<tr>
<td>Wales</td>
<td>2,309</td>
<td>0:06</td>
</tr>
<tr>
<td>Isle of Man and the Channel Islands</td>
<td>927</td>
<td>0:02</td>
</tr>
<tr>
<td>British Colonies</td>
<td>13,607</td>
<td>0:39</td>
</tr>
<tr>
<td>Foreigners</td>
<td>8,510</td>
<td>0:21</td>
</tr>
<tr>
<td>Total</td>
<td>4,025,647</td>
<td>100</td>
</tr>
</tbody>
</table>

Table V. gives the number of persons, exclusive of children under three years of age, who spoke Gaelic only, and Gaelic and English, with their percentages to the population in 1901. The counties in which the highest percentages obtained of persons speaking Gaelic only were Ross and Cromarty with 15.92% (1,217 persons) and Inverness with 13.01% (1,722 persons). But in no fewer than eighteen counties the proportion of Gaelic-speaking persons was under 1%.

Table V. Showing Number of Persons aged three years and upwards speaking Gaelic only and Gaelic and English in 1901.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>4,472,103</td>
<td>28,106</td>
<td>0:63</td>
<td>202,700</td>
<td>4:53</td>
</tr>
<tr>
<td>Northern portion</td>
<td>1,753,470</td>
<td>27,854</td>
<td>1:59</td>
<td>160,915</td>
<td>9:18</td>
</tr>
<tr>
<td>Southern portion</td>
<td>2,718,633</td>
<td>25,232</td>
<td>0:01</td>
<td>41,785</td>
<td>1:54</td>
</tr>
<tr>
<td>Northern division</td>
<td>112,175</td>
<td>489</td>
<td>0:43</td>
<td>17,084</td>
<td>15:23</td>
</tr>
<tr>
<td>North-western</td>
<td>156,554</td>
<td>23,893</td>
<td>14:34</td>
<td>85,573</td>
<td>49:58</td>
</tr>
<tr>
<td>North-eastern</td>
<td>460,941</td>
<td>20</td>
<td>0:01</td>
<td>5,125</td>
<td>1:11</td>
</tr>
<tr>
<td>East-midland</td>
<td>665,215</td>
<td>95</td>
<td>0:01</td>
<td>13,818</td>
<td>2:06</td>
</tr>
<tr>
<td>West-midland</td>
<td>546,586</td>
<td>3,357</td>
<td>0:06</td>
<td>42,315</td>
<td>12:14</td>
</tr>
<tr>
<td>South-western</td>
<td>1,862,775</td>
<td>162</td>
<td>0:01</td>
<td>34,259</td>
<td>1:84</td>
</tr>
<tr>
<td>South-eastern</td>
<td>662,415</td>
<td>89</td>
<td>0:01</td>
<td>7,002</td>
<td>1:06</td>
</tr>
<tr>
<td>Southern</td>
<td>193,443</td>
<td>1</td>
<td>0:00</td>
<td>494</td>
<td>0:26</td>
</tr>
</tbody>
</table>

Vital Statistics.—In Table VI. is shown the number of births, deaths, marriages and illegitimate births for the decades ending 1870, 1880, 1890 and 1900.

Table VI. Illustrating Nationalities in 1891 and, 1901.

<table>
<thead>
<tr>
<th>Year</th>
<th>Births</th>
<th>Deaths</th>
<th>Marriages</th>
<th>Illegitimate births</th>
</tr>
</thead>
<tbody>
<tr>
<td>1861-1870</td>
<td>1,120,791</td>
<td>1,232,311</td>
<td>224,222</td>
<td>110,061</td>
</tr>
<tr>
<td>1871-1880</td>
<td>1,251,930</td>
<td>253,550</td>
<td>259,388</td>
<td>102,128</td>
</tr>
<tr>
<td>1881-1890</td>
<td>1,280,044</td>
<td>781,860</td>
<td>298,664</td>
<td>90,981</td>
</tr>
<tr>
<td>1891-1900</td>
<td>1,10,921</td>
<td>108,260</td>
<td>259,388</td>
<td>90,981</td>
</tr>
</tbody>
</table>

The counties in which the highest percentages of illegitimate births were found were Wigtown, Dumfries, Kirkcudbright and Peebles in the south; Elgin, Banff and Aberdeen in the north-east, and Caithness in the north; the shires showing the lowest percentages were Clackmannan, Dumbarton and Shetland.

Table VII. Births, Deaths, Marriages and Illegitimate Births, 1861-1900.

<table>
<thead>
<tr>
<th>Rate</th>
<th>Births</th>
<th>Deaths</th>
<th>Marriages</th>
<th>Illegitimate births</th>
</tr>
</thead>
<tbody>
<tr>
<td>1861-1870</td>
<td>3:48</td>
<td>3:47</td>
<td>3:22</td>
<td>3:01</td>
</tr>
<tr>
<td>1871-1880</td>
<td>2:15</td>
<td>2:15</td>
<td>1:91</td>
<td>1:84</td>
</tr>
<tr>
<td>1881-1890</td>
<td>0:71</td>
<td>0:71</td>
<td>0:66</td>
<td>0:70</td>
</tr>
<tr>
<td>1891-1900</td>
<td>8:79</td>
<td>8:79</td>
<td>7:11</td>
<td></td>
</tr>
</tbody>
</table>

Occupations of the People.—Table VIII. divides the people according to occupations. The most noteworthy feature in this connexion is the great diminution that took place within the intercensal period (1891-1901) in the unproductive class, which to some extent accounts for the increase in the number of the industrial and commercial classes.

Poor Relief.—Before the Reformation, relief of the poor had been the duty of the Church, for early legislation aimed at suppressing rather than aiding poverty. Those, indeed, who were absolutely dependent on alms might receive a licence to beg within the bounds of their own parish, but the able-bodied poor were severely dealt with. The act of 1579 directed the magistrates in towns and the justices in rural parishes to propose a register of the aged and impotent poor and to levy a tax on the inhabitants of every parish for their support. One consequence of the denial of relief to the able-bodied was that the workhouse, so familiar in the English poor-law system, was not established in Scotland, though almshouses are found in many
towns, and poorhouses, where those indigent who are alone in the world without any one to care for them find food and shelter, began to be general in the 19th century. Hence arises the prevalence of out-relief, one of the distinctive features of the Scottish poor law. The act of 1570, however, proved largely inoperative. The provisions of rent produces passed from the justices to de ministers and kirk-sessions, who by an edict of the Privy Council, in 1692, were required to draw up a list of the poor twice a year, and rates were levied only when collections in the church “plates” were insufficient. For 150 years nothing was done to systematize poor relief, and even in 1842 about half of the parishes were yet unassessed to the poor. The total inadequacy of the voluntary system to cope with genuine distress, in respect both of contributions and the dispensing of alms, led in 1845 to the passing of an act which made the parish the poor-relief authority, besides establishing the parochial board for the kirk-sessions where recourse was had to a rate, made the appointment of inspectors of the poor and medical officers compulsory, and set up a system of central administrative control known as the Board of Supervision for the Relief of the Poor, with headquarters in Edinburgh. The act did not provide for compulsory assessment, but this was virtually accomplished by the vigilance of the Board, which demanded of local authorities increased care and more liberal relief, with the result that in 1894 only 46 out of 848 parishes remained unassessed. In this year a change in the governing body was affected, the Local Government Board abolished the kirk-sessions, and created the Board of Supervision, while the parochial boards made way for parish councils. As the authorities cannot give relief to those able to work, there are no casual wards in Scotland, vagrants having to pay for their night’s lodging, or find it in the police station or elsewhere. Every parish has to support its own poor, that is, natives or those who have acquired a settlement by living in it for five years, but relief is given in the parish in which it is applied for, the cost being recovered from the parish of birth or settlement afterwards. For the sick poor the larger towns provide hospitals and dispensaries, besides establishing penny homes for the homes of the poor, while in rural districts there are cottage hospitals, village sick-rooms, and sick wards in the poorhouses. The mentally afflicted are sent to the asylum if they are dangerous, or kept in the licensed wards of poorhouses, or, if they are harmless or imbecile, boarded out. The expense of pauper lunacy is only partially borne by the parish. The district lunacy board (practically a joint-committee of the county and burgh councils), aided by a parliamentary grant, is charged with the provision and upkeep of the asylums, the poor-law authorities only defraying the maintenance of their own patients. Orphans on Scottish estates, or the children of paupers, are boarded out and reared like ordinary children, attending the public schools and growing up without the “pauper taint.”

Police.—It was not till the middle of the 19th century that a regular police force was established in Scotland. Till then dwellers in rural districts had practically to provide for their own safety as best they could, while some towns maintained a paid watch and others enrolled volunteer constables, every citizen being expected to take his turn in patrolling the streets to protect person and property. At first an adoptive act was introduced, under which the Commissioners of Supply, who then managed county business—resident landowners in possession of landed estate to the annual value of £100—were empowered to raise a police force in the counties; but the want of common policy and initiative led in 1857 to the compulsory institution of a police force throughout the country. Burghs having a population of more than 7000 might furnish their own police, and smaller burghs were policed as part of the county to which they belonged by the standing joint-committee (composed equally of Commissioners of Supply and members of the county council), but no new police burgh the population of which was under 20,000 was to be free to police itself. All the constabulary forces, excepting the Orkney and Shetland police, are annually inspected as to efficiency and reported on to the Secretary of State for Scotland.

Scotland

Education. (a) Elementary Schools.—The system of schools which prevailed till the Education Act of 1872 dated from 1696, when the Act for Settling of Schools was passed—one of the last but not the least of the achievements of the Scots Parliament—providing for the maintenance of a school in every parish by the kirk-session and heritors, with power to the Commissioners of Supply to appoint a schoolmaster in case the primary authorities made default. The schoolmaster held his office for life, co-education was the rule from the first, and the school was undenominational. The various religious secessions in Scotland led to the founding of a large number of sectarian and subscription schools, and at the Disruption in 1843 the Free Church made provision for the secular as well as the religious instruction of the children of its members. The Education Act of 1872 abolished the old management of the parish schools and provided for the creation of districts (large, parish or group of parishes) under the control of school boards, of which there are 972 in Scotland, elected every three years by the ratepayers, male and female. Since that date the most important changes effected in the elementary education system were the abolition, in 1886, of individual inspection of the lower standards—afterwards extended to the whole of the standards, the inspectors applying a collective test, the “block-grant” system, to the efficiency of a school—and the abolition of school fees (1895) for the compulsory standards, the less being made up principally by a parliamentary grant, and partly by a proportion, earmarked for the purpose, of the proceeds of the Local Taxation (Customs and Excise) Act 1890, and the Education and Local Taxation Account (Scotland) Act 1892. The capitation grant in relief of fees is at the rate of 12s., of which 10s. is furnished by the parliamentary grant and 2s. by the other sources. King’s Scholars, trained at one of the training colleges, and King’s Students who attend one of the universities, form the chief source of supply of certificated teachers.

(b) Secondary Schools.—Records of the existence of schools in the chief towns occur as early as the 13th century. They were several in number, but the multi-national character of the cities and towns and the existence of religious foundations were mainly devoted to studies preparatory for the Church. Before the Reformation schools for general education were attached to many religious houses, and in 1496 the first Scottish act was passed requiring substantial householders to send their eldest sons to school from the time they were eight or nine years old until they were “competently founded and have perfil Latin.” In 1560 John Knox propounded in his First Book of Discipline a comprehensive scheme of education from elementary to university, but neither this proposal nor an act passed by the privy council in 1616 for the establishment of a school in every parish was carried into effect. In several burghs grammar schools have existed from a very early date, and some of them, such as the Royal High School of Edinburgh and the High School of Glasgow, reached a high standard of proficiency. They were largely supported by the town councils, who erected the buildings, kept them in repair, and usually paid the rector’s salary. By the act of 1872 their management was transferred to the school boards, and they may be conveniently classified into higher-class public schools, such as the old grammar schools and the liberally endowed schools of the Merchant Company in Edinburgh, and higher grade schools, with a few years’ preparatory course for the universities, while some of the ordinary schools have earned the grant for higher education. In 1885 the Scottish Education Department, of which the secretary for Scotland is the virtual head, was reorganized. It was separated from the English Department, and undertook the inspection of higher-class schools (public, endowed and voluntary), and two years later instituted a leaving certificate examination, the pass of which is accepted for most of the university and professional authorities in lieu of their preliminary examinations. In 1898 the functions of the Science and Art Department, as far as Scotland is concerned, were transferred to the Department, which makes substantial grant to every pupil who successfully passes the examination. In several cases an educational grant was formerly paid. A Technical Schools Act, passed in 1887, was applied by a few local authorities; but in 1890 funds
were by chance made available from an unexpected source, and
devoted to the purposes of medical and secondary education.
Parliament had introduced a measure of public-house reform
along with a scheme for compensating such houses as lost their
licence. This feature was so stoutly opposed that the bill did
not pass, although the chancellor of the exchequer had promised
the movement funds. Government proposed to distribute this
money among local authorities and expend the balance in relief
rates, but a clause was inserted in this bill giving burgh and
county councils the option of spending the balance on technical
education as well as in relief of rates. Advantage was largely
taken of this power, and the grant came to be succinctly described
as the “Residue” grant (£97,000 a year). The Department
established in each county a body known as the secondary edu-
cation committee, chosen by the county council and the chair-
men of the school boards, which is charged with the expenditure
of its share of the grant. The committee exists also in a few of
the largest burghs, the members being in this case appointed by
the town council, school board, and sometimes the trustees of
educational endowments. In virtue of a Continuation Class code,
technical and specialized education is given in day and, chiefly,
evening classes in various centres, the principal being the
Heriot-Watt College, Edinburgh; the Edinburgh and East of
Scotland College of Agriculture; the Glasgow and West of Scot-
tland Technical College; the Glasgow School of Art; the Glasgow
Athenaeum Commercial College; the West of Scotland Agricul-
tural College; the University of Edinburgh Technical Institute; Gray’s School
of Art, Aberdeen; the Edinburgh Royal Institution School of
Art, and the Edinburgh School of Applied Art; but well-
equipped classes are held in most of the large towns, and several
county councils maintain organizers of technical instruction.
As regards agricultural education, the county is found to be in
most cases too small an area for efficient organization, and
consequently several counties combine to support, for instance,
the East of Scotland Agricultural College—a corporation con-
sisting of the agricultural department of the University, the
Heriot-Watt College and the Veterinary College of Edinburgh—
the West of Scotland Agricultural College, Glasgow, and
the agricultural department in Aberdeen University. The
leading public schools on the English model are Trinity College,
Glenalmond, Perthshire; Loretto School, Musselburgh, and
Fettes College, Merchiston Castle and the Academy in Edinburgh.

(c) Universities and Colleges.—There are four universities in
Scotland, namely (in the order of foundation), St Andrews (1411),
Glasgow (1450), Aberdeen (1494) and Edinburgh (1582), in
which are the customary faculties of arts, divinity, law, medicine
and science. In 1901 Mr Andrew Carnegie gave £5,000,000
for the improvement of the apparatus, besides the management of the fund was handed
over to a body of trustees, who devote the annual income
(£100,000) partly to the payment of students’ fees and partly to
buildings, apparatus, professorships and research. The court
of each university is the supreme authority in regard to finance,
discipline, and the regulation of the duties of professors and
lecturers. The universities are empowered to affiliate other
academical institutions, and women students are admitted on an
equal footing with men. Under the act of 1890 the University
College of Dundee was incorporated with St Andrews University,
and Queen Margaret’s College and the Women’s College in Edinburgh
College, the buildings and endowments, used for women
students exclusively, being handed over to the University Court.
St Mungo’s College, Glasgow, incorporated in 1889 under a
Board of Trade licence, has medicinal and law faculties, and
Anderson’s College Medical School, Glasgow, was instituted in
1887. These are on the same basis as the extra-mural medical
schools in Edinburgh, their medical curricula qualifying for
licence only and not for Scottish university degrees. The United
Free Church maintains colleges at Aberdeen, Edinburgh and
Glasgow, and there is a Roman Catholic college at Edinburgh
Agricultural College, the Dumbarton Academy, and Fort Augustus.
The Church of Scotland and the United Free Church each possess
their training colleges for teachers, the Episcopal Church supports
one and the Roman Catholic Church one. The Edinburgh Museum
of Science and Art has been transferred to the Scottish Education
Department.

Agriculture.—Though Scotland is a country of great estates,
this circumstance possesses less significance from the agricultural
than from the historical standpoint. The excessive size of the
properties may to some extent be accounted for by the fact
that most of the surface is so mountainous and unproductive
as to be unsuitable for division into smaller estates, but two
other causes have also co-operated, namely, first, the wide
territorial authority of such Lowland families as the Scotts
and Douglases, and such Highland clans as the Campbells of Argyll
and Breadalbane, and the Murrays of Athol and the duke of
Sutherland; and secondly, the stricter law of entail introduced
in 1685. Thus the largest estates remain in the hands of the old
hereditary families. The almost absolute power formerly wielded
by the landlords, who within their own territories were lords of
regality, hindered independent agricultural enterprise, and it
was not till after the abolition of hereditary jurisdictions in
1748 that agriculture made real progress. The Society of
Improvers in the Knowledge of Agriculture, founded in 1723, ceased to exist after the rebellion of 1745, and the introduction
of new and improved methods, where not the result of private
energy and sagacity, was chiefly due to the Highland and
Agricultural Society, established in 1784. Further stimulus was
also supplied by the high prices that obtained during the
Napoleonic wars, and, in spite of periods of severe depression since
then, the science of agriculture has continued to advance. The
system of nineteen years’ leases had proved distinctly superior
to the system of yearly tenancy so general in England, although
prejudicially affected by customs and conditions which, for a
considerable time, seriously strained the relations between landlord
and tenant. But the abolition of the law of hypothec in 1879—
under which the landlord had a lien for rent upon the produce
of the land, the cattle and sheep fed on it, and the live stock
and implements used in husbandry,—the Ground Game Act of 1850,
1901-1902, and the several Agricultural Holdings Acts, and the construction of
light railways improved matters and established a better under-
standing. The period of general depression which set in before
1885 was surmounted in Scotland with comparatively little
trouble. A large amount of capital was lost by tenants, and a
few farms were thrown here and there upon the landlords’
hands, but in no district was rent extinguished or were holdings
abandoned. The sub-commissioners who reported to the Royal
Commission on Agriculture in 1803 found nearly everywhere a
demand, sometimes competition for farms, persisting throughout
the crisis. In Banff, Nairn, Elgin and several southern counties
property was at a premium, while in the north-east and
Aberdeen the average was 30%; but in nearly all the counties, towards the end at least of the period of depression,
the coexistent demand and competition for farms were observes-
able. In some districts in the west rents fell very little; in
others, especially sheep-farming districts, the fall was very severe. In Ayrshire the figure varied from 5 to 20%; for
Dumfriesshire 16% was given as a fair average, but here too the
distressed farmer was compelled to admit that if he gave up his
holding there were others ready to take it. Afterwards, owing
to the increased attention given to stock-fattening and dairying,
Competition and changes in land prices, farming reached a condition of equilibrium,
and the most noticeable residuum of the period of depression
was the large intrusion of the butcher and grocer class into the
farmer class proper. Caithness-shire was declared to be the
greatest sufferer by the period of depression; rents fell in that
county by 30 to 50% on large farms, 20 to 30% on medium,
and 10 to 60% on small farms. Nevertheless, the decline in
the value of land was serious. According to the reports of the Inland
Revenue Commissioners, the gross income derived from the
ownership of lands in Scotland was returned in 1879-1880 at
£7,769,303. After the depression the amount returned was only
£5,913,836, a drop in twenty-five years of £1,857,467. These figures refer to land,
whether cultivated or not, including ornamental grounds,
gardens attached to houses when exceeding one acre in extent,
teinds or tithe-rent charge commuted under the Lands Commutation Acts, farm-houses and farm-buildings.

The crofters of the Highlands and islands had their grievances also. During the first half of the 19th century wholesale clearances had been effected in many districts, and the crofters were compelled either to emigrate or to crowd into areas already congested, where, eking out a precarious living by following the fisheries, they led a hard and miserable existence. At last after agitation and discontent had become rife, government appointed a royal commission to inquire into the whole question in 1883. It reported next year, and in 1886 the Crofters' Holdings Act was passed. Amending statutes of succeeding years added to the commissioners' powers of fixing fair rents and cancelling arrears, the power of enlarging crofts and common grazings. Since then political agitation has practically died out, though the material condition of the class has not markedly improved, except where, with government aid, crofter fishermen have been enabled to buy better boats; but in some districts, even in the island of Lewis, substantial houses have been built. After the passing of the act (1886) the Crofters' Commission in 13 years considered applications for rent and revaluation of holdings and 300 acres. The average holding in 1895 was 61.7 acres, or an annual reduction of £1,357,571 of arrears of rent amounting to £1,04,692 they cancelled £24,180, and also assigned 48,549 acres in enlargement of holdings. Under the Congested Districts (Scotland) Act of 1897, £35,000 a year was devoted within certain districts of Argyll, Inverness, Ross and Cromarty, Sutherland, Caithness, Orkney and Shetland, to assisting migration, improving the breeds of live stock, building piers and boat-slips, making roads and bridges, developing home industries, &c.

<table>
<thead>
<tr>
<th>Year</th>
<th>1 to 5 Acres.</th>
<th>5 to 50 Acres.</th>
<th>50 to 300 Acres.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>20,150</td>
<td>65,891</td>
<td>33,921</td>
</tr>
<tr>
<td>1903</td>
<td>19,500</td>
<td>63,961</td>
<td>34,018</td>
</tr>
<tr>
<td>1905</td>
<td>18,685</td>
<td>63,961</td>
<td>34,018</td>
</tr>
</tbody>
</table>

In Table XI. will be found a classification of the holdings in 1895, 1903 and 1905. The figures show that the holdings under 50 acres constituted fully two-thirds of the total holdings and that, though no very decided alteration in the size of farms was in progress, the larger portion of the cultivated land was held in farms of between 50 and 300 acres. The average holding in 1905 was 61.7 acres. Table X. shows the total area, the cultivated area and the area under grain crops, green crops, grasses and miscellaneous crops. Comparison between 1905 and the average for 1871-1875 clearly demonstrates the change which Scottish agriculture had undergone. Though practically the same amount of land was brought under the

<table>
<thead>
<tr>
<th>Crops</th>
<th>Average Total Produce.</th>
<th>Average Yield to the Acre.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1885</td>
<td>1905</td>
</tr>
<tr>
<td>Wheat—Bushels</td>
<td>1,835,501</td>
<td>2,065,381</td>
</tr>
<tr>
<td>Barley</td>
<td>8,245,820</td>
<td>8,004,446</td>
</tr>
<tr>
<td>Oats</td>
<td>33,497,127</td>
<td>35,217,807</td>
</tr>
<tr>
<td>Beans</td>
<td>709,577</td>
<td>364,818</td>
</tr>
<tr>
<td>Peas</td>
<td>37,464</td>
<td>17,108</td>
</tr>
<tr>
<td>Potatoes—Tons</td>
<td>803,523</td>
<td>979,541</td>
</tr>
<tr>
<td>Turnips and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swedes—Tons</td>
<td>6,496,189</td>
<td>7,162,794</td>
</tr>
</tbody>
</table>

† Not separately distinguished.

plough, there was a considerable fall in the acreage under grain and green crops, but this was rather more than balanced by the increased area under grass, showing that the tendency towards the growing of live stock has become more widespread and more pronounced. Only a little more than one-fourth of the area of Scotland is cultivated, while in England only one-fourth is left uncultivated; but it should be borne in mind that "permanent pasture" does not include the mountainous districts, which not only form so large a proportion of the surface but also, in their heaths and natural grasses, supply a scanty herbage for sheep and cattle, 9,104,308 acres being used for grazing in 1905. Oats remain the staple grain crop, and barley, though fluctuating from year to year, is steadied by the demands of the distillers. Wheat showed a marked decline in most years from 1893 to 1904. Table XI., however, shows that in most cases, even when the acreage occupied by crops is smaller, the estimated yield to the acre shows a distinct improvement, the result of enhanced skill and industry, and the adoption of more scientific methods. In 1905 the yield of hay from clover, meadow and rotation grasses amounted to 666,985 tons, or 31-91 cwt.s. to the acre, and from permanent pasture 299,908 tons, or 28-46 cwt.s. to the acre, or 876,939 tons of all kinds of hay from 375,220 acres.

Table XII. shows the number of live stock in 1905, with the average for the period 1871-1875, and illustrates the extent to which farmers have turned their attention to stock in preference to crops. The cattle stock has risen steadily, and a regular increase in the number under 2 years points to the healthy state of the breeding industry. The breeds include the Ayrshire, noted milkers and specially adapted for dairy farms (which prevail in the south-west), which in this respect have largely supplanted the Galloway in their native district; the polled Angus or Aberdeen, fair milkers, but valuable for their beef-making qualities, and on this account, as well as their hardihood, in great favour in the north-east, where cattle-breeding has been carried to perfection; and the West Highland or Kyloe breed, a picturesque breed with long horns, shaggy coats and decided colours—black, red, dun, cream and brindle—that thrives well on wild and healthy pasture. The special breeds of sheep are

<table>
<thead>
<tr>
<th>TABLE IX.—Classification of Holdings above 1 Acre.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
</tr>
<tr>
<td>1903</td>
</tr>
<tr>
<td>1905</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE X.—Acreage under Cultivation—continued.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area, including Inland Water, but excluding Foreshore and Tidal Water, 19,455,728 Acres.</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total area under Crops and Grasses.*</td>
</tr>
<tr>
<td>Permanent Pasture—</td>
</tr>
<tr>
<td>For Hay</td>
</tr>
<tr>
<td>Not for Hay</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Arable Land</td>
</tr>
<tr>
<td>Grain Crops—</td>
</tr>
<tr>
<td>Wheat</td>
</tr>
<tr>
<td>Barley or Bere</td>
</tr>
<tr>
<td>Oats</td>
</tr>
<tr>
<td>Rye</td>
</tr>
<tr>
<td>Beans</td>
</tr>
<tr>
<td>Peas</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

* Not including mountain and heath land.
SCOTLAND

| COMMUNICATIONS |

the fine-woolled of Shetland, the blackfaced of the Highlands, the Cheviots, natives of the hills from which they are named, a favourite breed in the south, though Border Leicesters and other English

Table XII.—Illustrating Increase of Live Stock.

<table>
<thead>
<tr>
<th>Stock</th>
<th>Average 1871-1875.</th>
<th>1905.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbroken</td>
<td>156,520</td>
<td>49,608</td>
</tr>
<tr>
<td>Total</td>
<td>178,632</td>
<td>206,188</td>
</tr>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other cattle, 2 years and above</td>
<td>309,252</td>
<td>437,128</td>
</tr>
<tr>
<td>Other cattle, under 2 years</td>
<td>207,920</td>
<td>276,330</td>
</tr>
<tr>
<td>Total</td>
<td>1,127,332</td>
<td>1,227,295</td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ewes kept for breeding</td>
<td>4,735,008</td>
<td>2,918,544</td>
</tr>
<tr>
<td>Other sheep, 1 year and above</td>
<td>2,416,114</td>
<td>2,722,467</td>
</tr>
<tr>
<td>Total</td>
<td>7,151,122</td>
<td>7,042,211</td>
</tr>
</tbody>
</table>

Table XIII. Illustrating Increase of Live Stock.

| Figs | | |
|------|------|
| Breed of sheep, as well as a variety of crosses, are kept for winter feeding on lowland farms. The principal breeds of horses are the Shetland and Highland ponies, and the Clydesdale draught.

The area devoted to orchards rose from 1562 to 1880 to 2482 acres in 1905. The chief areas for tree and small fruit are Clydesdale and the Carm of Gowrie, but there are also productive orchards in the shires of Haddington, Stirling, Ayr and Roxburgh, where the market-gardening has developed in the neighbourhood of the larger towns. In 1812 woods and plantations occupied 907,659 acres, of which 501,469 acres were natural woods and 406,226 planted. Within ten years after 1792, when they had only 73,990 acres, and renewed attention to forestry and encouragement of planting the area had grown in 1805 to 878,675 acres; by 1905, however, the acreage was practically unchanged. Inverness, Aberdeen and Perth are naturally the best wooded shires. The modern plantations consist mostly of Scots fir with a sprinkling of larch.

Deer Forests and Game, &c.—Deer forests in 1900 covered 2,287,297 acres, an increase of 575,505 acres since 1883. The red deer is peculiar to the Highlands, but the fallow deer is not uncommon in the hill country of the south-western Lowlands. The grouse moors occupy an extensive area and are widely distributed. Parmigian and black-cock are found in all districts, partridges are, however, more fully preserved, and the capercailzie, once extirpated, has been restored to some of the Highland forests. Hares and rabbits, the latter especially, are abundant. Fox-hunting is fashionable in most of the southern shires, but otter-hunting is practically extinct. The bear, wolf and beaver, once common, have long ceased to be, the last wolf having been killed, it is said, in 1868 by Sir Ewen Cameron of Lochiel. The wild cat may yet be found in the Highlands, and the polecat, cramp and pine marten still exist. The golden eagle and the white-tailed eagle haunt the wilder and more remote mountainous districts, while the other large birds of prey, like the osprey and kite, are becoming scarce. The islands, rocks and cliffs and some inland lochs are frequented in multitudes by a great variety of water-fowl.

Fisheries.—The Scottish seaboard is divided for administrative purposes into twenty-seven fishery districts, namely, on the east coast, Eyemouth, Leith, Anstruther, Montrose, Stonehaven, Aberdeenshire, Peterhead, Fraserburgh, Banff, Buckie, Findhorn, Cromarty, Helmsdale, Lybster, Wick (13); on the west, Stornoway, Barra, Loch Broom, Loch Carron and Skye, Fort William, Campbeltown, Inverary, Rothesay, Greenock, Balantrae (10). The whole of the fisheries are controlled by the Fishery Board for Scotland, which was established in 1882 in succession to the former board of Whitefriars Fishery. In 1905 the number of fishermen directly employed in fishing was 36,162, there were 17,496 engaged in curing and preserving the fish landed, while 32,201 were employed in subsidiary industries on shore, making a total of 85,559. There are 221 professional fish auctions, 153 fish canneries, and 15,603 small fisheries and dependent industries. In 1905 the herring fishery yielded 5,342,777 cwt. (£1,343,080); in 1900, 4,541,297 cwt. The most prolific districts are Shetland in the north, Fraserburgh, Peterhead, Wick, Anstruther and Stornoway in the east, and Stornoway in the west. The principal herring market is continental Europe, Germany and Russia being the largest consumers, and there has been a growing exportation to the United States. Of this total catch of fish for human food (excluding fishmeal) amounted to 7,856,310 cwt., and in 1907 the highest recorded to 1910, 9,018,154 cwt. (£1,149,127). The annual value of the herring fish (lobsters, crabs, oysters, mussels, clams, periwinkles, cockles, shrimps) is about £73,000. The weight of salmon carried by Scottish railways and steamers in 1894 was 2437 tons, and in 1903 it was 2047 tons. In 1894 the number of boxes of Scottish salmon delivered at Billingsgate market in London was 15,489, and in 1903 it was 15,103, being more than half of the salmon received from the whole of the United Kingdom, including Irish and English consignments. In 1903 the Tay rentals came to £22,902, the highest then recorded. The other considerable rentals were the Dee £18,392, Tweed £15,386 and Spey £184.

Roads.—In the 12th century an act was passed providing that the highways between market-towns should be at least 20 ft. broad. Over the principal rivers at this early period there were bridges near the most populous places, as over the Dee near Aberdeen, the Esk at Brechin, the Tay at Perth and the Forth near Stirling. Until the 16th century, however, traffic between distant places was carried on chiefly by pack-horses. The first stage-coach in Scotland was that which ran between Edinburgh and Leith in 1610. In 1658 there was a fortnightly stage-coach between Edinburgh and London, but afterwards it would appear to have been discontinued for many years. Separate acts enjoining the justices of the peace, and the commissioners of supply, to take measures for the maintenance of roads were passed in 1617, 1660, 1676 and 1686. These provisions had reference chiefly to what afterwards came to be known as the "statute labour roads," intended primarily to supply a means of communication within the several parishes. They were kept in repair by the tenants and cotters, and, when their labour was not sufficient, by the landlords, who were required to "stent" (assess) themselves, customs also being sometimes levied at bridges, ferries and causeways. By separate local acts the "statute labour road" was in all cases to be paid for by a payment called "cooper's money," and the General Roads Act of 1845 made the alteration universal. The Roads and Bridges (Scotland) Act of 1878 entrusted the control of the roads to royal and police burghs and in the counties to road trustees, from whom it was transferred by the Local Government Act of 1889 to county councils, the management, however, being in the hands of district committees. The Highlands had good military roads earlier than the rest of the country. The project, begun in 1725 under the direction of General George Wade, took ten years to complete, and the roads were afterwards kept in repair by an annual payment called "cooper's money." In the Lowlands the main roads were constructed under the Turnpike Acts, the earliest of which was obtained in 1750. Originally they were maintained by tolls, but this method, after several counties had obtained separate acts for its abolition, was superseded in 1883 by the act of 1878.

Canals.—There are four canals in Scotland, the Caledonian, the Crinan, the Forth and Clyde and the Union, of which the Caledonian and Crinan are national property (see CALEDONIAN CANAL). The Forth and Clyde Navigation runs from Bowling on the Clyde, through the north-western part of Glasgow and through Kirkintilloch and Falkirk to Grangemouth on the Forth, a distance of 35 m. There is also a branch, 24 m. long, from Stockfield to Port Dundas in the city of Glasgow, which is continued for the distance of 1 m. to form a junction with the Monkland canal. This last has a length of 24 m., and runs from the north-east of Glasgow through Coatbridge to Woodhall in the parish of Old Monkland. It began in 1761 and opened for traffic in 1792. The Forth and Clyde canal was authorized in 1767 and opened from sea to sea in 1790. In 1846 its proprietors bought the Monkland canal, and in 1867 the combined undertaking was incorporated under the name of the Caledonian Railway Company. The Union canal, 314 m. long, starts from Port Downie, on the Forth and Clyde canal near Falkirk, and runs to Port Hopeston in Edinburgh. Begun in 1818 it was completed in 1822, and in 1849 was vested in the Edinburgh and Glasgow Railway Company, which in turn was absorbed by the North British Railway Company in 1865. The Forth and Clyde canal has a revenue of about £120,000 a year, including receipts from the docks at Grangemouth, and the expenditure on management and maintenance is about £40,000. The Union canal earns between £2000 and £3000, and its expenditure is but little
less than its revenue. Three other canals formerly existed in Scotland. The Aberdeen canal, 18½ m. long, running up the Don valley from Aberdeen to Inverurie was opened in 1807, but did not prove profitable and was ultimately sold to the Great North of Scotland Railway Company, by which it was abandoned. The Glasgow, Paisley and Johnstone canal, 11 m. long, was opened in 1811 and was bought in 1869 by the Glasgow and South-Western railway, which in 1881 obtained statutory powers to abandon it as a canal and use its site, so far as necessary, for a railway line. The Fort and Clyde canal was only half a mile long. It ran from the Fort and Clyde canal to the Clyde, opposite the river Cart, and was intended to allow vessels to pass direct from the east coast up that river to Paisley. The Caledonian railway, which acquired it together with the Fort and Clyde canal in 1867, obtained powers to abandon it in 1893.

Railways.—The first railway in Scotland for which an act of parliament was obtained was that between Kilmarnock and Troon (9½ m.), opened in 1812, and worked by horses. A similar railway, of which the chief source of profit was the passenger traffic, was opened between Edinburgh and Dalkeith in 1824, branches being afterwards extended to Leith and Musselburgh. By 1840 the length of the railway lines for which bills were passed was 191½ m., the capital being £3,122,133. The chief companies are the Caledonian, formed in 1845; the North British, of the same date; the Glasgow and South-Western, formed by amalgamation in 1859; the Highland, formed by amalgamation in 1865; and the Great North of Scotland, 1846.

Table XIII. shows the advance in mileage, goods and passenger traffic and receipts, from both sources, since 1857.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mileage</th>
<th>Passengers</th>
<th>Passenger Traffic Receipts</th>
<th>Goods Traffic Receipts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1857</td>
<td>1243</td>
<td>14,733,503</td>
<td>916,097</td>
<td>1,582,781</td>
<td>2,504,487</td>
</tr>
<tr>
<td>1858</td>
<td>2700</td>
<td>38,290,952</td>
<td>2,503,933</td>
<td>3,884,424</td>
<td>6,388,357</td>
</tr>
<tr>
<td>1861</td>
<td>2999</td>
<td>54,305,074</td>
<td>2,031,277</td>
<td>4,269,023</td>
<td>6,330,300</td>
</tr>
<tr>
<td>1864</td>
<td>3097</td>
<td>65,413,349</td>
<td>3,163,195</td>
<td>4,561,567</td>
<td>7,724,762</td>
</tr>
<tr>
<td>1868</td>
<td>3097</td>
<td>65,413,349</td>
<td>3,163,195</td>
<td>4,561,567</td>
<td>7,724,762</td>
</tr>
<tr>
<td>1870</td>
<td>3458</td>
<td>122,210,102</td>
<td>4,751,929</td>
<td>6,341,093</td>
<td>11,692,322</td>
</tr>
<tr>
<td>1905</td>
<td>3804</td>
<td>115,986,000</td>
<td>5,014,452</td>
<td>6,583,256</td>
<td>11,667,708</td>
</tr>
</tbody>
</table>

The total capital of all the Scott companies in 1888 was £114,120,110; by 1910 it exceeded £185,000,000. Since the passing of the Light Railways Acts 1896, the Board of Trade has sanctioned several light railways. By 1910 the total railway mileage was 3,844.

Mining Industry.—Coal and iron, generally found in convenient proximity to each other, are the chief sources of the mineral wealth of Scotland. The principal coalfields are Lanarkshire, which yields nearly half of the total output, Fife, Ayrshire, Strathclyde and Midlothian, but coal is also mined in the counties (usually reckoned as forming part of one or other of the main fields) of Linlithgow, Haddington, Dumbarton, Clackmannan, Kinross, Dumfries, Renfrew, Argyll and Peebles, while a small quantity is obtained from the Oolite at Brora in Sutherland. The earliest records concerning coal pits appear to be the charters granted, towards the end of the 12th century, to William Oldbridge of Carriden in Linlithgowshire, and in 1291 to the abbot and convent of Dunfermline conferring the privilege of digging coal in the lands of Pittencrieff. The monks of Newbattle Abbey also dug coal at an early date from surface pits on the banks of the Esk. Aeneas Sylvius (Pope Pius II.), who visited Scotland in the 15th century, refers to the coalburning 78° door received at church doors due to a species of stone which they burn instead of wood; and although the value of coal for smiths' and artificer's work early recognized it was not used for domestic purposes till about the close of the 16th century. In 1606 an act was passed binding colliers to perpetual service at the works where they were employed, and they were not fully emancipated till 1799. An act was passed in 1843 forbidding the employment of children of tender years and women in underground mines. In 1905 there were 492 coal and iron mines in operation, employing 199,939 hands (89,516 below ground and 20,443 above). The total output in that year amounted to 55,839,297 tons, valued at £10,639,433. The total quantity worked up to the end of 1868 was 1,514,062 tons, the quantity then remaining to work being estimated at 4,639,783,000 tons. The quantity of coal exported in 1895 from the principal Scottish ports was 7,863,512 tons, and the quantity shipped coastwise to ports of the United Kingdom amounts annually to about 2½ million tons in addition.

The total capital of the iron trade dates from the establishment of the Carron ironworks near Falkirk in 1760, but it was the introduction of railways that gave the production of pig-iron its greatest impetus. In 1796 the quantity produced was 18,640 tons, which had only doubled in thirty-four years (37,500 tons in 1830). In 1840 this had grown to 241,000 tons, in 1845 to 475,000 tons and in 1865 to 1,164,000 tons, almost the height of its prosperity, for in 1905 the product of 101 blast furnaces only amounted to 1,375,125 tons, and in the interval there were years when the output was below one million tons. More than one-third of the iron ore (that chiefly worked being Black Band ironstone) comes from mines which also yield coal. The iron producing counties in the order of their output are Ayr, Lanark, Renfrew, Linlithgow, Dumbarton, Fife, Midlothian and Stirling, the first three being the most productive. In 1905 the quantity of ore raised was 832,388 tons, valued at £320,875 and yielding 240,716 tons of metal. The imports of ore in that year amounted to 1,862,444 tons, of the value of £4,420,379.

The oil shale industry is wholly modern and has attained to considerable magnitude since it was established (in 1851 and following years). Linlithgowshire yields nearly three-fourths of the total output. Midlothian produces nearly one-fourth, a small quantity is obtained from Lanarkshire, and there is an infinitesimal supply from Sutherland. The mineral is chiefly obtained from seams in the Calcareous Sandstone at the base of the Carboniferous rocks.

Fire-clay is produced in Lanarkshire, which yields nearly half of the total output, and Ayrshire and, less extensively, in Stirlingshire, Fifeshire, Renfrewshire, Midlothian and a few other shires. With the exception of the counties of Orkney, Shetland, Caithness, Sutherland and Inverness, granite is quarried in every shire in Scotland, but the industry predominates in Aberdeenshire, and is of considerable importance in Kirkcudbrightshire; limestone is quarried in Lanark, Dunbarton, Renfrew and Ayr and some firms are established in Dumfriesshire and Leadhills in Lanarkshire. In 1905 there were produced 2774 tons of dressed lean ore, of the value of £25,823, yielding 2167 tons of lead in smelting and 11,409 oz. of silver. Gold and silver are also produced in small quantities. The total output of lead in 1905 was 4,390 tons, valued at £10,030, and the total output of silver was 1,142,335 valued at £320,761, is quarried in nearly every county, but the industry flourishes particularly in the shires of Lanark, Dumbarton and Ayr and also in the counties of Selkirk, Roxburgh and Peebles. Of the total output of ironstone, 6,932 tons, valued at £10,030, is mined in Dumfriesshire and Leadhills in Lanarkshire. In 1905 there were 66 mines apart from coal and iron, employing altogether 5329 hands, and 1127 quarries employing 7790 persons inside the quarries and 4797 persons outside, or 12,197 in all. Alumina is treated at works near Foyers in the shire of Inverness, where abundant water power enables electricity to be generated cheaply. The Foyers installation is the largest water-power plant in the United Kingdom.
SCOTLAND

Manufactures.

(a) Wool and Woollen. — Although a company of wool weavers was incorporated by the town council of Edinburgh in 1475, the cloth worn by the wealthier classes down to the beginning of the 17th century was of English or French manufacture, the lower classes wearing "coarse cloth made at home," a custom still prevalent in the remotest districts of the Highlands. In 1607 seven Flemings were brought to Edinburgh to teach the manufacture of serge and broadcloth, and eight years later a company of Flemings was established in the Canongate (Edinburgh) for the manufacture of cloth under the protection of the king, but, notwithstanding also the establishment in 1681 of an English company for the manufacture of woollen fabrics near Haddington, the industry for long made little progress. In fact its importance dates from the introduction of machinery in the 19th century. The most important branch of the trade, that of tweeds, first began to attract attention shortly after 1830; though still having its principal seat in the district from which it takes its name, including Galashiels, Hawick, Innerleithen and Selkirk, it has extended to other towns, especially Aberdeen, Elgin, Inverness, Stirling, Bannockburn, Dumfries and Paisley. Carpet of all kinds was manufactured in Kilmarnock as late as 1817, but is also carried on in Aberdeen, Ayr, Bannockburn, Glasgow, Paisley and elsewhere. Tartans are largely manufactured in Tillitcoultry, Bannockburn and Kilmarnock, and shawls and plaid in several towns. Fingerings and many other kinds of woollen yarns are manufactured at Alloa, the headquarters of the industry. In 1903 the number of operatives in the woollen industry (including combers and sorters, spinners, weavers and workers in other processes) amounted to 24,906. In 1850 the employed numbered 10,230.

(b) Flax, Hemp and Jute. — The manufacture of cloth from flax is of very ancient date, and towards the close of the 16th century Scottish linens were largely exported to foreign countries, as well as to England. Regulations in regard to the manufacture were passed in 1641 and 1661. In a petition presented to the privy council in 1684 complaining of the severe treatment of Scotsmen selling linen in England, it was stated that 12,000 persons were engaged in the manufacture. Through the intercession of the secretary of state with the king these restrictions were removed. Further to encourage the trade it was enacted in 1696 that the bodies of all persons, except its poor tenants and cotters, should be buried in plain linen only spun and made within the kingdom. The act was renewed in 1693 and 1695, and in the former year another act was passed prohibiting the export of lint and permitting its import free of duty. At the time of the Union the annual amount of linen cloth manufactured in Scotland is supposed to have been about 1,500,000 yards. The Union gave a considerable impetus to the manufacture, as did also the establishment of the Board of Manufactures in 1727, which applied an annual sum of £2,650 to its encouragement, and in 1729 established a colony of French Huguenots in Edinburgh, on the site of the present Picardy Place, to teach the spinning and weaving of cambric. From the 1st of November 1727 to the 1st of November 1728 the amount of linen cloth stamped was 2,183,978 yds., valued at £103,312, but for the year ending the 1st of November 1822, when the duties as to the inspection and stamping of linen ceased, it had increased to 36,268,530 yds., valued at £1,306,296. The counties in which the manufacture is now most largely carried on are Forfar, Perth, Fife and Aberdeen, but Renfrew, Lanark, Edinburgh and Ayr are also extensively associated with it. Dunfermline is the principal seat of the coarser fabrics, Dunfermline of the table and other finer linens, while Paisley is widely known for its sewing threads. The allied industry of jute is the staple industry of Dundee. In 1890 the number employed in the linen industry was 34,222, which had declined in 1901 to 23,570. In 1890 the operatives in the jute and hemp industry numbered 30,885, and in 1901 they were (including workers in canvas, sacking, salicloth, rope, twine, mats, cocoa fibre) 46,550.

(c) Cotton. — The first cotton mill was built at Rothesay by an English company in 1779, though Penicuik also lays claim to priority. The Rothesay mill was soon afterwards acquired by David Dale, who was the agent for Sir Richard Arkwright, and had the invaluable aid of his counsel and advice. Dale also established cotton factories in 1783 at New Lanark, afterwards so closely associated with the socialistic schemes of his son-in-law, Robert Owen. The counties of Lanark and Renfrew are now the principal seats of the industry. The great majority of the cotton factories are concentrated in Glasgow, Paisley and the neighbouring towns, but the industry extends in other districts of the west and is also represented in the counties of Aberdeen, Perth and Stirling. As compared with England, however, the manufacture has stagnated. The number of hands employed in 1850 was 34,325, in 1875 it was 35,652 and in 1901 (including bleachers, dyers, printers, calenderers, &c.) it was 34,057.

(d) Silk and other Textiles. — The principal seats of the silk manufacture are Paisley and Glasgow. In 1885 the number employed amounted to 600 and in 1901 to 2,424. The weaving of lace curtains has made considerable progress, in 1878 only 1,234 hands being employed against 287 in 1785. In fabrics, a characteristic Border industry, with its chief seat at Hawick, employed 11,057 hands in 1901. The total number of persons working in textile fabrics in 1901, exclusive of 21,849 drapers, mercers and other dealers, but including 43,040 employed in mixed or unspecified materials (hosiery, lace, carpets, rugs, fancy goods, &c., besides a large number of 'undefined' factory hands and weavers), amounted to 174,547 persons.

(e) Whisky and Beer. — Scotland claims a distinctive manufacture in whisky. Though distillation was originally introduced from England, by 1771 large quantities of spirits were already being conveyed to the English market. The legal manufacture of whisky was greatly checked in the earlier part of the 19th century by occasional advances in the duty, but after the reduction of 2s. 4d. per proof gallon in 1823 — the duty amounted in 1904 to 11s. per proof gallon — the number of licensed distillers rapidly increased, to the discouragement of smuggling and illicit distillation. In 1824 the number of gallons made amounted to 5,085,731; by 1855 this had more than doubled; in 1884 it was 20,164,662; in 1900 it reached 31,798,465; and in 1904 it had receded to 27,110,977. More than four-fifths of the distilleries at work in the United Kingdom are situated in Scotland. The leading distilling counties are Argyll, Banff, Elgin, Inverness and Aberdeen, Perth and Ross and Cromarty, while the industry is found in seventeen other shires. In 1893-1894 the total net duty received for home-made spirits amounted to £5,461,198 and in 1903-1904 to £7,276,125. The production has attained to colossal dimensions. In 1893-1894 the quantity of proof gallons in bond was 61,757,754, and in 1903-1904 it amounted to 121,397,951, the production having practically doubled itself within ten years. Ale was a common beverage as early as the 12th century, one or more breweries being attached to every populous house in the English market. The legal manufacture of whisky was greatly checked in the beginning of the 18th century that the threatened imposition of a tax on malt in 1725 provoked serious riots in Glasgow and clamour for repeal of the Union; and sixty years afterwards Robert Burns in certain poems voiced the popular sentiment concerning the "curst restrictions" proposed by the Excise on beer and whisky. Though ale has been superseded by whisky as the national beverage, brewing is extensively carried on in Edinburgh, whose ales are in high repute, Leith, Alloa and elsewhere. In 1885 the number of barrels of beer, duty-paid, amounted to 1,233,923 in 1893-1894 to 1,713,559; and in 1903-1904 to 1,877,978. In 1893-1894 the duty (6s. 3d. the barrel) yielded £473,111 and in 1903-1904 (7s. qd. the barrel) £649,866. After 1893-1894, when the number of brewers licensed to brew for sale numbered 149, there was a steady fall to 117.
in 1903-1904, alleged by the Inland Revenue Commissioners to be due to the disappearance of the small brewer. The practice of private brewing exhibits a still greater decline—from 272 to 84 in the years named. Notwithstanding the enormous turnover and output and the large capital invested, neither distilling nor brewing gives employment to many hands, the figures for 1901 being 1350 maltsters, 2053 brewers and 1970 distillers.

(f) Miscellaneous.—Paper, stationery and printing are industries in which Scotland has always occupied a foremost position. A paper mill was erected in 1675 at Dalry on the Water of Leith in which French operatives were employed to give instruction, with the result, in the words of the proprietors, that “grey and blue paper was produced much finer than ever was done before in the kingdom.” Midlothian has never lost the lead then secured. The paper mills at Penicuik and elsewhere in the vale of the Esk and around Edinburgh are flourishing concerns, and the industry is also vigorously conducted near Aberdeen. Paper manufacture is largely developed at Glasgow, Aberdeen and Edinburgh. In 1901 the number of persons employed in the paper and stationery industries amounted to 19,602. Ever since it was established by Andrew Myller and Walter Chepman, early in the 16th century, the Edinburgh press has been renowned for the beauty and excellence of its typography, a large proportion of the books issued by London publishers emanating from the printing works of the Scottish capital. Printing is also extensively conducted on in Glasgow and Aberdeen, and Cuparrie enjoyed considerable repute for its press. The number of persons engaged in the production of books and other printed matter (including lithographers, copper, steel plate and “process” printers, bookbinders, publishers and booksellers and distributors) amounted in 1901 to 24,139. The first sugar refinery was erected in 1765 at Greenock, which, despite periodical vicissitudes, has remained the principal seat of the industry, which is also carried on at Leith, Glasgow and Dundee. The making of preserves and confectionery flourishes in Dundee, Aberdeen and Edinburgh. Kirkcaldy is the seat of the oil-fish-cloth and linseed industries, and latter industry flourished in 1837. The headquarters of the chemical manufacture are situated in Glasgow and the vicinity, while explosives are chiefly manufactured at Stevenston and elsewhere in Ayrshire, and at certain places on the Argyll coast. Among occupations providing employment for large numbers were trades in connexion with building and works of construction (136,639 persons in 1901), and furniture and timber (39,000), while the conveyance of passengers, parcels and messages employed 163,102 (railway, 43,957; roads, 53,813; sea, rivers and canals, 20,431; docks, harbours and limehouses, 10,659; and storage, porterage and messages, 35,142).

Commerce and Shipping.—That Scotland had a considerable trade with foreign countries at a very early period may be inferred from the importation of rich dresses by Malcolm III. (d. 1093), and the enjoyment of Oriental luxuries by Alexander I. (d. 1124). His successor, David I., receives the special praise of Fordun for enriching “the ports of his kingdom with foreign merchandise.” In the 13th century the Scots had acquired a considerable celebrity in shipbuilding; and a powerful French baron had a ship specially built at Inverness in 1249 to convey him and his vassals to the Holy Land. The principal shipowners at this period were the clergy, who embarked the wealth of their religious houses in commercial enterprises. Definite statements regarding the number and tonnage of shipping are, however, lacking till the 18th century. From two reports printed by the Scottish Burgh Record Society in 1851, it appears that the number of vessels belonging to the principal ports—Leith, Dundee, Glasgow, Kirkcaldy and Montrose—in 1656 was 58, the tonnage being 3140, and that by 1692 they had increased to 97 vessels of 6710 tons. The figures only represent a portion of the total shipping of the kingdom. At the time of the Union in 1707 the number of vessels was 215 of 14,483 tons.

### TABLE XIV.—Showing Registered Tonnage in Port in Specified Years.

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<thead>
<tr>
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<tbody>
<tr>
<td>1850</td>
<td>169</td>
<td>3,0827</td>
<td>3172</td>
<td>552,212</td>
<td>2715</td>
<td>727,942</td>
<td>2065</td>
<td>827,295</td>
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<tr>
<td>1860</td>
<td>169</td>
<td>3,0827</td>
<td>3172</td>
<td>552,212</td>
<td>2715</td>
<td>727,942</td>
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<tr>
<td>1884</td>
<td>169</td>
<td>3,0827</td>
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<td>2715</td>
<td>727,942</td>
<td>2065</td>
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<tr>
<td>1900</td>
<td>169</td>
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<td>3172</td>
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<td>727,942</td>
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<td>2715</td>
<td>727,942</td>
<td>2065</td>
<td>827,295</td>
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</table>

Table XIV. exhibits the growth of the foreign and colonial trade at specified dates since 1755, showing how it advanced by leaps and bounds during the latter part of the 19th century. Thought the value of imports into Scotland in 1850 was only one-eighth of that in 1905, this does not represent the due proportion of foreign wares used and consumed in Scotland, for the obvious reason that large quantities of goods are brought into the country by the railway system, largely by the tea, consumed in Great Britain being imported into London, while several ports have almost a monopoly of certain other imports. Foreign and colonial merchandise transhipped was valued at £89,289 in 1859 and at £716,246 in 1906. The customs revenue rose from £1,065,080 in 1859 to £3,399,141 in 1903. Judged by the combined value of their imports and exports the chief ports are Leith and Glasgow. These figures only represent a portion of the total shipping of the kingdom. At the time of the Union in 1707 the number of vessels was 215 of 14,483 tons.

### TABLE XV.—Foreign and Colonial and Coastwise Trade: Tonnage of Vessels.

<table>
<thead>
<tr>
<th>Year</th>
<th>Coastwise Entered</th>
<th>Cleared</th>
<th>Colonial and Foreign Entered</th>
<th>Cleared</th>
<th>Total Entered</th>
<th>Cleared</th>
</tr>
</thead>
<tbody>
<tr>
<td>1855</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1860</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1870</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1880</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1890</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1900</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
</tr>
<tr>
<td>1905</td>
<td>1,965,552</td>
<td>2,057,036</td>
<td>668,076</td>
<td>840,150</td>
<td>2,633,608</td>
<td>2,898,086</td>
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</tbody>
</table>

Table XVI. shows the growth of foreign and colonial trade since 1755.
**TABLE XVII. — Chief Ports (1905).**

<table>
<thead>
<tr>
<th>Port.</th>
<th>Order</th>
<th>Imports and Exports. £</th>
<th>Order</th>
<th>Colonial and Foreign Tonnage In and Out.</th>
<th>Order</th>
<th>Coastwise Trade In and Out.</th>
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</thead>
<tbody>
<tr>
<td>Glasgow</td>
<td>1</td>
<td>38,201,732</td>
<td>1</td>
<td>4,472,071</td>
<td>1</td>
<td>4,381,957</td>
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<tr>
<td>Leith</td>
<td>2</td>
<td>17,975,078</td>
<td>2</td>
<td>2,210,015</td>
<td>4</td>
<td>1,410,160</td>
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<tr>
<td>Grangemouth</td>
<td>3</td>
<td>6,273,317</td>
<td>3</td>
<td>1,625,978</td>
<td>4</td>
<td>859,177</td>
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<tr>
<td>Dundee</td>
<td>4</td>
<td>5,658,783</td>
<td>7</td>
<td>320,103</td>
<td>2</td>
<td>867,139</td>
</tr>
<tr>
<td>Greenock</td>
<td>5</td>
<td>2,640,457</td>
<td>10</td>
<td>312,310</td>
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<td>3,416,007</td>
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<td>Methil</td>
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<td>1,127,032</td>
<td>3</td>
<td>1,716,355</td>
<td>8</td>
<td>524,244</td>
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<tr>
<td>Aberdeen</td>
<td>7</td>
<td>1,035,933</td>
<td>8</td>
<td>217,410</td>
<td>10</td>
<td>1,013,906</td>
</tr>
<tr>
<td>Granton</td>
<td>8</td>
<td>932,480</td>
<td>5</td>
<td>202,305</td>
<td>7</td>
<td>2,308,078</td>
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<tr>
<td>Burntisland</td>
<td>9</td>
<td>836,743</td>
<td>6</td>
<td>1,305,945</td>
<td>9</td>
<td>294,261</td>
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<tr>
<td>Ardrossan</td>
<td>10</td>
<td>651,124</td>
<td>6</td>
<td>326,356</td>
<td>5</td>
<td>1,094,439</td>
</tr>
</tbody>
</table>

**Parliamentary Government.** — By the Act of Union in 1707 Scotland ceased to have a separate parliament, and its government was assimilated to that of England. In the parliament of Great Britain its representation was fixed at sixteen peers elected in Holyrood Palace by the peers of Scotland at each new parliament in the House of Lords, and at forty-five members in the House of Commons, the counties returning thirty and the burghs fifteen. The power of the sovereign to create new Scottish peerages was answered by the fact that many of them numbered the number of a diminishing quantity. By the Reform Act of 1832 the number of Scottish representatives in the Commons was raised to fifty-three, the counties under a slightly altered arrangement returning thirty members as before, and the burghs, reinforced by the erection of various towns into parliamentary burghs, twenty-three; the second Reform Act (1867) increased the number to sixty, the universities obtaining representation by two members, while two additional members were assigned to the counties and three to the burghs; by the third Reform Act of 1885 the representation of the counties and five to that of the burghs, the total representation being raised to seventy-two. The management of Scottish business in parliament has since 1885 been under the charge of the secretary for Scotland.1

**Law.** — At the Union Scotland retained its old system of law and legal administration, a system modelled on that of France; but since the Union the laws have been gradually brought into line with those of England. The criminal law of the two countries being now practically identical, although the methods of procedure are in many respects different. The Court of Session, as the supreme court in civil cases, is called and held at Edinburgh, dates from 1535, and was formed on the model of the parlement of Paris. Since the Union it has undergone certain modifications. It consists of thirteen judges, acting in an Inner and an Outer House. The Inner House has according to tradition, a membership of three, appointed by the lord president of the whole court, and the second by the lord justice clerk. In the Outer House five judges, called lords ordinary, sit in separate courts. Appeals may be made from the lords ordinary to either of the divisions of the Inner House, and, if the occasion demands, the opinion of all the judges of the Court of Session may be called for; but whether this be done or not the decision is regarded as a decision of the Court of Session. Appeals may be made from the Court of Session to the House of Lords. The lord justice general (lord president), the lord justice clerk and the other judges of the Court of Session form the high court of justice of Scotland, instituted in 1672, and which sits at Edinburgh for the trial of cases from the three Lothians and of cases referred from the circuit courts. The latter meet for the south at Jedburgh, Dumfries and for the north at Perth, Edinburgh and Inverness; and for the north at Perth, Aberdeen, Dundee and Inverness. The law agents who undertake cases to be decided before the supreme courts are either solicitors before the supreme courts (S.S.C.) or writers to the signet (W.S.), the latter of whom possess certain special privileges. The lawyer authorized to plead before the supreme courts is termed an advocate. The principal law officer of the crown is the lord advocate, who is assisted by the solicitor-general and by advocates-depute. The practical administration of the law in a county is under the control of the sheriff-depute, who combines with his judicial duties certain administrative functions. The office, which once implied a much less restricted authority than the sheriff principal, is now as old as the reign of Alexander I. (d. 1124), when the greater part of the kingdom was divided into twenty-five sheriffdoms. In the latter part of the 13th century they numbered thirty-four, but not all were in being. Sheriffs in all, who except in the counties of the west and of Lanarkshire, need not reside in the counties to which they are appointed and are not prohibited from private practice. They are assisted by sheriffs-substitute, upon whom the bulk of the work falls, who must hold the sheriff's seat, and are not debarred from private practice. At one time the functions of the sheriff-principal were confined to one county, but by an act passed in 1855 it was arranged that as sheriffs held various counties, so also could the sheriff principal. Thus Aberdeen, Kincardine and Banff form one group, and the three Lothians with Peebles another. The public prosecutor for counties is the procurator-fiscal, who takes the

1 A separate secretary of state for Scotland was in existence after the Union, but its establishment was abolished by the Reform Act 1885. The secretary of state for the home department was responsible for the conduct of Scottish business, being advised in these matters by the lord advocate. The secretary for Scotland is not one of the principal secretaries of state.
in initiative in regard to suspected cases of sudden death, although in this country the whole weight of the law rests upon the execution of the coroners. The sheriff is the chief executive officer of the county, and his duty is the preserve of abuses of the office, and the levy of taxes for county expenditure, were practically superceded by the county councils, which are also the local authority under the Contagious Diseases (Animals) and the Public Health Acts. The county councils are administered according to local administrative duties formerly entrusted to the justices of the peace, and may also enforce the Rivers Pollution Act each within its own district.

The county councils are strengthened by certain special committees, such as the education committee. These committees have already been defined, and the standing joint committee—one half appointed by the county council, the other half by the Commissioners of Supply. Each county council, and for the purposes of the registrar-general, and for police purposes part of the area of one county may be brought into the area of another. For parliamentary purposes some counties have been united, as Clackmannan and Forfar, and Perth and Kinross. The number of sheriffs has been reduced from three to one, and the county council has a resident or chairman appointed by the crown.
Sir John Rhys, seems improbable: for the non-English place-names of Scotland are either Gaelic or Brythonic (more or less Welsh), and the names of Pictish kings are either common to Gaelic and Welsh (or Cymric, or Brythonic), or are Welsh in their phonetics. Mr Skene held that the Picts were a Gaelic-speaking people, but the weight of philological authority is with Mr Whitley Stokes, who says that Pictish phonetics, "so far as we can ascertain them, resemble those of Welsh rather than of Irish" (see Zimmer, Das Matterrecht der Piken; Rhys, Royal Commission's Report on Land in Wales, Celtic Britain, Rhind Lectures; Skene's Celtic Britain, Lectures on the Early History of the Kirk of Scotland, p. 447; MacCalmán's edition, 1892, of Skene's Highlander of Scotland).

The Roman occupation has left not many material relics in Scotland, and save for letting a glimmer of Christianity into the south-west, did nothing which permanently affected the institutions of the partially subdued peoples. In A.D. 81-82 Agricola garrisoned the Roman frontier between Forth and Clyde, and in 84 he fought and won a great battle farther north, probably on the line of the Tay. His enemies were men of the early iron age, and used the chariot in war. They fought with courage, but were no match for Roman discipline; it was, however, in their subsequent following of the tribes farther north, or were the difficulties of pursuit thoroughly overcome till after the battle of Culloden in 1746. The most important Roman stations which have hitherto been excavated are those of Birrenswork, on the north side of Solway Firth; Ardoch, near the historical battlefield of Sheriffmuir (1715); and Newstead, a site first occupied by Agricola, under the Elidon hills. Roman roads extended, with camps, as far as the Moray Firth. It is not till A.D. 300 that we read of "the Caledonians and other Picts"; in the 4th century they frequently harried the Romans up to the wall of Hadrian, between Tyne and Solway. About the end of the century the southern Picts of Galloway, and tribes farther north, were partially converted by St Ninian, from the candida casa of Whithern. The Scots, from Ireland, also now come into view, the name of Scotland being derived from that of a people really Irish in origin, who spoke a Gaelic (see Cetic) akin to that of the Caledonians, and were in a similar stage of higher barbarism. The Scots made raids, but, as yet, no national settlement.

The withdrawal of the Romans from Britain (410) left the northern part of the island as a prey to be fought for by warlike tribes, Berwickshire, Roxburghshire, the northern part of Northumberland, Durham and Yorkshire to the Humber. In later days the Celtic kings of northern and western Scotland succeeded in holding, on vague conditions of homage to the English crown, the English-speaking region of historic Scotland. That region was the most fertile, had the best husbandry, and possessed the most civilized population, a people essentially English in language and institutions, but indOMITably attached to the Celtic dynasties of the western and northern part of the island. It was the English-speaking south-east part of Scotland, gradually extended to as to comprise Fife and the south-west (Lanarkshire, Dumfriesshire, Strathclyde, Dumbartonshire, Ayrshire and Renfrewshire), which learned to adopt the ideas of western Europe in matters political, municipal and ecclesiastical, while it never would submit to the domination of the English crown. This English element, in a nation ruled by a Celtic dynasty, prevented Scotland from becoming, like Wales, a province of England.

On the west of the northern part of the English kingdom of Bernicia, severed from that by the Forest of Etrick, and perhaps by the mysterious work of which traces remain in the "Catraill," was founded a kingdom of Pictish origin, which included the territory and population, later anglicized, of Renfrewshire, Ayrshire, Lanarkshire, Dumfriesshire, and, south of the historic border, Cumberland and Westmorland to the Dervent. Strathclyde was essentially Welsh, and it may be noted that this region, centuries later, was the centre of the recalcitrant Covenanters, a people enthusiastically religious in their own way. Later, this region was the hotbed or "revivals" and the cradle of Irvingism. Whether the influence of Cymric blood may be traced in these characteristics is a dubious question.

In addition to the kingdom of Cymric, the north, from Cape Wrath to Lochaber, in the west, and to the Firth of Tay, on the east, was Pictland; and the vernacular spoken there was the Gael. The west, south of Lochaber to the Mull of Kintyre, with the isles of Bute, Islay, Arran and Jura, was the realm of the Dalriadic kings, Scots from Ireland (503): here, too, Gaelic was spoken, as among the "Southern Picts" of the kingdom of Galloway. Such, roughly speaking, were the divisions of the country which arose as results of the obscure wars of the 5th, 6th and 7th centuries.

As regards Christianity in these regions, Protestantism, Presbyterianism, have only here a battle-ground. The mission of St Ninian (397) was that of a native of the Roman province of Britain, and the church which he founded would bear the same relation to Rome as did the church in Britain. There are maternal relics of his church, bearing the Christian monogram, and there are stones with Latin epitaphs; these objects are wholly unlike the Irish crosses and inscriptions of the Gaelic church. If Bede is right in saying that Ninian was trained in Rome, then, the early Christianity of Scotland was Roman.

In the chronicles of Prosper of Aquitaine record that Palladius was ordained by Pope Celestine as the first bishop "to the believing Scots," that is, to the Irish. If there were "believing Scots" in Ireland before the first bishop was ordained, their ecclesiastical constitution cannot have been episcopal. Fordun, in the 14th century, supposed that the clergy, before Palladius, were presbyters or monks. As Hector Boece, "that pillar of falsehood," dubbed these presbyters "Culdees," "the pure Culdee," a blameless presbyterian, almost prehistoric, has been claimed as the ancestor of Scottish presbyterianism; and episcopacy has been regarded as a deplorable innovation. The Irish church has paid more reverence to St Patrick than to Palladius (375-463), and the church of St Patrick, himself a figure as important as obscure, certainly abounded in bishops; according to Angus the Culdee there were 1071, but these cannot have been bishops with territorial sees, and the heads of monasteries were more potent personages.

The Dalriadic settlers in Argyll and the Isles, the (Irish) Scots, were Christians in the Irish manner. Their defeat by the Picts, in 565, induced the Irish St Columba to endeavour to convert the conquering Picts. In 565-566 he founded his mission and monastery in the isle of Iona, and journeying to Inverness he converted the king of the Picts. About the same date (532), the king of Cymric Strathclyde summoned, from exile in Wales, St Kentigern, the patron saint of Glasgow, who restored a Christianity almost or quite submerged in paganism, Celtic and English. The pagan English of Deira (603) routed under Æthelfrith the Christian Scots of Argyll between Liddesdale and North Tyne: and pagan English for more than a century held unopposed the
region from Forth to Humber. In 617 Æthelfrith fell in battle with the English, East Anglia, and his sons, Eanfrid and Oswald, fled to the North. Eanfrid, by his marriage with a Pictish princess, became the father of the Pictish king Talorcarn, while Oswald was baptized into the Columban church at Iona. In a season of war and turmoil Oswald won the crown of the northern English kingdom, stretching to the Forth, with its capital at Edwinsburgh (?Edinburgh, a dubious etymology), and in that kingdom St Aidan, from Iona, erected the Columban churches under the auspices of Oswald, whose brother Oswin dominated Strathclyde and Pictland up to the Grampians; the English example for a time, extending itself and Anglicizing more of the culture of the Scottish that was to be.

Thus the Dalriadic Scots had handed on the gift of Irish Christianity, with such literature as accompanied it in the shape of Latin, and reading and writing, to the northern English from Forth to Humber. The ecclesiastical constitution thus introduced was one of missionary monastic stations, settled in fortified villages. The Celtic church, unluckily, differed from the Roman on the question of the method of calculating the date of Easter, the form of the tonsure, and other usages, one of them apparently relating to Celtic Asceticism, which from this time, extended itself and Anglicizing more of the culture of the region that was to be.

At the Synod of Whitby, 664, in which the church of the English was established, it was decided to adopt the Roman method of calculating Easter, and to abandon the tonsure and other practices of the Celtic church. The result was the severance of these regions from the main current of western ecclesiastical ideas. Conceivably these sentiments of Columbans never wholly died out in the Scottish kingdom of later history, whose kings were always apt to treat Rome in a cavalier manner, laughing at interdicts and excommunications. A papal legate, in Bruce’s time, was no more safe, if his errand was undesirable, than under John Knox, when Mary Stuart were the crown. “All the world errs, Rome and Jerusalem err, only the Scoti and the Britones are in the right.” is quoted as the opinion of the Scoti and Britones in 634. It appears that Scotland was naturally Protestant against Rome as soon as she was Christian.

Meanwhile Rome was too strong, and in 664, in a synod held at Whitby, St Wilfrid procured the acceptance of Roman as against Celtic Christianity. Return to the questions. On the situation of the Holy Communion. English Christians overcame the Celtic divines of Iona, and in 710 even in Pictland they came into the customs of Western Christianity. The church of the Celtic tribe thus yielded to the church of the Roman empire.

There followed an age of war in which the northern English were routed at Nectan’s mere, in Forfarshire, and driven south of Forth. In the quarrels of Picts and of Scots of Argyll, the Pictish king, Angus MacFergus (ob. 761), was victorious while in his prime, and then consolidated Pictland; but (602–829) the Scandinavian searovers began to hold large territories in Scotland, weakened the Picts, and made easy their conquest by Kenneth MacAlpine of Kintyre, the king of the Dalriadic Scots of Argyll. In 860 this Scot became king of the Picts. Old legends represent him as having exterminated the Picts to the last man; and the Picts become, in popular tradition, a mythical folk, hardly human, to whom great feats, including the building of Glasgow cathedral, are attributed, as the walls of Tiresius and Mycenae in Greece were traditionally assigned to the energy of the Cyclopes. In 1614 Sir Walter Scott met a dwarf named Tallant in the Orkneys, whom the natives regarded as a “Pecht” or Pict.

There was, of course, in fact, no extermination of the Picts, there was merely a change of dynasty, and alliance between Picts and Scots, and that change was probably made in accordance with Pictish customs of succession. Kenneth MacAlpine, though son of a Scottish father, was probably, though not certainly, a Pict on the mother’s side, and in Pictland the crown was inherited in the female line. The consequence was that what had been Pictland came to be styled Scotland. The king of Alban was a Scot in the paternal line. His conquest was not achieved at a blow, but his language, Gaelic, prevailed. Henceforth, despite the incursions of the Scandinavians, and partly because of them, the ecclesiastical and royal centres of life are moved to the south and the east, though the king of Alban (Arran) is not always master of his Ri, or subordinate princes of the seven provinces (Moirlath). His position is rather that of an overlord, or Bretwalda, like Agamemnon’s among the Achaean anachtes. He allies himself with Cymric Strathclyde, and by constant raids, and thanks to English weakness caused by Danish invasions, he extends his power over English Lothian.

A marriage of the daughter of Kenneth MacAlpine with the Welsh prince of Strathclyde gives Scotland a footing in that region; in short, Scotland slowly advances towards and even across the historic border.

Through this contact with and actual tenure of English lands arose the various so-called “submissions” of kings of Scotland to the English crown. Thus (924) the English Chronicle asserts that Constantine, king of Scotland, “chose Edward King to father and lord.” It is impossible here to analyse the disputes as to whether, in Freeman’s words “from his marriage to the 14th century” (the means, to Rannochburn) “the vassalage of Scotland was an essential part of the public law of the Isle of Britain.” In fact this vassalage was claimed at intervals by the English kings, and was admitted by Scottish kings for their lands in England; but as regards Scotland, was resisted in arms whenever opportunity arose. Each submission “held not long,” and the practical result was that (945) Malcolm acquired northern Strathclyde, “Cumberland, Galloway (?) and other districts,” while another Malcolm (1018) took Lothian, the northern part of Northumbria, after winning a great battle at Carham on the Tweed.

The Celts, Scoto-Picts, of Alban, had thus annexed a great English-speaking region, which remained loyal to their dynasty, the more loyal from abhorrence of the Norman conquerors. The English or anglicized element in Scotland was never subjugated by England, save during the few years of the Cromwellian Commonwealth, and was supported (with occasional defections, and troubles caused by dynastic Celtic risings) by the Celtic element in the kingdom during the long struggle for national independence. Scotland, in short, was too English to be conquered by England. Poor, distracted, threatened on occasion by the Danes or the Normans, yet as an independent state it existed, and for the long interval between the union of 1707, when English men were admitted to participate in its privileges and in its administration. Such were the consequences, in the sequel, of what seemed a disastrous event, the absorption, by a Celtic kingdom, of a large and fertile region of northern England.

The English element in the realm of Malcolm II. (1005–1034) was the conducting medium of western ideas which naturally appealed to the interests and the ambitions of that prince. On looking at the genealogical tree of the dynasty of Kenneth MacAlpine, we see that from the line of his death (955) to the accession of Duncan II. (1001) to the death of Malcolm II. (1034) no monarch is succeeded by his own son or grandson. The same peculiarity appears in the list of the ancient kings of Rome, but these are entangled in mythology. In the dynasty of Kenneth the succession to the crown alternated thus: he was succeeded by his brother Donald, who was followed by his nephew, Kenneth’s son, Constantine; Constantine’s brother, Aedh, followed; and henceforth till 957, the kings were alternately chosen from the houses of Constantine and...
and Aodh. It was the custom to appoint the successor to the
king, his “Tanist,” at the same time as the king himself.
Malcolm II succeeded his brother's court, and, in accordance
with the native system of royal inheritance, should have been followed
by the unnamed grandson of his own predecessor, Kenneth III.
But Malcolm was accused of putting his legitimate successor out of
the way, and thus securing the succession of his own grandson,
Duncan, a son of his daughter, Bethoc, and his husband Crinan,
protector of the abbey (or lay abbot) of Dunkeld. Malcolm thus
set the example of advance to the western system of royal
successions, while in Crinan's lay tenure of the abbacy of
Dunkeld we see the habit of appropriating ecclesiastical revenues
which again became so common about a century before the
Reformation.

The innovation of Malcolm II. brought no peace but a sword.
Boedhe, son of Kenneth III., left a daughter, Grucha, who
inherited the claims of the unnamed son of Boedhe slain by order
of Malcolm. Grucha married Gilgocgain, and had issue male,
Lulach. After the death of Gilgocgain, Grucha wedded
Macbeth, Mormaor (or earl in later style) of the province or sub-
kingdom of Moray; Macbeth slew Duncan, and ruled as pro-
tector of the legitimate claims of Lulach. From Lulach descended
a line of the Macbeths, and, for a century the dynasty violently
contested by Malcolm II. was opposed by claimants of the blood
of Lulach, representing the Celtic customs adverse to the English
and Norman ideas of the family in possession of the throne.
Thus Celtic principles, as opposed to the western principles of
chartered feudalism, did not perish in Scotland without a long
and severe struggle.

Meanwhile the dynasty of Malcolm II. was brought into close
connexion with the English crown, and relied on English support,
both before and after the Norman Conquest. The genius of Shakespeare, in his Macbeth, based on
Hamlet, materials borrowed by Hollisshun from Hector Boece,
and the dynastic myth of the descent of the
Stuart kings from Banquo, has clouted the actual facts of
the Celts of Scotland, or at least to those of the great sub-
kingship or province of Moray, Duncan, not Macbeth, was the
usurper. Duncan left sons, Malcolm, called Canmore (great head),
and Donald Ban; and in 1054 Siward, earl of North-
umberland, defeated Macbeth, whether acting under the order of
Edward the Confessor in favour of the claims of Malcolm Can-
more, or merely to punish Macbeth for sheltering Norman fugitives from the English
frontier. Duncan's death (1057)
was the more probable, though the chronicler, Florence of Worcester,
asserts the protection of the sons of Duncan by England.
Siward did not dethrone Macbeth, who was defeated and slain by
Malcolm in 1057; Lulach fell obscurely in 1058, leaving claimants
to his rights, though these did not trouble much the crowned king,
Malcolm Canmore. His long reign (1058–1093), and his second marriage (1068) with Margaret, sister of Edgar Ætheling,
of the ancient English royal blood—dispossessed by the Norman
Conqueror—intensified the sway of English ideas in Scotland,
and increased the prepotency of the English element in political,
social and ecclesiastical affairs. The anarchic state of North-
umberland and Cumberland after the Norman Conquest, which
did not soon assimilate them, was Malcolm's opportunity. He
held Cumberland (1070), and supported the claims of his brother-
in-law, the Ætheling, while his relationship with Gospatric, earl of Northumbria, who retired into Scotland, gave him pre-
texts for invading the north-east of England. William the
Conqueror's earl of Northumberland, Robert de Comines, was
slain at Durham in 1069, and the houses of Gospatric (earls of
Dunbar and March) and de Comines (the Comyns of Badenoch)
were long puissant in Scottish history.

In 1072 William marched north and took a disputed homage of
Malcolm at Abernethy, receiving as hostage the king's eldest
son (by his first wife, Ingebioge), named Duncan. As to the
nature of Malcolm's homage, whether for Scotland (Freeman),
or for manors and a subsidy in England (Robertson), historians
disagree. Malcolm subdued "the King of Moray," son of Lulach,
who died in far Lochaber, though his family's claims to the
crown of Scotland did not lapse. In 1093 William Rufus renewed
the treaty of Abernethy with Malcolm and fortified Carlisle,
thereby cutting Malcolm off from Cumberland; Malcolm was
summoned to meet Rufus at Gloucester; he went, but declined
to accept the jurisdiction of the Anglo-Norman peers, or to "do
right" to Rufus, except on the frontier of the two realms,
wherever he may have supposed that frontier to be. He was
an independent king, no vassal of England; as such (1093) he
invaded Northumberland, and was slain at Alnwick. His wife,
St Margaret, did not survive her sorrow; she died in the castle
of Edinburgh. Her reforms in church matters had apparently
made her a Celt, but we learn under cover of a mist her
body was conveyed to and buried at Dunfermline.

Margaret, in fact, completed the reduction of the Celtic church
in Scotland to conformity with western Christendom, and some
recent presbyterian writers have not forgiven her. Beautiful,
charitable and pious, she mollified the fierce manners of her
husband, who, according to her director and biographer, Turgot,
acted as interpreter between her and the Gaelic-speaking ecclesias-
tics at their conferences. Certain obscure religious usages,
as regards Lent, the Communion, the non-observance of Sunday,
non-communicating at Easter and the Forbidden Degrees in
Culdees, were brought into conformity with western Christ-
dom. The last Celtic "bishop of Alban" died at this time;
and when Malcolm of Canmore was established after an interval of turmoil, English ecclesiastics began to out
the Celtic Culdee.s from St Andrews.

Malcolm would have been succeeded by his eldest son by
Margaret, Edward, but he fell beside his father at Alnwick,
and the succession was disputed between Duncan, son of Malcolm
by his first wife; Edmund, eldest surviving son of Malcolm and
Margaret; and Donald Ban, brother of Malcolm. The Celts
(apart from the claimant of the blood of Lulach and the house
of Moray) placed Donald Ban on the throne; England supported
Duncan (by primogeniture Malcolm's heir, and a hostage in
England); there was division of the kingdom till Duncan was
slain, and Edgar, son of Malcolm and Margaret, was restored by Edgar Ætheling. He put out the eyes of his uncle, Donald
Ban, and in unsantly ways established the dynasty of the
English St Margaret and of the Celtic Malcolm. In 1103 Edgar's
sister, Eadgyth (Matilda), married Henry I.; the dynasty of Scotland now shows, by the names of its members, that the
English element in it was predominant. After Donald Ban no
Scottish sovereign bore a Gaelic Christian name save Malcolm
the Maid; and perhaps no later king knew Gael.

Edgar, before his death, established his brother, Alexander I.,
as king of Scotland, north of Forth and Clyde, with Edinburgh,
which looks as if he considered Forth and Clyde the
frontier of what was legally Scotland; while his youn
ger brother, David, as earl, ruled Lothian and
Cumbria. The reign of Alexander I. is marked by war with the
northern Celts, and by the introduction of English bishops of
St Andrews, while the claims of the see of York to superiority
over the Scottish church were cleverly evaded at Glasgow
(David's bishopric), as well as at St Andrews, where English
Augustinian canons were now established, to the prejudice of
the Celtic Culdee.s. We observe that the chief peers of Alex-
ander, who signed the charter of his monastery at Scone, are
Celts—Heth, earl of Moray (husband of the daughter of Lulach),
Malise of Strathearn, Dufagan of Fife, and Rory. After the
death of Alexander I. (1124) his successor, David I., is attended by
men of Norman names, Moreville, Umfraville, Sonnerville,
Bruce, FitzAlan (the ancestor of the Stewards of Scotland,
and himself of an ancient Breton house), and so on.

David, educated in England by Normans, was the maker of a
Scotland whereof the anglicized part at least was now ruled by
Anglo-Norman feudalism and Anglo-Norman municipal
laws in the burghs. Marrying Matilda, widow of
Simon de St Liz and heiress of Walthouf, David received the
cardinal of Huntington and supposed himself to have claims
over Northumberland, a cause of war for three generations.
With Anglo-Norman aid he repelled a Celtic rising—the right of
the claimants to represent the blood of Laluch is exquisitely complex and obscure in this case—but in the end David annexed to the crown the great old sub-kingdom or province of Moray, and made grants therein to English, Norman and Scottish followers.

Some of the most eminent of his southern allies could not stand by David when, in the reign of Stephen and in fidelity to the cause of his niece, the empress Matilda, daughter of Henry I., he served in services of labour and of war. Below these were the towns of Northumberland and Cumberland opened their gates, but he and Stephen met in conference at Durham, and David's son Henry, prince of Scotland, received the Honour of Huntington, Carlisle, Doncaster "and all that pertains to them" (1135). Stephen's relations with Henry became unfriendly, and in January 1138, in pursuance of Henry's claim to Northumberland, David again invaded. A holy war against him was proclaimed by the archbishop of York, and on the 22nd of August 1155 Bruce, Baliol, and others of David's southern allies renounced fealty to him, and he was defeated at the battle of the Standard, near Northampton.

David regained the shelter of Carlisle, a legate from Rome made peace, and Prince Henry received the investiture of Northumberland, without the strong fortresses of Bamborough and Newcastle. The anarchic weakness of the reign of Stephen enabled David to secure his hold of northern England to the Till, but the death of his gallant and gentle son Henry, in June 1152, left the succession to his son, Malcolm the Maiden, then a child of ten, and David's death (24th of May 1153) exposed Scotland to the dangers of a royal minority.

David was, if any man was, the maker of Scotland. The bishops erected by him, and his many Lowland abbeyes, Holyrood, Melrose, Dryburgh, Kelso, Jedburgh and others, confirmed the freedom of the Scottish church from the claims of the see of York, encouraged the improvement of agriculture and endowed the country with beautiful examples of architecture. His charters to land-owners and burghs (charters not being novel in Scotland, but now more lavishly conferred) substituted written documents for the unwritten customs of Celtic tenure, and converted the under kings of provinces into early of the king, while vice-comes, or sheriffs, administered local justice in the king's name, though Celtic custom still prevailed, under a thin veneer of law, in the Celtic regions, as in Galloway. Where Anglo-Normans obtained lands in Moray and Renfrewshire, there seems to have been no displacement of the population: though a FitzAlan was dominant in Renfrewshire, the "good men," or gentry, still bore Gaelic names, till territorial names—"of" this or that place—came into use. In Lothian the place-names recorded in charters were already, for the most part, English. Beneath the freeholders and nobility were free tenants, farmers paying rents, mainly in kind, and the rise of these towns was due to the trade, as the castle was to the market; these were the natiæ, attached to the land, and changing masters when the land changed hands. These natiæ were gradually emancipated, partly through the influence of the church, partly for economic reasons, partly through the rule that any villein became free after a year's residence in a burgh.

Thus Scotland never saw a jacquerie or servile rising. The burghs were not actually the creations of David and William the Lion, but the rights, duties and privileges which had gradually developed in the towns were in the time of these kings codified and confirmed by charters; the towns had magistrates of their own election, courts, and legalized open markets. The greater burghs had a union, and made laws and regulations for municipal affairs. In addition to royal burghs, there were burghs of nobles and of bishops, and the provostship was apt to become, by custom, almost hereditary in a local noble family, which protected the burgeses. The germ of a parliament existed in the crown vassals and the royal officials—chancellor, steward, constable, marischal and the rest—with bishops, priors, earls, barons and other profili homines. The term leto communitæ, "the whole community," appears to denote in England of noble birth, who might be present at any important assembly for the discussion of national affairs. Burgess do not yet receive mention as present on such occasions.

Scotland was as yet, and in fact remained, destitute of constitutional history as it appears in England. There was, technically speaking, no taxation. The king "lived on his own," on rent of crown lands, feudal fines and aids, wardships, marriages, and the revenues of vacant bishoprics. Opposition used the mechanism of conspiracies; and changes of administration were effected by the seizure of the king's person, especially during the minor and minority, with the help of the clergy. While Roman law became the foundation of justice, a learned clerk was needed as assessor and developed into the Lord Justice Clerk. The vice-comes, or sheriff, as the king's direct representative, was the centre of justice for shires, and his judicature tended to encroach on that of noble holders of courts. Royal authority, sheriffs, juries and witnesses gradually superseded ordeal, compurgation, and trial by battle, though even barons long retained the right of "pit and gallows."

In the matter of education, the monasteries had their schools, as had the parish churches, and there were high schools, the burghs, and "song-schools." From the time of David to the death of Alexander III. Scotland was relatively peaceful, prosperous, and, in the south, anglicized, and was now in the general movement of western civilization.

Malcolm the Maiden, before his early death in 1165, had put down the menacing power of Somerled, lord of the Isles, a chief apparently of mixed Celtic and Scandinavian blood, the founder of the great clan of Macdonald, whose chiefs, the lords of the Isles, were almost royal; Malcolm also subdued the Celts of Galloway, sometimes called Picts, but at this time Gaelic in speech. Malcolm's brother William the Lion (1165-1214), initiated the French alliance, fondly ascribed to the time of Charlemagne. William's desire was to seize Northumberland; in 1173 he was allied with Henry, the rebellious son of William II., himself in alliance with France. The capture of William at Alnwick, in July 1174, permitted a Celtic revolt in Galloway, and necessitated the Treaty of Falaise, by which for fifteen years Scotland was absolutely a fief of England, though the clergy maintained their independence of the see of York, which was recognized by Pope Clement III. in 1188. In a quarrel of enumbrance, the see he had been authorized to lay an interdict on Scotland, William and the country merely disregarded it; and in 1191 a new pope absolved the Scottish king. The Celtic risings now were made in defence of the royal claims of a descendant of Duncan, son of Malcolm Canmore; there were also MacHeth claimants to the old rights of Lulach; Galloway and the Celtic north were ceaselessly agitated.

After the death of Henry II. in 1189, Richard I. sold back to Scotland all that his father had gained by the Treaty of Falaise, and William only became Richard's man—for all the lands for which his predecessors had been hegemen to the English kings, a vague phrase but implying that the king of Scotland was not liege man for Scotland. To John, William did homage (1200) salvo jure suo. In 1209 he promised to purchase John's goodwill with 15,000 merks, and gave hostages. Peace was preserved till William died in 1214.

In the reign of his successor, Alexander II., the risings of Celtic claimants died out; he converted Argyll into a sheriffdom, and (1237) resigned the claims to Northumberland, in exchange for lands in the northern English counties with a rental of £200 yearly. His death in 1249 left the crown to his son, Alexander III., a child of eight, in whose minority began the practice by which parties among the nobility seized the person of the sovereign. At the age of ten, Alexander, William the Lion, in 1174, permitted a Celtic revolt in Galloway, and necessitated the Treaty of Falaise, by which for fifteen years Scotland was absolutely a fief of England, though the clergy maintained their independence of the see of York, which was recognized by Pope Clement III. in 1188. In a quarrel of enumbrance, the see he had been authorized to lay an interdict on Scotland, William and the country merely disregarded it; and in 1191 a new pope absolved the Scottish king. The Celtic risings now were made in defence of the royal claims of a descendant of Duncan, son of Malcolm Canmore; there were also MacHeth claimants to the old rights of Lulach; Galloway and the Celtic north were ceaselessly agitated.

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at York, wedded a child bride, Margaret, daughter of Henry III. His boyhood was distracted by vague party strifes, but Henry did not attempt to administer his country. In 1261 his queen born at Westminster, called her fealty to Edward, the young, patriotic; Eric, king of Norway, became the mother of "The Maid of Norway," heiress of Alexander III.; the girl whose early death left the succession disputed, and opened the flood-gates of strife. Alexander (1260) won the western isles and the Isle of Man from Norway, paying 4000 marks, and promising a yearly rent of 100 marks. In 1279 Alexander did homage to Edward I. at Westminster, *salvo jure suo*, and through the lips of Bruce, earl of Carrick. The homage was vague, "for the lands which he holds of the king of England," or according to the Scottish version, "saying my heart lies to the rights of the blood of Alexander's daughter, Margaret of Norway (1285), and of his own, the prince of Scotland, without issue, the estates, at Scone, recognized Margaret's infant daughter as rightful successor. At this assembly were Bruce, earl of Annandale; Robert de Brus, earl of Carrick (later king), his son; Comyn, earl of Buchan; John Baliol, and James the Steward of Scotland, of the house of Fitzalan. On the 29th of May 1286 Alexander died, in consequence of a slip made by his horse on a cliff near Kinghorn during a night ride. His death was the great calamity of Scotland, and is lamented in a famous fragment of early Scotch verse. The golden age of "The Kings of Peace" was ended.

Bruce and Baliol parties.

The first step of the Scottish noblesse (mainly men of Norman names), after Alexander's death, was to send a secret verbal message to Edward of England. Six custodians of the realm were then appointed, including the bishop of Glasgow (Wishart) and the bishop of St Andrews (Frazer). Presently the nobles formed two hostile parties, that of the Bruce and that of Baliol. The Bruce party took up arms, and from the terms of their "band," or agreement, altogether different from that of the Baliol party, arose to the rights of the blood of Norway, while declaring their fealty to Edward. In 1286-1289 Scotland was on the verge of civil war. Edward procured a papal dispensation for the marriage of the Maid of Norway to his son Edward; the Scots were glad to consent, and preliminaries were adjusted by the Treaty of Birgham (18th of July 1290). All possible care was taken by the Scots to guard their national independence, but Edward succeeded in inserting his favourite clause, "saving always the rights of the King of England, which belonged, or ought to belong, to him." As the Bruce faction had the advantage of having the probability to be the natural heir to the throne, the attitude of the Scots may be ascribed to the two bishops, who did not consistently live on this level. In August Edward ventured a claim to the castles of Scotland, which was not admitted. By the 19th of August it was known that the child queen had arrived in the Orkneys. An assembly was being held at Scone; the Bruces did not appear, but, by the 7th of October, they arrived in arms, on a rumour of the queen's death. The bishop of St Andrews tells Edward of these events, and urges him to come to the border, to preserve peace. The bishop of St Andrews was for Baliol, he of Glasgow was for Bruce; and the Baliol party, the seven earls complain, was ravaging Moray. These seven earls appear to represent the old rulers of the seven provinces of Pictland, and asserted ancient claims to elect a king. The Bruces placed themselves under Edward's protection. In March 1291 he ordered search to be made for documents bearing on his claims in the English clerical libraries, and summoned his northern feudal levies to meet him at Norham on Tweed, fully armed, in June. Hitherto he called the representatives of Scotland for the 10th of May; on the 2nd of June the eight claimants of the crown acknowledged him as Lord Paramount, despite a written protest of the communities of Scotland; obscurely mentioned, and not easily to be understood. Edward took homage from all, including burgesses even, at Perth; his decision on the claims was deferred to the 2nd of June 1292 at Berwick.

The choice lay between descendants in the female line of David of Huntingdon, younger brother of William the Lion. John Baliol was great-grandson of this David, through his eldest daughter; Bruce the old was grandson of David through his second daughter, and pleaded that, by Scottish custom, he was David's heir. He also pleaded a selection of himself as successor by Alexander III., before the birth of Alexander III., but of this he had no documentary evidence. On the 17th of November 1292 Edward decided, against Scottish custom (if such custom really existed), in favour of Baliol, who did fealty, and, amidst cries of dissent, was crowned at Scone on the 26th of December.

Edward instantly began to summon John to his courts, even on such puny matters as a wine-merchant's disputed bill. He appeared to aim at driving Baliol into rebellion and annexing his kingdom. In 1293 Edward refused to obey a similar summons from the king of France, and in 1294 was fighting in Gascony. Baliol declined to follow his standard and negotiated for a French alliance. Edward ordered Baliol's English property to be confiscated; Baliol renounced his fealty, and English merchants were massacred at Berwick. The Comyns failed in an attack on Carlisle, and (30th of March 1296) Edward took Berwick, seized William Douglas (father of the Good Lord James), and massacred the male populace. A disorderly levy of Scots, appearing on the side of the French, was defeated at Dupont, near Tournay (Boulogne) and were defeated with heavy loss. Robert Bruce was now of Edward's party; the nobles in a mass surrendered and Edward was unopposed. He seized the Black Rod, the coronation stone of Stane, St Margaret's fragment of the True Cross, and many documents; then he marched north as far as Elgin. The Ragman's Roll contains sworn admissions of all *probi homines* outside of the western thoroughfare, Waddell region; and, in October 1296, Edward returned to England, with Baliol his prisoner, leaving Scotland in the hands of the elder of Surrey as guardian, Cressingham as treasurer, and Ormiston to take charge of the money. Edward made an attempt, and, when Edward went abroad in June 1297, he left orders for suppression of assemblies (*convventiculae*). Now Sir William Wallace came to the front, a younger son of Sir Malcolm Wallace of Elderslie, near Paisley. The family probably came from England with the FitzAlans, the hereditary Stewards of Scotland. The English chroniclers call Wallace *lato*, "a brigand," and he probably was a leader of broken men, discontented with English rule. Sir Thomas Gray, son of an English gentleman wounded in a rising at Lanark in May 1297, says that Wallace was chosen the leader of the Scots ("Hegemon") and began operations by slaying Eslerig, sheriff of Clydesdale, at Lanark. The Lanercost contemporary chronicle writes that the bishop of Glasgow and the Steward began the broil, and called in Wallace as the leading brigand in the country-side. Wallace, in fact, was a gentleman of good education. Percy and Clifford led the English forces to suppress him, and (7th July) made terms with the bishop, the Steward and Robert Bruce, who submitted; but Wallace held out in Ettrick Forest. Sir William Douglas was kept a prisoner for life, but Andrew Murray was put out in Moray, with a large following. The nobles who had submitted made delays in providing hostages, and Warenne marched from Berwick against Wallace, who, by September 1297, was north of Tay.

On hearing of Warenne's advance, Wallace occupied the Abbey Craig at Stirling, commanding the narrow bridge over the Forth; the Steward and Lennox attempted pacific negotiations; a brawl occurred; and next day (11th of September) the English crossed Stirling bridge, marched back again, recrossed, and were attacked in deploying from the bridge. The general, Warenne, was old and feeble, Cressingham was hasty and confident; counsels were confused, the manner of position was rash, and the rout was sanguinary. Cressingham was slain, and Warenne fled to Berwick. Pursuing his victory, Wallace ravaged Cumberlend, most English writers say with savage ferocity; but Hemingburgh represents Wallace as courteous on one occasion, and as confessing that his men were out of hand.

By the 29th of March 1298 Wallace appears, in a charter granted by himself, as guardian of the kingdom, and, with
Andrew Murray, as army leader in the name of King John—that is, the captive Balliol. By June 1298 Robert Bruce is active in the service of Edward, in Galloway. Edward was moving on Scotland, and on the 22nd of July he found Wallace in force, and in a strong position, guarded by a morass, at Falkirk. The Scottish horsemen fled from the English cavalry, but the Mount of St John Menteith, sheriff of Dunbartonshire, of Sir John Comyn, brother of the Steward. The schiltrons, or squares of Scottish spears, were unbroken by Edward's cavalry, till their ranks were thinned by the English bowmen and could no longer keep out the charging horse. Wallace had made the error of risking a general engagement in place of retiring into the hills; to do this had, it is said, been his purpose, but Edward surprised him, and Wallace disappears from the leadership, while the wavering Robert Bruce appears in command, with the new bishop of St Andrews, Lamberton; Lord Souls; and the younger Comyn, "the Red Comyn" of Badenoch. For want of supplies, Edward returned to England through Annandale, burning Bruce's castle of Lochmaben. Stirling still held out for England. There is certain evidence of fierce dissensions in some way connected with Wallace, among the Scottish leaders (August 1299). Wallace was going to France; the Scottish leaders were reconciled to each other, and took the castle of Stirling, which they entrusted to Sir William Oliphant. The Scottish cause seemed stronger than ever, under Bruce, the Steward, the Red Comyn and Lamberton, but in June 1300 Edward mustered a splendid array, and took Calais. Wallace, with a letter from the archbishop of Canterbury with the pope approving of the Scottish cause, he granted a truce till Whitsuntide 1301. The barons of England angrily refused to submit to the papal interference, but nothing decisive was attempted by Edward, though Bruce had again entered his service. By 1303 France (which doubtless had moved the pope to his action) deserted the Scots in the Treaty of Amiens, and Edward, with little opposition, overran Scotland in 1303.

On the 9th of February 1304 Comyn with his companions submitted; the humane Wallace, who had returned from the continent, and on the 24th of July the brave Oliphant surrendered Stirling on terms of a degrading nature. Among his officers we see the names of Napier, Ramsay, Halkerton and Polwarth.

The noblest names of Scotland now took part in the pursuit of Wallace, who, as great in diplomacy as in war, had visited Rome (he had a safe-conduct of Philip of France to that end), and had at least secured a respite for his country. It seems probable that Wallace remained consistently loyal to Balliol, and hostile to the party of the wavering Bruce. He was taken near Glasgow, in his own country, and handed over to England by the English forces there. Bruce, however, had certainly received the blood-money, £100 yearly in land, and Wallace, like Montrose, was hanged, disembowelled and quartered (at London, August 1305). Tradition attributes to Wallace strength equal to his courage. His diplomacy in France proves him to have been a man of education, and his honour is un-impeached; he never wavered, he never was liegeman of Edward, while bishops, nobles, and, above all, Bruce, perjured themselves and turned their coats again and again. The martyr of an impossible loyalty, Wallace shares the illustrious immortality of the great Rollof the Vikings, a prince in his country's history. His victory at Stirling lit a fire which was never quenched, and began the long and cruel wars of independence on which Scotland now entered.

For an hour there seemed as if there might be no raising of the fallen standard of St Andrew. Edward had not yet alienated the country by cruelty, save in the case of Wallace and the massacre of Berwick. He aimed at a union of the two countries, and Scottish representatives were chosen to sit in the English parliament. The laws of David I. were to be revisited. Eight justices were appointed, the sheriffs were mainly Scots of the kingdom; the bishop of St Andrews was one of the Scottish representatives. The country was being re-organized, ruined churches and bridges were being rebuilt. The "commons," the populace, were eager for peace; nobles like Bruce were Edward's men. Bruce had been actively engaged in the siege of Stirling, and had succeeded his father as earl of Annandale. Yet, during the siege of Stirling (11th of June 1304), Bruce had entered into a secret band with Lamberton, bishop of St Andrews, for mutual aid. Early in February 1306 Galloway, where Bruce found the Red Comyn before a high altar, in the church of the Franciscans at Dumfries: Comyn's uncle was also slain, and Bruce, from his castle of Lochmaben, summoned his party to arms; he was supported by the bishops of St Andrews and Glasgow, and by Sir James of Douglas, and was promptly crowned by the kinsman of Buchan, representing the clan MacDuff, at Scone.

The cause of the slaying of Comyn is unknown; the two men had long been at odds, but the evidence does not confirm the story that Comyn had betrayed Bruce to Edward. It is more probable that Comyn merely refused to be drawn into Bruce into a rising, and that the deed was unpremeditated. Be that as it may, Bruce had now no place of repentance for a sacrilegious homicide; he could not turn his tabard again; he was outlawed, forfetted and excommunicated. He had against him, not merely England, but the kith and kin of Comyn, including the potent clan of MacDowall or MacDougall in Galloway and Lorne; on his own side he had his kinship, broken men, and the clergy of Scotland. Heedless of the excommunication they backed him, and the preaching friars proclaimed his to be a holy war.

Bruce was warring in Galloway when, in May 1306, Aymer de Valence led an English force to Perth. Bruce followed, and was defeated in Methven wood; the prisoners of rank, his brother Nigel, and Atholl, with others, were hanged, and his two bishops were presently secured. "All the Commons went him fra," says Barbour, the poet chronicler. His queen, with Lady Buchan and his sister, were imprisoned; and his castles were held against him. He took to the heather, making for the western seas, hewing his way through the MacDougals at Tyn- drum and marching over the mountains to Loch Lomond, to the still more formidable Sir Nial Campbell of Argyll, founder of the house of Argyll, and archbishop of St Andrews. He reached a castle of Macdonald of Islay (Angus Og), ally, at Dunaverty in Kintyre. He was driven to an isle off the Irish coast; he thence joined Douglas in Arran, and by a sudden camisade he butchered the English cantonized under his own castle of Turnberry in Carrick. Two of his brothers were taken in Galloway and hanged at Carlisle, while King Edward, a dying man, lay, with a great army at Carlisle, or at the neighbouring abbey of Lanercost. Aymer de Valence, Butetourte, Clifford, and Mowbray were sent to net and "drive" the inner wilds of Scotland. Bruce, after shelter in the forests and caves of Loch Trol and Loch Dungeon. Now he evaded them, now he and his valiant brother Edward surprised and cut them up in detail, doing miraculo, says a contemporary English chronicler. Douglas, an excellent guerilla leader, captured his own castle and butchered the English garrison. By the 15th of May 1307 a writer of a letter from Forfar says that if Edward dies his cause in Scotland is lost. Bruce slipped into Ayrshire and defeated de Valence at Loudon Hill; so Edward, a dying man, began to move against him with his whole force. He died (7th of July 1307) at London-Shotts, which for long was reckoned to ruin himself by his own follies, while ferocious hangings and dragging of men to death at horses' heels roused the Scottish Commons, and the men of Ettrick and Tweeddale, renouncing their new lord, de Valence, came over to the wandering knight who stood for Scotland.

In the winter of 1307 and in 1308 Bruce ruined Buchan, a Comyn territory, and won the castles of Aberdeen and Forfar, while Edward Bruce cleared the English out of Galloway. In the summer of 1309 Bruce fell on the MacDougals, on the right side of the Awe, where it rushes from Loch Awe at the pass of Brander, and, aided by a rear attack led by Douglas, seized the bridge and massacred the enemy. He then took the old royal castle of Dunstaffnage and drove the chief, John of Lorne, into England; Menteith, the capitor of Wallace, changed sides, and
Edward, after a feeble invasion in 1310, retreated from a land laid desolate by the Scots.

In 1311 Bruce carried the war into England, seconded by the most audacious if the least skilled of his captains, his daring brother Edward. For two years the north of England, as far south as Durham and Chester, was the prey of the Scots, and some English counties secured themselves by paying an indemnity. The castles of Carlisle and Berwick, however, repelled the assailants, but Perth was surprised, in January 1312, Bruce himself leading the advance. Randolph, earl of Murray, took the king prisoner in the country. Bruce stormed and captured the castle, by scaling the precipitous rock to the north, while a feigned attack was being made on the accessible southern front. In short almost every castle held by the English was captured, and the fortifications were destroyed.

In the spring of 1313 Edward Bruce invested Stirling castle, the key of Scotland; on midsummer day he accepted a pact for the surrender of the place if not relieved within a year. This was a heedless piece of chivalry on Edward’s part. It gave the English king, less opposed by his nobles since his favourite, Gaveston, was slain, time to muster a large army, which the Scots soon met, if at all, in the open field. Edward II. not only summoned English but Irish levies, and knights of Hainault, Bretagne, Gascony and Aquitaine crowded to his standard. The estimates of numbers by the old writers are usually much exaggerated; modern authorities reckon King Edward’s army at 50,000 of whom 10,000 were cavalry. Old accounts put the infantry at 100,000, the horsemen at 40,000. Bruce had but five hundred horse, under Keith the Marischal; Douglas led the levies of his own district and Ettrick Forest; Randolph commanded the men of Moray; Walter Steward, those of the south-western shires; and Angus Og brought the Scottish standard the light-footed men of the Isles, and, probably, of Lochaber, Moidart, and the western coast in general. Bruce commanded the people of Carrick and probably of his old cardon, Annandale.

Moving out from the Torwood forest, Bruce arrayed his force so as to guard either the Roman road through St Ninians, or the way through the Carse, which was then studded with marshes and small lakes. The former route appeared to be chosen by the English, and Bruce stationed his army in a position where it was defended by a cliff, or ravine of the Bannockburn, and by two roads. Between which was a practicable but narrow neck of firm land. Randolph, on Bruce’s left, was to guard against a rush of English cavalry to relieve Stirling castle. The Macdonald tradition is that their clan was on the right wing, under Angus Og; the old accounts place them with Bruce’s reserves. Three hundred English horsemen appear to have stolen round Randolph’s flank unseen by him, and Bruce is said to have warned him that “a rose had fallen from his chaplet.” Randolph advanced with his footmen against the English horse, who unwarily accepted his challenge and were defeated by his spearmen. While Edward’s army paused, Bruce, mounted on a palfrey, was attacked by Sir Henry Bohun. Bruce evaded his spear and slew him with an axe stroke; the axe shaft broke in his hand. The omens were evil for England; and her forces bivouacked, reserving the general attack for the following day. Bruce is said to have proposed retreat and a guerrilla war, but his council were for fighting.

In the general engagement, next day, the English cavalry could not break the impenetrable wood of the Scottish spearmen, who, however, were galled by the arrows of the English bowmen, which had broken their formation at Falkirk. Bruce bade Keith, with his five hundred horse, charge the archers in flank: apparently they were unprotected by pikes; they were broken, and the great peril passed away. The Scottish archers charged with axe in hand, and the Scottish right front was protected by a mass of fallen English horses and fighting men; the rear ranks of the English, clogged and crowded, could not reach the foe, and the line of Scottish spears pressed steadily and slowly forward. Now a panic was caused by a rush of camp followers from the “gillie’s hill” : the English wavered; Bruce commanded an advance of his whole line: the English rout was general, and, had Bruce possessed cavalry, few would have escaped. The Bannockburn was choked with the fallen, and it was only by hard spurring that Edward and his guards reached Dunbar, whence he sailed to Berwick. An immense booty and many ransoms rewarded the Scots, whose victory was one of the decisive battles of the world. It was won by the generalship of Bruce and his captains; by the excellence of his position, by the steadiness of his men, and, obviously, by the recent fury of the English cavalry, and by the folly which led the archers open to defeat by the Marischal’s handful of horse (24th of June 1314).

Bruce now swept the country, but Carlisle he could not take. He married his daughter, Marjory, to the Steward, and from this union came the Stewart (Stuart) dynasty. The invasion of Ireland by Edward Bruce failed (1315-1318), and Edward fell in battle after which (1318) parliament settled the crown in the Stewart’s line, failing male descendants of Robert Bruce.

He disdained the pope’s efforts to make peace with England, except on terms of absolute independence for his country. He lost his father-in-law, and held himself and Scotland to Edward with heavy loss near Byland Abbey in Yorkshire, where the highlanders scaled a cliff and drove the English from a formidable position. A thirteen years’ truce was arranged in 1323: the pope removed his excommunication from Bruce, and acknowledged him as king: a son, David, was born to him in 1324.

The murder of Edward II. (1327) was followed by successful Scottish raids in the north, and in May 1328 the Treaty of Northampton sealed the triumph of Scotland. David Bruce was to marry Joanna of England: Bruce was recognized as king: former owners of forfeited lands, with three exceptions, were not to be restored. This led, after Bruce’s death, to an invasion by the disinherited English ci-devant lords of lands in Scotland, and to a long war from which Scotland was only “saved as by fire.” Bruce died, outworn by war and hardships, on the 7th of June 1329: his body was buried in Dunfermline abbey; his heart, which Douglas was bearing to the Holy Land, was brought home again, after Douglas’s chivalrous death in battle with the Moors in Spain.

Bruce, previously so shifty, had never wavered or turned back since he smote the Red Comyn at Dumfries. In face of obstacles apparently insurmountable he had made a nation, consolidating all the forces which Wallace had stirred into life. There is, perhaps, nothing in the history of medieval Europe which so closely resembles a voice from ancient Greece as the reply of the nobles and the whole communis Scotland to the pope (parliament of Aberbrothoch, 6th of April 1326). They will be liegemen of Bruce only so long as he resists England. As long as a hundred Scots are left alive, they will continue the war for freedom, “which no good man loses save with his life.” They show that the barbarities of Edward I. (which he regarded as reprisals) have made it eternally impossible for Scotland to yield to an English king. Their excommunication by Rome does not trouble them at all. They are free from Rome, from England, from all alien powers. Henceforth, through good and evil fortune, this was the spirit of the nation.

The most important point in constitutional history was the action of a parliament at Cambuskenneth, near Stirling, in 1326. The representatives of the burghs were present: they made a grant of all tenths to the king during his life; while they covenanted with him that he should collect no other taxes and should exercise the privileges of prisaes et cariagia with moderation. The long wars had been adverse to commerce, for which ransoms and the booty of Bannockburn made inadequate compensation. But the great abbey church of St Andrews was, none the less, completed, to stand for some two hundred and forty years, and was dedicated in the presence of Bruce.

The brilliant and sustained effort which made Scotland independent was almost paralyzed by the deaths of Bruce and...
the Good Sir James of Douglas, during the minority of David II. (crowned, 24th of November 1331). The disinherited lords, deprived of their lands by Bruce, were headed by Edward Baliol, claiming the crown of Scotland as heir of John Baliol, and secretly backed by England. Randolph, her warring husband, the earl of Edward Baliol, with the disinherited lord of Liddesdale, and Beaumont, the disinherited earl of Buchan, and the English claimant of the earldom of Atholl, landed a filibustering force in Forfarshire. They were opposed by the new regent of Scotland, the earl of Mar, who was routed with heavy loss and was slain, at Dupplin, on the 24th of August 1332. The English owed the victory to their archers, whose shafts rolled up a courageous charge by the Scots. Edward Baliol was enabled to seize and fortify Perth and was crowned at Scone, as Edward I. of Scotland (24th of September). On the 23rd of November, at Roxburgh, Baliol acknowledged Edward III. as his liege lord and promised to surrender Berwick and large lands in southern Scotland. The hands on the clock were then put back to the time of the reign of John Baliol. But the earl of Murray, son of Randolph, and Archibald, youngest brother of the Good Lord James of Douglas, surprised Baliol at Annan and drove him, half clad, into England.

The struggle was now (1333) for Berwick, which was besieged by Edward III. Archibald Douglas tried to relieve it, just as Edward II. strove to relieve Stirling, and found his hopes crushed by the capture of Carlisle in the fall of July 1333, where he was routed and slain, with many of the leaders of the Scots. Scotland was never again to hold Berwick for any length of time: meanwhile a few castles stood out, but the child king was sent over to France for safe keeping. A parliament held by Baliol at Edinburgh (February 1334) ratified the promises made by him to England at Roxburgh: the disinherited lords were in power and many patriots turned their coats. At Newcastle on the 12th of July Baliol surrendered to Edward III. the southern shires of Scotland with his son, Edward Baliol, and the earl of Rothesay. The southern earldom of Scotland, and Edward III. would have succeeded where Edward I. failed, had not the partisans of Baliol come to deadly feud over matters of their private interests and ambitions. Some took part with Sir Andrew Murray, son of a companion of Wallace, and with the Steward, who contrived to occupy the castle of Dunkarton, the key of western Scotland. These two men, with Campbell of Loch Awe, and Randolph's son, the earl of Moray, held up the national standard and were joined by the English claimant of the earldom of Atholl.

Randolph's daughter, too, the famous Black Agnes of Dunbar, brought over her husband, Sir John Douglas, the Black Knight of Liddesdale, went to her relief and slew Atholl: Edward III. (1336) again waged a victorious summer campaign, from Perth as his base, and again found Scottish resistance revive in winter. His capture with France in October 1337, caused by his claims to the French crown, tended to withdraw his attention from Scotland, where, though the staunch Sir Andrew Murray died, Black Agnes drove the English besiegers from Dunbar (1338), while the Knight of Liddesdale recovered Perth. By 1342 Roxburgh, Stirling and Edinburgh castles were in Scottish hands, though the Knight of Liddesdale captured and starved to death, in Hermitage castle, his gallant companion in arms, Sir Alexander Ramsay, who had relieved the garrison of Dunbar. With this Douglas, Knight of Liddesdale, a ruffian and a traitor, may be on to begin the long struggle between his too powerful house and the crown.

King David, a lad of eighteen, had returned from France and had removed this Douglas from the sheriffdom of Teviotdale, superseding him by Alexander Ramsay. Douglas revenged himself on Ramsay, as we have seen, and though David was obliged to overlook the crime, the Knight of Liddesdale henceforth was not to be trusted as loyal against England. It is probable that he was intriguing for Baliol's restoration, and he certainly was securing the favour of Edward III. An ill-kept truce of three years was ended in October 1346, when David attempted to lead the whole force of his realm, including the levies of John, Lord of the Isles, and of the western Celts in general, against England. As the Celts marched south the earl of Ross slew Ronald Macdonald, whose inheritance was claimed by John of the Isles. As a result, the Islesmen went home: David, however, crossed the border, plundering and burning the marches. Near Durham he came into touch with English levies under Henry Percy and the archbishop of York. David was a knight of the French school of late chivalry: he was not a general like Bruce or Randolph. In this affair of Neville's Cross (17th of October 1346) he copied the mistakes of Edward II. at Bannockburn; his crowded division was broken by the English archers, and the king himself was wounded and captured. Moray, the last male representative of Randolph, with the Constable and Earl Marischal of Scotland, was slain; the Steward made his escape: and, henceforth, the childless David regarded his heir, the Steward, with jealousy and suspicion. The Steward, during the king's captivity, was regent, and the Douglas of Liddesdale (the son of Archibald and nephew of the Good Lord James) drove the English out of Dougallsdale, Teviotdale and the forest of Ettric. A truce till 1351 was arranged between England, France and Scotland, while the country strove to raise the royal ransom, and David, who preferred English ways to those of his own kingdom, acknowledged Edward III. as his paramount. It became David's policy to secure his own life interest on Scotland, while the crown, on his decease, should go to one of the English royal family. The more loyal William Douglas, in 1353, slew his kinsman, the shifty Knight of Liddesdale, on the braes of Yarrow, and a fragment of one of the oldest Scottish ballads descends from this time.

In July 1354 an arrangement as to David's ransom was made: his price was 90,000 merks sterling (for the coinage of Scotland was already beginning to be debased). Negotiations were interrupted by the arrival of French reinforcements in men and gold: Berwick was recaptured, only to be recovered by England in 1356. In the same year Edward Baliol, after handing over his crown and the royalty of Scotland to Edward III., retired from active life, and Edward wasted the south in the raid of "The Burned Candlemas." In October 1357 David was permitted to return to Scotland, giving up his claim to the duchy of Teviotdale and the forest of Ettrick. A truce till 1357 was arranged. The country, crushed by inevitable taxation, was discontented, and not reconciled by Edward's grant of commercial privileges. In May 1363 David put down a rising headed by the Steward, and then, in October, went to London, where he and the earl of Douglas made arrangements by which the countries were to be united under Edward III., if David died childless. Scotland was to be forgiven the ransom, receive the Stone of Scone and retain its independent title as a kingdom: her parliaments were to be held within her own borders; her governors and magistrates were to be Scots, freedom of trade was guaranteed, and the earl of Douglas was to be restored to his English estates, or to an equivalent.

This scheme would have saved Scotland from centuries of war and from a Steward dynasty: there would have been a union of the crowns, as under James VI.; or (by an alternative plan of November, December 1363) a son of the king of England, not Edward III. himself, would succeed to David. In March 1364 David laid the projects before a parliament at Scone, which firmly refused its assent. Possibly David had, as one motive for his scheme, the very dubious legitimacy of the children of the Steward, a probable cause of civil war and a disputed succession. He had also private reasons for disliking the Steward, who was on bad terms with the widow, Margaret Logie (by birth a Drummond), whom David had married on the death of his first wife. The country,
resolved to stand by the Steward and the blood of Bruce, preferred the heavy taxation and the turbulence inevitable under such a king as David to union under an English prince. On the 20th of June 1365 Edward granted a four years' truce, with the ransom to be paid in yearly instalments of £4,000. But the necessary taxation was resisted by various nobles, including John of the Isles (1368), who had married a daughter of the Steward. John was in arms, divisions and distress were everywhere, a famine prevailed, and Scotland had to face the prospect of yielding to Edward, when, in 1369, that prince proclaimed himself king of France, and, having his hands full of war, made a farther seven years' truce with his enemies.

David was now free to subdue John of the Isles, to repudiate all his own debts contracted before 1368, and to make preparations for a crusade. From this crowning folly death delivered him on the 22nd of February 1371. The whole of his ransom was never paid, and his absurdiies and misfortunes gave the Estates opportunity to strengthen their constitutional position. They established the rule that no official should put in execution any royal warrant against the statutes and common form of law.

The reign also saw the introduction of the committees, "electors," the Commons and the "Estoires," which did the actual business of parliament, thus saving time and expense to the members. But these committees, later known as the Lords of the Articles, were to exercise almost all the powers of parliament in accordance with the desires of the crown, or of the dominant faction, and they were among the grievances abolished after the revolution of 1688-1689. The whole reign was a period of wasteful turmoil, of party strife, of treachery, of reaction. But the promise of peace and prosperity in exchange for absolute independence was rejected with all the old resolution; and the freedom which a Bruce desired to sell was retained by the first of the Stewart line, Robert II.; for Mr Froude erred in alleging that James I. was the first Stewart king of Scotland.

Robert II., the grandson of Robert Bruce, had lived hard, and when he came to the throne, was weary of fighting and of politics. Nothing proves more clearly the firm adherence of the nation to the blood of Bruce, and the parliamentary settlement of the crown in his female line, than the undisputed acceptance of the Steward's children as heirs to the throne. Several of them had been born to Robert's mistress, Elizabeth Mure of Rowallan, before a papal dispensation permitted, in 1349, a marriage which the canon law seemed to render impossible. The pope might have said, like a later pontiff on another day, "remittimus irremissiblemente." By a second marriage, undeniably legal, Robert had a family whose claims were not permitted to give trouble at his accession, though the earl of Douglas, the fellow conspirator of David II., would have caused difficulties if he had possessed the power. His eldest son, the earl who fell at Otterburn, was married to Robert's daughter, Isabella, but by her he had no issue. The new prince of Scotland, John (an unlucky name, later changed to Robert), was a fa-inch: the king's second son, Robert, earl of Fife (later first duke of Albany), was a man of energy and ambition, while the character of the third, Alexander, is expressed in his sobriquet, "The Wolf of Badenoch."

When the new reign opened, Edward III. made no secret of his claims to be king of Scotland, and the southern regions were still in English hands. From 1372 to 1383 Scotland was in truce with England; and Robert II. had no desire to aid France and accept from Rome a dispensation from the oath of truce. The southern nobles, under the Douglases and March, kept up a semi-public feud with the Percy on the border, after the accession of Richard II., still a child, and piece by piece Scottish territory was recovered, mainly in Teviotdale and Liddesdale. In 1380 and 1381, Lancaster, uncle of Richard II., arranged truces, but difficulties were caused by the late proclamation, in Scotland, of a truce made with her ally, France, on the 26th of January 1384. With the tidings of this truce arrived, in April, a body of French knights who desired to enjoy fighting, and though dates are obscure they seem to have caused, by a raid in April, a retaliatory foray by the Percies in May or June. The king smoothed matters over, but in 1385 a great band of French knights landed in Scotland, forced the king's hand, and penetrated England as far as Morpeth. Here they might have had fighting enough, as Lancaster led a force against them, while Richard II. followed with a large army. But Douglas, to the disgust of the French, refused battle, and allowed the English to do what mischief could be done in a thrice stripped country. The French deemed the Scots shabby, poor and avaricious: their grooms were killed by the peasantry when they went foraging: the nobles were churlish and inhospitable.

In August 1388 Douglas led the famous raid as far as Alnwick城堡, with his chief companion in the battle of Otterburn, fought by moonlight. Here Douglas fell in the thickest of the melee, but his death was concealed and Henry Percy, with many other English knights, were captured and held to heavy ransom (15th of August 1388). These battles were fought in the spirit of chivalry, and were followed, in 1389, by a three years' truce.

The second son of King Robert, Albany, was appointed governor, his father being in ill-health and dying in 1390. He was succeeded (14th of August 1390) by his son, Robert III., when the previous year, his brother Albany had been preferred before him as governor. The reign of a weakening was full of anarchy, complicated by the feud between his eldest son, the wayward duke of Rothesay, and his ambitious brother, now duke of Albany. These two are the first dukes in Scotland.

There was peace with England till the death of Richard II. in 1399, and till the parliament of January 1399 Albany still undertook the duties of the king.

Here commenced the tragedy of the Stuarts and of Scotland. For nearly two centuries each reign began with a long royal minority, increasing the power and multiplying the feudalism of the nobles. The remainder of each reign was, therefore, a struggle to re-establish the central power, a struggle in which cruel deeds were done on all sides. Meanwhile, now England, now France, secured the alliance of the men in power, or out of power, and threatened the independence of the kingdom. The cause of the miseries of these two unhappy centuries was beyond human control: no Stuart sovereign, after Robert II., escaped from the inevitable evils of a long minority, while Robert II. himself was as weak as any child. Under his rule, the Cols in the north and west, in 1387, became troublesome, while Robert's son, the Wolf of Badenoch, who was justiciary, with his own wild sons, rather fanned than extinguished the flames. They slew the sheriff of Angus (1391-1392) in a battle, and then two clan-confederacies, quarrelling among themselves, put their cause to the ordeal of fight, in the famous combat of thirty against thirty, on the Inch of Perth (see Scott's "Fair Maid of Perth"). Though we know the cost of fencing the lists, from entries in the treasury accounts, we are ignorant of the cause of the quarrel, and even of the clans engaged. The names are diversely given, but probably the combat was only one incident in the long wars of the Camerons with the great Clan Chattan confedery. In 1397, at Stirling, the Estates denounced the anarchy "through all the kingdom," and, in 1398-1399, were full of grievances arising from universal misgovernment. By this parliament, David, prince of Scotland and duke of Rothesay, was made regent for three years; with his uncle, duke of Albany, as his coadjutor. Peace between Albany and the wayward Rothesay was impossible, and Rothesay, by breaking with the daughter of the earl of March, and marrying a daughter of the third, Earl of Douglas, added a fresh fuel to the general confusion.

Meanwhile Scotland, to vex Henry IV., adopted the cause of the "Mammet," the pretender to be Richard II. This enigmatic personage appeared in Islay, and rather had his pretences thrust on him than assumed them; he was half-witted. Meanwhile the insult to March caused him to seek alliance with Henry IV., who crossed the border—the last English king to do so—and appeared before Edinburgh castle. Rothesay held it in his contempt, and, as Albany declined a battle, in the open, Henry returned with nothing gained.
In 1400 Albany, and the 4th earl of Douglas (brother-in-law of the duke of Rothesay), confessed before the Estates that they had arrested the prince, and were cleared of the guilt of his subsequent death. They kept him, first in the castle of St Andrews, and then at Falkland, where he perished; some said of dysentery, others, of starvation.

Restored to the regency, Albany permitted his son, Murdoch, with Douglas, to retort on a successful raid by Percy and the Mar of Bute in learning, the unwarranted series of border raids defeated by English archery, as usual, at Hamilton hill: Murdoch and Douglas were captured. Percy, dissatisfied with Henry's treatment of him in the matter of ransoms, led an army into Scotland which was to have trysted at Cocklaw with Albany and the whole forces of the realm, and invaded England. But Douglas and Percy left Cocklaw before Albany came up, and hurried to join hands with the Welsh rebel, Glendower. The hostile forces met at Shrewsbury, and Shakespeare has made the result immortal. Percy was slain; Douglas was the prisoner of England.

The young prince of Scotland, the first James, was on his way to seek safety in France, during an interval of truce, but was captured on the high seas by English cruisers. (The dates are obscure, but James was in the Tower by February-March 1405-1406.) His father's death followed (4th of April 1406). Albany sent, within a year, envfoys to plead for his release; and again, in 1409, but vainly. An interval of peace occurred, among a series of border battles, and the heresy of Lollardy was attacked by the clergy; Resby, who had been a priest in England, was burned in 1407 at Perth. The embers of Lollardy, not extinguished by the new central foundations of learning, the university of St Andrews, smouldered in the west till the Reformation.

"The wicked blood of the Isles," the Macdonalds, descendants of island kings, now made alliance with England; Donald, eldest son of the Lord of the Isles, having an unsatisfied claim on the earldom of Ross, which Albany strove to keep in his own family. The greatest of highland hosts met at Ardtrumish castle, now a ruin on the sound of Mull: they marched inland and north, defeated the Mackays of Sutherland and were promised the plunder of Aberdeen. The earl of Mar, with a small force of heavily-armoured mainland cavaliers, stopped and scattered the plauded Gael at Harlaw (1411). The knights lost heavily, but Donald did not plunder Aberdeen (see Elspeth's ballad of Harlaw, in The Antiquary). Next year Albany received the submission of Donald at Lochgilp in Knapdale, and the Caelds were, for the moment, useless to their allies of England.

Time went on: Albany's son, Murdoch, was set free, but in 1410 the captive King James much resented Albany's neglect of himself. His letter is written in Scots. Albany died in 1420; his regency, with that of his son Murdoch, produced the anarchy which James, when free, combated at the cost of his life. Meanwhile France demanded and received auxiliaries from Scotland, who fought gloriously for French freedom. Their great victory, where the duke of Clarence fell, was at Baugé Bridge (1421), where the Stewarts and Kennedys, under Sir Hugh, were specially distinguished. In 1424 the Scots, with the earl of Buchan and the earl of Douglas, were almost exterminated at Verneuil, some five months after King James, already affianced to the Lady Jane Beaufort, was released. He never paid his ransom, and his noble hostages lived and died south of Tweed: one cause of his unpopularity.

Tradition tells that James vowed "to make the key keep the castle, and the bush keep the cow," even though he "lived a dog's life," in the endeavour. His reign was a struggle against anarchy, and in the cause of the poor and weak. He instantly arrested Murdoch, son of Albany, and Fleming of Cumbernauld, met parliament, dismissed it, retaining a committee ("the Lords of the Articles"), and took measures with landlords, who must display their charters; appointed an inquest into lay and clerical property; and imposed taxes to defray his ransom. The money could not be collected, and the edicts against private wars and the maintenance of armed retainers were hard to enforce. James next arrested Lennox and that Sir Robert Graham whose feud proved fatal to the king. In March 1425 he met his second parliament, relying on a council of barons with no great earl but Mar. He next arrested Albany's secretary and the Lord Montgomery: the story, accepted by our historians, that he also seized twenty-six notables, has been finally disproved by Sir James Ramsay. No Scottish king ever embarked on such a coup d'état as the arrest of "the whole Scottish House of Lords," and Knox, who attributes a much larger design to James V, must have been deceived by rumour. Albany (Murdoch), his son, and Lennox, were tried and executed: Albany's son, James, in revenge burned Dumbarton. The king appears to have been avenging his private wrongs, or destroying the three nobles pour encourager les autres. Parliament now insisted on inquisition for heretics: an act was passed (which never took effect) against "bands" or private leagues among the nobles: the Covenant was called "the great band," by cavaliers in days to come.

More important was the establishment of a new court of justice, the court of Session, to sit thrice in the year. Yeomen were permitted to practice archery, to which they much preferred football and golf.

The highlanders were next handled as the lowlanders had been; a parliament was held at Inverness and a number of chief who attended were seized, imprisoned or executed. The Lord of the Isles, when released, burned Inverness (1429), but, being pursued, he was deserted by Clan Chattan and Clan Cameron (probably the clans represented on the ordeal of battle on the Inch of Perth). The Lord of the Isles made submission, but Donald Balloch, his cousin, defeated Mar near Inverlochy, later, and fled to Ireland, and was reported dead, though he lived to give trouble. James was unjealously impressing highland anarchy: from the highlands came his bane.

James next granted his daughter, a child, to the Dauphin, later Louis XII.; but, as Jeanne d'Arc said, "the daughter of the king of Scotland could not save Orleans," then (1428-1429) besieged in a desultory manner by the English. In February 1429 the Scots under the oriflamme were cut to pieces in "The Battle of the Herrings" at Rouvray. Thesurviving Scots fought under Jeanne d'Arc till her last success, at Lagny, under Sir Hugh Kennedy of Ardstinchar in Ayrshire, but James (May, June 1429) made a treaty of peace with Cardinal Beaufort, which enabled Beaufort to send large reinforcements into Paris, where the Maid, deserted by Charles VII., failed a few months later.

In October 1430 was born the prince destined to be James II. The king and the Estates were curtailing the judicial privileges and jurisdiction of the clergy; and the anti-pope, Peter de Luna, quarrelled with the country on this ground. Scotland then deserted his cause for that of Martin V., but quarrels between church and state did not cease, and a legate arrived to settle the dispute a few days before the king's murder. James had already threatened the Benedictines and Augustines for "im-pudently abandoning religious conduct," and had founded the Carthusian monastery in Perth, that the Carthusians might offer a better example. A reformation by the state seemed at hand, but the religious orders fell deeper in odium and contempt during the next hundred and thirty years. Doctrine, too, was endangered by heretics, one of whom, a Hussite named Paul CRAWAR, was burned at Perth in 1433.

In 1427 James seized, as a male fee, the earldom of Strathearn, gave the earl by female descent the title of Menteith, and sent him to England as a hostage for his ransom. He was nephew of the Sir Robert Graham whom James had arrested at the beginning of his reign: Graham's anger was thus rekindled. The earls of Mar and March also lost their lands, on one pretext or another: James's policy was plainly to break the power of the nobles.

The English translation (1440) of a lost contemporary Latin history of the events averrs that Sir Robert Graham rose in parliament, denounced James as a tyrant and called on the barons to seize their king: Graham was taken, was banished from court, was confiscated and fled to the Aitholl hills. He thence intrigued with the old earl of Atholl (heir to the crown if the ancestors of James by Robert II.

Death of James I.
and Elizabeth Muir were illegitimate), and he drew into the conspiracy the king's chamberlain, Atholl's grandson. By his aid 300 highlanders were brought into the monastery of the Black Friars in Perth, where the king was keeping the Christmas of private war, and Crichton, who slew James who had fled into a vault. The conspirators were seized and tortured to death with unheard-of cruelties, but lawlessness had won the battle. James had failed, practically, even in his effort (1447-1448) to Anglicize parliament, by introducing the representative system; two "wise men" were to be chosen by each sheriffdom, and two Houses were to take the place of the one House in which all Estates were wont to meet. But constituents were averse to paying their members, no Speaker was elected, the reform never came into being. Till the Union, all estates sat in one room during parleys. The court of session was the most powerful and permanent of James's innovations, and his poem "The King's Quhair" attests his real genius. He had attempted to reform the country too hurriedly; and treachery, by all accounts, was one of his methods. He left a child as king, and the old round of anarchy began again; oppression, murder, feud, faction and private war. History repeats itself, and the evil practices were checked, not by the Reformation, but by the increased resources and entire safety enjoyed by James VI. when he succeeded to the crown of England.

Space forbids a record of the faction fights in the reign of James II. Coming to the crown at the age of seven, he was used like the Great Seal, as a sanction of authority and passed from one party to another of the nobles, as each chanced to be the more dexterous or powerful (crowned 25th of March 1437). The Crichtons and Livingstones held the king till the earl of Douglas died, being succeeded by his son, a boy. The queen-mother married Sir James Stewart of Lorne, and their sons, Buchan and Atholl, mixed in the confused intrigues of the reign of James III., but the queen was treated with scant courtesy by the rival parties. From them the young earl of Douglas and the duchy of Touraine, the most powerful man in Scotland, stood apart, sullenly watching an unprecedented state of anarchy. Livingstone and Crichton, previously foes, invited him and his brother to dine with the child king in Edinburgh castle, and there served to him "the black dinner" bewailed in a fragment of an early ballad. The two young nobles, after a mock trial, were decapitated (November 1440).

Douglas was succeeded in his earldom by his grandfather, Sir James the Gros, an unwieldy veteran. On his death in 1443, his son, William, a lad of eighteen, became earl, and was regarded as privy to the intrigues of the queen. Crichton lost the chancellorship; and the keys were given to Kennedy, bishop of St Andrews and founder of St Saluator's college in that university. Involved in secular feuds with Douglas, Livingstone and the earl of Crawford, Kennedy destroyed Crawford with a spiritual weapon, his Curse (23rd of January 1445-1446).

On the 3rd of July 1449 James married Marie of Gueldres, seized and imprisoned the Livingstones, and generally asserted royal power. He relied on Douglas, who (1450) was his constant companion, till the earl visited Rome (November 1450-April 1451). In his absence in the Papal states, in which he was absent for twenty-six years, Douglas took advantage of his absence and was reinstated. He appears, however, that he was, or was suspected of being, in treasonable alliance with the new earl of Crawford and the ever-turbulent Celtic lord of the Isles. It is certain, from documents, that Douglas was always in the royal entourage from June 1451 to January 1452, so that stories of insults and crimes committed by him at this period seem legendary. Nevertheless, on the 22nd of February 1452, James, who had invited Douglas, under safe-conduct, to visit him at Stirling, there dined his guest with his own hand. The king was exasperated by parliament, in the sense of Douglas's contemptuous treatment of his safe-conduct, and because of his oppressions, conspiracies and refusal to aid the king against rebels, such as the new "Tiger Earl" of Crawford.

The brother of the slain Douglas defied his king, then made his submission, and visited London, where he probably intrigued with the English government against his sovereign and country. In 1455 James made serious war against the "Black Douglas" of the south; his army being led by the "Red Douglas," the earl of Angus. The royal cause was successful, and the Black Douglas was attainted (10th of June 1455). He fled south and became the pensioner and ally of Edward IV., who reasserted the traditional claim to sovereignty over Scotland—"his rebels of Scotland!"

From 1457 to 1459 a truce was made between Scotland and the Lancastrian party, then in power, but in July 1460, Henry VI. was defeated and taken, and his wife and son sought James's hospitality. Roxburgh castle was in English hands; James besieged it, and on the 3rd of August 1460 was slain by the bursting of one of his own huge siege guns. The castle was taken, but the second James died at the age of thirty, leaving a child to succeed him in his heritage of woe. James II. had overcome his nobles, but left a legacy of feuds to the coming reign.

The period of James III. is filled with the recurrent strife of the nobles among themselves and against law and order. Slowly and obscurely the Renaissance comes to Scotland; its presence is indicated by the artistic tastes of the king, and, later, by the sweet and mournful poetry of Henryson. But the Renaissance, like the religious revivals initiated in Italy, arrived in Scotland weak and weary; hence it did much harm with the new enthusiasms of the Faith of St Francis, and art was trampled on by the magistrates who hated poetry and painting.

In politics, the queen-mother, who had the private guardianship of her boys, the king and the dukes of Albany and Ross, turned from the Lancastrian to the Yorkist side, while Kennedy and his party (Lancastrians) were accused of endangering Scotland to please France. This was the beginning of that movement away from the Ancient League to partisanship with England, which culminated in the success of the Protestant alliance against Scotland at the Reformation. This, then, is an important moment in the long and weary march to union with England.

In 1461 Henry VI. was driven to take sad shelter with Kennedy at St Andrews. In June 1461 Edward IV. was crowned, and at once made pact and alliance with the banished Douglases and the Celts of the west Highlands and the isles. From Ardithorn castle, John, lord of the Isles, sent ambassadors to Westminster, where (1462) a treaty was made for an English alliance and the partition of Scotland between Douglas and the Celts. A marriage between the mother of James III. and Edward IV. was spoken of, but Kennedy would not meet the English, and in March 1463 the English army joined the French. But Douglas invaded Scotland, in advance of an English army, but was defeated by an army under Bishop Kennedy. When France went over to the Yorkists, Kennedy, accepting an English pension, made a long truce between Scotland and England (October 1464). Peace might have been assured, but Kennedy died in 1466. His tomb in his college chapel of St Saluator's at St Andrews, his college and his bridge over the river Eden, have survived as monuments of a good and great man; they passed unscathed through the ruin wrought by the heretics.

On his death the nobles, notably Fleming, Livingstone, Crawford, Hamilton and Boyd, made a band for securing power and place. Boyd, with some borderers, Hepburn and Ker of Cessford, seized the boy king, and Boyd had himself made governor, his son marrying the princess Mary, sister of James.

In July 1460 James, then about eighteen, married Margaret, daughter of King Christian of Norway, who pledged the Orkneys and Shetland Isles for her dowry, which remains unpaid. The enemies of the Boys instantaneously overthrew them, and the Hamiltons, a race of English origin, arose on them. The shaggy place of possible heirs to the crown. The princess Mary was divorced by her Boyd husband and married Lord Hamilton. Their descendants were again and again kept from the royal succession only by the existence of a Stuart child, Mary, queen of Scots, or James VI. This fact, with the consequent feud of the Stewarts of Lennox, themselves claimants, governs the
James marched in force to Stirling, the key of the north, but the treacherous commander of the castle, Shaw of Sauchie, held the castle against him. James and his leaders, Atholl and Huntly, with their Stewarts and Gordons, and the levies of the nobles, comprising the mounted gentry of Fife, encountered the vanguard of the English army on the moors of the Bannockburn, and the only thing they were able to do was make a show of determined resistance. They were dispersed and many of them were killed or captured. Meanwhile, confusion reigned in England. The queen was at the mercy of her counselors, and the lords of the earldom of Gloucester held the castle. James, having conquered England, was crowned king of Scotland and became the first monarch of the Stewarts. James was the first ruler of the Stewart dynasty to be crowned king of Scotland, and his reign was marked by a period of relative peace and prosperity. The country was at peace with England and the rest of Europe, and James was able to turn his attention to internal affairs. He was a瓦ardian of the Reformation in Scotland and was able to establish himself as a powerful and popular monarch.
years' truce fostered by the Spanish envoy, Ayala, who has left a flourishing description of the king and his country. Meanwhile Perkin had failed in Cornwall and been captured. Henry VII, kept offering the hand of his daughter Margaret, who was married to James at Holyrood in August 1503. From this wedding, disturbed by quarrels over the queen's dowry, was to result the union of the crowns on the head of Margaret's great-grandson, James VI., after a century of tragedies and turmoil.

In 1507 the pope failed to draw James into the league formed to check French aggression in Italy. A murder on the borders poisoned Scottish relations with England, and the death of Henry VII. (1509) left James face to face with his blustering brother-in-law, Henry VIII. The Holy League of 1512, against France, found James committed to the cause of the old French alliance. He strengthened his fleet, but his admiral, Sir Andrew Barton, fell in a fight with English privateers equipped by the earl of Surrey and commanded by his sons (1511). Border homicides added their element of international irritation, and James renewed the ancient league with France. In 1513 Dr West, an envoy of Henry VIII., found James in the state of "a fey man," doomed, distracted, agitated and boastful. In May came the letter and ring of the French queen ordering James, as her knight, to strike a blow on English ground. He wrote to Henry none the less (24th May) with peaceful proposals, but on the 30th of June Henry invaded France. Strange portents and warnings of storms did not check James: he sent forth a fleet of thirteen ships and 3000 men, which faded into nothingness: he declared war on Henry; and on the 22nd of August he crossed the border with all his force, including the highlanders and islesmen. After securing his flank and rear by taking Norham, Wark and Eitel castles, he awaited the approach of Surrey's army at Ford castle, behind which lies Flodden Edge, a strong position, which he presently occupied. Surrey, who was ill-provisioned, challenged him to fight on the open field of Wooler Haugh. James declined to commit this chivalrous folly; but, for all that, permitted Surrey to outmanoeuvre him and pass, concealed by a range of hills, across his front, to a position north of Flodden, on his lines of communication.

Next day, 9th of September, Surrey crossed the Till, unobserved, by Twisel bridge and Millford, and moved south against Branxton hill, the middle of three ridges on the Flodden slope. The ground was difficult from heavy rains, the English troops were weary and hungry, but James had lost touch of Surrey and knew nothing of his movements till his troops appeared on his rear towards evening. In place of remaining in his position, James hurried his troops. On top of Branxton hill, the French army was divided into three elements: Home and Hunami, on the Scottish left, charged Edmund Howard's force; the Tynemouth men, under Dacre, did not support Howard, at first, but Dacre checked Home (whose later conduct is obscure) and drove off the Gordons. The Percys broke Errol's force; Rothes and Crawford fell, and the king led the centre, through heavy artillery fire, against Surrey. With Herries and Maxwell he shook the English centre, but while Stanley and the men of Cheshire drove the highlanders of Lennox and Argyll in flight (their leaders had already fallen), the admiral and Dacre fell on the flank of James's command, which Surrey, too one to pursue the fleet highlanders outmanoeuvred with his whole force. The Scottish centre fought like Paladins, and James, breaking out in their front, hewed his way to within a lance's length of Surrey, as that leader himself avers. There fell the king, riddled with arrows, his left hand hanging helpless, his neck deeply gashed by a bill-stroke. His peers surrounded his body, and night fell on "the dark impenetrable wood" of the Scottish spears. At dawn the survivors had retreated, only the light Border horse of Home hung about the field. The bishop of Durham accuses them of plundering both sides. (That Home's Borderers had but slight loss is argued by Colonel the Hon. FitzWilliam Elliot, in The Trustworthiness of Border Ballads, pp. 136-138.) Among the dead were thirteen earls, and James's son, the archbishop of St Andrews. The king's death assured the victory, which Surrey had not the strength to pursue, though the townsmen of Edinburgh built their famous Flodden Wall to resist him if he approached.

England never won a victory more creditable to the fighting and marching powers of her sons than at the battle of Flodden. Though the king's eldest son of James, marked out by Ayala, gave the opportunity, but he nobly expiated his fault that the Scots had so handled their enemies that they could not or dared not pursue their advantage; on the other hand, it was long indeed before the memory of Flodden ceased to haunt the Scots and deter them from invading England in force.

Though Ayala's well-known letter certainly flattens the material progress of Scotland, the country had assuredly made great advances. While England was tuneless, with Dunbar and the other "Makers," Scotland was "a nest of singing birds." The good Bishop Elphinstone founded the university of Aberdeen in 1495; and in 1496 parliament decreed compulsory education, and Latin, for sons of barons and freeholders. Prior Hepburn founded a new college, that of St Leonard's, in the university of St Andrews, and Scotland owes only one university, that of Edinburgh, to the learned enthusiasm of her reformed sons. Printing was introduced in 1507, and the march of education among the laity increased the general contempt for the too common ignorance that prevailed among the clergy. The greater benefices were being conferred on young men of high birth but of little learning. The college of Surgeons was founded by the municipality of Edinburgh (1509), and in 1506 obtained the title of "Royal." The stimulus given to shipbuilding encouraged commerce, and freedom from war fostered the middle class, which was soon to make its influence felt in the Reformation. The burgesses, of course, had long been a relatively rich and powerful body: it is a fond delusion to suppose that they sprang into being under John Knox, though their attachment to his principles made them prominent among his disciples, while Flodden probably began to deter them from the ancient attachment to France. Protestantism, and the disasters of James V., with the regency of his widow, were to convert the majority of Scots to the English party.

The long minority of James V. was fatal to the Stuart dynasty. The intrigues of Henry VIII., the ambition of Angus, who married the king's mother (Margaret, sister of Henry VIII.); the counter intrigues of Albany, a resident in France, and son of the rebellious Albany, brother of James III.; the constantly veering policy and affections of the queen-mother; and the gold of England, filled fourteen years with distractions, murders, treasons and conspiracies. Already Henry VIII. was trying to succeed his king, who, as he grew old, had the "stepfather, Angus, was his master and was the paid servant of Henry. The nobles were now of the English, now of the French party; none could be trusted to be loyal except the clergy, and they were factious and warlike. The result was that James threw off the yoke of his stepfather, Angus; drove him and his astute and treacherous brother, Sir George Douglas, into England (thereby raising up, like Bruce, a fatal party of lords disinherited), and while he was alienated from Henry and his Reformation, threw himself into the arms of France, of the clergy and of Rome.

Meanwhile the many noble and dissatisfied pensioners of England adopted Protestantism, which also made its way among the barons, burgesses and clergy, so that, for political reasons, James at last could not but be hostile to the new creed; he bequeathed this anti-Protestantism, with the French alliance, through his wife, Mary of Guise, and the influence of the house of Lorraine, to his unhappy daughter, Mary Stuart. The country, ever jealous of its independence, found at last that France threatened her freedom even more than did England, the apparent enemy; and thus, partly from Protestantism, partly from patriotism, the English party in Scotland proved victorious, and the Reformation was accomplished. Had Henry been honourable and gentle, had his sister not shared his vehement passions, James and Henry, nephew and uncle, might have been...
He had been educated in Scotland and Paris, held the rich abbey of Arbroath, and for some twenty years at least lived openly with Marriote Oglyve, of the house of Arlie. He was a practised diplomatist, and necessarily of the French and Catholic party. His wealth, astuteness, experience and tenacity of purpose were to harass Henry's attacks on Scottish independence, till the daggers of pietistic cut-throats closed the long debate. Beaton was cruel: he had no more scruples than Henry about burning men for their beliefs. But the martyrs were few, compared with the numbers of people whom the reformed kirk burned for witchcraft. Some twelve martyrs at least perished in 1539-1540, and George Buchanan, whose satires on the Franciscans delighted the king, escaped to France, in circumstances which he described diversely on different occasions, as was his habit.

In 1540 James visited the highlands, and later reduced the Macdonalds and annexed the lordship of the Isles to the crown. In 1541 he lost two infant sons, and the mysterious affair of the death of that aesthetic ruffian, Sir James Hamilton of Finnart, was supposed to lie heavy on his mind. There were disputes with Henry, who demanded the extradition of fugitive friars, which James refused. In 1541 he disappointed Henry, not meeting him at York, and this course, advised by his council and Francis I, ranked deep, while Henry was making a large English raid on the Border in time of peace. The English fared ill, and Henry horrified his council by his usual proposal to kidnap the king of Scotland. Henry's men marched on the Border, but a force which James summoned to Fala Moor (31st of October 1542) contained but one lord who would march with him—Napier of Merchistoun. About this date occurs the legend of a list of hundreds of heretics, whom the clergy asked James to proscribe. No king of Scotland could dream of executing such a coup d'état; the authority for it is that mythopoeic earl of Arran who later became regent, and told the fable to Henry's agent, Sir Ralph Sadleir.

Presently ensued the Scottish raid of Solway Moss and the capture of many of the Scottish nobles. The facts may be found in contemporary English despatches printed in the Hamilton papers. The fables are to be read in Knox's History of the Reformation in Scotland, and in Froude. The secret of the raid was sold by the brother of Angus, Sir George Douglas, and by other traitors. England was prepared, and on the 23rd of November routed and drove into Solway Moss a demoralized multitude of farm-burning Scots. The guns and some 1200 men were taken; many men were drowned. James retired heartbroken from the Border to Edinburgh, where he executed business. He then dwelt for a week at Linlithgow with the queen, who was about to give birth to a child. Next he bore "the pleasant pageant of his6 blesse heart " to Falkland, where he hailed the birth (8th of December) of his daughter, Mary Stuart. Uncomforted, he died on the 14th (15th?) of December. Accounts differ as to the date. Sheer grief and shame, and, it is said, sorrow for the failure in war of his favourite, Oliver Sinclair, were the apparent causes of his death. Knox appears to insinuate that a rumour declared Mary of Guise and the cardinal guilty of poisoning James, but an attempt had been made to put another sense on the words of this historian, who frequently hints that Mary was the mistress of the cardinal (Knox, vol. i. p. 299).

Again Scotland had to endure a long royal minority. The distraction of Scotland promised to Henry VIII. a good chance of annexing the kingdom, whether by the marriage of Edward, prince of Wales, to the infant queen, Mary, or by acquiring, through treachery, her person and the castles of the country. Sir George Douglas at once crossed the border. Angus soon followed, with the lords captured at Solway Moss, all bound more or less to work Henry's will. In Scotland the cardinal; Arran, who was next heir to the throne; Huntly and Murray were proclaimed regents. Knox and others speak of a will of James V., forged by the cardinal, but the stories are inconsistent, and rest mainly on the untrustworthy evidence of Arran. His legitimacy was rather worse than dubious, and henceforth he sided with the party most
The death of Beaton brought the Douglases into resistance to Henry VIII., who aided the murderers, now besieged in Beaton’s castle of St Andrews. An armistice was arranged; the besieged begging for a remission from the pope, and also asking Henry to request the emperor to move the pope to refuse. The remission, however, arrived before the 2nd of April 1547, and was refused by the murderers.

Henry VIII. and Francis II. were now dead. In mid July French armed galleys approached St Andrews, and the castle surrendered. Some English artillery was brought to bear on it. With other captives, John Knox was put aboard a French galle.

In September the Protector Somerset (Hertford) invaded and utterly routed the Scots at Pinkie near Musselburgh. No result ensued, except Scottish demands for French aid, and a resolve to send Mary to France. Feroce fighting, aided by French auxiliaries, followed: in 1550 the English abandoned all castles occupied by them in Scotland. Mary was now in France, the destined bride of the Dauphin; while Knox, released from the galleys, preached his doctrines in Berwick and Newcastle, and was a chaplain of Edward VI., till the crowning of Mary Tudor brought him to France. Huldreich Zwingli with political modifications of his own, the extreme form of Calvinism.

A visit of Mary of Guise to France (1550) ended in her acquiring the regency, which she administered mainly under French advice. The result was irritation, the nobles looking towards England as soon as Mary Tudor was succeeded by Elizabeth, while Protestantism daily gained ground, inflamed by a visit from Knox (1555-1556). Invited again, in 1557, he shrank from the scene of turmoil, but a "band" of a Protestant tendency was made by nobles, among whom was Mary’s natural brother James Stewart, the Earl of Lennox (3rd of Dec. 1557). On the 24th of April, Mary wedded the Dauphin, and about the same date Walter Milne, an aged ex-priest, was burned as a heretic, the last Protestant martyr in Scotland. There was image-burning by godly mobs in autumn; a threat of the social revolution, to begin at Whitsuntide, was issued on the 1st of January 1559,-" the Beggars’ Warning." Mary of Guise issued proclamations against preachers and church-wreckers, backed by a statute of March 1559. The preachers, mainly ex-friars and tradersmen, persevered, and were summoned to stand their trial in April, but Knox arrived in Perth, where an armed multitude supported their cause. On the 10th of May they were outlawed for non-appearance at Stirling. Knox accuses Mary of Guise of treachery: the charge rests mainly on his word.

On the 10th of May the brethren wrecked the monasteries of Perth, after a sermon by Knox, and the revolution was launched, the six or seven preachers already threatening the backward members of their party with excommunication. The movement spread to St Andrews, to Stirling, to Edinburgh, which the brethren entered, while Mary of Guise withdrew. She was still too strong for them, and on the 24th of July they signed a compact. They misrepresented its terms, broke them, and accused the regent of breaking them. Knox and William Kirkcaldy of Grange had been intriguing with England for aid, and for the marriage of the earl of Arran (son of the earl of Arran, now also duke of Chathelherault, ex-regent) with Queen Elizabeth. He escaped from threatened prison in France, by way of Switzerland, and though Elizabeth never intended to marry him, the Hamiltons now deserted Mary of Guise for the Anglo-Protestant party. Maitland of Lethington, the Archiphe of his day, also deserted the regent; but in November the reformers were driven by the regent and her small band of French soldiers from Edinburgh to Stirling. They were almost in despair, but, heartened by Knox and Lethington, they resumed negotiations with Elizabeth, who had already supplied them with money. An English fleet suddenly appeared, and drove the French to retreat into Leith from an expedition to the west. In February 1560 a league was made at Berwick between Elizabeth and “the Congregation.” France was helpless, the tumult of Amboise alarmed the Guises for their own lives and power, and the regent, long in bad health, was dying in Edinburgh castle. On the 10th of June
she expired, and hunger forced her French garrison in Leith, after a gallant and sanguinary defence, to surrender.

After an armistice, treaties of peace were concluded on the 6th of July: the treaty, as far as it touched the rights of Mary Stuart, was not accepted by her, nor did she give her assent to the ensuing parliament or convention of Estates. Knox and the other preachers began to organize the new kirk, under the guidance of the English ambassador, whose rule was very brief. The Convention began business in August, crowded by persons not used to be present, and accepted a Knoxian "Confession of Faith." On the 24th of August three statutes abolished papal and prelatical authority and jurisdiction; repealed the old laws in favour of the church, and punished celebrants and attendants of the Mass—for the first offence by confiscation, for the second by exile, for the third by death. The preachers could get the statute passed, but the sense of the hostility prevented the death penalty from being inflicted, except, as far as we know, in one or two instances. The Book of Discipline and the Book of Common Order express Knox's ideals, which, as far as they were noble, as in the matter of education and of provision for the poor, remained, in part or in whole, "devout imaginations." Not so the Knoxian claims for the power of ministers to excommunicate, with civil penalties, and generally to "rule the roast" in secular matters. The nobles and gentry clung to the wealth of the old church; the preachers, but for congressional offerings, must have starved. Neglect as well as mob violence left the ecclesiastical buildings in a ruinous condition, but the authority of the state, with their power of boycotting (excommunication), became a theocracy. The supernormal claims of these preachers to dominance in matters public or private were the main cause of a century of war and tumult. The preachers became, what the nobles had been, the opponents of authority; the Stuarts were to break them and be broken on them till 1688. In the hands of the ministers a Calvinism more Calvinistic than Calvin's was the bitter foe of freedom of life, of conscience, and of religious tolerance. On the other hand, unlike the corrupt clergy whom they dispossessed, they were almost invariably men of pure and holy life; stainless in honour; incorruptible by money; poor and self-sacrificing; and were not infrequently learned in the original languages of the scriptures. Many were thought to be possessed of powers of healing and of prediction; in fact a belief in their supernormal gifts, like those of Catholic saints, was part of the basis of their prestige. The lower classes, bullied by sabbatarianism and deprived of the old revels, were restive and hostile; but the educated middle class was with the preachers; so were many lesser country gentry; and the nobles, securing the spoils of the church, were acquiscent.

The rulers condoned, in the hope of securing public and private work of destruction had been done, was the most peaceful that occurred in any European country. On the Catholic side there was as yet no power of resistance. Huntly, the Catholic "Cock of the North," had himself been compromised in the actions of the Congregation. How the Catholics of the west highlands took the change of creed we do not know, but they were not fanatically devout and attempted no Pilgrimage of Grace. Life went on much as usual, and the country, with a merely provisional government, was peaceful enough under the guidance of Moray, Maitland of Lethington, and the other lay Protestant leaders. They wished, as we saw, to secure the hand of Elizabeth for the earl of Arran, a match which would practically have taken away the Scottish crown from Mary Stuart, unless she were backed by the whole force of France. But Elizabeth had seen Arran in London and had probably detected his hysterical folly. He actually became a suitor for Mary's hand, when the death of her husband the French king (30th of December 1560) left her a friendless exile. Her kinsmen, the Guises, fell from power, and were no longer to be feared by England, so that Elizabeth need not abandon her favourite,Lord Robert Dudley, for the Scottish princess. When her marriage with Arran in the spring of 1561, Mary's brother, Lord James Stewart, lay prior of St Andrews, visited her in the interest of the Scottish Protestant party, while Lesley, later bishop of Ross, brought the promises of Huntly. He would restore the Mass in the North and welcome the queen at Aberdeen if she would land there, but Mary knew the worth of Huntly's word, and preferred such trust as might be ventured on the good faith of her brother. She foiled the attempts of the English ambassador to make her ratify the treaty of Edinburgh, and, while Lethington, a worse prophet than Knox, predicted "strange tragedies," Mary came home.

Young as she was, she came as no innocent novice to a country seething with all the pernicious ambitions that a religious revolution brings to the surface. She was wise with the wisdom of the Guises, but sincere friends she had none, and with all her trained fascinations she made few, except in the circle of the Flemings, Beatons, Livingstons and Seaton. Lethington, who had deserted her mother, dreaded her arrival; she forgave him, and for a time, relying on him and her brother, contrived to secure a measure of tranquility.

Scotland was, doubtless, in Mary's mind, a mere stepping-stone to England. There the Catholic party was strong but for its lack of a leader, and to the English Catholics Mary seemed their rightful queen. By one way or other—by a Spanish marriage, by the consent of Elizabeth to recognize Mary as her heir, by the ambitions of her own nobles and the wit of Lethington, ever anxious to unite the island under one sovereign—Mary hoped to wear the three crowns. Catholicism she would restore if she could, but that was not her first object. It was commonly thought that, though she would never turn Calvinist, she might adopt the Anglican doctrine as under Huntly and thereby only she could be recognized as Elizabeth's successor. Till she became Elizabeth's captive there was always the possible hope of her conversion, and despite her professions to the pope there was at least one moment when the pope perceived this possibility. Meanwhile she only asked freedom of conscience for herself, and her mass in her own chapel. The bitter fanaticism of Knox on this point encountered the wiser policy of Lord James and of Lethington.

Mary had her mass, but the constant and cowardly attacks on her faith and on her priests embittered her early years of queenhood in her own country. The politicians hoped that Elizabeth might convert Mary to her own invisible shade of Protestantism if the sister sovereigns could but meet, and for two years the promise of a meeting was held up before Mary.

Meanwhile the needy and reckless Bothwell, a partisan of Mary of Guise, a Protestant and the foe of England, was accused by Arran of proposing to him a conspiracy to seize the queen, but the ensuing madness of Arran left this plot a mystery, though Bothwell was imprisoned till he escaped in August 1562. The queen's task was to undertake her journey to the north, which ended in a battle with the Gordons. The death of Elizabeth and the execution of one of her sons. This attack by a Catholic queen on the leader of the Catholic party has been explained in various ways. But Mary's heart was in the expedition and in the overthrow of Huntly; she was in the hands of her brother, to whom she had secretly given the earldom of Murray, coveted by Huntly, whose good faith she had never believed in, and whose power was apt to trouble the state and disturb her friendly relations with England. She was deliberately "running the English course," and she crushed a probable alliance between the great clans of the Gordons and Hamiltons.

The question of her marriage was all important, and her chances were not improved by the scandal of Chastelard, whether he acted as an emissary of the Huguenots, sent to smirch her character, or merely played the fatuous fool in his own conceit. He was executed on the 22nd of February 1563 at St Andrews. Lethington then went to London to watch over Mary's interests, and either to arrange her marriage with Don Carlos, or to put pressure on Elizabeth by the fear of that alliance. Now, in March 1563, Elizabeth first drew before the Scottish queen the lure of a marriage with her favourite, Lord Robert Dudley; Mary to be acknowledged as her successor if Elizabeth died without issue. Later in the year, and after Lethington's diplomatic
mission to France, Elizabeth announced that a marriage of Mary with a Spanish, Imperial or French prince would mean war, while she still hinted at the Leicester marriage, or perhaps at a union with young Henry Darnley, son of Lennox. Elizabeth’s real intention was merely “to drive time,” to distract Scotland and to leave her rival isolated. The idea of a Spanish marriage excited the wrath of Knox, whose interviews with Mary did nothing but irritate both parties and alienate the politicians from the more enthusiastic Protestants. The negotiations for the Leicester marriage were prolonged till March 1565, when Elizabeth had let slip on Mary Henry Darnley (the young son of Lennox, who himself had been allowed to return to Scotland), and at the same time made it clear that she had never been honest in offering Leicester.

Till the spring of 1565, Mary, despite the insults to her religion and the provocations to herself, had remained attached to “the English course” and to the counsels of Moray and Lethington. Her naturally high temper, wearied of treacheries and brow-beatings, now at last overcame her. Darnley was esteemed handsome, though his portraits give an opposite impression; his native qualities of cowardice, perfidy, profligacy and overweening arrogance were at first concealed, and in mid April 1565 Lethington was sent to London, not discontent with Mary’s triumph, but designed till the 31st of March, but to announce Mary’s intended wedding with her cousin. Thus the cunning of Elizabeth and Cecil had its reward. Darnley being a Catholic, as far as he was anything, the jealous fears of the Brethren under Knox reached a passionate height. The Hamiltons saw their Stuart enemies in power and favour. Murray knew that his day of influence was over, and encouraged by the promises of Elizabeth, who was remonstrating violently against the match into which she had partly begrudged and partly forced Mary, he again approached her, and Mary’s triumph seemed complete. Her valour, energy and victory over Elizabeth were undeniable, but she was now in the worst of hands, and her career took its fatal ply. Lethington had not left her, but he was over-looked; Lennox and the impracticable Darnley were neglected; and the dangerous Earl of Morton, a Douglas, had come to trample for his lands and office as chancellor, while Mary rested on her foreign secretary, the upstart David Riccio; on Sir James Balfour, noted for falseness even in that age; and on Bothwell.

As early as September 1565 gossips were busy over the indiscretion of Riccio’s favour: Darnley had forfeited the good opinion of his wife; was angry because the Hamiltons were not wholly sacrificed to the ancient feud of Lennox and his clan; and Knox’s party looked forward with horror to the parliament of March 1566, when Mary certainly meant “to do something tending to some good anent restoring the ancient religion.” She was also supposed to have signed a Catholic league, which only existed in devout imaginations, but in February 1566 she sent the bishop of Dunblane to crave a large subsidy from the pope. Quite ignorant as to the real state of affairs, he raised the money and sent a nuncio, who never risked himself in Scotland, but made the extraordinary proposal later, that Mary should execute or at least “discount” her chief advisers.

Meanwhile the clouds of hatred gathered over the queen. Lethington (5th of February 1566), wrote to Cecil saying that “we must chop at the very root,” and Randolph, Elizabeth’s ambassador, heard that measures against Mary’s own person were being taken. Randolph was dismissed for supplying Murray with English gold; from Berwick he and Bedford reported to Cecil the progress of the conspiracy. While Mary was arranging a marriage between Bothwell and the late Huntly’s daughter, the lady, many of the Darnley party intrigued with Lord Ruthven and George Douglas, a bastard kinsman of Morton, for the murder of Riccio, and for his own acquisition of the crown matrimonial. Morton and Lindsay were brought into the plot, while Murray, in England, also signed. He was to return to Edinburgh as soon as the deed of slaughter was done, and before parliament could proceed to his forfeiture.

Mary, according to Ruthven’s published account, had herself unconstitutionally named the executive committee of parlia-

ment, the Lords of the Articles, who were usually selected on various occasions, by the Estates themselves. While Mary was at supper, on the 9th of March, Darnley, with Ruthven, George Douglas and others, entered the boudoir in Holyrood, by his private stair, while Morton and his accomplices, mainly Douglasses, burst in by way of the great staircase. There had been an intention of holding some mock trial of Riccio, but the fury of the crowd overcame them: Riccio was dragged from Mary’s table and fell under more than fifty dagger wounds. While Mary, Darnley and Ruthven exchanged threats and taunts, Bothwell and Huntly escaped from the palace but next day, Mary contrived to have the burghers of Edinburgh summoned to Atholl. On the following evening Murray arrived, and now Murray was welcome to his sister. Darnley had taken on him (his one act of kingly power) to dismiss the parlia-

ment, but he now found himself the mere tool of his accomplices. He denied—he never ceased to deny—his share in the guilt, and Mary worked on his vanity and his fears, and moulded his “heart of wax” to her will. On his assurances the lords, expecting an amnesty, withdrew their guards from the palace and the day found that the bird had flown to the strong castle of Dunblane. Hence Mary summoned the forces of the country, under Bothwell and Huntly; she forgave Murray; the murderers had no aid from the Protestants of Edinburgh, who as before failed them in their need. Knox himself fled to Kyle, though there is no evidence that he was privy to a deed which he calls “worthy of all praise,” and Morton and Ruthven spurred to Berwick, while Lethington skulked in Atholl. His possessions were handed over to Bothwell. Darnley betrayed some obscure accomplices. He was now equally detested by Murray, by the new exiles and by the queen, while she reconciled Murray and Bothwell. She tried to assuage all feuds; in an inventory of her jewels she left to Darnley, but in case he and her child did not survive its birth. The infant, James, was born in the castle on the 10th of June.

On Mary’s recovery, her aversion to Darnley, and her con-

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fidence in Bothwell, were unconcealed; and, early in September, she admitted Lethington to her presence. She had learned that Darnley meant to leave the country: she met him before her Privy Council, who sided with her; he withdrew, and the lords, including Murray, early in October signed a “band” disclaiming all obedience to him. On the 7th or 9th of October, Mary went to Jedburgh on the affairs of Border justice, and a week later she rode with Murray to Hermitage castle, where for several days Bothwell had lain, wounded nearly to death by Elliot, a border reiver. On her return she fell into an almost fatal illness and prepared for her end with great courage and piety; Darnley now visited her, but was ill-received, while Bothwell was borne to Jedburgh from Hermitage in a litter. While Buchanan represents the pair as indulging in a guilty passion, the French ambassador, du Croc, avers that Mary was never in better repute with her subjects. On the 24th of November Mary was at Craigimmil castle, near Edinburgh, where undoubtedly she held a conference with her chief advisers that led to no good to Darnley; and there were rumours of Darnley’s design to seize the infant prince and rule in his name. The evidence on these points is disputable, but now, or not long after, Huntly, Bothwell, Lethington and Argyll signed a “bands” for Darnley’s murder.

Meanwhile, in December, Mary held the feasts for the baptism of her son by Catholic rites at Stirling (17th of December), while
Darnley stood aloof, in fear and anger. A week later, moved by Bedford, representing Elizabeth, and by Bothwell and her other advisers, Mary pardoned Morton and his accomplices. She also restored Archbishop Hamilton to his consistorial jurisdiction, but withdrew her act, in face of presbyterian opposition. Darnley had retired to his father's house at Glasgow, where he fell ill of small-pox, and, on the 4th of January 1567 Mary, from Holyrood, offered to visit him, though he had replied by a verbal insult to a former offer of a visit from Stirling. About this week must have occurred the interview in the garden at the Douglas's house of Whittingehame, between Morton, Bothwell and Lethington, when Morton refused to be active in Darnley's murder, unless he had a written warrant from the queen. This he did not obtain. On the 20th of January 1567 Mary left Edinburgh for Glasgow, her purpose being to bring Darnley back to Craigmillar. At this time (the 22nd-23rd of January), she must have written the two first Casket Letters to Bothwell. Letter II. (really Letter I.) leaves no doubt, if we accept it, as to her murderous design (see CASKET LETTERS). What followed must be read in Mary's biography: the end was the murder of Darnley in the house at Kirk o' Field, after the midnight of Sunday, the 9th of February.

Public and conspicuous as was the crime, the house being blown up with gunpowder, no secret has been better kept than the details. The facts of Mary's lawless marriage with Bothwell, her capture at Carberry Hill, her confinement in Loch Leven Castle, her escape, her flight to France, her arrest at Darnley, and her escape again, with the proceedings of the English Commission, which uttered no verdict, must be read in her biography (see MARY STUART).

Scotland was now ruled by her brother, the Regent Murray, in the name of her infant son, James VI. Murray arrested Lethington, as accused of Darnley's murder, and Lethington was now lodged under ward in Edinburgh, but Kirkcaldy of Grange released him and gave him shelter in Edinburgh castle, which he commanded (23rd of October). Lethington was to be tried, but his nearest friends mustered in great numbers, and, secure in the castle, he and Kirkcaldy upheld the cause of Mary. Lethington's motive is obvious; in Mary's success lay his chance of safety: how he won over Kirkcaldy is unknown. The rebellion in the north of England failed, Northumberland was driven across the border, and it was Murray's idea to harter him for Mary, in the beginning of January 1570. But on the 23rd of January, Murray was shot dead, in the street of Linlithgow, by a Hamilton, with the approval and aid of Archbishop Hamilton and other heads of the house.

The contending parties, queen's men and king's men, now made approaches to each other; neither had a share in the Hamiltons' crime. But Randolph, sent to Edinburgh for the purpose, kept them apart; Elizabeth despatched Sussex to ravage the Scottish border, in revenge for a raid by Buccleuch, and in May Lennox entered Scotland with an English force and soon was appointed regent (17th of July). This meant a war of Stuarts against Hamiltons, and, generally, of "Queen's men" against "King's men." Truces and empty negotiations merely protracted disorder. On the 2nd of April 1571 Mary's party lost the castle of Stirling, which had been taken the previous year by a daring night surprise; and Archbishop Hamilton, a prisoner, was hanged without trial. In May the Hamiltons entered Edinburgh, and later Lennox, in a parliament held at Leith, secured the forfeiture of Lethington. As the year passed by, Argyll, Cassils, Eglinton and Boyd went over to Lennox's party, and in an otherwise futile raid of Kirkcaldy's men on Stirling, Lennox was captured and was shot by a man named Calder. In England the Ridolphi-Norris plot was discovered, and at the end of 1571 Buchanan's "Detection!" of Mary, with translations of the Casket Letters, was published. Though Mar was now regent, Morton was the man of action. In February 1572 he forced on the kirk an order of bishops, "Tulcan bishops," filters through which the remaining wealth of the church trickled into the coffers of the state, or of the regent.

This was the beginning of the sorrows of more than a century. The kirk Presbyterian was founded on the Genevan model, and was intended to be a theocracy. She had claimed, since the riots at Perth in 1559, the Power of the Keys, with the power of excommunicating even the king; a sentence practically equivalent to outlawry. These pretensions were incompatible with the freedom of the state and of individuals. It became the policy of the crown to check the preachers by means of the order of bishops, first reintroduced by Morton, and worthy of their origin. The kirk was robbed of its fresh, benefits were given to such villainous cadets of great families as Archibald Douglas, an agent in Darnley's murder; and though, under the scholarly but fierce Andrew Melville, the kirk purified herself fresh and successfully opposed the bishops, James VI. dominated her again, when he came to the English crown, and the result was the long war between claims equally exorbitant and intolerable, those of the crown and the kirk.

The death of Mar (28th of October 1572) left power in the stronger hands of Morton, and the death of Knox (24th of November) put the kirk for a while at the mercy of the new regent. Meanwhile Mary's party dwindled away; at a meeting in Perth (23rd of February 1573) her thanes fled from her, and Elizabeth at last reinforced Mary's enemies with men and artillery. On the 28th of May Edinburgh castle surrendered at discretion. Lethington, the heart of the long resistance, died, a paralytic, with his last words: "Thrice has his master won his kingdom; and the gallant Kirkcaldy. Knox has prophesied that he would be hanged, and hanged he was."

Despite the ferocity of partisans in "the Douglas wars," an English envoy reported that the power of the country gentry and the boroughs had increased, while that of the great waverers, nobles, Hamilton, Huntly and others, was diminishing. The "navy was so augmented as it is a thing almost incredible," but none the less the £100 sterling was worth as much, Drury wrote from Berwick, as £2000 Scots.

In 1573, at the General Assembly, Andrew Melville, now a man of thirty, and, with Buchanan, the foremost scholar of Scotland, especially in Greek, caused the lawfulness of bishops to be mooted. Thenceforward Scotland was engaged in a kind of "bishops' war." Meanwhile Morton found the old Marian party feud reviving, and in 1577, knowing his own guilt in Darnley's murder, he attempted to win the alliance of Mary for his own security. In March 1578, a coalition of his public and private foes caused Morton to resign the regency, while the young earl of Mar became custodian of the boy king. On the 28th of May, Morton allied himself with Mar, who commanded Stirling castle, and Morton's party won. Morton went on to win the greater part of the kingdom; but in April 1579 he died suddenly, after dining with Morton; poison was suspected. Morton, with Angus, attacked the Hamiltons, whose chiefs fled the country, accompanied by the worst of traitors, Sir James Balfour. Knowing all the secrets of Darnley's murder, Balfour revenged himself by raking up Morton's foreknowledge of the deed; and here he was helped by the influence exercised over the young king by his cousin Esme Stuart d'Aubigny (a son of Darnley's paternal uncle, John), who came to Scotland from France in September 1579. D'Aubigny was allied instead with Knox, brother-in-law, James Stewart of the house of Ochiltree, captain of the King's Guards, an able, handsome, learned, but rapacious man. The Hamiltons, now in English exile, were forfeited; d'Aubigny received the earldom of Lennox; and, as after Darnley's death, placards, were posted urging the trial of Morton for that crime. As against the new Lennox, Morton was deemed a friend by the preachers, though Lennox professed to be reconciled to the kirk. Through-out 1580 Elizabeth encouraged Morton, with her wonted fickle treachery. In October she recalled her ambassador, and left Morton to his fate. Sir James Balfour secretly returned with Margaret Morton's information, and Morton was accused and arrested on the last day of 1580. Elizabeth sent old Randolph to threaten and plead, but Lennox and James Stewart were too
powerful. Morton was tried on the 1st of June 1581, was found guilty, and, with one Binning, who had accompanied Archibald Douglas to the scene of Darnley's murder, was executed. His title went to the Douglasses of Lochleven. James Stewart received the Hamilton earldom of Arran, and under him and Lennox the young king began his long strife with the kirk and his half-hearted dealings with the Catholics and his mother.

It is impossible here to follow the course of the strife, in which the godly were led by the earls of Gowrie and Angus. Gowrie seized James, and power, at Ruthven (August 1582), a storm approved by other preachers. In June 1583, James escaped to St. Andrews and was surrounded by his party. In November he made the son of Lennox, who had died in France, a duke; Arran again was in power, and Melville with other preachers fled to England in 1584, after the execution of Gowrie for high treason. The king and council were proclaimed judges in all cases; preachers were to submit to their judicature when accused of political offences, a standing cause of strife.

No longer needing Catholic assistance, James threw over his mother, with whom he had been intriguing, and sent the beautiful Mary of Seton to day to Edward. Mary's secretary was Elizabeth. At the end of 1585, all James's exiled foes, Douglasses, Hamiltons and others, returned across the border in force, caught the king at Stirling, drove Arran into hiding, restored the Gowrie family, and became the new administration. In 1586, the Babington plot was arranged, and discovered by those who had allowed it to be arranged. James practically did nothing to rescue his mother: one of his representatives in England was that Archibald Douglas who helped to slay his father.

The execution of Mary on the 8th of February left James "a free king" as far as his mother's claim to the throne was concerned, and he had his pension of £3000 or £4000 from Elizabeth. Thus war between the two countries was avoided. Thereafter, till James came to the throne of England, the history of Scotland was but a series of inchoate revolutions, intrigues that led to nothing definite and skirmishes in the war of kirk and state. The king had to do with preachers who practically held the doctrines of Becket as to priestly pretensions. James was "Christ's silly vassal," so Andrew Melville told him, and "Christ" in practice meant the preachers who possessed the power of the keys, the power to bind and loose on earth as in heaven. The kirk, while Elizabeth warned James against the pretensions of men who "would have no king but a presbytery," whenever he was at odds with the ministers and with the nobles who kept trying to seize his person with the approval of the ministers, Elizabeth secretly or openly backed the kirk.

The kirk was strong enough to compel James to march, more than once, against the Catholic earls, Huntly, Errol, Angus and others. They, again, constantly intrigued with Spain, and there were moments when James, driven desperate by the preachers, listened to their projects. He was anti-papal by conviction, yet hoped for help from Rome, and was so far implicated in the adventures of his Catholic subjects that, in the interest of his own character, he had to advance against them and drive them into exile. In 1590 he married Anne of Denmark: in 1592 his character suffered through the murder, by Huntly, of "the bonny earl o' Murray," suspected of favouring the madcap Francis Stewart, early of Bothwell (nephew of Queen Mary's Bothwell), a man who made it his business to kidnap the king, and who presently, by the help of Gowrie's widow, seized him in Holyrood. In 1592 parliament "ratified the liberty of the true kirk," leaving little liberty for king and state. Since, in the phrase of one preacher, "the king might be excommunicated in case of contumacy and disobedience to the will of God," as interpreted by the ministers. In the following year (23rd of July 1593) Bothwell, much favoured by the preachers, made his capture of James, but had not the power to hold him long, and a later revolutionary attempt in the same year, by Atholl and the young earl of Gowrie, was a failure.

Gowrie went abroad and passed some time at the university of Padua; to him the eyes of the preachers were hopefully turned after 1596. As Bothwell had become a Catholic, they excommunicated him in 1593; in 1596 James resolved to recall the exiled Catholic peers; the commissioners of the General Assembly, alarmed and infuriated, met in Edinburgh, ordered a day of humiliation, decided to excommunicate the Catholic earls and established a kind of revolutionary committee of public safety. James insisted on his own authority; insisted that a secular court had a right to try a virulent preacher who declined the secular jurisdiction when accused of having denounced Queen Elizabeth. He increased Presbyterian emotion by the suspicion that the preachers were declared to be seditionists; a meeting in a church ended in a threatening riot that raged round the Tolbooth, where James was sitting, and on the following day he with his Court withdrew to Linlithgow (18th of December 1596). The Court of Session was also to be removed, and the burgesses, fearing loss of trade, laid down their arms. The leader of the clerical agitation, Mr Bruce, with a wild preacher named Balcanquhal, fled to England, and James returned in triumph to his capital on the 1st of January 1597. He followed up his victory; a General Assembly, to Perth, was summoned to the crown of England after the death of the queen. He was in deep poverty, the Estates were chary of supplies, plotters in Scotland had been offering to Cecil to kidnap the king (1598), and his relations both with the English government and with his own subdue but struggling preachers were bitterly unfriendly.

It is not known whether the mysterious events that culminated in the slaying of the earl of Gowrie and his brother, by John Ramsay, in their own house in Perth, on the 5th of August 1600, had any connexion with James's attitude (1585). He increased Presbyterianism by the suspicion that he was intriguing with Catholic powers, and by his book on the rights and duties of a king (Basilicon Doron), which fell into the hands of Andrew Melville. Some cryptic correspondence with the pope, whether actually by James or by Elphinstone, one of his ministers, came apparently to the knowledge of the English court; his secret relations with the earl of Essex were, if not known, suspected; the young earl of Gowrie, returned from a residence on the continent, was too effusively welcomed by Elizabeth in May 1600; and James made a tactless speech when asking parliament for money towards his "honourable entering to the crown of England."

The Gowrie conspiracy

The most probable explanation is that Gowrie laid, with the utmost secrecy, a plot to lure James to Perth, kidnap him there, transport him to Fastcastle, a fortress of the profligate and intriguing Logan of Restalrig, on the Berwickshire coast, and then raise the Presbyterian party. If we could accept the evidence of a letter attributed to Logan and produced in 1608, this theory would be valid. But the letter has been proved beyond question to be a forgery, though it may very well be a forged copy of a genuine original (see The Gowrie Conspiracy Confessions of George Sprod, by A. Lang, Roxburghe Club, London, 1902). Certainly no plot was laid by James to entrap the Ruthvens, and the only question is, was the brawl in which they fell accidental, or had a plot hatched in deep secrecy been frustrated by unexpected circumstances? (In James VI. and the Gowrie Conspiracy the writer argues in favour of the latter solution.) In any case the scepticism of the Edinburgh ministers, especially of Bruce, encouraged the tendency of the people to think the worst, and led to the banishment, followed by other restrictions and sufferings, of Bruce himself. The house of Gowrie, so long hostile to Mary Stuart and James, was forfeited and ruined. Charles I. was
born just after the trial of the dead Ruthvens (19th of November 1600), and his mother was, as usual, opposed to the king’s recent proceedings.

In 1602 Cecil was engaged in dark plots against James; the rising of Essex (of which James probably was expected) had failed; but by the end of the year Cecil had entered into a secret understanding with James to favour his claims to the English succession. Elizabeth’s last letter to the king was of the 5th of January, 1603; she died in the earliest hour of the 1st of April, and James, late on the 3rd of April, had the news from Carey. He entered London on the 6th of May, whence he henceforth, as he said, governed Scotland “by the pen.” Entirely safe from the usual turbulent movements of Scottish opposition, and but ill acquainted with Scottish opinion, he could dictate measures which were oppressive to the preachers and unwelcome to the majority of the laity. He kept the kirk for two or three years without a General Assembly, to which they had a legal right, and (with at least a shadow of legal right) he proclaimed unlawful the assembly of Aberdeen (1605). Though the recalcitrants who held it were punished, James’s own officials saw that he had gone too far. His bishops were already becoming odious to his nobles; his pronouncement of General Assemblies continued, and the brothers Melville, called to England, were treated with unconstitutional harshness. Andrew, who behaved with injudicious violence, was banished to France, James to Newcastle; other preachers were confined to their parishes; and by a mixture of chicanery (as at the pseudo assembly of Linlithgow, and 1615, where the king’s prelates pretended to consent, as a new turn of the dragon’s teeth of civil war. Catholics were equally or more severely persecuted; and though the Borderers were brought into tranquillity, it was by means of indiscriminate severity.

A scheme for complete union of England and Scotland, promoted by James and by Francis Bacon, was unwelcome to and rejected by the two jealous countries (1604–1606). But Post- nati, subjects born in Scotland after James’s accession to the English throne, were allowed to purchase and hold real property, and “to bring real actions for the same,” in England (1609).

In 1615 James had his Scottish bishops consecrated by three English bishops, ensuring for the northern country apostolic succession; and justices of the peace were created in Scotland. The “plantation” of Ulster by Scottish colonists was begun and flourished. Catholics were more and more persecuted, and in 1615 Father Ogilvie was executed, after abominably cruel treatment in which Spottiswoode, archbishop of Glasgow, took an unworthy share. In the same year the king’s “Courts of High Commission” were consolidated, and an organ was actually placed in the royal chapel at Holywood.

In 1617 James visited his native land: ecclesiastical brawls at once broke out, and James vigorously pushed, in face of the disfavour even of his bishops, the acceptance of his famous Five Articles. They were accepted at Perth, in 1618, but were evaded wherever evasion was possible. Communicants were to kneel, not to sit, a thing that had, of all others, been odious to John Knox; Easter was to be observed, also Christmas, contrary to earnest consciences; confirmation was introduced; the Communion might be administered to the dying in their houses; and baptism must be on the first Sunday after the child’s birth.

These articles, harmless as they may seem to us, were the last straw that Scottish loyalty could bear. In 1621, they were carried in parliament by a fair majority; to the horror and bitter indignation of all men and women of the old leaven. Worse, the English liturgy was used in a college chapel of St Andrews on the 5th of January 1623. James tried to suppress the general irritation by a proclamation against conventicles, and a threat to take away the courts of law from Edinburgh, if people did not go to church on Christmas day. He postponed the threat till Easter 1625, but, says Calderwood, “The Lord removed him out of the way fourteen days before the Easter Communion.” He died on the 27th of March. Encouraged by safety and adulation in England; grasping at the Tudor ideal of kingship, determined to reduce to order the kirk from which he had suffered so many injuries and insults, he sowed the wind and his son reaped the whirlwind.

Only the chief moments in the struggle between Charles I. and the Scots can be touched on in this summary. James VI. had succeeded in his struggle with the preachers partly by complying the nobles with gifts out of old church lands. Charles I. reunited the kirk and the nobles by threatening, or seeming to threaten, to resume or impair these gifts, and also by his favour towards the universally detested bishops (1625–1629). Mr S. R. Gardiner speaks of the final shape of Charles’s measure as a “wise and beneficent reform”; and he did aim at recovering the “teinds” or tithes, and securing something like a satisfactory sustenance for ministers. But he had caused alarm, and he refused all demands for the withdrawal of the loathed articles of Perth. The younger bishops too were not “sound” in Calvinism; many were looked on as Arminians. Protests were uttered in 1635, when Charles entered Edinburgh and held a parliament. Above all, and most legitimately, the revival of General Assemblies, now long discussed, was demanded vainly.

By 1636, Charles and Laud had decided to introduce a liturgy, a slightly, but in Scottish apprehensions “idolatrously,” modified version of the Anglican prayer-book. Anglicanism was a limb of Antichrist; extemporaneous prayers were regarded as inspired: a liturgy was “a Mass-book.” The procedure was purely despotic, and at the first attempt to use the liturgy in St Giles’s there broke out the famous “Jenny Geddes’ riot in the church on Christmas, 1637.” The nobles of the country, the ministers and lairds, met in Edinburgh and sent a petition against the liturgy to Charles. In November were formed “The Tables,” a standing revolutionary committee of all Estates.

Constant meetings hurled protests against the bishops; no man was more active than the young Montrose. In February 1638 the Covenant, practically a “band” of the whole country, enforced on reluctant signers, was launched. It made Scotland, like Israel, “a covenanted people” for the defence and propagation of the old Presbyterianism of Andrew Melville, and many devotes held that it was for ever binding on the nation. Legists differ as to whether the band was legal or not, but revolutions make their own laws, and the Covenant could not be more illegal than the imposition of the liturgy. Charles drove on the bishops, who better understood the situation, and he sent the half-hearted Hamilton to negotiate and threaten in Edinburgh, where the Covenanters were blockading the castle. But Charles did grant a General Assembly in Glasgow (21st of November), where, among unseemly uproar, the ecclesiastical legislation of James I. was rescinded, the law and custom of forty years were abolished, conformist clerics were expelled, and the earl of Argyll appeared as leader of the extreme party, while Montrose was the general of the armed Covenanters. In 1639 he was as active in arms in the north as Hamilton, on the king’s side, was dilatory and helpless in the south. By May the chief clerical leader, Henderson of Leuchars, was denouncing Royalists as “Amalekites,” and by biblical precedent Amalekites receive no quarter. Prclay was “Baal worship,” and the kirk thus turned the strife in the direction of religious ferocity.

While Charles hung irresolute on the eastern border, the Covenanters, under Alexander Leslie, took heart, occupied Duns Law, and terrified Charles into negotiations (11th–18th June). A hollow pacification was made: the assembly of August (1639) imposed the signing of the Covenant on all Scotsmen. A parliament (31st of August) demanded the loss of votes (fourteen) by bishops, and freedom of debate on bills formed by the Lords of the Articles, who had practically held all power; while Argyll carried a bill demanding for each estate the right to select its own representatives among these lords. Traquair, as royal commissioner, proroged parliament; negotiations with the King in London had no result; and in 1640 the protraction was continued, and though opposed by Montrose, the parliament constituted itself, with no royal warrant. War was at hand, but Montrose formed a party by the “band of Cumbernauld,”
to suppress the practical dictatorship of his rival and enemy, Argyll, who, he understood, was to be one of a triumvirate, and absolute north of Firth. Argyll allowed the committee of Estates to rule, as before, and bided his time. On the 20th of August Montrose was the first of the Covenanting army to cross the Tweed; Newcastle was seized, and Charles, unsupported by England, entered on the course of the Long Parliament and the slaying of Strafford. In Scotland the secret of the Cumbernauld band came out; Montrose, Napier and other friends were imprisoned on the strength of certain ambiguous messages to Charles, and on the 27th of July, being called before parliament, Montrose said—"My resolution is to carry with me honour and fidelity to the grave." Montrose kept his word, while Hamilton stooped to sign the Covenant. Montrose lay in prison while Charles I. visited Scotland and met the parliament, perturbed by the dim and unintelligible plot called "The Incident" (October 1641), which seems to have aimed at seizing the persons of Argyll, Hamilton and his brother Lanark. All that is known of Montrose, in this matter, is that from prison he had written thrice to Charles, and the last of these had intended to show his third letter to Argyll, Hamilton and Lanark, on the very day when they, suspecting a plot, retired into the country (12th of October). An agitated inquiry which only found contradictory evidence was disturbed by the news of the Irish rebellion (28th of October). Charles heaped honours on his opponents (Argyll was the one marquis of his name), and hastened to England. The country was governed by fifty-six members of the Estate and by the dreaded commission of the General Assembly, for now the kirk dominated Scotland, denying even the right of petition to the lieges.

The English parliament, at war with the king, demanded aid from Scotland; it was granted under the conditions of the Solemn League and Covenant (1643), by which the Covenanters expected to secure the establishment of Presbyterianism in England, though the terms of agreement are dubious. Scotland, however, regarded herself as bound to war against "Sectaries," and so came into collision with Cromwell, to her undoing. In January 1644, a Scottish army crossed Tweed, to aid the parliament, with preachers to attend the synod of Westminster. Already some 2000 men from Ireland, mainly of Macdonalds and other clans driven into Ireland by the Argylls, were being despatched to the west Highland coast. Lanark, from Oxford, fled to join the Covenanters; Charles imprisoned Hamilton in Cornwall; Montrose was made a marquis; Leslie, with a large Scottish force and 4000 horse, besieged Newcastle. Montrose arrived a day too late for Marston Moor (2nd of July 1644); Rupert took his contingent; he entered Scotland in disguise, met the ill-armed Irish levies under Colkitt, raised the Gordons and Ogilvies, who supplied his cavalry, raised the fighting Macdonalds, Camerons and Macleans; in six pitched battles he routed Argyll and all the Covenanting warriors of Scotland, and then, deserted by Colkitt and the Gordons, and surprised by Leslie's cavalry withdrawn from England, was defeated at Philiphaugh near Selkirk, while men and women of his Irish contingent were shot or hanged months after the battle.

The clamour of the preachers was now for blood, and gentlemen taken under promise of quarter were executed by command of the Estates at St. Andrews, for to give quarter was "to violate the oath of the Covenant"—as interpreted by the clergy. It would have been wiser to put the revenges as reprisals for the undeniable horrors committed by Montrose's Irish levies. The surrender of Charles to the Scots, the surrender of the Scots to Charles the English, for 1£00,000 of arrears of pay, with hopes of another 2£00,000 (February 1647), were among the consequences of Montrose's defeat. But the surrender of the king lowered in Scottish consciences; for the country was far from acquiescing in the transaction.

Leslie, by the advice of one Nevo, a preacher, massacred, on his return to Scotland, the Macdonals in Dunaverty castle. A strife arose between Hamilton, who wished to disband the Covenanting army, and Argyll, and gradually the struggle was between Hamilton and the sympathizers with the imprisoned king and Argyll at the head of (or under the heeds of) the more fanatical preachers and Presbyterians. The Scottish commissioners in England, with Lauderdale, and with the approval of Hamilton's faction, signed, at the end of 1647, "The Engagement" with Charles, and broke away from the tyranny of the preachers. The Engagers had the majority in parliament, but were fractionally cursed from the pulpit; they and their army mustered for the deliverance of their king. In August 1648, they crossed the border, leaving the fanatics to arm in their rear, but Cromwell, with a small force, marching across the fells, caught and utterly routed them at Preston and on the line of the Ribble, taking the captives and Hamilton, who was sent to the block.

This was the kirk's proudest triumph; the countrymen of the preachers had been ruined on "St. Covenant's Day." The preachers, with Lords Loudoun and Eglington, Argyll and Cassilis, armed and raised the godly, and occupied Edinburgh. The parliamentary committee capitulated with the extremists, who sent friendly messages to Cromwell, and Argyll met him on the Tweed. Thence Cromwell sent a message to the house of parliament, with a cortège of 7000 foot and 700 horse, to Edinburgh, where he himself stayed for some time. A parliament in Argyll's and the preachers' interest met there in January 1649; only sixteen nobles were present, as against fifty-six in the previous year. The execution of Charles I. (30th of January 1649) left the extreme party in a quandary. How could they keep terms with "bloody Sectaries" that had slain their king, in face of the protests of their envos? They did pass the Act of the Classes, disabling all "Engagers" from all manner of offices, military and civil, and dividing the distracted country into two hostile camps. On the 6th of February Charles II. was proclaimed king in Edinburgh, if he took the two Covenants. This meant war against England, and war in which the Engagers and Royalists could not take part. The situation developed into ruin under the strife of the wilder and the gentler preachers.

Communications with Charles II. at the Hague were opened, and the Scots accused the English of breach of the Solemn League and Covenant. Huntly, as a Royalist, was decapitated at Edinburgh; and the envos of Charles, thanks to the advice of Montrose, failed to induce him to stamp himself a recrrent and a hypocrite by signing any covenants. But Montrose (January 1650) was sent by Charles to "search his death," as he said, in an expedition to the north of Scotland, while, in the absence of his stainless servant, Charles actually signed the treaty of Breda (1st of May). In April Montrose was abandoned by his royal master, and was defeated at Carbiesdale, on the south side of the kyle, or estuary, of Shin and Oykel; he was betrayed, insulted, bullied by the preachers, and, going to his death like a bridegroom to the altar, was hanged at Edinburgh, on the 20th of May. "Great in life, Montrose was yet greater in his death." He had kept his word, he had "carried fidelity and honour to the grave." (Gardiner.) His head was set on a spike and his quartered limbs were exposed in various places.

Charles came to Scotland; he signed the Covenants, while his tormentors well and duly knew that the action was a base hypocrisy, that they had tempted him to perjury. Cromwell, who now crossed the border, impressed this truth, as far as he might, on the preachers, who made Charles sign declarations yet more degrading, to the discredit of his father and mother. Meanwhile David Leslie, with singularly excellent strategy, foiled and evaded Cromwell in the neighbourhood of Edinburgh, till the great cavalry leader was forced to retreat towards England. At Dunbar Leslie held Cromwell in the hollow of his hand, but his army had been repeatedly "purged" of all Royalist men of the sword by the preachers; they are said, and Cromwell believed it, to have constrained Leslie to leave his impregnable position and attack on the lower levels. Leslie appears to have intended a surprise, as at Philiphaugh, but "through our own laziness," he confesses, the surprise came from Cromwell's side, and few of the Scots except the mounted gentry escaped from the crushing defeat at
In the first (1660–1663) the royal commissioner to parliament was the earl of Middleton, a soldier of fortune who had been in arms for the Crown as late as 1655, who had been excommunicated by the Kirk, and was determined to keep down the preachers. With him were the Cavalier party, anxious to recover their losses during the civil war. All were impoverished, and grieved was the dominant motive of the members of the privy council, the rulers of the country. Meanwhile, in London, the Earl of Lauderdale, secretary for Scotland, had the king’s ear, and would have restored presbytery, at least by way of experiment. The “creature” of Charles, as he called himself, this burly, violent scholar, bufon and bully, was reckoned a patriot. As an “Engager” he had seen his country conquered by English arms. His policy was to keep Scotland in good humour by restoring presbytery; to raise in the country a militia strong enough to support Charles against the English parliament, and thus, in both countries, to make the royal prerogative absolute. The first parliament (1661–1663), under Middleton, was obsequious enough to grant a scheme for seizing annually, to the Kirk and the conventicles, and to rescind all but the private legislation of the revolutionary years (1638–1666). The Lords of the Articles were restored, mere nominees of government. Middleton, Tarbat and Clarendon overcame Charles’s reluctance to restore episcopacy; Lauderdale fell into the background; The Rev. James Sharp, hitherto the agent of the Resolutions, or milder party among the preachers, turned his coat, and took the archbishopric of St Andrews. Episcopacy being restored, some three or four hundred preachers were driven from their parishes (1665). We made a waste,” said Archbishop Leighton, “and stocked it with owls and satyrs,” the detested “curates.” The Shorter Catechism was taught; the liturgy was not brought in; the sole change was in kirk government.

Meanwhile the Cavalier party invented a system of heavily fining men who had been their opponents in the troubles. Middleton coveted the estates of the earl of Argyll, son of the late marquis, and on a trumped-up charge of “leasing making” (he had spoken in a private letter of “the tricks of parliament”) had him condemned to death. He was saved by the exertions of Lauderdale, and Tarbat suggested, while Middleton adopted, a scheme for ostracizing, and making incapable of office, twelve of their opponents, including Lauderdale. But Lauderdale had the skill to turn the cards on Middleton, accusing him of tricking both parliament and king, and of usurping royal prerogative. Middleton and Tarbat were cashiered, and the able but profligate earl of Roxthes united four or five of the highest offices in his own person, Lauderdale remaining at court as secretary for Scotland.

II. We come now to the years from 1664 to 1667. Middleton, with Archbishop Sharp, misgoverned the country, established a high court of commission, exiled the fiercer preachers to Holland, whence they worked endless mischief by agitation and a war of pamphlets; irritated the Covenanting shires, Fife and the south-west, by quartering troops on them to exact fines for Nonconformity, and so caused, during a war with Holland, the Pentland Rising (November 1666). This unconcerted movement arose out of an act of cruelty by soldiers in the remote Glenkens, and was unsupported by Holland, with which the Covenanters had been intriguing. Crushed at Rullion Green in the Pentlands, by General Dalziel, this movement left the Presbyterians the more angry, by reason of the cruelty of its suppression, and the unjust and making incapable of office, twelve of their opponents, including Lauderdale. But Lauderdale had the skill to turn the cards on Middleton, accusing him of tricking both parliament and king, and of usurping royal prerogative. Middleton and Tarbat were cashiered, and the able but profligate earl of Roxthes united four or five of the highest offices in his own person, Lauderdale remaining at court as secretary for Scotland.

III. Lauderdale again saw his chance; Rothes was deprived of all offices save the chancellorship; Sharp was “snibbed” and disgraced, attempts at concession were begun, and the indulgence of 1660 licensed a number of Presbyterian ministers, under restrictions. The indulgence accentuated the division between those who accepted and those who rejected it. Outrages on conformist ministers were frequent, and conventicles were accompanied by armed men. A popular book, *Jus Populi*...
Vindicatum (1669), demanded the restoration of the covenants, which meant civil war, the hanging of the bishops, and even applauded assassination by men who had a "call," like Phinehas. In a parliament with Lauderdale as commissioner (1669-1673) "clanking acts" were passed against nonconformity, but the laws were too severe to be executed, save sporadically; the total was followed by a new Anglican Act: (1673). Lauderdale having married the rapacious countess of Dysart, corruption was rife; his brother, Haltoun, was an example of reckless greed; opposition arose to a scheme of union, presently dropped, and by 1673 the duke of Hamilton and Sir George Mackenzie led an organized political opposition. Lauderdale’s Militia Act gave Charles a force of 20,000 men, who would “go anywhere” (that is, would invade England), at the king’s command, and in 1673-1675 Lauderdale was attacked in the English House of Commons, Charles, by him, but his best allies, Kincardine and Sir Robert Murray, deserted him, while Sir George Mackenzie of Rosehaugh came over to his party, became king’s advocate (1677), and till 1686 was the Achitophel and public prosecutor of the government. After an alleged attempt to negotiate through Argyll (1678) with the preachers, in view of the threatening increase of armed conventicles, Lauderdale resolved on suppression. Without money, and without anything like an adequate regular force, he called out the clansmen of Atholl, Perth and other nobles, and quartered them also on the Highland host .” on the disfranchised people. He would either put them down, with the support of his brother, or, if preferred, bring rebellion to a head. The gentry, who had proclaimed their inability to suppress conventicles, were ordered to sign a bond making them responsible for their tenants, and were bound over to keep the king’s peace by “law burros,” a method common in private life but unheard of between monarch and people. After six weeks the plundering clansmen were withdrawn, and in the spring of 1678, also of 1679, Hamilton with his allies carried their complaints to Charles. Mackenzie, in a controversy at Windsor (1679), proved to Charles that in Scotland he was as absolute as the kings of France and Spain, over church, state, and all his subjects, and indeed, by various acts of James VI. and of his own reign, Charles really was a despot (British Museum, Additional MSS. 23,244, pp. 20-28).

Meanwhile, armed conventicles abounded, and the extreme faction openly denounced and separated themselves from the rapidly growing mass of the Indulged. Early in May 1679 Sharp was hacked to death on Magus Moor near St Andrews. The murderers rode to the west, joined the company of Robert Hamilton, defeated Graham of Claverhouse with a small force of his own at Drumclog, occupied Glasgow, and proved himself an ableml of the regular forces to cope with a rising. Charles might have been unable, in the frenzy of the popish plot of Titus Oates, to send forces from England, but as he chose the popular Protestant, the duke of Monmouth, to command them, he was allowed to despatch some regiments. The rebels, who were in two hostile parties, Indulged and Separatists, failed to hold Bothwell Bridge, and were easily routed. The duke of York was sent, in honourable banishment, to Scotland, and in the parliament of 1678 was royal commissioner.

In the summer of the fourth period (1683-1688), the domination of the duke, Queensberry, Perth, and his brother, Drummond of Lundy (earl of Melfort), Lauderdale was out of favour, and died. Now “by concession” (a third indulgence) “and represcence, the once mighty force of Scottish Presbyterianism had at length been broken” (Hume Brown). By “Presbyterianism” we here understand, not the Presbyterian form of church government—the kirk whose motto is Nec tamen consumebatur—but the pretensions of preachers to dominate the state by the ethical “cleaver of the keys," by excommunication with civil penalties and by the fiercest religious intolerance. Presbyterianism can exist and flourish without these survivals of the proudest pretensions of Romanism. To quote Dr Hume Brown again: “When the absolutism of the Stuarts was succeeded by a more rational government (1688), the example of the Indulged ministers, who composed the great mass of the Presbyterian clergy, was of the most potent effect in substituting the idea of toleration for that of the religious absolutism of Knox and Melville.” Save for the fact that the ministers were as intolerant as ever of Nonconformists, Catholics and heretics, this is a just view, but Charles II. had denied himself all. The test was carefully framed, the more fanatical ministers, were potent, whether the majority or not, while, after 1688, government found “the once mighty force of Presbyterianism broken.” It was broken by the two last Stuart kings, who employed methods the most brutal and repulsive for the crushing of consciences trained in the theocratic ideas of Knox and Melville. The memory of the courage and devotion with which men, women and even children faced torture, death and ruin for an ideal impossible and undesirable is dear to the Scottish people.

On the side of the extremists, Cameron was happy enough to die in fair fight at Aitrs Moss (22nd of July 1680), after publicly disowning the king for his breach of the covenant. Cargill next excommunicated the king, Dalziel and Mackenzie, and his followers separated themselves from “the ordinances dispensed by any Presbyterian minister.” The followers of these two men, and of their successor, Renwick, who later was hanged, became the armed and organized “Societies,” a large force of yeomen and farmers in south-western Scotland, usually styled Cameronians. After the Revolution, the government left them alone and would not, as the pretentiousmentants, the more fanatical ministers, were potent, whether the majority or not, while, after 1688, government found “the once mighty force of Presbyterianism broken.” It was broken by the two last Stuart kings, who employed methods the most brutal and repulsive for the crushing of consciences trained in the theocratic ideas of Knox and Melville. The memory of the courage and devotion with which men, women and even children faced torture, death and ruin for an ideal impossible and undesirable is dear to the Scottish people.

In 1681, parliament, under the duke of York as commissioner, passed a test act so drafted that no human being could honestly and logically take the test. The earl of Argyll, son of the marquis, added a qualifying clause; he would take the test, “as far as it was consistent with itself.” By the influence of his countless creditors, who desired to be paid out of his estates, and in revenge for his seizure, on claims for debts, of the whole estates of clan Maclean (1674-1686), he was tried and was actually found guilty of treason. He escaped, but was condemned on the old charge after his later invasion of Scotland (1685).

In 1684, while Perth, and his brother, Melfort, who went over to Rome, were in power, Renwick emitted an “Apologetical Declaration,” in which the active enemies of his sect were threatened with secret trials and with assassination (October), and a “curate,” with some soldiers, was murdered. This, coming on the head of the Rye House murder plot (of which the Rev. Mr Carstairs, the agent of Argyll, and probably Argyll himself, then in Holland, were not ignorant), caused the government to demand, at the hands of the military, from all and sundry, an “Abjuration” of Renwick’s anarchist utterances. A cluster of bills were passed, and for the first time it was made obligatory to include no disavowal of religious principles, and was “universally unscrupled, even by the generality of great professors and ministers too,” says Sheilds, an advanced extremist. However, the peasantry found, in the abjuration, matter contrary to their consciences, and while some recusants were shot out of hand, a girl named Margaret Wilson, with an old woman, Margaret MacLauchlan, were tied to stakes and drowned by the incoming tide, near Wigtown (13th of May 1685). How the penalty came to be inflicted, as the pair had what Wodrow calls a “most horrid and unnatural manner” of dying, or why the record of the withdrawal of the reprieve, remains a mystery. The guilt appears to attach to the local authorities at Wigtown.

In this cruel affair, Claverhouse, who caused to be shot the celebrated John Brown, “the Christian carrier,” had no hand. To quote Dr Hume Brown, Claverhouse “kept strictly within the limits of his commission, and he carried out his orders with the distinct aim of sparing blood in the end. To those who he thought had been led astray, it was his policy not to be unmerciful; for, in his own words, ‘it renders three desperate where it gains one.’ On the other hand, in the case of the obdurates, he showed a relentless precision, which gained for him his evil name, ‘The Bloody Clavers,” the commissioned servant of the powers of darkness.” As constable of Dundee he secured the commutation of the death penalty on minor offenders under his jurisdiction, and his expressed maxim was...
"in the greatest crimes it is thought wise to pardon the multitude and punish the ringleaders." It is no exaggeration to say that, of the governors of Scotland under the Restoration, Claverhouse was the ablest, the most honourable, the least rapacious and even the most eloquent. But "Blurdy Claverhouse" will continue to enjoy his traditional reputation in popular tracts and popular histories.

Charles II. had died on the 2nd of February 1685, and there were in Scotland some who wept for him. The year of his death was, par excellence, "The Killing Time," thanks to Renwick and his associates and the Rye House plotters. Now, too, came the attempts of Monmouth and of Argyll, who, owing to divided counsels in his camp, and want of support either from his clan or from the southern malcontents, failed in his invasion of Scotland, was taken, and was executed, suffering like his father with great courage and dignity. Many recusants were penned up, starved and cruelly treated, even tortured when they attempted escape, in the vaults of Dunottar Castle.

In 1686 James claimed and used the dispensing power as to penal laws against Catholics, in face of the opposition of two of the Scottish bishops (who were ejected from their sees) and of parliament. Mackenzie, for his opposition, lost office. The privy council was opened to Catholics, but on the landing of William III. the populace, in 1688, wreaked the chapel of Holyrood and began to "rattle" conformist ministers, or "curates." Of the guard that defended Holyrood the "gentlemen and the rabble, when they saw all danger over, killed some and put war among the clans, and outmanoeuvring them died of their wounds and hunger," a parallel to the Dunottar cruelties not usually mentioned by historians ("Balarcs Memois"). A Convention of Estates, without a royal commissioner, met at Edinburgh on the 14th of March 1689, and it is curious that Williamites and Jacobites were not unequally represented. For president, Hamilton, who had been in opposition from 1673 to 1682, was preferred to Atholl by a small majority, but it soon appeared that William's friends were in the ascendancy.

Claverhouse, now Viscount Dundee, despairing of his party, and under apprehension of an attack on Perth, retired northward with a handful of horse, and began to play the part of a Regenerateur. Montrose, while the Convention offered the crown to William and Mary, adding the claim of right to de-throne a king who had infringed the laws. In May, William, in London, took the coronation oath, but firmly refused to accept, except in some sense of his own not easily understood, the clause, "to be careful to root out all heretics." The castle of Edinburgh was surrendered by Gordon, and Balarcs was put in that prison where, according to legend, he was visited by the wrath of Dundee, on the night of the battle of Killiecrankie. When Dundee managed the clans and outmanoeuvred Mackay, a party in parliament was agitating for constitutional reforms, and especially for freedom from the Lords of the Articles. William opposed, and party war was furious, when news came of Dundee's complete victory at Killiecrankie. The terror of the Whigs turned to joy when they heard that Dundee himself had fallen in the arms of victory. Two murderers had been sent by the earl of Nottingham to "seize," that is to despatch, Dundee. They left London for Mackay's camp on the 10th of July. On the 17th of July Dundee was shot, and on the 21st of October Newcastle wrote that his emissaries "had done very good service to the King" (Slate Papers, "Domestic," July 17th, 18th, 19th, October 21st, 1689). Henceforth, for lack of a commander of Dundee's genius, there was no real danger from the clans, and absolutely no chance of a rising of the lowland Jacobites in their support. At Dunkeld the newly raised Cameronian regiment successfully repulsed the highlanders, ill led by General Cannon as they were. They were never again dangerous at this period, were scattered by Livingstone in a surprise at Cromdale haughs, and government began to attempt to buy from chiefs the peace of the clan.

Meanwhile, despite the war, and were betrayed, between "the Club" (the advanced constitutionalists) and the Jacobites. In 1690 an act restored the kirk to the legal position of 1592, under sixty of the surviving ministers deprived in 1661. An act abolished civil penalties upon sentences of excommunication, and thus broke the terrible weapon which the preachers had wielded so long. Nothing was said about the eternally binding Covenant, which continued to be the fetish of the Cameronians and of later seceders. The General Assemblies, henceforth, under the influence of the diplomatic Carstairs (who had been cruelly tortured in 1684, to extract information about the Rye House Plot), did little to thwart government, though many "placed ministers" were, at heart, attached to the ancient claims of Knox and Melville. Laws as to patronage, an inflammatory question, were made, abolished and remade, causing, from about 1730 onwards, passions which exploded in the great Disruption of 1842. The dealings with the clans culminated in the massacre of the MacIans of Glencoe (13th February 1692).

Through military inefficiency the hill passes were not stopped, and the murders of a peaceful and harmless population were relatively few. That Dalrymple arranged for actual extermination of the males of the clan is certain, but there is no proof that he knew of the modus operandi, the betrayal of hospitality, "murder under trust." It is conceivable that William signed the orders under the impression that a "punitive expedition" of the ordinary sort was alone intended, but remonstrance from the Estates brought no punishment on any man except the dismissal, later, of Dalrymple (Viscount Stair) from office.

In 1694 the kirk was much irritated by William's demands for oaths of allegiance to himself, without the consent of the ecclesiastical courts. William gave way, but similar Hanoverian demands later caused great searchings of heart and divisions among the preachers. The Episcopal party among the ministers was excluded from a share in church government and tended to dwindle; the bishops had no territorial sees; and gradually Episcopalianism became to be Jacobites, professing a strange loyalty to James, who had treated them so unjustly, and later to his son, "James VIII.," the Chevalier de St George (b. June 10, 1688).

In 1693-1694 the government were in a quandary, the Cromwellian occupation the interest of Scottish men had slowly shifted from religion to commerce; but a tariff war between England and Scotland had checked manufacturing and other enterprises. One William Paterson, instrumental in founding the Bank of England, conceived the plan of a Scottish East India Company, which, in 1695, obtained a patent by act of parliament. William complained, later, that he had no notice of the terms of that patent till after it was passed (he was fighting under Namur at the time), and the act not unnaturally aroused the jealousy of the rival English companies. It committed William to obligations which might readily produce a great naval war with Spain, for Paterson's real design was to establish an entrepôt in Panama, at Darién, within the undeniable sphere of Spanish influence. The Scots invested very largely, for them, but their expeditions were ill-found and worse managed; the Spaniards seized one of their vessels with its crew; the colonists deserted the colony; a fresh expedition was expelled by Spain, and William refused to take up the Scottish quarrel (1695-1700). The losses and the apparent injustice caused a frenzy of excitement in Scotland, and William could only express his regret and his desire for an incorporeal Union of the two kingdoms. He died on the 7th of March, when the project of Union was to be debated by the English parliament. Under William, Scotland was a constitutional country; the absolute despotism enjoyed by Charles II. ceased to be; a free debating parliament existed, and torture was inflicted only by decree of king and parliament. It was abolished two years after the Union of 1707.

Anne, from the beginning of her reign, advocated union, which, with the question of the succession, was the subject of constant and furious debates in the Scots parliament, until, on the 4th of March 1707, the act received the influence of the diplomatic Carstairs, which might readily produce a great naval war with Spain, and sixteen elected peers at Westminster; the holders of Darien stock were compensated; as a balance to equality of taxation a
pecuniary equivalent was to be paid, the kirk and Scottish courts of justice were safeguarded (final appeal being to the British House of Lords), and Scots shared English facilities and privileges of trade, in name, for many years passed before Scotland really began to enjoy the benefits. Mar, Queensberry, Stair (of Glencoe) and Argyll (Red John of the Battles) were the leading statesmen of the Unionist party; being opposed to Hamilton, Atholl, and Lochbald of Carnwath, as Jacobites; by Fletcher of Saltoun as an independent patriot; by popular sentiment, by mob violence, and by many of the preachers, though not by the General Assembly. Every sentimental consideration was against a union with a prelate kingdom, “an auld enemy,” which drove a hard bargain by threats of excluding Scottish commodities. The negotiations were constantly disturbed by Jacobite intriguers with France in favour of James VIII.; by Scottish adherence to the Act of Security, which might give Scotland a king other than a Hanoverian in succession to Anne; and by the hanging of an Englishman, Captain Green, for piracy on a lost Scottish vessel (1705). The final debates of 1706 were conducted under apprehensions of an invasion of Edinburgh by highlanders and wild western fanatics of the Covenant; but the astuteness of Harley’s agent in Edinburgh, de Foe, the resolution of Argyll and the tact of Queensberry, who easily terrified the duke of Hamilton, carried the measure into haven. The Union was at first rich in causes of friction, and in nothing else; even as late as 1745 it was most unpopular, but Scotland had no choice. The nation would never accept a Catholic king, a Stuart, nor, even if it could, was it able to trust in a foreign power, and it was inferred by James in his own mind that the religious objection was insuperable; opportunities of commercial development were indispensable; war with England was not to be contemplated by the common sense of the country; and thus, as de Foe wrote, “The Union was merely formed by the nature of things.” In Lockhart’s words, the 30th of April 1707 “was the last day that Scotland was Scotland. I may lament and weep,” he adds, “but truly I have had admirable sport,” with his greyhounds.

Friction about matters of trade was the instant sequel of the Union: so much ill-feeling was provoked that, in the general opinion, had King James VIII. landed alone when brought to the Scottish coast by Forbin’s fleet in March 1708, he would have carried Scotland with him. But Forbin was chased away from the Firth of Forth by a fleet under Sir George Byng; he refused to allow the young adventurer to land farther north, and the Jacobites doubted that France was never serious in the enterprise. The Jacobites also, through mistrust of each other—none could trust Hamilton—and finally through the intoxication of a pilot who failed to return, Forbin, led to the impiety of his last exploit, convinced the Jacobites to manage a secret measure of toleration for the Episcopalian clergy, after one of them, Mr Greenshields, had long lain in prison for his use of the liturgy (1711). The kirk was incensed by the growth of Episcopalianism and of Popery, the restoration of patronage, and the pressure to accept an oath abjuring James, which divided a church that was absolutely anti-Jacobite. Repeal of the Union was actually mooted in 1712, and even Argyll was restive. The fatal duel in which Hamilton was slain by Mohun, when on the eve of going as ambassador to France, with the interests of James in his eye, was a blow to the Jacobites; as were the death of Anne, the fall of Bolingbroke and the unopposed succession of George I. (August 1714). Their king over the water had, in a manly and magnanimous letter to his adherents, refused to change his creed, and when Bolingbroke fled from England his evangelical efforts at proselytizing James were fruitless. Berwick and Bolingbroke were his ministers, but Berwick would not accompany him to Scotland, and Bolingbroke did not provide the necessary munitions of war. Through a series of confusions and blunders, Mar prematurely raised on the 16th of September 1715 the standard of King James, and though in command of a much larger army than ever followed Montrose, was baffled by Argyll, who held Stirling with a very small force. Mar never crossed the Forth, and the command of Mackintosh, who did, was captured, with his Northumbrian cavaliers, at Preston, on the very day (12th of November) when Argyll foiled Mar in the confused battle of Sheriffmuir. Mar’s highlanders began to desert; his council was a confusion of opinions and discontent, and when, after many dangers and in the worst of health, James joined the Jacobites at Perth, it was only to discourage his friends by his gloom, and to shelve their remaining plot—two Argyll to Montrose. Thence he futilely sailed with Mar to Falmouth, a drunken man, having his army to shift for themselves. Many of his noble supporters escaped, he did his best to provide them with ships, others were executed, while the great Whig, Forbes of Culloden, protested against the bad policy of the repressive measures. Argyll, who had saved the country, was regarded as lukewarm, and lost the royal favour, while James, at Avignon, intrigued with Charles XII. of Sweden and with Argyll and his brother, the earl of Islay, till he was driven from France to take refuge in Italy. Spain backed him in 1710, but the death of Charles XII., and the utter failure of a Spanish expedition to Scotland in 1719, when the Jacobites were scattered, and the Spaniards taken, in a fight at Glenahell, ruined what had seemed a fair chance of success. Returning from Spain, James married Maria Clementina Sobieska, daughter of Prince James Sobieski, a pretty bride whom Charles Wogan rescued from danger in Innsbruck, an adventure of romantic gallantry. The marriage was unhappy; James was eternally occupied with the business of his cause and the feuds of his adherents; Clementina lost her gaiety and became ceaselessly jealous; and her retreat to a convent in France in 1717 was her divine retribution. Forbin offered in As- terbury’s plot (1720), the alleged treason of Mar and the splits in the Jacobite party. Clementina, however, was the mother of two sons, Charles Edward, the hope of his party, and Henry. The cause slumbered, till in 1742-1743 the outbreak of wars with France and Spain gave Prince Charles a chance of showing his mettle. The Jacobites surrounding James in Rome never ceased to weave at the endless tissue of their plot, but in Scotland nothing more substantial than the drinking of loyal healths was done, between the flight of Lockhart of Carnwath, the manager of the party, and the years of 1737-1744. The old Jacobites were dying out; James never had a minister who was not bailed by three-fourths of the party, and denounced as a favourite at best, at worst a traitor; and the Cause would have sunk into ashes but for the promise of his eldest son, Prince Charles.

In Scotland the kirk, as ever, was militant, but it could no longer wage war on kings and their ministers, nor attempt to direct foreign and domestic policy. The preachers thus fell into parties, which attacked each other in a brotherly way. The grounds of strife were the spread of “liberal” religious ideas; on the side heretical and anti-Calvinistic doctrines, and on the other a tendency to stretch Calvinistic principles till they were scarcely to be distinguished from Antinomianism. A Glasgow professor, the Rev. Mr Simson, was attacked for Arminianism and Socinianism as early as 1717; and the battle raged between the more severe Presbyterian—

Parties in the kirk.

who still hangkered after the Covenant, approved of an old work The Marrow of Modern Divinity (1649), and were especially convinced that preachers must be elected by the people—and the Moderates, who saw that the Covenant was an anachronism, and that the church was still the pillar of the state and supported in the General Assembly the candidates selected by patrons, as against those chosen by the popular voice. The Marrow was discouraged as verging on Antinomianism (1720); and in 1722 its protesting admirers were rebuked by the Assembly. The Marrow men put in protests, and were clearly on the way to secession from the kirk. The oath of abjuration of James was another cause of division, at least till it was watered down in 1719; and by 1726 a revival of the charges of heresy against Simson, with the increase of agitation against the majority of the Assembly who supported patrons, lighted a flame which burned the slight bonds that kept the extremists in union with the kirk.

In 1732 their leaders were the brothers Erskine, one of whom, Ebenezer, preached a sermon accusing professed Presbyterian
as guilty of “an attempt to jostle Christ out of his church.” For this and other severe censures of his brethren, Mr Erskine would not apologize: he had “delivered the utterance given to him by the Lord”; his was the very attitude of the preachers who thundered against James VI. Mr Erskine was rebuked in the Assembly of 1733; he protested with three friends; they were deprived of their charges; they vowed that they were “the True Presbyterian Covenanted Church of Scotland,” and had the power of the keys. They constituted themselves a presbytery, and maintained that the covenants were perpetually binding. The Assembly went as far as was possible in offers of reconciliation, but the KirkViewers were unyielding, and were deposed in 1740. In 1744 they made the “Taking of the Covenanters” a term of ministerial and Christian communion. It is impossible here to follow the schisms which split the seceding body within itself: the Erskines themselves were handed over to Satan; their very families adopted opposite factions: there were “Burghers” and “Anti-Burghers,” “New Lights” and “Old Lights”; besides the sects which in the 19th century merged in United Presbyterians, and merged themselves later with the Free Church of the Disruption, itself the parent of a still more numerous body, the Free Church of Scotland.

The whole movement, intended as a return to the kirk of Knox and Melville and the Covenanters, was a not unneeded protest against the sleepy “moderation,” and want of spiritual enthusiasm, which invaded the established kirk in the latter part of the 18th century, a period in which she possessed such distinguished writers as John Home, author of the drama of Douglas, Robertson, the historian, and Dr Carlyle, whose amusing autobiography draws a perfect portrait of an amiable and highly educated “Moderate” and man of the world. Naturally the opposite party, whether seceders, or “High Flyers,” as they were called, within the church, had most influence with the populace, so that “the Trew Universal Kirk” of Scotland was broken into several communions, differing but slightly in accepted doctrines, and not at all in mode of worship. Their tendency has been centripetal, and all the “Free Churches” are agreed in their views concerning the prolonged existence of “the Auld Kirk.” The Episcopalians, in this period, were nearly as much perturbed as the Presbyterians, by questions as to the election of bishops in relation to their exiled King, and by the introduction of ritualism in the shape of “the usages.” They passed through much persecution. In consequence of the rising of 1745, but, after the death of their King Charles, they became as loyal as any other religious body, managing their own affairs with no more turmoil than is caused by the coexistence of the Anglican and the Laudian prayer-books, with their different forms of the communion service.

As to civil matters, the country was troubled by riots against the Malt Tax, but the clans submitted to a very superficial disarmament; companies of highlanders were employed to preserve order and check cattle-raiding; and one of these, “The Black Watch” (the Forty-Second), greatly distinguished itself at the battle of Fontenoy. Wade drove his military roads through the highlands, and, poor as the country still was, the city of Glasgow throw on the tobacco and sugar trade with America and the West Indies. Yet Duncan Forbes of Culloden, president of the Court of Session, after the outbreak of the war with Spain, reported amazing scarcity of money in the country, and strenuously advised legislative checks on the taste for tea, which naturally diminished the profits of the excise on more generous beverages. The fact is that as English companies for foreign trade had long been in charter possession, Scotsmen, and Scottish captains, had no profitable outlets, while agriculture was conducted on slovenly medieval or prehistoric methods; and only the linen trade of the country was really flourishing. Thus, except in the case of the west coast trade with the colonies, Scotland had reaped little commercial benefit from the Union, and the loss of business caused by the abolition of the parliament, and the rush of noble families to London, was severely felt in Edinburgh. Yet there existed no dangerous political dissatisfaction. Though the chief

religions of the highlanders, the Episcopalian and Catholic forms, were depressed by persecution, and priests were few, the clans had long been accustomed to lack of religious functions and did not feel the want. But the hereditary jurisdictions and feudal powers, as of calling out tenants by the fiery cross and punishing the peaceful by burning their cottages, had never been abolished; the chief’s will was law, and if the chiefs headed a rising, their clansmen would follow them, willingly or “forced out.” They formed a remarkable militia, trained to the use of arms; wonderfully mobile and rapid on the march and dauntlessly courageous.

In 1737-1739 saw the germs of civil war beginning to take active life. Simon Fraser, Lord Lovat, an aged intriguer, conceived discontent against the government for the loss of his independent company, and began to intrigue with France and with James in Rome. In the same year a young Tweedside laird, Murray of Broughton, visited Rome, fell in love with Prince Charles, then a handsome, wayward, stalwart and ambitious lad, with “a body made for war,” and, returning home, Murray practically succeeded to the duties once performed by Lockhart of Carnwath, as Jacobite against the government organized.

In 1738 the waning power of Walpole and the approaching war with Spain caused Forbes of Culloden to propose the raising of five or six highland regiments for foreign service. Walpole, urged by Lord Islay, brother of Argyll, is said to have approved, but nothing was done. The declaration of war with Spain and the certainty of war with France promised to the Jacobites good fishing in turbulent waters; and they entertained futile hopes of enlistings Argyll with his potent clan. Walpole entered into communication with James, who saw through the manœuvre, and in 1741 a Jacobite association was formed, which included Lovat and Lochiel. Their agent was Drummond (Macgregor really) of Balhaldie, who in 1741-1743 dealt with the English Jacobites, and persuaded France that they were powerful and eager. In fact the Scots were feebly organized, and the English Jacobites were not organized at all. Says Murray, “there was not the least ground for encouragement,” but, thanks to Balhaldie, Louis XV. began to mobilize an invading force in November 1743. Balhaldie carried to James in Rome an invitation for Prince Charles to go to France, a serbal invitation, which James reluctantly accepted. Cardinal Tencin was not in the secret, and by the time Charles made his way to Paris in January 1744, James clearly perceived the duplicity of France. The Scottish Jacobites were left in ignorance of the French attempt to land in the mouth of the Thames (February–March 1744), an effort frustrated by a disastrous tempest, and by the slackness of the English conspirators.

Prince Charles was left in neglect and obscurity; till, unchecked by Murray, relying on hasty Jacobite promises brought by him, and encouraged by the French victory of Fontenoy, he started with seven companions for the west highland coast on the 21st of July 1745. His landing at Borradale on the 5th of August brought a few enthusiastic Macdonalds about him; from a sense of honour Lochiel joined with the Camerons. Keppoch and Clanranald would not desert a prince with a reward of £30,000 on his head, but MacLeod and Sleat held aloof; and Lovat wrecked the adventure by his doubts and delays. None the less a small ill-armed force of some 2000 men marched south; Cope did not oppose them, but evaded them and went to Inverness, leaving open the road to Edinburgh. At Perth Charles was joined by a skilled soldier, Lord George Murray, brother of the Whig duke of Atholl, a pardoned veteran who had been out in 1745.

But Lord George’s previous dealings with Cope inspired in Charles a distrust which was to prove fatal. Charles entered Edinburgh unopposed on the 16th of September, made his quarters in Holyrood, and on the 21st of September routed Cope at Prestonpans. But he had not the force to invade England, or to take the castle, and waited, collecting recruits and money, and encouraged by empty promises from France, till, as he wrote to James (26th of October), “I shall have one decisive
stroke for 't, but unless the French land, perhaps none. As matters stand, I must either conquer or perish in a little.' His English adherents did not come in, and, after marching to Derby, his council insisted that enough had been done for honour, that Wade was on their flank and rear, the duke of Cumberland in their front, and an army was gathered to defend London. A broken-hearted man, Charles was compelled to acquiesce in retreat (5th of December). If the chiefs had possessed information now accessible to us, they might not have made "the great refusal," but with only the intelligence which they possessed they could not have foreseen what the English army was like. Their force was not more than 5000 men; and they were wholly unskilled in the use of the guns which they had captured at Prestonpans. The retreat was admirably conducted; Lord George and Cluny fought a gallant and successful rear guard at Clifton; they escaped from Cumberland across the border, but Charles, against advice, left a doomed garrison in Carlisle. After a stay to re-fit at Glasgow, Charles moved to besiege Stirling castle, and to join a force from the north, almost as numerous as that with which he had invaded the heart of England.

Cumberland had returned to London, but Hawley marched from Edinburgh with an army which Charles drove to the winds of Falkirk Moor. Hawley's guns were never in action, the Macdonalds charged and scattered his cavalry on the right wing, but pursued too far, and as the pipers had gone in sword in hand, they could not be recalled. On the left the prince's men could not load their pieces, their powder being ruined by the tempestuous rain. They were checked by two steady regiments; many fled, all was darkness and confusion, but, on returning to Falkirk, Charles found that Hawley had decamped in a disgraceful rout. He could not pursue them, whereabouts of his right was unknown, and after the battle his best officers felt rather dismayed than encouraged by the conspicuous lack of discipline. In place of advancing on Edinburgh, they dallied round Stirling castle in futile siege, and, on the news of Cumberland's advance, alarmed by desections which they appeared to have greatly exaggerated, the chiefs compelled Charles to a fresh retreat. His expostulations perhaps prove him to have been "the best general in his army," but he was dragged northwards to Inverness, and with depleted ranks of starving men, outworn by the fatigue of a long night's march to surprise Cumberland and wise assistance of Culloden Moor in defence of Inverness, his base and only source of supplies (16th of April 1746). Charles had some 9000 men, Cumberland had nearly 9000 and eighteen well-served guns. Here for the first time the highlanders were under heavy fire of grape and roundshot, to which they could not reply, and though the right wing and centre, Camerons, Atholl men, Macleans, Clan Chattan, Appin Stewarts, under Lord George and Lochiel, fought with even more than their usual gallantry and resolution, the Macdonalds on the left, discouraged by the death of Keppoch, Scouats and other officers in the advance, never came to the shock. Though outmatched, the enflamed and met by heavy musketry fire in front, the right wing broke Barrell's regiment and passed the guns, but the attack was checked by the bayonets of the second line and a rapid retreat became general. Charles did not leave the field till all was lost; so much seems clear from Yorke's evidence; but the price on his head, and probably suspicions urged by some of his Irish officers, induced him to desert his army and hurry secretly to the west coast and the western isles. He was rewarded by five or six months of dangerous and distressful wanderings, and would certainly have been taken at one juncture but for the courageous and wise assistance of Flora Macdonald, while on all hands the highlanders displayed the most devoted loyalty.

Into the ferocious conduct displayed by Cumberland after the victory, and in the suppression of the clans, we need not enter; nor is the list of executions of rebels alluring. The spirit of the clans remained true indeed, but their prince became a "broken man": his clency, and courage, and all that had endeared him to his people, perished under the disguises and vicissitudes engendered by many years of a secret fugitive existence, after he was driven from France in 1749 (see A. Lang's Pickle the Spy, and Life of Prince Charles).

As far as the rising had a political aim and reason for existence, apart from mere dynastic sentiment, that aim was "to break the Union"; in the prince's words, "to make Scotland once more a free and happy people." But the vast majority of Scots, though not in love with the Union, preferred it to the rule of a Catholic king—Charles probably, for James had every desire to abdicate. The failure of Charles had, in fact, the result of assimilating Scotland much more closely to Jacobite sentiment, and the predominance of the highland dress, did not indeed break, but it transferred to other fields the military spirit of the clans. The chiefs first raised the highland regiments which have covered themselves with glory from Ticonderoga to Dargai and Elandslaagte. The reward which many of the clansmen of the Peninsula and Waterloo received may be appreciated by those who read the introduction to Scott's Legend of Montrose. They returned to gentry desolate of men, deserted, first, by the voluntary emigrations of the clans, and later by forced emigrations in the interests of sheep farms and deer forests. The abolition of the hereditary jurisdictions and of the claims of feudal superiors to military service, after Culloden, broke the bond between chiefs and clans, and introduced new social and economical conditions, bequeathing the Land Question to the 20th century. The "planting" of ministers in the highlands, which had since the Reformation been almost destitute of religious instruction, bred a populace singularly strict in the matter of "Sabbath observance," and, except in districts still Catholic or Episcopalian, eager supporters of the Free churches. In outlying places the old popular beliefs linger; second sight is common in some gilts; and the interesting poetical tradition of local Jacobite sentiment, in the north, survived; and when he wrote English verse he often followed the artificial style of the 18th century. The later famous men of letters, Scott, Carlyle and R. L. Stevenson, appealed as much to Scottish readers as to their countrymen, patriotic as each of them was in his own way. As early as 1730-1740, the great English public schools and universities began to attract the Scottish youths of the wealthier classes, and now good Scots is seldom heard in conversation and is not always written in popular Scottish novels. Scotland and England, however, will always remain pleasantly distinct by virtue of their historical past and inherited traditions.

BIBLIOGRAPHY.—The best general history of Scotland is that of Pococke (1744), and the one that is based on thorough research in MSS., many documents now available, such as the depositions of Spalding's History of Scotland (1807), and the History of the Highlands (1811) is excellent, but close with the Union of the crowns. Scott's Tales of a Grandfather is, of course, full of interest, but is inevitably somewhat behind the mark of later years.
of research. The Foreign Calendars of State Papers, especially J. Bain's Calendars (Edinburgh, 1881-1888), are useful indices, but much important work is unpublished or uncollected.

There is much new information among the documents published by the Historical Manuscripts Commission, by the Scottish History Society, and the Register of the Privy Council, edited by Professors Masson and Humble. The volumes of the book club, of Maitland, Abbotsford and Spalding, are full of matter; also those of the Early Scottish Texts Society and the Wodrow Society, with the works of Knox, and the Early Scottish Society, and the History of the Society of Antiquaries, by Wodrow (edited by the Rev. Robert Burns, 1837-1838). Knox, like Bishop Burnet, needs to be read critically and in the light of contemporary documents; especially those in the Hamilton Papers, The Scots and English State Papers (Foreign). The most recent general Histories of Scotland are those of P. Hume Brown (Cambridge, 1899), and on a larger scale, but ending at 1746, of A. Lang (Edinburgh, 1900-1907). Matheson's works deal with the period of the Covenant, and Sir Archibald Maclachlan, with the Union; while Sir H. Craik's A Century of Scottish History (Edinburgh, 1901) gives a full account of the disruption of the Kirk. Many important manuscripts in most rooms are still un-calendared; those of the French Foreign Office are imperfect in places, and have been little consulted; and a complete calendar of the treasures of the Advocate's Library was only recently begun. Among monographs, Six Saints of the Covenant and The Life of Mary Stuart (up to 1566), by D. Hay Fleming; The Life of Knox, by P. Hume Brown, and John Knox and the Reformation, by A. Lang; Miss Shield's King over the Water and Martin Haile's James Francis Stewart, [q.v.], are among the outstanding works of the last generation. Wodrow's The Great Morgues (of Argyll); Napier's Lives of Montrose and Dundee; Clarke and Foxcroft's Life of Bishop Burnet; Sir W. Macaulay's life of Douglas, with all Sir W. Fraser's family histories, and Patrick's Statutes of the Scottish Church, may on various points prove serviceable. For Scottish constitutional history, what there is of it, Sanford Terry's Scottish Parliaments may be recommended. (A. L.)

IV. SCOTTISH LITERATURE

"Scottish Literature" is taken here in the familiar sense of the Teutonic vernacular of Scotland, not in the more comprehensive sense of the literature of Scotland or of writings by men of Scottish birth, whether in Gaelic (see CElt) or Latin or Northern English. The difference between the two definitions, however, is of small practical concern. The Scottish-Gaelic literature, which is separately dealt with (see CElt: Literature) in, by comparison, of minor importance; and the Latin, though it has a range and influence in Scotland to which it is difficult to find a parallel in the history of the literatures of Europe, is (perhaps for the very reason of its persistency and extent) so bound up with the vernacular that it may be conveniently treated with that literature. It is true that down to the 15th century there were many Teutonic Scots who had difficulty in expressing themselves in "Ynglis," and that, at a later date, the literary vocabulary was strongly influenced by the Latin habit of Scottish culture; but the difficulty was generally insuperable, and the works of Sir David Lindsay and the other great writers of the 15th century style in the use of a medium which had had literary traditions; also perhaps from medieval and humanistic contempt of the vulgar tongue; in some cases from the cosmetic circumstance of the Scot and the special nature of his appeal to the learned world. The widespread use of Latin was, however, seldom or never antagonistic to the preservation of national sentiment. That it was used for other than literary purposes strengthened that sentiment in a way which more scholarly or literary interest could not have done. The Scottish verse is rarely wanting, even in places where Scots is the mother tongue, and where Latin is the language of the literatures, an exclusive privilege. And to say this implies no disrespect to the quality of early Scottish Latinity.

In a survey of the vernacular literature of Scotland it is advantageous to keep in mind that there are two main streams or threads running throughout, the one literary in the higher sense, expressing itself in "schools" of a more artificial or academic type; the other popular, also in the better sense of that term, more native, more rooted in national tradition, more persistent and consequently less bookish in fashion. The former is represented by the mystical and devotional works of the 14th century, by the 17th-century Court poets, by the "English" writings of Sir Walter Scott, the latter by the domestic and rustic muse from Christis Kirk on the Gane to the work of the 18th century revival begun in Ramsay. There is, of course, frequent interaction between these two movements, but recognition of their separate development is necessary to the understanding of such contemporary contrasts as the Thrissil and the Ros and Peblis to the Play, Drummond and Montgomerie, Hume and Ramsay and Hume. In our own day, when the literary medium of a people which is entirely lacking that of England, the native Scottish literature has been reserved for certain dialectal revival, more or less bookish in origin, and often as artificial and as unrelated to existing conditions as the most "aurate" and Chaucerian "Yngls" of the 14th century was to the popular speech of that time.

This sketch is concerned only with the general process of Scottish literature. An estimate of the writings of individual authors will be found in separate articles, to which the reader is, in each case, referred.

Early Period (from the beginnings to the earlier decades of the 15th century). The literary remains of this period written in the vernacular, which is in its main characteristics "Northern English," are in the familiar medieval kinds of romance and rhymed chronicle. After the Wars of Independence a national or Scottish sentiment is discernible, but it does not colour the literature of this age as it does that of later periods when political and social conditions had suffered serious change.

The earliest extant verse has been associated with Thomas of Ercludienne (q.v.), called The Rhymer, but the problem of the Scot's share in reworking the Tristan saga is in some important points undetermined. Yet more important is the revival begun by Huchown (q.v.), who continues in the 14th century the traditions of medieval romance. Contemporary with the work of the latter are a few anonymous fragments such as the verses on the death of Alexander II., first quoted by Wintoun in the 15th century, and the stanzas on the "Maydens of Engleonde" and "Long beorid," quoted by Fabyan. The type of alliterative romance shown in the work ascribed to Huchown continued to be popular throughout the period (e.g. The Knightly Tale of Gaiolos and Grene), and lingered on in the 15th century in The Book of the Howlat by Holland (q.v.), the anonymous Rauf Collyear of the third quarter of the 15th century, and in occasional pieces of burlesque by the "Chaucerians" makars.

Independent of this group of alliterative romances is the not less important body of historical verse associated with the names of John Barbour (q.v.), Andrew of Wintoun (q.v.), and, in the middle period, Harry the Minstrel (q.v.). Barbour has been called the Father of Scottish Poetry, apparently for no other reason than that he is the oldest writer who has held place in popular esteem. Though his work shows some of the qualities of historical romance and alliterative style in the use of a medium which had had literary traditions; also perhaps from medieval and humanistic contempt of the vulgar tongue; in some cases from the cosmopolitan circumstance of the Scot and the special nature of his appeal to the learned world. The widespread use of Latin was, however, seldom or never antagonistic to the preservation of national sentiment. That it was used for other than literary purposes strengthened that sentiment in a way which more scholarly or literary interest could not have done. The Scottish verse is rarely wanting, even in places where Scots is the mother tongue, and where Latin is the language of the literatures, an exclusive privilege. And to say this implies no disrespect to the quality of early Scottish Latinity.

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rarely they approach Chaucer in sheer accomplishment. The first example of this new style is the Kingis Quoir of James I. (q.v.), a dream-poem written in Troilus verse, and reminiscent of Chaucer's translation of the Romance of the Rose. The indebtedness to Chaucer, even when full allowance is made for the young poet's individuality, is direct and clear. The language, like that of the later Lancelot of the Laik and the Quare of Jelousy, represents no spoken dialect. Whether it is to be explained by the deliberate adoption of southern literary forms by the author, whose enthusiasm for Chaucer and the circumstances of his sojourn in England made inevitable, or whether the single text which is extant is a Scottish scribe's rendering of a text purely southern in character, is a nice academic question. The balance of evidence, and the presumption is strongly in favour of the former, which is the traditional view. When the linguistic forms of the other pieces in the Selden MS., presumably by the same scribe, have been carefully examined and compared, it should not be difficult to reach a final settlement.

The later Scots Chaucerian type is less directly derivative in its treatment of allegory and in its tricks of style, and less southern in its linguistic forms; but, though it is more original and natural, it nevertheless retains much of the Chaucerian habit.

The greater poets who represent this type are Robert Henryson, William Dunbar, Gavin Douglas, and, to a large extent, Sir David Lyndsay—whose united genius has given high literary reputation to the so-called Golden Age. General opinion has exaggerated the importance of the minor writers who shared in this poetical outburst. There is, of course, some historical significance in the drawing up of such lists as we have in Dunbar's Lament for the Makaris, or in Douglas's Palace of Honour, or in Lyndsay's Testament of the Papygno, but it is at the same time clear that their critical importance has been exaggerated. Several of the writers named belong to an earlier period; of many of the others we know little or nothing; and of the best known, such as Walter Kennedy (q.v.) and Quintyn Schaw, it would be hard to say that they are not as uniformly dull as any of Ocelleve's southern contemporaries.

The greater portion of this Middle Scots "Chaucerian" literature is courtly in character, in the literary sense, that it continues and echoes the sentiment and method of the verse of the cours d'amour type; and in the personal sense, that it was directly associated with the Scottish court and conditioned by it. All the greater writers, with the exception of Robert Henryson, were well born and connected with the Household, or in high office. Hence what is not strictly allegorical after the fashion of the Romance of the Rose or Chaucer's exercises in that kind, is for the most part occasional, dealing with courtiers' sorrow and fun, with the conventional plaints of the vanity of the world and with the vanities of their authors. Even in the Homerically prefixed Elegy on the death of a friend, the most original of these poets, is in his most original pieces strongly "Chaucerian" in method, notably in his remarkable series of Pables, and his Testament of Cresseid, a continuation of the story left untold by Chaucer. In his Robene and Makyne, on the other hand, he breaks away, and follows, if he follows anything, the tradition of the postwelles. Dunbar often, and at times deliberately, recalls the older verse-habit, even in his vigorous shorter poems; and Douglas, in his Palace of Honour and King Hart, and in his translation of Virgil, is unequivocally medieval. Still later, amid the satire and Reformation heat of Lyndsay we have the old manner persisting in the Testaments and in the tale of Snyer Maldram.

There are, as might be expected, points of contact between the work of the greater makars and the more native and "popular" material. It is remarkable that each of these poets has left one example of the old manner, shown in the alliterative romance-poem; but the fact that in each case their purpose is strongly burlesque is significant of the change in literary outlook.

The non-Chaucerian verse of this period is represented by (a) alliterative romance-poems and (b) verse of a rustic, domestic and "popular" character. Of the historical romance-poem there is little or nothing beyond Henry the Minstrel's Wallace (super). The outstanding type is shown in such pieces as Holland's (q.v.) Duke of the Howlot, and in the anonymous poems Galagros and Gawame, The Awnturs of Arthur at the Terne Watkeyne, Rauf Collysar and The Pestill of Susau. These, however, were already outworn forms, lingering on in a period which had chosen other ideals.

Strong as the Chaucerian influence was, it was too artificial to change the native habit of Scots verse; and though it helps to explain much in the later history of Scots literature, it offers no key to the main process of that literature in succeeding centuries. Our knowledge of this non-Chaucerian material, as of the Chaucerian, is chiefly derived from the MS. collections of Asloaon, Bannatyne (q.v.) and Maitland (q.v.), supplemented by the references to "fugitive" and "popular" literature in Dunbar, Douglas, Lyndsay and, in especial, the prose Compleynt of Scotlande. Classification of this literature by traditional subdivision into genres is difficult, and, at the best, unprofitable. The historical student will be mainly interested in the varying antipathies of the later style and purpose of Ramsay, Ferguson and Burns, and in finding therein early evidence of what has been too often treated as the characteristics of later Scottishism. It would not be difficult to show that the reaction in the 18th century against literary and class affectation—however editorial and bookish it was in the choice of subjects and forms—was in reality a re-expression of the old themes in the old ways, which had never been forgotten, even when Middle Scots, Jacobean and early 18th-century verse-fashions were strongest. It is impossible here to do more than to point out the leading elements and to name the leading examples. These elements are, briefly stated, (1) a strong partisanship for subjects dealing with humble life, in country and town, with the fun of taverns and village greens, with that domestic life in the rough which goes to the making of the earlier farces in English and French; (2) a whimsical, elfin kind of wit, delighting in extravagance and topsy-turvyness; (3) a frank interest in the pleasures of good company and good drink. The reading of 15th- and 16th-century verse in the light of these will bring home the critical error of treating such poems as Burns's Collar's Saturday Night, the Address to the Deil, and Scotch Drink as entirely expressions of the later poet's personal predilection. Of the more serious, or "ethical" or "theological" mood which counts for so much in the modern estimate of Scottish literature, there is but little evidence in the popular verse of the middle period. Even in the deliberately religious and moral work of the more academic poets this seriousness is never more exclusive or oppressive than it is in any other literature of the time. If it becomes an obsession of many of the post-Reformation writers, it becomes so by the force majeure of special circumstances rather than in the exercise of an old-established habit.

The style of this rustic style are Peblis to the Play and Christis Kirk on the Green, ascribed by some to James V. (q.v.), Sym and his Brudir, a satirical tale of two palmers, The Wij of Auchtirmuchty, and the Wowing of Jok and Jynny. The more imaginative, elfin quality, familiar in Dunbar's Ballad of Kynd Kiotok and his Interlude of the Drochtis Part appears in such pieces as Gyre Carling (the mother-witch), King Berdot, and Lichentouns Drene. The convivial verse, at its best in Dunbar's Testament of Mr Andrew Kennedy, may be studied in Okey sould nolt Allene honort be, one of the many eulogies of John Barleycorn anticipatory of Burns's well-known piece.

In the collections there are few examples of the simple fabliau, the best being the Thrie Priestis of Peblis and The Dumb Wyf, or of the social variety of the same as shown in Rauf Collysar and John the Reeve. For the latter Sir David Lyndsay remains the chief exponent. Of historical and patriotic verse there are few specimens, but some of the lyrics and love-songs, more or less medieval in timbre and form, are of importance. Of these, Tayis Bank and The Murning Maiden are perhaps the best.

Vernacular prose was, as might be expected, and especially in Scotland, late in its appearance. The main work continued to be done in Latin, and to better purpose by Hector Bœce (q.v.), John Major (q.v.) and George Buchanan (q.v.) than by the earlier annalists Fordun (q.v.) and Bower (q.v.). It is not till the middle
of the 15th century that we encounter any works seriously undertaken in the vulgar: before that time there is nothing but an occasional letter (e.g. that of the earl of March to Henry IV.), a few laws, and one or two scraps in the Asloan and other MSS., all of the plainest and without any effort towards style. Nor can it be said that the first works of a more extensive and deliberate character show any consciousness of pure art as we find it in contemporary writings in England, though the fact that they are translations rather than concoctions, being among the earliest books are Sir Gilbert Haye's  *Buke of the Law of Arms, Buke of the Order of Knighthood, and Government of Princes*, preserved in a single MS. at Abbotsford. The dull treatise of John of Ireland (q.v.) lays claim to originality of a kind. The author's confession that, being "thirty yoers nistir in Franche, and in the noble study of Parys in Latyn tomg," he "knew nocht the gre cloouens of Chaucer," and again that he had written another work in Latin, "the tounge that I knew better," is valuable testimony to the difficulties in the way of a struggling Scots prose. Other preliminary efforts are the *Permut of Noblemen* in the Asloan MS.; the *Spectacle of Luf*, translated by G. Mill (1492); and the *Shoirt Memoriale of the Scitis Corniktls*, an account of the reign of James II. In the early 16th century the use of the vernacular is extended, chiefly in the treatment of historical and polemical subjects, as in Murdoch Nisbet's version of Purvey (in MS. till 1601), a compromise between northern and southern usage; Gau's (q.v.) *Richt Vay*, translated from Christern Pedersen; Bellenden's (q.v.) translation of *Livy and Scottish History*; the *Complaynt of Scotlande*, largely a mosaic of translation from the French; Nisbet's (q.v.) nothing. The earliest prose work in Scots prose, *Of Fruel of Solitude*, translated by G. Mill (1492); and the *Shoirt Memoriale of the Scitis Corniktls*, an account of the reign of James II. It was not till the publication of Bassandyny's *Bible* in 1576-1579 that a Scottish version was used officially. *Lyndsay* in the midst of passages in Scots quotes directly from the *Genevan Bible*. The literary influence of the Bassandyny was unimportant. Of the prose books named the *Complaynt of Scotlande* is the most remarkable example of aureate Middle Scots, the prose analogue of the verse of the "Chaucerians." This characteristic is by no means strong in Scots prose, even at this time: the last, and most extravagant, example is the *Rolment of Courtis* by Abacuck Byssset, as late as 1622.

So far in our treatment of the Middle Period we have taken account of the "Chaucerian" and more popular verse and of the prose. There appear towards the close of the period certain verse-writers, who, despite points of difference with their Middle Scots predecessors, belong as much to this period as to the next. In language they are still Scottish; if they show any southern affections, it is (all echoes of the older aureate style notwithstanding) the affection of Tudor and Elizabethan English. This poetry, like that of the early half of the period, is curiously its differences are the differences between the atmosphere of the reigns of the first and fourth Jameses and that of the sixth. When the sixth James becomes the first of England, a more thorough transformation is discernible. In the centre of this group is King James (q.v.) himself, poet and writer of prose, but he yields his literary competence to Alexander Scott (q.v.) and Alexander Montgomerie (q.v.). Their interest on the formal side is retrospective, but it is possible to find even in the persistent reiteration of medieval sentiment and methods, a fresh feeling for nature, and a lyrical quality of later *timbre*. With these may be named the minors, William Fowler (q.v.), Alexander Arbuthnot (q.v.) and John Rolland (q.v.), the last most strongly influenced by Douglas and the earlier "makars."

III. The third period begins with the 17th century, with the union of the English and Scottish crowns, if we seek the aid of political history for our literary finger-posts. Strict accuracy would place the date of change earlier than 1600 or 1603, for there is evidence in the 16th century, even outside the region of diplomatic and official correspondence, of the intermingling of the north and south. It is, however, when James is established on his new throne that we have the clearest signs of the changes which had been at work and were ultimately to transform the entire literary habit of his ancient kingdom. The recital of the names of the Anglo-Scots poets will make this clear: Robert Ker, *Sweight to the Descriptioun of Scotland*; Andrew Cheyne, best known in Scots to balance this *Fruel of Solitude*; Sir David Murray of Rowallan (q.v.); a group whose "courty" style might be assumed, had the literary evidence been less ample than it is. Too, in prose. There we have Drummond again, and that strange genius Sir Thomas Urquhart (q.v.); a crowd of polemical writers, mostly ecclesiastics, all the historians, including Spottwood and Calderwood. There is small room for the old vernacular here; and less when we take into account the still active Latinity, shown in the publication by the poet Arthur Johnston (q.v.) of the two volumes of *Delitiae poëtarum Scotorum haec aevi illustrium* (1637), and in the writings of John Barclay (q.v.) author of the *Argenis*, Sir Robert Aytoun (n.s.), Thomas Dempster (q.v.), the historian, David Hume of Godscroft, Sir John Scot of Scotstarvet, best known for his prose *Staggering State*, Sir Thomas Craig, author of the *Just Feudale*, Andrew Melville and others represented in Johnston's volumes.

There is no place for "the best" in the English and Latin list. The play *Philotas*, a poor example in a genre rarely attempted in the north, is indebted to the south for more than its subject. The interesting philological tractsate *Of the Orthographe and Congruitie of the Briton Tongue* by Alexander Hume (not the verse writer, n.s.) is in its language a medley; and William Lithgow had travelled too widely to retain his native speech in purity, even in his indifferent verse. Scraps may be unearthed as mediocres as the *Answer to Curat Caddel* or *Satyre upon the Whig*, which attempts to revive the mere vulgarity of the Scots "flying.* The only contributions which redeem these scattered years and more from the charge of disrespect for the native muse come from the pen of the Sempills (q.v.). Even here individual merit must yield to historical interest. We are attracted to Beltrees and his kinsmen less by their craftsmanship than by the fact that they supplied the leaders of the vernacular revival of the 18th century with many subjects and verse-models, and that by their treatment of these subjects models, based on the practice of an earlier day, they complete the evidence of the continuity of the domestic popular type of Scots verse.

In the 18th century the literary union of the North and South is complete. The Scot, whatever dialectal habits his speech, wrote the English of Englishmen The story of his triumphs belongs to the story of English literature: to it we leave James Thomson, Adam Smith, David Hume, James Boswell and Sir Walter Scott. If the work begun by Allan Ramsay, continued by Ferguson and completed by Burns, were matter for separate treatment, it would be necessary to show not only that the editorial zeal which turned these writers to the forgotten vernacular and to "popular" themes was inspired by the general conditions of reaction against the artificiality of the century, but that it was because these poets were Scots, and in Scotland, that they chose this line of return to the suburbs and naturalness, and did honour, partly by protest, to the slighted efforts of the "vulgar*" muse. Yet even they did not abjure the "southern manner," and their work in it is matter of some critical signification, whatever may be said of its inferiority in spirit and craftsmanship.

**Bibliography.** — Authorities dealing with individual authors and their generation are named in the bibliographies appended to the articles on Scottish writers. Reference may be made here to the following general works (given in chronological order): Warton, *History of English Poetry* (1774-1781); D. Irving, *Scottish Writers* (1839), and *History of Scottish Poetry* (1861); H. Ward, *The English
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The purpose of this article is to trace the growth of the Scottish "Kirk" as a whole, defining the views on which it was based and the organization in which they took form. The controversies within the Church of Scotland have not arisen out of matters of faith but out of practical questions of church government and of the relation of church and state. Holding a church theory to which the rulers of the country were for a century strongly opposed, Scotland became the leading exponent of Presbyterianism (q.v.); and this note has been the dominant one in her religious history even in recent times.

The Scottish Reformation came out of a covenant in which the barons, inspired by John Knox, then abroad, bound themselves in 1557 to oppose the Roman Catholic religion and to promote the cause of the Reformation. When parliament, on the 24th of August 1560, passed the acts abolishing the papal jurisdiction and the mass in Scotland, it was able, as Knox had been preparing for this crisis, to sanction a new confession of faith for the Reformed church. Other documents of the new system were quickly produced, among them the First Book of Discipline, set forth the whole of the proposed religious and educational constitution, and this book speaks of "the order of Geneva which is now in use in some of our churches." This order, afterwards with some modifications known as John Knox's Liturgy, and used in the church down to the reign of Charles I., is a complete directory of worship, with forms of all the services to be held in the church.

The type of religion found in these documents is that of Geneva, the unit being the self-governing congregation, and the great aim of the system the pure preaching of the Word. The congregation elect the minister; in no other way can he enter on his functions; but once elected and admitted he is recognized as a free organ of the divine spirit, not subject in spiritual things to any earthly authority but that of his fellow-ministers; the word of God is the supreme authority, and the spoken word of God the vital element of every religious act. The word of God is to prevail in all matters, in conduct as well as doctrine, and in the affairs of government as well as in the church. The terrible power of excommunication is claimed for the church; but the council of the realm also is called to use the power given them by God to put down all religion but the reformed, and to further the aims and carry out the sentences of the church. It was a matter of course that saints’ days and church festivals were abolished as having no warrant in Scripture; Sunday alone remained, as the principal day of preaching. In towns a week-day was to be set apart for the "exercise" or public interpretation of Scripture, in which all qualified persons in the neighbourhood were to take part, as if the whole country were a school of the Bible.

The First Book of Discipline does not set forth any complete scheme of church government. Its arrangements are in part provisional. In addition to the minister, who is its most definite figure and proved to be the most permanent, it recognizes the superintendent, the lay elder and the reader. Ten or twelve superintendents were to be appointed, "a thing most expedient at this time." They were parish ministers and subject like their brethren to church courts; their added function was to plant churches, and place ministers, elders and deacons wherever required. This was also the duty of "commissioners" who were superintendents over smaller territories and for a shorter term. Whether the superintendents were meant to be permanent in the church is not clear. The lay elder was very much what he is still. The reader was to conduct service when no minister was available, reading the Scriptures and the Common Prayer. When there was preaching, it was accompanied by free prayer; the liturgy was not then called for. Of church courts the assembly is taken for granted, having existed from the first; the minor church courts are not yet defined, though the elements of each of them are present. A noble scheme of education was sketched for the whole country, but neither this nor the provision made for ministers' stipends was carried out. In 1572 the assembly, however, established a church, from which the expenses of both were to be paid, being in the hands of the barons.

The system naturally took time to get into working order. The old clergy, bishops, abbots and priests were still on the ground, and were slow to take service in the new church. In 1574 there were 289 ministers and 715 readers; in the district of the presbytery of Auchterarder, which now has fifteen parishes, there were then four ministers and sixteen readers. As the ranks of the clergy slowly filled, questions arose which the Reformation had not settled, and it was natural that the old system should affect the work of the church, as the barons were familiar with it. Presbyterianism, however, met with little opposition, for the system was not a complete break with the past, nor was it so much a change in church government as a formal acknowledgment of the church's theory of government. As early as 1572 the new system was recognized and approved by the assembly, and the first general assembly, of 1577, exercised the functions of the old synods in which the barons were the principal members. The assembly of 1575 decided that all ministers were bishops; that of 1578 abolished the name of bishop as denoting an office in the church, and that of 1580 in spite of a royal remonstrance abolished Episcopacy, a decree to which all the bishops except five submitted. The Second Book of Discipline recognizes four kinds of office in the church, and no one can lawfully be placed in any of them except by being called to it by the members. Pastor, bishop and minister are all titles of the same office, that of those who preach the word and administer the sacraments, each to a particular congregation. The doctor is a teacher in school or university; he is an elder and assists in the work of government. Elders are rulers; their function also is spiritual, though practical and disciplinary. The fourth office is that of the deacons, who have to do with

Poets (1880-1881), passion; H. Craik, English Prose Selections (1893-1896), passion; W. J. Courthope, History of English Poetry, i. and ii. (1895-1897); J. J. Russel, Literary History of the English People, i. and ii. (1896); T. F. Henderson, Scottish Vernacular Literature (1898); G. Gregory Smith, The Transition Period (1900), and Specimens of Middle Scots (1902); Chambers's Cyclopaedia of English Literature (1903); J. A. Millar, Scottish History of Scotland (1903); The Cambridge History of Scotland (1908).

(G. G. S.)

Scottish Reformation.

First Book of Discipline.

Second Book of Discipline.

"Tulchan," a calf-skin filled with straw, supposed to induce the cow to give milk freely; hence a term of contempt for one who is used as a dummy for the advantage of another.
matters of property and are not members of church courts. Neither superintendent nor reader now appears; all the functions of bishops and superintendents are vested in the elderships, or church courts, and it is urged that the parts which still remain in Scotland of the old system should be cleared away and the whole replaced by a Roman Catholic or a presbyterian, or a system of pure and simple worship. The assembly is to have the right to fix its own time of meeting, and its decision in matters ecclesiastical is not to be subject to any review. Kirk-sessions and presbyteries are not named, but the principles are clearly laid down on which these institutions were to rest.

By committing herself to this system the Church of Scotland established between herself and the Church of England a division which became more and more apparent and was the cause of much of her subsequent sufferings. It is no doubt strange that she should have endured so much not for any great Christian principle, but for a question of the kingdom. The Presbyterians, hitherto recognized in Scotland, were not the only supporters of Presbyterianism in England, for the Puritans in the other counties were also in favor of it. The principles of Presbyterianism were almost universally recognized, and it might not have been held with such tenacity or proved so incapable of compromise but for the opposition and persecution of the three Stuart kings. The history of the Scottish church for a century after the date of the Book of Discipline is that of a religious struggle between the people and the crown.

For some years after its inception Presbyterianism carried all before it. The presbyteries came quickly into existence; that of Edinburgh dates from 1580. In that year it was found that there were 924 parishes in Scotland, but not nearly all supplied with ministers; it was proposed that there should be 50 presbyteries (in 1910 there are 84) and 400 ministers. A great part of the country, especially in the north and west, had not yet been reached by the Reformation. At this time began the long series of attempts made by James VI. in the direction of curbing Presbyterian liberty and of the restoration of Episcopacy. In 1584, when the King was in Denmark, he called on the bishops to show that they were the true judges of the church and the law. The bishops, declared the king to be supreme in all causes and over all persons, thus subverting the jurisdiction of the church, and made all conventions illegal except those sanctioned by the king. The bishops were to do what had hitherto been done by the assembly and presbyteries, and no attacks were to be made at religious meetings on the king or council. Other acts followed by which the episcopate was strengthened, though the act of 1587 annexing the temporalities of the bishops to the crown, while fatal to the old episcopate, made the prospects of the new more doubtful. In 1588 a change took place in the Kirk. The Presbyterians threw James into the arms of the kirk; in 1592 the acts of 1584 were abrogated, the Second Book of Discipline legalized and Presbytery established.

The church was at the time very powerful, the people generally sympathizing with her system, and her assemblies being attended by many of the nobles and the foremost men. Discipline was strict; the temper of the church was in accordance with the Old rather than the New Testament.

Another sudden change took place a few years later, James falling out of humour with the church on the question of the residence of the bishops. The new bishops were not to be resident in Edinburgh, and the Kirk-sessions, which had been in session, were dissolved. The criticism of some of the ministers. His Basilicon Doron, published in 1599, shows a determination to make the church episcopal. With this end assemblies, from which Melville was excluded, and which were otherwise tampered with and terrorized, were got to agree that a number of ministers should sit in parliament, and to surrender the assembly's right of meeting. On his accession to the throne of England in 1603 James entered on a new set of attempts to assimilate the Scottish church to that of England. Melville was brought to London, imprisoned and sent abroad; other ministers who had acted or spoken too freely were banished. The powers of the bishops were increased, and their brethren brought in various ways under subjection to them, and in 1609 two courts of high commission were set up by the royal authority with plenary powers to enforce conformity to the new arrangements. In 1610 three ministers were called to London to be consecrated as bishops, as if there had till now been no bishops in Scotland; these on their return consecrated ten others. In 1612 the act of 1592 which established Presbytery was rescinded, and Episcopacy became the legal church system of Scotland.

In all this it was the position and rights of the clergy that were assailed; and James showed kindness to the church in seeking to secure that stipends should be paid and that new churches should be provided where required. The people had been less interfered with; the change of church government involved no change in the conduct of worship. But the articles passed by the packed assembly of Perth in 1618 touched on the religious habits and postures of the people, and in this it soon appeared that a crisis had been reached. These famous articles were: (1) That the communion should be received kneeling; (2) That it might be administered in private; (3) That baptism might be in the home; (4) That children of eight should be taken to the bishop for examination and his blessing; (5) That Christmas, Good Friday, Easter and Whitsunday should be observed. These articles were opposed in parliament and were strongly resisted throughout the country. When Charles became king in 1625 he at once let it be known that the Articles of Perth were not to be abrogated, and that no meeting of the assembly was to be allowed. During the first years of his reign he was occupied in other directions; but when he came to Scotland in 1633 he came with him and though his father showed himself kind to the clergy in matters of stipend, and adopted measures which caused many schools to be built, he also showed that in the matter of worship the policy of forcing Scotland into uniformity with England was to be carried through with a high hand. A book of canons and constitutions of the church which appeared in 1636, instead of being a digest of acts of assembly, was English in its ideas, dealt with matters of church furniture, exalted the bishops and ignored the kirk-sessions and elders. The liturgy was ordered to be translated and in the same year a new prayerbook was published, with somewhat higher doctrine, of the Anglican Common Prayer. The introduction of this service book in St Giles's Church, Edinburgh, on the 16th of July 1637, occasioned the tumult of which Jenny Geddes will always figure as the heroine. The sentiment was echoed throughout Scotland.

Petitions against the service book and the book of canons poured in from every quarter; the tables or committee formed to forward the petition rapidly became a powerful government at the head of a national movement, the action of the crown was temporizing, and on the 28th of February the National Covenant was signed in the famous scene in Greyfriars church and churchyard. This document consisted of three parts: (1) A covenant signed by King James and his household in 1580, to uphold Presbyterianism and to defend the state against Romanism; (2) A recital of all the acts of parliament passed in the reigns of James and Charles in pursuance of the same objects; and (3) The covenant of nobles, barons, gentlemen, burgesses, ministers and commons to continue in the reformed religion, to defend it and resist all contrary errors and corruptions. The Covenant was no doubt an act of revolt against legal authority, and even Mr. David Robertson has said it was a sort of civil war, and many years ago said oppressively and illegally in its attempt to coerce Scotland into a religious system alien to the country, and that the subjects were entitled to free themselves from tyranny. The crown was unable either to check the popular movement or to come to any compromise with it, and the Glasgow assembly of 1638, the first free assembly that had met for thirty years, proceeded to make the church what the Covenant required. A clean sweep was made of the legislation of the preceding period; the five articles of Perth, the service book and book of canons and the court of high commission were all condemned. The bishops were tried not for being bishops but on exaggerated charges of false doctrine and loose living; and all were deposed from the ministry. Many ministers were also deposed on the charge of Arminianism. It was by an assembly that the second reformation was effected; but the assembly contained the most
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influential of the nobility and gentry, and was carried on the crest of a great national movement. The Covenant was accepted by parliament in 1639.

The Seventeenth Century is the culminating period of Scottish Presbyteranism, when, having successfully resisted the crown, it not only was supreme in Scotland but exercised a decisive influence over Europe. The causes which brought about this state of affairs are to be sought to a large extent in the civil history of England. Presbyterianism was rapidly growing in that country, and the English parliament sought the alliance of the assembly, while the Independents, though in the event Presbytery was as little to their liking as Episcopacy, joined in the wish to get rid of the episcopal system. In its period of triumph the Presbytery of Scotland displayed its character. After the injustice and persecution it had suffered it could scarcely prove moderate or tolerant; it showed a vehement determination to carry out the truth it had vindicated with such enthusiasm, to the full extent and wherever possible. The Covenant, at first a standard of freedom, was immediately converted into a test and made the instrument of oppression and persecution. All policy was to be determined by the Covenant; the king and every official was to be obliged to take it. The mind of the nation being so preoccupied with the Covenant, it naturally followed that when a party in Scotland in favour of the kirk was ready to denounce and to unchurc those who showed any inclination to moderation and political sanity, that the beginnings of schism soon appeared in the ranks of the Covenanters.

In 1643, when the full legal establishment of Presbytery had just been consummated, the assembly, asked by the English parliament to arrange a league to be signed in both countries for the furtherance of reformed religion, agreed, but asked that the league should be a religious one. The result was the Solemn League and Covenant. The league did not mention Presbyteranism; but the assembly had refused to hear of any recognition of independency; if religion were thoroughly reformed, they considered the result must be Presbyterianism in England as in Scotland. In the Westminster Standards also, which were the fruit of the Scottish desire for a religious uniformity, Scotland did not obtain by any means all it desired in its church documents. The Scottish divines in the Westminster Assembly were only five in number, while the assembly contained effective parties of Erastians and Independents. The Confession of Faith contains no approval of any system of church government, and when she adopted it in 1647 the kirk gave up her old confession in which the principles at least of true church order are laid down. In accepting in 1645 the Westminster Directory of Public Worship she tacitly gave up her own liturgy which had been in use till recently, and committed herself to a hald and uninviting order of worship, in which no forms of prayer were allowed to be used. So much did Scotland for the sake of uniformity accept from England. The metrical psalms also, which are still sung in Scottish churches, were adopted at this time; they are based mainly on the version, which had been approved by the Westminster Assembly, of Francis Rouse (1579-1659), a member of the English House of Commons.

The engagement made with Charles, then a prisoner in the Isle of Wight in 1647, which promised him support on condition of his sanctioning the Solemn League and Covenant and pledging himself to set up after three years a church according to the Confession of Faith, was protested against by the assembly; and from this came the famous "Act of Classes" by which the Covenanters disqualified for public office and even for military service who had been parties to the engagement. The rescinding of this act in 1657 led to a serious breach in the ranks of the Scottish clergy. The Rescissioners, or supporters of the resolution to rescind that act, were opposed by the Protesters, the rigid adherents to the strictest interpretation of the Covenant. The period of the Commonwealth was filled with the strife between these two parties, its bitterness not lessened by the fact that the assembly dissolved in 1653 by Cromwell's soldiers was not allowed to meet again in his protectorate. The Protesters, who were in favour with the common people, are chargeable with having brought into Scotch church life the observance of fastsition and the long and excited Communion services which were kept up for two and a half centuries and may still be witnessed in the Highlands.

If the mismanagement of Scotch religious affairs under James and Charles I. is a melodrama story, what took place under Charles II. is infinitely sadder. A series of bunglers was committed in the attempt to compel Scotland to submit to the religion the government prescribed, and the failure of each measure was followed by more inhuman severities. Detail is impossible here. From the first Charles issued his Edict of Toleration determined to force Episcopalianism on Scotland, and not too scrupulous in the choice of methods for securing his ends. The attempt was nearly successful. In the greater part of the country little change took place in the religious services. The service book was not read nor kneeling at communion required, and it made no immediate difference to the people that the clergy should be under bishops. The inferior church courts still sat, though not the assembly. At the Restoration it was a question whether the bulk of the population was in favour of Presbytery or of Episcopacy. But the matter was one of power, and the military violence and the judicial severity of the Covenanting spirit arose, nourished on intolerable grievances, and that the nation as a whole decided against the system which had been promoted by such means.

The Recessory Act of 1661 swept away the legislation of the preceding twenty years, and so disposed of the Presbyterian polity of the church. Episcopacy was restored by a letter from the king on the 5th of September 1661. James Sharp (q.v.), Fairfoul, James Hamilton (1610-1674) and Robert Leighton (q.v.) were the new bishops; Sharp and Leighton having to be ordained as deacons, then as priests, before they consecration, and the parishioners being required to swear that though Leighton had left them before crossing the border. An act requiring all ministers appointed during the period when patronage was abolished to get presentation from their patrons and institution from their bishops was applied in the west of Scotland in such a way that 300 ministers left their manse. Their places were filled with less competent men whom the people did not wish to hear, and so conventicles began to be held. The attempts to suppress these, the harsh measures taken against those who attended them or connived at them, or refused to give information about them, the imprisonment, confessions, imprisoms, tortures, expatriations, all make up a dreadful narrative. Indulgences were tried, and were successful in bringing back about 100 ministers to their parishes and introducing a new cause of division among the clergy. On the other hand, the Covenanting spirit rose higher and higher among the persecuted till the armed risings took place and the formal rebellion of a handful of desperate men against the ruler of three kingdoms. The story of Richard Cameron (q.v.) is one of the highest romantic heroism; his name is perpetuated in that of the Cameronian body ("first-born of the Scottish sects"), which, as the Reformed Presbyterian Church, kept up a separate existence till 1876, when it united with the Free Church, and in that of the Cameronian regiment, originally formed from his followers after his death and distingushed since in every part of the world. The proclamation of toleration in 1685 was intended mainly for Roman Catholics and excluded field preachers.

When William landed in England in 1688, the scene changed in Scotland. The soldiery was withdrawn from the west, and the people at once showed their feelings by the "rabbilling" or ejection of the curates who occupied the manse of the ousted ministers, in which, however, no lives were lost. William would have decided for Episcopacy in Scotland, as the great body of the nobles and gentry adhered to it, but only on condition that the Episcopalians agreed to support him and that they had the people with them. Neither of these conditions was fulfilled. On the 22nd of July
1689 the Convention which declared the throne vacant and called William and Mary to fill it, declared in its Claim of Right that prelacy and the superiority of any office in the church above ministers had been a great and insupportable grievance to Scotland. Effect was given to this; and in April 1690 the act was passed on which the establishment of the Church of Scotland rests, the Westminster Confession being recognized, the laws in favour of Episcopacy repealed, though the Recessory Act remained on the statute book, and the assembly appointed to meet. The Covenanters were not mentioned; at his coronation William had refused to be a persecutor, and he desired that the church should embrace all who were willing to be in it. The Revolution church contained from the first men of different views. Its first assembly in 1690 received into the church the three remaining ministers of the Cameronians, though their followers refused to come with them. With regard to Episcopalian ministers, by whom the majority of parishes were served, there was more difficulty. The Presbyterians were not ready for union with them, and many of them were put out of their livings, ostensibly by way of discipline. The king and his representatives at the assembly pressed hard for their reception, and in 1693 the "Act for settling the quiet and peace of the Church" was passed, which provided for their admission on taking the oaths of allegiance and assurance, subscribing the Confession of Faith and acknowledging Presbyterian government. This act fixed the formula of subscription to be signed by all ministers.

From this time forward the church, while jealously asserting her spiritual independence, was on the side of the crown against the Jacobites, and became more and more an orderly and useful ally of the state. In 1697 the Barrier Act was passed, which provided that any act which is to be binding on the church is to come before the assembly as an overt and to be transmitted to presbyteries for their approval. The difficulties which threatened to arise about the union were skillfully avoided; the Act of Security provided that a Presbyterian minister who should "continue without any alteration to the people of this land in all succeeding ages," and the first oath taken by Queen Anne at her accession was to preserve it. The Act of Toleration of 1712 allowed Episcopalian dissenters to use the English liturgy. This had not hitherto been done, and the claim of the Episcopallians for this liberty had been the occasion of a bitter controversy. The same parliament restored lay patronage in Scotland, an act against which the church always protested and which was the origin of great troubles.

Presbyterianism being loyal to the house of Hanover, while Episcopacy was Jacobite, was now in enjoyment of the royal favour and was treated as a firm ally of the government. But while the church as a whole was more peaceful, more courtly, more inclined to the friendship of the world than at any former time, it contained two well-marked parties. The Moderate party, which maintained its ascendancy till the beginning of the 19th century, sought to make the working of the church in its different parts as systematic and regular as possible, to make the assembly supreme, to enforce on presbyteries respect for its decisions, and to render the Presbyterian gentry of the church as exact and formal as that of the civil courts. The Popular party, regarding the church less from the side of the government, had less sympathy with the progressive movements of the age, and desired greater strictness in discipline. The main subject of dispute arose at first from the exercise of patronage. Presbyteries in various parts of the country were still disposed to disregard the presentations of lay patrons, and to settle the men desired by the people; but legal decisions had shown that if they acted in this way their nominee, while legally minister of the parish, could not claim the stipend. To the risk of such sacrifices the church, led by the Moderate party, refused to expose herself. By the new policy inaugurated by Dr William Robertson (1721-1793), which led to the second secession, the assembly compelled presbyteries to give effect to presentations, and in a long series of disputed settlements the "call," though still held essential to a settlement, was less and less regarded, until it was declared that it was not necessary, and that the church courts were bound to induce any qualified presentee. The substitution of the word "concurrence" for "call" about 1764 indicates the subsidiary and ornamental light in which the assent of the parishioners was now to be regarded. The church could have given more weight to the wishes of the people; she professed to regard patronage as a grievance, and the annual instructions of the assembly to the commission (the committee representing the assembly till its next meeting) enjoined that body to take advantage of any opportunity which might arise for getting rid of the grievance of patronage, an injunction which was not discontinued till 1784. It is not likely that any change in the laws could have been obtained at this period, and disregard of the law might have led to an exhausting struggle with the state, as was actually the case at a later period. Still it was in the power of the church to give more weight than she did to the feelings of the people; and her working of the patronage system drove large numbers from the Establishment. A melancholy catalogue of forced settlements marks the annals of the church from 1749 to 1780, and wherever an unpopular presentee was settled the people quietly left the Establishment and erected a meeting-house. In 1763 there was a great debate in the assembly on the progress of schism, in which the "Popular party" pressed the point that the door of the Moderates, while the Moderates rejoined that patronage and Modernism had made the church the dignified and powerful institution it had come to be. In 1764 the number of meeting-houses was 120, and in 1773 it had risen to 190. Nor was a conciliatory attitude taken up towards the seceders. The ministers of the Relief desired to remain connected with the Establishment, but were not suffered to do so. Those ministers who resigned their parishes to accept calls to Relief congregations, in places where forced settlements had been made, and with whom the Assembly had no connexion, were not admitted as still ministers of the church, and were deposed and forbidden to look for any ministerial communion with the clergy of the Establishment. Such was the policy of the Moderate ascendancy, or of Principal Robertson's administration, on this vital subject. It had the merit of success in so far as it completely established itself in the church. The presbyteries ceased to disregard presentations, and lay patronage came to be regarded as part of the order of things. But the growth of dissent steadily continued and excited alarm from time to time; and it may be questioned whether the peace of the church was not purchased at too high a price. The Moderate period is justly regarded as in some respects the most brilliant in the history of the church. Her clergy included many distinguished Scotsmen, among them Thomas Reid, George Campbell, Adam Ferguson, John Home, Hugh Blair, William Robertson and John Erskine. The labours of these men were not mainly in theology; in religion the age was one not of advance but of rest; they gained for the church a great and widespread respect and influence.

Another salient feature of the Moderate policy was the consolidation of discipline. It is frequently asserted that discipline was lax at this period and that ministers were allowed to continue their charges. It cannot, however, be shown that the leaders of the church at this time sought to procure the miscarriage of justice in dealing with such cases. That some offenders were acquitted on technical grounds is true; it was insisted that in dealing with the character and status of their members the church courts should proceed in as formal and punctilious a manner as civil tribunals, and should recognize the same laws of evidence; in fact, that the same securities should exist in the church as in the state for individual rights and liberties.

The religious state of the Highlands, to which at the period of the Union the Reformation had only very partially penetrated, occupied the attention of the church during the whole of the 18th century. In 1725 the gift called the "royal bounty" was first granted—a subsidy amounting at first to £1000
per annum, increased in George IV.'s reign to £3000, and continued to the present day; its original object was to assist the reclamation of the Highlands from Roman Catholicism by means of catechists and teachers. The Society for Propagating Christian Knowledge, incorporated in 1709, with a view partly to the wants of the Highlands, worked in concert with the Church of Scotland, setting up schools in remote and destitute localities, while the church promoted various schemes for the dissemination of the Scriptures in Gaelic and the encouragement of Gaelic students. In these labours as well as in other directions the church was sadly hampered by poverty. The need of an increase in the number of ministers and evangelicals, and, through them, chapels began to be built about 1796, they were provided only in wealthy places by local voluntary liberality; for the supply of the necessities of poor outlying districts no one as yet looked to any agency but the state. In every part of the country many of the ministers were miserably poor; there were many stipends, even of important parishes, not exceeding £40 a year; and it was not till after many debates in the assembly and appeals to the government that an act was obtained in 1810 which made up the poorer livings to £150 a year by a grant from the public. The decrease of growth in the Evangelical church, and the frequent failure of the most miserable description, if not falling to decay.

With the close of the 18th century a great change passed over the spirit of the church. The new activity which sprang up everywhere after the French Revolution produced in Scotland a revival of Evangelicalism which has not yet spent its force. Modernism had cultivated the ministers too fast for the people, and the church had become to a large extent more of a dignified ruler than a spiritual mother. About this time the brothers Robert and James Haldane devoted themselves to the work of promoting Evangelical Christianity, James making missionary journeys throughout Scotland and founding Sunday schools; and in 1798 the eccentric preacher Rowland Hill visited Scotland at their request. In the journals of these evangelists dark pictures are drawn of the religious state of the country, though their censorious tone detracts greatly from their value; but there is no doubt that the efforts of the Haldanes brought about or coincided with a quickening of the religious spirit of Scotland. The assembly of 1799 passed an act forbidding the admission to the pulpits of laymen or of ministers of other churches, and issued a manifesto on Sunday schools. These acts helped greatly to discredit the Moderate party, of whose spirit they were the outcome; and that party further injured their standing in the country by attacking Leslie, afterwards Sir John Leslie, on frivolous grounds—a phrase he had used about Hume's view of causation—when he applied for the chair of mathematics in Edinburgh. In this dispute, which made a great sensation in the country, the popular party successfully defended Leslie, and thus obtained the sympathy of the enlightened portion of the community. In 1810 the Christian Instructor began to appear under the editorship of Dr Andrew Thomson, a churchman of vigorous and elevated noble character. It was an ably written review, in which the theology of the Haldanes asserted itself in a somewhat dogmatic and confident tone against all unsoundness and Modernism, clearly proclaiming that the former things had passed away. The question of pluralities began to be agitated in 1813, and gave rise to a long struggle, in which Dr Thomas Chalmers (q.v.) took a notable part, and which terminated in the regulation that a university chair or principality should not be held along with a parish which was not close to the university seat.

The growth of Evangelical sentiment in the church, along with the example of the great missionary societies founded in the end of the 18th and the beginning of the 19th century, led to the institution of the various missionary schemes which were then carried on, and their history forms the chief part of the history of the church for a number of years. The education scheme, having for its object the planting of schools in destitute Highland districts, came into existence in 1824. The foreign mission committee was formed in 1825, at the instance of Dr John Ingles (1762-1834), a leader of the Moderate party, and Dr Alexander Duff (q.v.) went to India in 1829 as the first missionary of the Church of Scotland. The church extension committee was first appointed in 1828, and in 1834 it was made permanent. The colonial scheme was inaugurated in 1836 and the mission in 1838, Robert Murray Mc'Cheyne (1813-1843) and Andrew Alexander Bonar (1810-1892) setting it out in the following year as a deputation to inquire into the condition of the Jews in Palestine and Turkey and on the continent of Europe. Of these schemes that of church extension has most historical importance. It was originally formed to collect information regarding the spiritual wants of the count and to apply to the government to build the churches found to be necessary. As the population of Scotland had doubled since the Reformation, and its distribution had been completely altered in many counties, while the number of parish churches remained unchanged, and meeting-houses had only been erected where seceding congregations required them, the need for new churches was very great. The application to government for aid, however, proved the occasion of a "Voluntary controversy," which raged with great fierceness for many years and has never completely subsided. To this period belongs "the Anti- Episcopal Bill" (1833) and the scheme for the "provide a Church in every Parish and a Parson in every Church." These measures were largely the work of Robert Rollo in the United States, the "men of property" having previously come to hold Voluntary principles—aided to the influence of these principles in the country, while the political excitement of the period disposed men's minds to such discussions. The government built forty-two churches in the Highlands, providing them with a slender endowment; and these are still known as parliamentary churches. Under Thomas Chalmers, however, the church extension committee struck out a new line of action. That great philanthropist had come to see that the church could only reach the masses of the people effectively by greatly increasing the number of her places of worship and abolishing or minimizing seat-rents in the poorer districts. In his powerful defence of establishments against the voluntaries in both Scotland and England, in which his ablest assistants were those who afterwards became, along with him, the leaders of the Free Church, he pleaded that an established church to be effective must divide the country territorially into a large number of small parishes, so that every corner of the land and every person, of whatever class, shall actually enjoy the benefits of the parochial machinery. This territorial principle, with the strict censures of the period, was then a view ever since. With the view of realizing this idea he appealed to the church to provide funds to build a large number of new churches, and personally carried his appeal throughout the country. By 1835 he had collected £56,000 and reported the building of sixty-two churches in connexion with the Establishment. The keenness of the conflict as it approached the crisis of 1843 checked the liberality of the people for this object, but by 1841 £305,747 had been collected and 222 churches built.

The zealous orthodoxy of the church found at this period several occasions to assert itself. John M'Leod Campbell (q.v.), minister of Row, was deposed by the assembly of 1830 for teaching that assurance is of the essence of faith and that Christ died for all men. He has since been recognized as one of the profoundest Scottish theologians of the 19th century, although his deposition was never removed. The same assembly condemned the doctrine put forth by Edward Irving, that Christ took upon Him the sinful nature of man and was not impeccable, and Irving was deposed five years later by the presbytery of Annan, when the outburst of supposed miraculous gifts in his church in London had rendered him still more obnoxious to the strict censures of the period. In 1841 Thomas Wright of Borthwick (1785-1855) was deposed for a series of heretical opinions, which he denied that he held, but which were said to be contained in a series of devotional works of a somewhat mystical order which he had published.

The influence of dissent also acted along with the rapidly rising religious fervour of the age in quickening in the church that sense of a divine mission, and of the right and power to carry out that mission without obstruction from any worldly
authority, which belongs to the essential consciousness of the Christian church. An agitation against patronage, the ancient root of evil, and the formation of an anti-patronage society, helped in the same direction. The Ten Years' Conflict, which began in 1833 with the passing by the assembly of the Veto and the Chapel Acts, is treated in the articles FREE CHURCH OF SCOTLAND, and it is not necessary to dwell further in this place on the consequences of those acts. The assembly of 1843, from which the exodus took place, proceeded to undo the acts of the church during the preceding nine years. The Veto was not repealed but ignored, as having never had the force of law; the Strathbogie ministers were recognized as if no sentence of deposition had gone forth against them. The protest which the moderator had read before leaving for Edinburgh had been set on the table; and an act of separation and deed of demission were received from the ministers of the newly formed Free Church, who were now declared to have severed their connexion with the Church of Scotland. The assembly addressed a pastoral letter to the people of the country, in which, while declining to "admit that the course taken by the seceders was justified by irresistible necessity," they counselled peace and goodwill towards them, and called for the loyal support of the remaining members of the church.

Two acts at once passed through the legislature in answer to the claims put forward by the Church of Scotland. The Scottish Benefices Act of Lord Aberdeen, 1843, gave the people power to state objections personal to a presentee, and bearing on his fitness for the particular charge to which he was presented, and also authorized the presbytery in dealing with the objections to look to the number and character of the objectors. Sir James Graham's Act, 1844, provided for the erection of new parishes, and thus created the legal basis for a scheme under which chapel ministers might become members of church courts.

The Disruption left the Church of Scotland in a sad and maimed condition. The clergy, numbering 565, and among these were many of her foremost men. A third of her membership was computed to have gone with them. In Edinburgh many of her churches were nearly empty. The Gaelic-speaking population of the northern counties completely deserted her. All her missionaries left her but one. She had no gale of popular enthusiasm to carry her forward, representing as she did not a newly arisen principle but the opposition to a principle which she maintained to be dangerous and exaggerated. For many years she had much obloquy to endure. But she at once set herself forward by the church. The committee for selecting and recruiting the missionary staff. A lay association was formed, which raised large sums of money for the missionary schemes, so that their income was not allowed seriously to decline. The good works of the church, indeed, were in a few years not only continued but extended. All hope being lost that parliament would endow the new churches built by the church extension scheme of Dr Chalmers, it was felt that this also must be the work of voluntary liberality. Under Dr James Robertson, professor of church history in Edinburgh, one of the leading champions of the Moderate policy in the Ten Years' Conflict, the extension scheme was transformed into the endowment scheme, and the church accepted it as her duty and her task to provide the machinery of new parishes where they were required.1 By 1854, 30 new parishes had been added at a cost of £139,000, and from this time forward the work of endowment proceeded still more rapidly. In 1843 the number of parishes had been 924; in 1909 it was 1437. By the Poor Law Act of 1845 parishes were enabled to remove the care of the poor from the minister and the kirk-sesson, in whom it was formerly vested, and to appoint a parochial board with power to assess the ratepayers.

Education Act of 1872 severed the ancient tie connecting church and school together, and created a school board having charge of the education of each parish. At that date the Church of Scotland had 900 schools, mostly in the Highlands. The church continued till lately to carry on normal schools for the training of teachers in Edinburgh, Glasgow and Aberdeen; but these, along with the normal schools of the United Free Church, were recently made over to the state.

In 1874 patronage was abolished. The working of Lord Aberdeen's Act had given rise to many unedifying scenes and to lengthy struggles over disputed settlements, and it was early felt that some change at least was necessary in the law. The agitation on the subject went on in the assembly from 1857 to 1860, when the assembly by a large majority condemned patronage as restored by the Act of Queen Anne, and resolved to petition parliament for its repeal. The request was granted, and the right of electing parish ministers was conferred by the Patronage Act 1874 on the congregation; thus a grievance of old standing, from which all the ecclesiastical troubles of a century and a half had sprung, was removed and the church placed on a thoroughly democratic basis. This act, combined with various efforts made within the church for its improvement, secured for the Scottish Establishment a large measure of popular favour, and in the last half of the 19th century she grew from strength to strength.

The church influence. This revival was largely due on the one hand to the improvement of her worship which began with the efforts of Dr Robert Lee (1804–1868), minister of Old Greyfriars, Edinburgh, and professor of Biblical criticism in Edinburgh University. By introducing into his church a printed book of prayers and also an organ, Dr Lee stirred up vehement controversies in the church courts, which resulted in the recognition of the liberty of congregations to improve their worship. The Church Service Society, having for its object the publication of new forms of worship and modern liturgies, with a view to the preparation of forms of prayer for public worship, was founded in 1865; it has published eight editions of its "Book of Common Order," which, though at first regarded with suspicion, has been largely used by the clergy. Church music has been cultivated and improved in a marked degree; and hymns have been introduced to supplement the psalms and paraphrases; in 1866 a committee appointed by the Church of Scotland, the Free Church, the United Presbyterian Church and the Presbyterian Church in Ireland issued The Church Hymnary, which is authorized for use in all these churches alike. Architecture has benefited from the church, and has been improved by both the measures of the church and by the measures of the church. The church has also added to the usefulness of the Church of Scotland by the duke of Argyll, now once more fitted up for worship.

Committee of Christian Life and Work.

The church has greatly increased of late years in wide of view and liberality of sentiment, and shelters various tendencies of thought. A volume of Scotch Sermons, published in 1880 by ministers holding liberal views, brought out the fact that the
church would not willingly be led into prosecutions for heresy. After this, however, there was a revival on the part of some of the ministers of High Church orthodoxy. The Scottish Church Society was founded in 1892 with Dr John Macleod of Govan as president, "to defend and advance catholic doctrine as set forth in the ancient creeds and embodied in the standards of the Church of Scotland." In 1897, however, Alexander Robinson of Kilmun was deposed by the presbytery of Dunoon acting under the orders of the Assembly on account of the views contained in his book *The Saviour in the New Light*, in which the results of modern criticism of the Gospels were set forth with some ability. The National Church Union in the United States of America was now established, and after this event by ministers and elders who feared that the cause of free theological inquiry was in peril in the church. This body at once raised the question of the relaxation of subscription, which was in a few years seriously taken up by the church, and the National Church Union, feeling that in this, as well as in the growth of liberal opinion in the church its object had been attained, discontinued its operations. The Scottish Church Society still carries on its work.

The question of subscription has been more or less before the church for many years. The formula adopted by the assembly of 1711 had still to pass a long course of modification, but it was not too strict. After debates extending over many years, the assembly of 1889 fell back on the words of the act of parliament of 1693, passed to enable the Episcopalian clergy to join the establishment, in which the candidate declared the Confession of Faith to be the confession of his faith, owned the doctrine therein contained to be the true doctrine and promised faithfully to adhere to it. This was accompanied by a Declaratory Act in which the church expressed its desire to enlarge rather than curtail the liberty hitherto enjoyed. Ten years later the assembly was again debating the question of subscription. A committee appointed in 1899 to inquire into the powers of the church in the matter reported that the power of the church was merely administrative—it was in her power as cases arose to prosecute or to refrain from prosecuting, but that she had no power to modify the confession in any way. Here the matter might have remained, but that the approach to parliament of the United and the Free Churches after the decision of the House of Lords in 1904 (see Free Church and United Free Church) offered an opportunity for asking parliament to remove a grievance the church had long and vainly sought to have removed. The Churches Bill of 1905 afforded relief to all the Presbyterian churches. It did not do what the Church of Scotland asked, viz. allow the words of the act of 1690 to be used as the formula; but it removed that of 1693 and left it to the church to frame a new formula for her ministers and professors, an undertaking to which she is seriously addressing herself.

The agitation for disestablishment sprang up afresh after the passing of the Church Patronage Act (Scotland); each assembly of the Free Church passed a resolution in favour of it, and the United Free Church continued this testimony. In 1890 Mr. Gladstone declared for disestablishment, and under his government of 1892 a Disestablishment Bill was introduced in the House of Commons by Sir Charles Cameron, in two successive sessions, 1893–1894. After the defeat of the Liberal government in 1895, the church was for ten years relieved from this anxiety, nor had the attack been renewed up to 1911. A counter-movement was represented by a bill introduced into parliament in 1886 in order to declare the spiritual independence of the Church of Scotland, in the hope that the Scottish church might be opened to a reunion of the Presbyterian bodies. The act of 1911 has altered the circumstances of the churches in this regard. During the agitation the church was much occupied with the question of her own defence, and after it died down, various schemes were entertained for the improvement of her position without and within. She more than once expressed her willingness to confer with the daughter Presbyterian churches, with a view to their sharing with her the benefits of her position.

Since 1908 the subject of the union of the churches has been much spoken of. The quarter-centenary of the birth of Calvin at Geneva, the time chosen for the celebration of the union of the Church of Scotland and the United Free Church assembly together for a memorial service in St Giles'; and a committee on union, consisting of 105 representatives from each assembly, was appointed.

The Church of Scotland has made few contributions of importance to the movement of Biblical Criticism which has entered so deeply into the lives of so many Scotchmen, but distinguished writers on theology. Robert Lee (1841-1868), minister of Old Greyfriars and professor of Biblical Theology in the University of Glasgow, opened up the liberty and the improvement of worship, of which the churches generally now reap the advantage. He held clear views as to the necessity of reform in the doctrine of the church as well; but these were not published till after his death. Sir John Barony, Parish, Glasgow, a man of great natural eloquence and an ardent philanthropist, enjoyed the warm friendship of Queen Victoria and was befriended by his nation. John Caird (q.v.), professor of divinity and then principal of Glasgow University, wrote *An Introduction to the Philosophy of Religion*, exercised a deep influence as a teacher on Scottish thought, and was the most distinguished of the "two Andrewes" of the Scottish Church.

The Church of England had a rich supply of ministers and other missionaries, with a large number of native agents, in India, East Africa and China. Jewish missions are kept up at five stations in the United States, but the foreign mission is still very small. The church has declined in Scotland, and the number of foreign emigrants from Scotland in many of the dependencies of the empire. The small-livings fund aims at bringing up to £200 a year all stipends which fall short of that sum, of which there are nearly 400. About £30,000 was still required in 1910 to carry out the object of this scheme.

The parliamentary return of 1888 showed the value of the teinds of 876 parishes to be £375,676 and the stipends paid to amount (exclusive of manses and glebes) to £42,336. The value of assessments obtained since that date is more than balanced by the decline of farmers' prices, so that the total revenue of the church from this source is about £200,000. The unexhausted teinds, according to the return in 1907, amounted to about £133,000. The exchequer pays to 190 poor parishes and 42 Highland churches, from church property in the hands of the crown, £1,040. Fromburgh and other local funds the church derives a revenue of £65,000. The church has itself added to her endowments, for the equipment of 453 new parishes £1,681,330, yielding over £54,000 a year. The entire endowments of the church, including manses and glebes but not church buildings, is £390,000.

For detailed accounts of the separate bodies—the United Presbyterian Church, the Free Church and the United Free Church—see the articles on each of these. The table on the following page shows the material progress of the respective organizations in recent years.

In the absence of a religious census it is not possible to deduce from socialist data the number of the members of the church in, or entitled to vote for the new Assembly. In the able statistical discussions in the reports of the United Free Church it is pointed out that in the figures furnished by the churches the numbers of members and the percentages and proportions of the total population of the country and the general death-rate, and the conclusion is drawn that the number of members is in each case too great.
SCOTLAND, EPISCOPAL CHURCH OF

1879.  1899.  1909.

Congregations:
Church of Scotland.  1,337  1,447  1,687
Free Church.  1,033  1,101  1,087
United Presbyterian.  533  577  1,620
United Free Church.  292  383  1
Membership:
Church of Scotland.  518,146  684,476  706,653
Free Church.  246,250  293,684  706,573
United Presbyterian.  172,150  195,498  1
United Free Church.  274,576  309,816  324,182

The Free Church in 1909 had 150 congregations and 77 ministers; its members and adherents are stated to number 60,000, and its income, apart from investments, is £22,542. The membership of the larger churches is that of communicants only; in the Highlands especially, the adherents of these churches who do not communicate form a large proportion of those connected with the church.

According to the figures given above the communicants of the Church of Scotland represent 14-7 of the population and those of the United Free 10-6. A study of the figures for many years past shows that the proportion of the people attached to these churches is not decreasing.

The Scottish Episcopal Church in 1909 numbered 388 charges with 52,029 communicants. Its charges are numerous in proportion to the population. For each member of the congregation there are on the average 27 members, while the Church of Scotland averages 497 and the United Free Church 313 members for each congregation. The adherents of each of these churches outnumber the communicants in the Church of England, which is seriously endangered. The Roman Catholic hierarchy 1 was restored in Scotland in 1787. There are six dioceses (two archbishops, one of Edinburgh and St Andrews and the other of Glasgow, and four suffragans, Aberdeen, Alloa, Dundee, and Dunfermline). In 1890, 550 priests; 38 churches, chapels and stations; and a Roman Catholic population estimated at about 519,000.

The original Secession Church has 5 presbyteries and 26 congregations; and the remnant of the Reformed Presbyterian Church which did not join the Free Church in 1876, 2 presbyteries and 11 congregations. The Congregational and Evangelical Union (formed by the amalgamation of the Congregational and Evangelical Churches in 1896) has 183 churches; and the remnant of the Evangelical Union, 7 churches. The Baptist Union has 128 congregations and the Wesleyan Methodists 40 churches.

LITERATURE.—For the earlier history of the church the outstanding authorities are the histories of Knox, Calderwood, Baillie’s Letters, and Wodrow’s History: Knox’s liturgy has been edited by Dr. Scott, and on the Westminster Standards the reader may consult Dr. R. L. G. Heras, The Westminster Assembly, and the lectures on the same subject. Modern histories of the church have been written by Cook, Hetherington and Principal Cunningham; Dr. Scott has prepared a History of the Church in 5 vols. containing information on every side of the subject. Among books professedly dealing with the Free Church question, the most valuable are Sydow’s Die Schottische Kirchenfrage (Potsdam, 1845), and The Scottish Church Question (London, 1845); Buchanan’s Ten Years’ Conflict (1849); Hanna’s Life of Chalmers (1852); and Taylor Innes on The Law of Creeds in Scotland (1867). See also Cockburn, Memorials of His Time (Continuation, 1874); Walker, The Royal Church: Buchanan and the Ecclesiastical Biography (1877); Annals of the Disruption (published by authority of a committee of the Free Church 1876-1877). On the United Presbyterian Church see McKerrow, History of the United Secession Church (1841); Struthers, History of the Relief Church (1843); McKelvie, Annals and Statistics of the United Presbyterian Church (1873). For a concise account of all the Sessions and Unions, Logan, The United Free Church (1861–1906). (A. M.)

SCOTLAND, EPISCOPAL CHURCH OF, a Scottish church (see above) in communion with, but historically distinct from, the Church of England, and composed of seven dioceses: Aberdeen and Orkney; Argyll and the Isles; Brechin, Edinburgh; Glasgow and Galloway; Moray, Ross and Caithness; and St Andrews, Dunkeld and Dunblane. All, except Edinburgh, founded by Charles I., are pre-Reformation sees. The bishops constitute the episcopal synod, the supreme court of appeal.

1 During the long period of proscription, the Roman Catholic Church in Scotland survived in scattered groups; after the Reformation it was at first under the jurisdiction of the English arch-priest, but from 1663 to 1694 it was governed by prebends apostolic and from 1694 to 1788 by vicars apostolic appointed by the pope.

whose president, elected by the members from among themselves, has the style, not the functions, of a metropolitan, being called primus. The legislature is the provincial synod, consisting of the bishops, at whose discretion it is summoned, and a lower chamber of presbyters. The canons have the authority of this synod. The presbyterian council, including laymen, administers finance. Each diocese has its synod of the clergy. Its dean is appointed by the bishop, and, on the voidance of the see, summons the clerical and lay electors, at the instance of the primus, to choose a bishop, who is presented to the episcopal synod for confirmation and to the primus for consecration. There are cathedrals at Perth, Inverness, Edinburgh and Cambridge; the sees of Aberdeen, Brechin and Glasgow have no cathedrals. The Theological College was founded in 1810, incorporated with Trinity College, Glenalmond, in 1848, and established at Edinburgh in 1876. There were 356 congregations, with a total membership of 12,133,5 and 324 ministers in 1900. No existing ministry can claim regular historic continuity with the ancient hierarchy of Scotland, but the bishops of the Episcopal Church are direct successors of the prelates consecrated to Scottish sees at the Restoration. On the refusal of the bishops to recognize William III. (1689), the presbyterian polity was established in the kirk, the effect of which on its ecclesiastical status is a matter of theological opinion, but the Comprehensive Act of 1696 allowed episcopalian incumbents, on taking the Oath of Allegiance, to retain their benefices, though excluding them from any share in the government without further declaration of presbyterian principles. Many non-jurors also succeeded for a time in retaining the use of the parish churches. The extruded bishops were slow to organize the episcopalian remnant under a jurisdiction independent of the state, regarding the then arrangements as provisional, and looking forward to a reconstituted national kirk under a "legitimate" sovereign. A few prelates, known as college bishops, were consecrated without see, to preserve the succession rather than to exercise a defined authority. But at length the hopelessness of the Stewart cause and the growth of congregations outside the unestablished churches forced the bishops to dissociate canonical jurisdiction from royal prerogative and to reconstitute for themselves a territorial episcopate. The act of Queen Anne (1712), which protects the “Episcopal Communion,” marks its virtual incorporation as a distinct society. But matters were still complicated by a considerable, though declining, number of episcopalian incumbents holding the parish churches. Moreover, the Jacobitism of the non-jurors provoked a state policy of repression in 1715 and 1745, and fostered the growth of new Hanoverian congregations, served by clergy episcopally ordained but amenable to no bishop, who continued themselves under the act of 1711. This act was further modified in 1746 and 1748 to exclude clergymen ordained in Scotland. These causes reduced the Episcopalians, who included at the Revolution a large section of the people, to what is now, save in a few corners of the west and north-east of Scotland, a small minority. The official recognition of George III. on the death of Charles Edward in 1788, removed the chief bar to progress. The “qualified” congregations were gradually absorbed, though traces of this ecclesiastical solemism still linger. In 1792 the penal laws were repealed, but clerical disabilities were only finally removed in 1864. In 1794 Seabury, the first American bishop, was consecrated at Aberdeen. The Book of Common Prayer, which came into general use at the Revolution, is now the authorized service book. The Scottish Communion Office, compiled by the non-jurors in accordance with primitive models, has had a varying co-ordinate authority, and the modifications of the English liturgy adopted by the American Church were mainly determined by its influence. Among the clergy of post-revolution days the most eminent are Bishop Sage, a well-known patriotic scholar; Bishop Rattray, liturgiologist; John Skinner, of Longside, author of Tullochgorum; Bishop Gleig, editor of the 3rd edition of the Encyclopedia Britannica; Dean Ramsay, author of Minimis Theologiae, and Scottish Life and Character; Bishop A. P. Forbes; G. H. Forbes, Hlitoriologist; and Bishop Charles Wordsworth.
SCOTT, A.—SCOTT, SIR G. G.

AUTHORITIES.—Garratt, State Papers; Keith, Historical Catalogue of the Scottish Bishops; Russeil's edition, 1824; Lawson, History of the Scottish Episcopal Church from the Revolution to the Present Time (1843); Stephen, History of the Church of Scotland from the Reformation to the Present Time (4 vols., 1843); Latrobe, History of the Nonjumeur (1845); Grub, Ecclesiastical History of Scotland (4 vols., 1861); Dowden, Annotated Scottish Communion Office (1884).

SCOTT, ALEXANDER (fl. 1550), Scottish poet, was probably a Lothian man, but particulars of his origin and of his life are entirely wanting. It is only by gathering together a few scraps of internal evidence that we learn that his poems were written between 1545 and 1568 (the date of the Bannatyne MS., the only Scottish MS. that is short of the first page) in London, where he became acquainted with Scot. In 1542 he was the first to bring Scot's works to the notice of modern readers, by printing some of the poems in his Ever Green. In a copy of verses ("Some Few of the Contents") on the Bannatyne MS., he thus refers to Scot:

"Licht skirtit lasses, and the gирand wyfe,
Fleming and Scot hai painted to the lyfe.
Scott, sweet tunged, Quhata sings the wculme hame
To Mary, our maist bontane dame;
How lyffie he and amorous Stuart sing!
Quhen luve and bewtie bid them spre the wing."

The sketch is just, for Scott's poems deal chiefly with female character and with passion of a strongly erotic type. He is "sweet tunded," for his technique is always good, and his lyrical measures show remarkable accomplishment. In this respect he holds his own with the best of the "makers" represented in the Bannatyne MS. In what may appear excessive coarseness to present-day taste, he makes good claim to rival Dunbar and his contemporaries. The poems referred to by Ramsay are "Ane Ballad maid to the Derisoun and Scoorne of Wantoun Wemen," "Ane New Yier Gift to the Queen May quhen scohe come first Hame, 1562," and some or all of his amorous songs (about 30 in number). Of these "To luve unluit," "Ladies, be war," and "Lo, quhat it is to lufe" are favourable examples of his style. No early Scots poet comes nearer the quality of the Caroline love-lyric. His Justing and Debaith up at the Drum bestrz [William] Adamstone and Jokin Sym follows the literary tradition of Pobbis to the Play and Chrisit iss Kirk on the Grene. He has left verse-Counders of the 1st and 50th Psalms.

The first collected edition was printed by D. Laing in 1621; a second was issued privately at Glasgow in 1682. The latest edition is by James Cranston (Scottish Text Society, 1 vol. 1896). (G. G. S.)

SCOTT, DAVID (1866-1849), Scottish historical painter, brother of William Bell Scott, was born at Edinburgh in October 1866, and studied art under his father, Robert Scott, the engraver. In 1828 he exhibited his first oil picture, the "Hopes of Early Genius dispelled by Death," which was followed by "Cain, Nimrod, Adam and Eve singing their Morning Hymn," "Sarpedon carried by Sleep and Death," and other subjects of a poetic and imaginative character. In 1829 he became a member of the Scottish Academy, and in 1832 visited Italy, where he spent more than a year in study. At Rome he executed a large symbolic painting, entitled the "Agony of Discord, or the Household Gods Destroyed." The works of his later years include "Vasco da Gama encountering the Spirit of the Storm," a picture—immense in size and most powerful in conception—finished in 1842, and now preserved in the Trinity House, Leith; the "Duke of Gloucester entering the Water Gate of Calais" (1841); the "Alchemist" (1838), "Queen Elizabeth at the Globe Theatre" (1840) and "Peter the Hermit" (1845), remarkable for varied and elaborate character-painting; and "Ariel and Caliban" (1839) and the "Triumph of Love" (1846), distinguished by the depth and magnitude of poetic thought. The most important of his religious subjects are the "Descent from the Cross" (1835) and the "Crucifixion—the Dead Rising" (1844). Scott also executed several remarkable series of designs. Two of these—the Monographs of Man and the illustrations to Coleridge's Ancient Mariner—were etched by his own hand, and published in 1831 and 1837 respectively, while his subjects from the Pilgrim's Progress and Nichol's Architecture of the Heavens were issued after his death.

He died in Edinburgh on the 5th of March 1849. See W. Bell Scott, Memoir of Sir David Scott, R.S.A. (1850), and J. M. Gray, David Scott, R.S.A., and his Works (1884).

SCOTT, SIR GEORGE GILBERT (1811-1878), English architect, was born in 1811 at Gawcott near Buckingham, where his father was rector; his grandfather, Thomas Scott (1747-1827), was a well-known commentator on the Bible. In 1827 young Scott was apprenticed for four years to an architect in London named Edmeston, and at the end of his pupildom acted as clerk of the works at the new Fishmongers' Hall and other buildings. In Edmeston's office he became acquainted with J.R. Plowden and David Scott, the father of the architect. Scott's desire for the purest business part of an architect's work, and the two entered into partnership. In 1834 they were appointed architects to the union workhouses of Buckinghamshire, and for four years were busily occupied in building a number of cheap and ugly unions, both there and in Northamptonshire and Lincolnshire. In 1838 Scott built at Lincoln his first church, the design for which won the prize in an open competition, and this was quickly followed by six others, all very poor buildings without chancels; church building in England had then reached its very lowest standard and expense. In 1839 he was appointed to carry out the Gothic Revival, and his special markable accomplishment was the spraying of Pugin on medieval architecture, and by the various papers on ecclesiastical subjects published by the Camden Society. These opened a new world to Scott, and he thenceforth studied and imitated the architectural styles and principles of the middle ages with the utmost zeal and patient care. The first result of this new study was his design for the Martyrs' Memorial at Oxford, erected in 1840, a clever adaptation of the late 13th-century crosses in honour of Queen Eleanor. From that time Scott became the chief ecclesiastical architect in England, and in the next forty years completed a large number of new churches and "restorations," the fever for which was fomented by the Ecclesiological Society and the growth of ecclesiastical feeling in England.

In 1844 Scott won the first premium in the competition for the new Lutheran church at Hamburg, a noble building with a very lofty spare, designed strictly in the style of the 13th century. In the following year his partnership with Moffat was dissolved, and in 1847 he was employed to renovate and refil Ely cathedral, the first of a long series of English cathedral works. In 1849 he was asked to carry out the plan of the new chapel, and the choir at Westminster Abbey. In 1850, 1851, and 1852 he visited and studied the architecture of the chief towns in northern Italy, and in 1853 won the competition for the townhouse at Hamburg, designed after the model of similar buildings in north Germany. In spite of his having won the first prize, another architect was selected to construct the building, after a very inferior design. In 1856 a competition was held for designs of the new government offices in London; Scott obtained the third place in this, but the work was afterwards given to him on the condition (insisted on by Lord Palmerston) that he should make a new design, not Gothic, but Classic or Renaissance in style. To this Scott very reluctantly consented, as he had little sympathy with any styles but those of England or France from the 13th to the 15th century. In 1862-1863 he was employed to design and construct the Albert Memorial, a costly and elaborate work, in the style of a magnified 15th-century reliquary or ciborium, adorned with many statues and reliefs in bronze and marble. On the partial completion of this he was knighted. In 1866 he competed for the new London law-courts, but the prize was adjudged to his old pupil, G. E. Street. In 1873, owing to illness caused by over-work, Scott spent some time in Rome and other parts of Italy. The mosaic pavement which he designed for Durham cathedral soon after-wards was the result of his study of the 13th-century mosaics in the old basilicas of Rome. On his return to England he resumed his professional labours, and continued to work almost without intermission till his short illness and death on the 27th of March 1878. He was buried in the nave of Westminster Abbey, and an engraved brass, designed by G. E. Street, was
placed over his grave. In 1838 Scott married his cousin, Caroline Oldrid, who died in 1870; they had five sons, two of whom adopted their father's profession.

An incomplete list of his works from 1834 in the Builder for 1878 (pseudonym) was on manuscript with which he was connected as architect, restorer or the author of a report. These include 29 cathedrals, British or colonial, 10 minsters, 476 churches, 25 schools, 23 parsonages, 58 monumental works, 25 colleges or colleges and 20 small churches and monasteries, with some ecclesiastical accessories. While a member of the Royal Academy, Scott held for many years the post of professor of architecture, and gave a long series of able lectures on medieval buildings with which he was connected as architect, restorer or the author of a report. He wrote a work on Domestic Architecture, and a volume of Personal and Professional Recollections, which, edited by his eldest son, was published in 1879, and also a large number of articles and reports on many of the buildings which had held.

SCOTT, MICHAEL (1789–1833), British author, was born at Cowlairs, near Glasgow, on the 30th of October 1879, the son of a Glasgow merchant. In 1806 he went to Jamaica, first managing some estates, and afterwards joining a business firm in Kingston. The latter post necessitated his making frequent journeys, on the incidents of which he based his best known book, Tom Cringle’s Log. In 1822 he left Jamaica and settled in Glasgow, where he engaged in business. Tom Cringle’s Log began to appear serially in Blackwood’s Magazine in 1829. Scott’s second story, The Cruise of the Midge, was also first published serially in Blackwood’s in 1834–1835. The first appearance in book-form of each story was in Paris in 1835. Both stories were originally published anonymously, and their authorship was not known till after Scott’s death at Glasgow, on the 7th of November 1835.

SCOTT, ROBERT (1811–1877), English divine and lexicographer, was born on the 26th of January 1811, at Bondleigh in Devonshire, where his father was rector. Educated at Shrewsbury School and Christ Church, Oxford, after a brilliant university career he was elected fellow of Balliol, where he was tutor from 1835 to 1840. After holding successively the college livings of Duloe and South Luffenham, in 1854 he was elected master of Balliol. This office he held, together (from 1861) with that of the professorship of the exegesis of Holy Scriptures, down to 1870, when he accepted the deanship of Rochester. As master of Balliol he kept the college up to the high level it had attained under his predecessor Dr Jenyns. As a Greek scholar, he had few equals among his contemporaries. His great literary achievement, which may be said to constitute his life’s work, was his collaboration with Dean Liddell in the Greek lexicon which bears their names. He died at Rochester on the 2nd of December 1887.

SCOTT, SIR WALTER, Bart. (1771–1835), Scottish poet and novelist, was born at Edinburgh on the 17th of August 1771. His pedigree, in which he took a pride that strongly influenced the course of his life, may be given in the words of his own fragment of autobiography. "My birth was neither distinguished nor sordid. According to the prejudices of my country it was esteemed gentle, as I was connected, though remotely, with ancient families both by my father’s and mother’s side. My father’s grandfather was Walter Scott, well known by the name of Beardie. He was the second son of Walter Scott, first Laird of Raeburn, who was third son of Sir William Scott, and the grandson of Walter Scott, commonly called in tradition Arthur Fitzgerald. His family connection with that ancient chieftain, whose name I have made to ring in many a ditty, and from his fair dame, the Flower of Yarrow—no bad genealogy for a Border minstrel."

In a notice of John Home, Scott speaks of pride of family as "natural to a man of imagination," remarking that, "in this motley world, the family pride of the north country has its effects of good and of evil." Whether the good or the evil preponderated in Scott’s own case would not be easy to determine. It tempted him into courses that ended in commercial ruin; but throughout his life it was a constant spur to exertion, and in his last years it proved itself as a working principle capable of inspiring and maintaining a most chivalrous conception of duty. If the ancient chieftain Auld Watt was, according to the anecdote told by his illustrious descendant, once reduced in the matter of live stock to a single cow, and recovered his dignity by stealing the cows of his English neighbours, Scott’s Border ancestry were sheep-farmers, who varied their occupation by lifting "sheep and cattle, and whatever else was too heavy or too hot." The Border lads were really a race of shepherds in so far as they were not a race of robbers. Scott may have derived from this pastoral ancestry an hereditary bias towards the observation of nature and the enjoyment of open-air life. He certainly inherited from them the robust strength of constitution that carried him successfully through so many exhausting labours. And it was his pride in their real or supposed feudal dignity and their rough marauding exploits that first directed him to the study of Border history and poetry, the basis of his fame as a poet and romancer. His father, Walter Scott, a writer to the signet (or attorney) in his boyhood, almost to his infancy. The current legend was that the first of the family to adopt a town life or a learned profession. His mother was the daughter of Dr John Rutherford, a medical professor in the university of Edinburgh, who also traced descent from the chiefs of famous Border clans.

The ceilings of Abbotsford display the arms of about a dozen Border families with which Scott claimed kindred through one side or the other. His father was conspicuous for methodical and thorough industry; his mother was a woman of imagination and culture. The son seems to have inherited the best qualities of each and added to them. It is not difficult to see how Carlyle wrote that as a boy Scott had been a dunce and an idler. With a characteristically conscientious desire not to set a bad example, the autobiographer solemnly declares that he was neither a dunce nor an idler, and explains how the misunderstanding arose. His health in boyhood was uncertain; he was consequently irregular in his attendance 1.

1 Dr Charles Creighton contributes the following medical note on Scott’s early illness:—'Scott’s lameness was owing to an arrest of growth in the right leg in infancy. When he was eighteen months old he had a feverish attack lasting three days, at the end of which time it was found that he had lost the power of his right leg:—i.e., the child instinctively declined to move the ailing member. The malady was a swelling at the ankle, and either consisted in or gave rise to a form of the bone-disease of the tibia or fibula in which the narrowing and shortening of the bone results in a diminution of the lower part of the bone, which connects the lower epiphysis of each of the two leg-bones with its shaft. In his fourth year, when he had otherwise recovered, the leg remained much shrunken and contracted. The limb would have been blighted very much more if the arrest of growth had taken place at the upper epiphysis of the tibia or the lower epiphysis of the femur. The narrowness and peculiar depth of Scott’s head point to some more general congenital error of bone-making allied to rickets but certainly not to the condition found in patients suffering from rickets. Scott has the typical "tripidial" or "scaphoid" or boat-shaped formation, due to premature union of the two parietal bones along the sagittal suture. When the bones of the exoccipital region are examined the patient shows a lack of bone along their outer formative edges, the sutures become prematurely fixed and effaced, so that the brain-case cannot expand in any direction to accommodate the growing brain. This universal synostosis of the cranial bones is what occurs in the case of microcephalic idiots. It happened to me to show to an eminent French anthropologist a specimen of a miniature or microcephalic skull preserved in the Cambridge museum of anatomy; the French term, holding up the skull and pointing to the petrous part, was "vache." The English term, "cow’s head," was a name taken to the point of the skull. When his head was opened after death, it was observed that the brain was not large, and the cranium thinner than it is usually found to be. In favour of the theory of the cranium’s making a cover for the brain, Scott was a specimen of the family of whom the first six died in ‘very early youth’."

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at school, never became exact in his knowledge of Latin syntax, and was so belated in beginning Greek that out of bravado he resolved not to learn it at all.

Left very much to himself throughout his boyhood in the matter of reading, so quick, lively, excitable and uncertain in health that it was considered dangerous to press him and prudent rather to let him have his own way, Scott was early freed to accommodate the romantic lore of which he afterwards made such splendid use. As a child he seems to have been an eager and interested listener and a great favourite with his elders, apparently having even then the same engaging charm that made him so much beloved as a man. Chance threw him in the way of many who were willing to indulge his delight in stories and ballads. Not only his own relatives—the old women at his grandfather's farm at Sandyknowe, his aunt, under whose charge he was sent to Bath for a year, his mother—too interested in the precocious boy's questions, told him tales of Jacobites and Border worthies of his own and other clans, but casual friends of the family—such as the military at Prestonpans, old Dr Blacklock the blind poet, Home the author of Douglas, Adam Ferguson the martial historian of the Roman republic—helped forward his education in the direction in which the bent of his genius lay. At the age of six he was able to define himself as “a virtuoso,” “one who wishes to and will know everything.” At ten his collection of chap-books and ballads had reached several volumes, and he was a connoisseur in various reading. Thus he took to the High School, Edinburgh, which was strong enough to be put in regular attendance, an unusual store of miscellaneous knowledge and an unusually quickened intelligence, so that his master “pronounced that, though many of his schoolfellows understood the Latin better, Guaterus Scott was behind few in following and enjoying the author’s meaning.” Throughout his school days and afterwards when he was apprenticed to his father, attended university classes, read for the bar, took part in academical and professional debating societies, Scott steadily and ardentedly pursued his own favourite studies. His reading in romance and history was really study; and not merely the indulgence of an ordinary schoolboy’s promiscuous appetite for exciting literature. In fact, even as a schoolboy he specialized. He followed the line of overpowering inclination; and even then, as he frankly tells us, “fame was the spur.” He acquired a reputation among his schoolfellows for out-of-the-way knowledge, and also for story-telling, and he worked hard to maintain this character, which compensated to his ambitious spirit his indifferent distinction in ordinary school-work. The youthful “virtuoso,” though he read ten times as much literature as his pearlyfellows, and was the only boy in his class, was carried by his enthusiasm into fields much less generally attractive. He was still a schoolboy when he mastered French sufficiently well to read through collections of old French romances, and not more than fifteen when, attracted by translations to Italian romantic literature, he learnt the language in order to read Dante and Ariosto in the original. This willingness to face dry work in the pursuit of romantic reading affords a measure of the strength of Scott’s passion. In one of the literary parties brought together to lionize Burns, when the poet visited Edinburgh, the boy of fifteen was the only member of the company who could tell the source of some lines affixed to a picture that had attracted the poet’s attention—a slight but significant evidence both of the width of his reading and of the tenacity of his memory. The same thoroughness appears in another little circumstance. He took an interest in Scottish family history and genealogy, but, not with the ordinary sources, he ransacked the MSS. preserved in the Advocates’ Library. By the time he was one and twenty he had acquired such a reputation for his skill in deciphering old manuscripts that his assistance was sought by professional antiquaries.

This early, assiduous, Scott’s earliest study was the main secret, over and above his natural gifts, of Scott’s extempore speed and fertility when at last he found forms into which to pour his vast accumulation of historical and romantic lore. He was, as he said himself, “like an ignorant gamaster who keeps up a good hand till he knows how to play it.” That he had vague thoughts from a much earlier period than is commonly supposed of playing the hand some day is extremely probable, if, as he tells us, the idea of writing romances first occurred to him when he read Cervantes in the original. This was a long time before he was out of his teens; and, if we add that his leading idea in his first novel was to depict a Jacobitic Don Quixote, we can see that there was probably a long interval between the first conception of Waverley and the ultimate completion.

Scott’s preparation for painting the life of past times was probably much less unconsciously than his equally thorough preparation for acting as the painter of Scottish manners and character in all grades of society. With all the extent of his reading as a schoolboy and a young man he was far from being a cloistered student, absorbed in his books. In spite of his lame-ness and his serious illnesses in youth, his constitution was naturally robust, his disposition genial, his spirits high: he was always well to the front in the fights and frolics of the High School, and a boon companion in the “high jinks” of the junior bar. The future novelist’s experience of life was singularly rich and varied. While he liked the life of imagination and scholarship in sympathy with a few choice friends, he was brought into intimate daily contact with many varieties of real life. At home he had to behave as became a member of a Puritanic, somewhat ascetic, well-ordered Scottish household, subduing his own inclinations towards a more graceful and manlier spirit of life of living into outward conformity with his father’s strict rule. Through his mother’s family he obtained access to the literary society of Edinburgh, at that time electrified by the advent of Burns, full of vigour and ambition, rejoicing in the possession of not a few widely known men of letters, philosophers, historians, novelists and critics, from racy and eccentric Monboddo to refined and scholarly Mackenzie. In that society also he may have found the materials for the manners and characters of St Ronan’s Well. From any tendency to the pedantry of over-culture he was effectually saved by the rougher and manlier spirit of his professional comrades, who, though they respected belles lettres, would not tolerate anything in the shape of affectation or sentimentalism. The atmosphere of the Parliament House (the lawcourts of Edinburgh) had considerable influence on the tone of Scott’s novels. His peculiar humour as a story-teller and painter of character was first developed among the young men of his own standing at the bar. They were the first mature audience on which he experimented, and seem often to have been in his mind’s eye when he enlarged his public. From their mindful companionship by the stove, where the briefless congregate to subdue their inclinations to a more graceful and manlier spirit of life by humouring the jests of their colleagues, “Duns Scottus” often stole away to pore over old books and manuscripts in the library beneath; but as long as he was with them he was first among his peers in the art of providing entertainment. It was to this market that Scott brought the harvest of the vacation rambles which it was his custom to make every autumn for seven years after his call to the bar and before his marriage. He scoured the country in search of ballads and other relics of antiquity; but he found also and treasured many traits of living manners, many a lively skit into which he did not hesitate to incorporate, and many a humorous mention of his own. He was always at the games of the Glengarry and the “mountain” on his return. His staid father did not much like these escapades, and told him bitterly that he seemed fit for nothing but to be a “gangrel scrape-gut.” But, as the companion of “his Liddesdale raids” happily put it, “he was makin’ himself a’ the time, but he didna ken maybe what he was about till years had passed: at first he thought o’ little, I dare say, but the gueerness and the fun.”

His father intended him originally to follow his own business, and he was apprenticed in his sixteenth year; but he preferred the upper walk of the legal profession, and was elected a member of the faculty of advocates in 1792. He seems to have read hard at law for four years at least, but almost from the first to have limited his ambition to obtaining some comfortable appointment such as would leave him a good deal of leisure for
literary pursuits. In this he was not disappointed. In 1790 he obtained the office of sheriff-depute of Selkirkshire, with a salary of £400 and very light duties. In 1806 he obtained the reversion of the office of clerk of session. It is sometimes supposed, from the immense amount of other work that Scott accomplished, that this office was a sinecure. But the duties, which are fully described by Lockhart, were really serious, and kept him hard at fatiguing work, his biographer estimates, for at least three or four hours daily during six months out of the twelve, while the court was in session. He discharged these duties faithfully for twenty-five years, during the height of his activity as an author. He did not enter on the emoluments of the office till 1812, but from that time he received from the clerkship and the sheriffdom combined an income of £1,600 a year, being thus enabled to act in his literary undertakings on his often-quoted maxim that "literature should be a staff and not a crutch." Scott's profession, in addition to supplying him with a competent livelihood, supplied him also with abundance of opportunities for the study of men and manners.

It was as a poet that he was first to make a literary reputation. According to his own account, he was led to adopt the medium of verse by a series of accidents. The story is told by himself at length and with his customary frankness and modesty in the Essay on Imitations of the Ancient Ballad, prefixed to the 1830 edition of his Border Minstrelsy, and in the 1830 introduction to the Lay of the Last Minstrel. The first link in the chain was a lecture by Henry Mackenzie on German literature, delivered in 1788. This spoke to the half-ashamed student and an enthusiastic student of French and Italian romance, that there was a fresh development of romantic literature in German. As soon as he had the burden of preparation for the bar off his mind he learnt German, and was profoundly excited to find a new school founded on the serious study of a kind of literature his own devotion to which was regarded by most of his companions with wonder and ridicule. We must remember always that Scott quite as much as Wordsworth created the taste by which he was enjoyed, and that in his early days he was half-ashamed of his romantic studies, and pursued them more or less in secret with a few intimates. While he was in the height of his enthusiasm for the new German romance, Mrs Barbauld visited Edinburgh, and recited an English translation of Bürger's Lénore. Scott heard of it from a friend, who was able to repeat two lines: "Tramp, tramp, across the land they speed; Splash, splash, across the sea!"

The two lines were enough to give Scott a new ambition. He could write such poetry himself! The impulse was strengthened by his reading Lewis's Monk and the ballads in the German manner interspersed through the work. He hastened to procure a copy of Bürger, at once executed translations of several of his ballads, published The Chase, and William and Helen, in a thin quarto in 1796 (his ambition being perhaps quickened by the unfortunate issue of a love affair), and was much encouraged by the applause of his friends. Soon after he met Lewis personally, and his ambition was confirmed. "Finding Lewis," he says, "in possession of so much reputation, and conceiving that if I fell behind him in poetical powers, I considerably exceeded him in general information, I suddenly took it into my head to attempt the style of poetry by which he had raised himself to fame." Accordingly, he composed Glenfinlas, The Eve of St John, and The Grey Brother, which were published in Lewis's collection of Tales of Wonder (2 vols., 1801). But he soon became convinced that "the practice of ballad-writing was out of fashion, and that any attempt to revive it or to found a poetical character on it would certainly fail of success." His study of Goethe's Götz von Berlichingen, of which he published a translation in 1796, gave him wider ideas. Why should he not do for ancient Border manners what Goethe had done for the ancient feudalism of the Rhine? He had been busy since his boyhood collecting Scottish Border ballads and studying the minutest details of Border history. He had begun to cast about for a form which should have the advantage of novelty, and a subject which should secure unity of composition. He was engaged at the time preparing a collection of the Minstrelsy of the Scottish Border. The first instalment was published in two volumes in 1802; it was followed by a third next year, and by an edition and continuation of the old romance of Sir Tristram; and Scott was still hesitating about subject and form for a large original work. Chance at last threw in his way both a suitable subject and a suitable metrical vehicle. He had engaged all his friends in the hunt for Border ballads and legends. Among others, the countess of Dalcith, wife of the heir-apparent to the dukedom of Buccleuch, interested herself in the work. Happening to hear the legend of a tricky hobbegoblin named Gilpin Horner, she asked Scott to write a ballad about it. He agreed with delight, and, out of compliment to the lady who had given this command to the bard, resolved to connect it with the house of Buccleuch. The subject grew in his fertile imagination, till incidents enough had gathered round the goblin to furnish a framework for his long-designed picture of Border manners. Chance also furnished him with a hint for a novel scheme of verse. Coleridge's fragment of Christabel, though begun in 1797—when he and Wordsworth were discussing on the Quantock Hills the principles of such ballads as Scott at the same time was reciting to himself in his gallops on MusSELhurst sands—was not published till 1816. But a friend of Scott's, Sir John Stoddart, had met Coleridge in Malta, and had carried home in his memory enough of the unfinished poem to convey to Scott that its metre was the very metre of which he had been in search. Scott introduced still greater variety into the metrical structures of Christabel, but it was to Christabel that he owed the suggestion, as one line borrowed whole and manyimitated rhythms testify.

The Lay of the Last Minstrel appeared in January 1805, and at once became widely popular. It sold more rapidly than poem had ever sold before. Scott was astonished at his own success, although he expected that "the attempt to return to a more simple and natural style of poetry was likely to be welcomed." Many things contributed to the extraordinary demand for the Lay. First and foremost, no doubt, we must reckon its simplicity. After the abstract themes and abstruse, elaborately allusive style of the 17th century, the public were glad of verse that could be read with ease and even with exhilaration, verse in which a simple interesting story was told with brilliant energy, and simple feelings were treated not as isolated themes but as incidents in the lives of individual men and women. The thought was not so profound, the lines were not so polished, as in The Pleasures of Memory or The Pleasures of Hope, but the "light-horseman sort of stanza," carried the reader briskly over a much more diversified country, through boldly outlined and strongly coloured scenes. No stanza required a second reading; you had but to keep your wits about you and construe laboriously before you could grasp the writer's meaning or enter into his artfully condensed sentiment. To remember the pedigrees of all the Scotts, or the names of all the famous chiefs and hardy retainers "whose gathering word was Bellenden," might have required some effort, but only the conscientious reader need care to make it. The only puzzle in the Lay was the goblin page, and the general reader was absolved from all trouble about him by the unanimous declaration of the critics, led by Jeffrey in the Edinburgh Review, that he was a grotesque excrescence, in no way essential to the story. It is commonly taken for granted that Scott acquiesced in this judgment, his politely ironic letter to Miss Seward being quoted as conclusive.

This is hardly fair to the poor goblin, seeing that his story was the germ of the poem and determines its whole structure; but it is a tribute to the lively simplicity of the Lay that few people should be willing to take the very moderate amount of pains necessary to see the goblin's true position in the action. The supernatural element was Scott's most risky innovation. For the rest, he was a cautious and conservative reformer, careful not to offend established traditions. He was far from raising the standard of rebellion, as Wordsworth had done, against the great artistic canon of the classical school—

"True art is nature to advantage dressed."
To "enraft modern refinement on ancient simplicity," to preserve the energy of the old ballad without its rudeness and bareness of poetic ornament, was Scott's avowed aim. He adhered to the poetic dictum against which Wordsworth protested. His rough Borderers are "dressed to advantage" in the costume of romantic chivalry. The baronial magnificence of Brankstone, Deloraine's "shield and jack and action," the elaborate ceremony of the combat between the pseudo-Deloraine and Musgrave, are concessions to the taste of the 18th century. Further, he disarmed criticism by putting his poem into the mouth of an ancient minstrel, thus pictorially emphasizing the fact that it was an imitation of antiquity, and providing a scapegoat on whose back might be laid any remaining sins of rudeness or excessive simplicity. And, while imitating the antique romance, he was careful not to imitate its faults of rambling, discursive, disconnected structure. He was scrupulously attentive to the classical rules of time, place and action. The scene never changes from Branksome and its neighbourhood; the time occupied by the action (as he pointed out in his preface) is three nights and three days; and, in spite of all that critics have said about the superficiality of the goblin page, it is not difficult to trace unity of intention and regular progressive development in the incidents.

The success of the Lay decided finally, if it was not decided already, that literature was to be the main business of Scott's life, and he proceeded to arrange his affairs accordingly. It would have been well for his comfort, if not for his fame, had he adhered at this point to the shadowed plan of the farm near Bowhill, with the proceeds of some property left to him by an uncle, and divide his year between this and Edinburgh, where he had good hopes, soon afterwards realized, of a salaried appointment in the Court of Session. This would have given him ample leisure and seclusion for literature, while his private means and official emoluments secured him against dependence on his pen. He would have been laird as well as sheriff of the caim and the sear, and as a man of letters his own master. Since his marriage in 1797 with Charlotte Charpentier, daughter of a French refugee, his chief residence has been at Lasswade, about six miles from Edinburgh. But on a hint from the lord-lieutenant that the sheriff must live at least four months in the year within his county, and that he was attending more closely to his duties as quartermaster of a mounted company of volunteers than was consistent with the proper discharge of his duties as sheriff, he had moved his household in 1804 to Ashiestiel. When his uncle's bequest fell in, he determined to buy a small property on the banks of the Tweed within the limits of his sheriffdom. There, within sight of Newark Castle and Bowhill, he proposed to live like his ancient minstrel, as became the bard of the Borders; under the shadow of the Border hills, at the foot of the Tweed, the shadow of Scott. But this plan was deranged by an accident. It so happened that an old school-fellow, James Ballantyne (1772-1833), a printer in Kelso, whom he had already befriended, transplanted to Edinburgh, and furnished with both work and money, applied to him for a further loan. Scott declined to lend, but offered to join him as sleeping partner. Thus the intended purchase money of Broadmeadows became the capital of a printing concern, of which by degrees the man of letters became the overworked slave, milch-cow and victim.

When the Lay was off his hands, Scott's next literary enterprise was a prose romance—a confirmation of the argument that he did not take to prose after Byron had "bet him," as he put it, in verse, but that romance writing was a long-cherished purpose. He began Waverley, but a friend to whom he showed the first chapters—which do not take Waverley out of England, and describe an education in romantic literature very much like Scott's own—not unnaturally decided that the work was deficient in interest and unworthy of the author of the Lay. Scott accordingly laid Waverley aside. We may fairly conjecture that he would not have been so easily diverted had he not been occupied with the new Edinburgh press, and with the planning and publication enterprise calculated to bring gist to the printing establishment. His active brain was full of projects for big editions, which he undertook to carry through on condition that the printing was done by Ballantyne & Co., the "Co." being kept a profound secret, because it might have injured the lawyer and poet professionally and socially to be known as partner in a commercial concern.

In 1806 he collected from different publications his Ballads and Lyric Pieces. Between 1806 and 1812, in order to serve the interests of the firm, though of course the work was not in itself unattractive to him, Scott produced his elaborate editions of Dryden (18 vols., 1808), Swift (19 vols., 1818), the Somers Tracts (13 vols., 1808-1813), and the State Papers and Letters of Sir Ralph Sadler (2 vols., 1809). Incidentally these laborious tasks contributed to his preparation for the main work of his life by extending his knowledge of English and Scottish history. Marmion, begun in November 1806 and published in February 1808, was written as a relief to "graver cares," though in this also he aimed at combining with a romantic story a solid picture of an historical period. It was even more popular than the Lay. Scott's resuscitation of the four-beat measure of the old "gests" afforded a signal proof of the justness of their instinct in choosing this vehicle for their recitations. The four-beat lines of Marmion took possession of the public like a kind of madness: they not only clung to the memory but they would not keep off the tongue: people could not help spouting them in solitary places and muttering them as they walked about the streets. The critics, except Jeffrey, who may have been offended by the pronounced politeness of the poet, were on the whole better pleased than with the Lay. Their chief complaint was with the "introductions" to the various cantos, which were objected to as vexatiously breaking the current of the story.

The triumphant success of Marmion, establishing him as facile princeps among living poets, gave Scott such a beecce, to use his own words, "as almost lifted him off his feet." He touched then the highest point of prosperity and happiness. Presently after, he was irritated and tempted by a combination of little circumstances into the great blunder of his life, the establishment of the publishing house of John Ballantyne & Co. A coolness arose between him and Jeffrey, chiefly on political but partly also on personal grounds. They were old friends, and Scott had written many articles for the Review, but its political attitude at this time was intensely unsatisfactory to Scott. To complete the breach, Jeffrey reviewed Marmion in a hostile spirit. A quarrel occurred also between Scott's printing firm and Constable, the publisher, who had been the principal feeder of its press. Then the temperer appeared in the shape of Murray, the London publisher, anxious to secure the services of the most popular littérateur of the day. The event of negotiations was a heartache. It made Constable, "the crafty," "the grand Napoleon of the realms of print," the publishing house of John Ballantyne & Co., to be managed by John Ballantyne (d. 1821), James's younger brother, whom Scott nicknamed "Rigdamunfidos," for his talents as a mimic and low comedian. Scott interested himself warmly in starting the Quarterly Review, and in return Murray constituted Ballantyne & Co. his Edinburgh agents. Scott's trust in Rigdamunfidos and his brother, "Aldiborontophosphohornio," and in his own power to supply all their deficiencies, is as strange a piece of infatuation as any that ever formed a theme for romance or tragedy. Their devoted attachment to the architect of their fortunes and proud confidence in his powers helped forward to the catastrophe, for whatever Scott recommended they agreed to, and he was too immersed in multifarious literary work and professional and social engagements to have time for cool examination of the numerous rash speculative ventures into which he launched the firm.

The Lady of the Lake (May 1810) was the first great publication by the new house, and next the vision of Don Roderick followed. The Lady of the Lake was received with enthusiasm, even in its first edition which sold out in a month. Scott's influence in the Scottish Highlands, fashionable for tourists, and raised the post-horse duty in Scotland. But it did not make up to
Ballantyne & Co. for their heavy investments in unsound ventures. The Edinburgh Annual Register, meant as a rival to the Edinburgh Review, though Scott engaged Southey to write for it and wrote for it largely himself, proved a failure. In a very short time the warehouses of the firm were filled with unsaleable stock. By the end of three years Scott began to write for his partners about the propriety of "reefing sails." But apparently he was too much occupied to look into the accounts of the firm, and, so far from understanding the real state of their affairs, he considered himself rich enough to make his first purchase of land at Abbotsford. But he had hardly settled there in the spring of 1812, and begun his schemes for building and planting and converting a bare moor into a richly wooded pleasure, than his business troubles began, and he found himself harassed by fears of bankruptcy. Rigdumfannidoos concealed the situation as long as he could, but as bill after bill came due he was obliged to make urgent application to Scott, and the truth was thus forced from him item by item. He had by no means revealed all when Scott, who behaved with admirable good-nature, was provoked into remonstrating, "For heaven’s sake, treat me as a man and not as a milch-cow." The proceeds of Rokeby (January 1813) and of other labours of Scott’s pen were swallowed up, and bankruptcy was inevitable, when Constable, still eager at any price to secure Scott’s services, came to the rescue. With his help three crises were tided over in 1813.

It was in the midst of these embarrassments that Scott opened as much work as seemed humanly possible for his partners, to make up the deficiency of the sale of Waverley. He chanced upon the manuscript of the opening chapters of Waverley which he had written in 1805, and resolved to complete the story. Four weeks in the summer of 1814 sufficed for the work, and Waverley was published by Constable without the author’s name in July. The notes and introductions first appeared in the edition of 1829. Many plausible reasons might be given and have been given for Scott’s resolution to publish anonymously. The reason given by Lockhart is that he considered the writing of novels beneath the dignity of a grave clerk of the Court of Session. He kept up the mystification, though the secret, which was formally divulged in 1827, was an open one to all his Edinburgh acquaintances, is easily understood. He enjoyed it, and his formally initiated coadjutors enjoyed it; it relieved him from the annoyances of foolish compliment; and it was not unprofitable—curiosity about “the Great Unknown” keeping alive the interest in his works. The secret was so well kept by all to whom it was definitely entrusted, and so many devices were used to throw conjecture off the scent, that even Scott’s friends, who were certain of the authorship from internal evidence, were occasionally puzzled. He kept on producing in hitherto nameless form, and was enabled to publish anonymously the works of an official who was to be seen every day at his post and as often in society as the most fashionable of his professional brethren. His treatises on chivalry, romance and the drama, besides an elaborate work in two volumes on Border antiquities, appeared in the same year with Waverley, and his edition of Swift in nineteen volumes in the same week. In 1813 he published the romantic tale of The Bridal of Triermain in three cantos, enlarged from an earlier poem, printed in the Edinburgh Annual Register of 1809. The Lord of the Isles was published in January 1815; Guy Mannering the following February; The Black Dwarf and Old Mortality in the same year; The Talisman and The Antiquary in 1815; the first series of the Tales of My Landlord, edited by “Jedediah Cleishbotham” in the same year; Harold the Dauntless in 1817; the two volumes of The Border Antiquities of England and Scotland in 1814 and 1817. No wonder that the most positive interpreters of internal evidence were mystified. It was not as if he had buried himself in the country for the summer half of the year. On the contrary, he kept open house at Abbotsford in the fine old feudal fashion and was seldom without visitors. His own friends and many strangers from a distance, with or without introductions, sought him there, and found a hearty hospitable country laird, entirely occupied to all outward appearance with local and domestic business and sport, building and planting, adding wing to wing, acre to acre, plantation to plantation, with just leisure enough for the free-hearted entertainment of his guests and the cultivation of friendly relations with his humble neighbours. How could such a man find time to write two or three novels a year, besides what was published in his own name? Even the few intimates who knew how early he got up to prepare his packet for the printer, and had some idea of the extraordinary power that he had acquired of commanding his faculties for the utilization of odd moments, must have wondered at times whether he had not inherited the arts of his ancestral relation Michael Scott, and kept a goblin in some retired attic or vault. Scott’s fertility is not absolutely unparalleled; Anthony Trollope claimed to have surpassed him in rate as well as total amount of production, having also business duties to attend to. But in speed of production combined with variety and depth of interest and weight and accuracy of historical substance Scott is unrivalled. On his claims as a serious historian, which Carlyle ignored in his curiously narrow and splenetic criticism, he was always, with all his magnanimity, peculiarly sensitive. A certain feeling that his antiquarian studies were undervalued seems to have haunted him from his youth. It was probably this that gave the sting to Jeffrey’s criticism of Waverley and that tempted him to the most unrelenting of all processes of reviewing his own novels in the Quarterly upon the appearance of Old Mortality. He was nettled besides at the accusation of having treated the Covenanters unfairly, and wanted to justify himself by the production of historical documents. In this criticism of himself Scott replied lightly to some of the familiar objections to his work, such as the feebleness of his heroes, Waverley, Bertram, Lovel, and the melodramatic character of some of his scenes and characters. But he argued more seriously against the idea that historical romances are the enemies of history, and he rebutted by anticipation Carlyle’s objection that he wrote only to amuse idle persons who like to lie on their backs and read novels. His apologia is worth quoting. Historical romances, he admits, have always been failures, but the failure has been due to the imperfect knowledge of the writers and not to the species of composition. If, he says, anachronisms in manners can be avoided, and “the features of an age gone by can be recalled in a spirit of delineation at once faithful and striking, . . . the composition itself is in every point of view dignified and improved; and the author, leaving the light and frivolous apparatus with whom a careless observer would be disgusted, takes his seat on the bench of the historians of his time and country. In this proud assembly, and in no mean place of it, we are disposed to rank the author of these works. At once a master of the great events and minute incidents of history, and of the manners of the times he celebrates, as distinguished from those which now prevail, the intimate thus of the living and of the dead, his judgment enables him to separate those traits which are characteristic from those that are generic; and his imagination, not less accurate and discriminating than vigorous and vivid, presents to the mind of the reader the individuals of the drama as they thought and spoke and acted.” This defence of himself shows us the ideal at which Scott aimed, and which he realized. He was not in the least unconscious of his own excellence. He did not hesitate in this review to compare himself with Shakespeare in respect of truth to nature. “The volume which this author has studied is the great book of nature. He has gone abroad into the world in quest of what the world will certainly and abundantly supply, but—what a man of great discrimination alone will find, and a man of the very highest genius will alone detect after he has discovered it. The characters of Shakespeare are not more exclusively human, not more perfectly men and women as they live and move, than those of this mysterious author.”

The immense strain of Scott’s double or quadruple life as
sherif and clerk, hospital laird, poet, novelist, and miscellaneous man of letters, publisher and printer, though the prosperous excitement sustained him. There is this certainly to be said for Scott's early series of attacks of agonizing cramp of the stomach, which recurred at short intervals during more than two years. But his appetite and capacity for work remained unbroken. He made his first attempt at play-writing as he was recovering from the first attack; before the year was out he had completed Rob Roy, and within six months it was followed by The Heart of Midlothian, which filled the four volumes of the second series of Tales of My Landlord, and has remained one of the most popular among his novels. The Bride of Lammermoor, The Legend of Montrose, forming the third series by "Jeddeliah Cleishbotham," (1821) was followed by the fourth time, through fits of suffering so acute that he could not suppress cries of agony. Still he would not give up. When Laidlaw begged him to stop dictating he only answered, "Nay, Willie, only see that the doors are fast. I would fain keep all the cry as well as the wool to ourselves; but as to giving over work, that can only be when I am in woolen."

Throughout those two years of intermittent ill-health, which was at one time so serious that his life was despaired of and he took formal leave of his family, Scott's semi-public life at Abbotsford, which was now the centre of a brilliant society, and the rate of production, on the whole, suffering no outward and visible check, all the world wondering at the novelist's prodigious fertility. The first of the series concerning which there were murmurs of dissatisfaction was The Monastery (1820), which was the first completed after the re-establishment of the author's bodily vigour. The failure, such as it was, was possibly due to the introduction of the supernatural in the person of the White Lady of Avenel; and its sequel, The Abbot (1820), in which Mary, Queen of Scots, is introduced, was generally hailed as fully sustaining the reputation of "the Great Unknown." Kenilworth (1821), The Pirate (1822), The Fortunes of Nigel (1822), Peveril of the Peak (1822), Quentin Durward (1823), St Ronan's Well (1824), Redgauntlet (1824) followed in quick succession in the course of three years, and it was not till the last two were reached that the cry that the author was writing too fast began to gather volume. St Ronan's Well was very severely criticized and condemned. And yet Leslie Stephen tells a story of a dozen modern connoisseurs in the Waverley novels who agreed that each should write down separately the name of his favourite novel, when it appeared that each had without concert named the same."The story of Robert Bruce," he says, "was the first to which they all agreed". St Ronan's, that, in spite of the heaviness of some of the scenes at the "humble" and the artificial melodramatic character of some of the personages, none of Scott's stories is of more absorbing or more brilliantly diversified interest. Contradictions between contemporary popular opinion and mature critical judgment, as well as diversities of view among critics themselves, rather shake confidence in individual judgment on the vexed but not particularly wise question which is the best of Scott's novels. There must, of course, always be inequalities in a series so prolonged. The author cannot always be equally happy in his choice of subject, situation and character. Naturally he was not always the first to deal with the subjects of which his mind was fullest. But any theory of falling off or exhaustion based upon plausible general considerations has to be qualified so much when brought into contact with the facts that very little confidence can be reposed in its accuracy. The Fortunes of Nigel comes comparatively late in the series and has often been blamed for its looseness of construction. Scott himself always spoke slightingly of his plots, and humorously said that he proceeded on Bayes's maxims. What the deuce is a plot good for but to bring in good things, he said? Yet some competent critics prefer The Fortunes of Nigel to any other of Scott's novels. An attempt might be 1 The Doom of Deveron. This and his other dramatic sketches, Macduff's Cross, Haddo Hill (1822) and Auchenbran, or The Ayrshire Tragedy, printed with Deveron in 1830, were slight compositions, dashed off in a few days, and afford no measure of what Scott might have done as a dramatist if he had studied the conditions of stage representation.
some of them among the most brilliant of his miscellaneous writings, and prefaces and notes to a collected edition of his novels if it could have continued at this rate he might soon have freed himself from all his encumbrances. The result of his exertions from January 1836 to January 1838 was nearly £40,000 for his creditors. But the terrific labour proved too much even for his endurance. Ugly symptoms began to alarm his family in 1839, and in February of 1840 he had his first stroke of paralysis. Still he was undaunted, and not all the persuasions of friends and physicians could induce him to take rest. “During 1839,” Lockhart says, “he covered almost as many sheets with his MS. as in 1829,” the new introductions to a collected edition of his Poetical Works were in progress. Life in the London parish of Westminster, being amongst the labours of the year. He had a slight touch of apoplexy in November and a distinct stroke of paralysis in the following April; but, in spite of these warnings and of other bodily ailments, he had two more novels, Count Robert of Paris and Castle Dangerous (constituting the fourth series of Tales of My Landlord), ready for the press by the autumn of 1831. He would not yield to the solicitations of his friends and consent to try rest and a change of scene, till fortunately, as his mental powers failed, he became possessed of the idea that all his debts were paid. His health was now restored, and free moral and religious belief he happily remained till his death. When it was known that his physicians recommended a sea voyage for his health, a government vessel was put at his disposal, and he cruised about in the Mediterranean and visited places of interest for the greater part of a year before his death. But, when he felt that the end was near, he insisted on being carried across Europe that he might die on his beloved Tweedside at Abbotsford, where he expired on the 21st of September 1832. He was buried at Dryburgh Abbey.

Scott’s wife had died in 1826. His eldest son, Walter, succeeded to the estate which had been conferred on his father in 1820, and the title became extinct on his death in 1847; the second son, Charles, died at Teheran in 1841, and the daughter, Anne, died unmarried in 1833. Scott’s elder daughter Charlotte Sophia (d. 1837) was the wife of his biographer, J. G. Lockhart (q.v.); and their daughter Charlotte (d. 1858) married J. R. Hope-Scott (q.v.), and was the mother of Mary Monica, wife of the Hon. J. C. Maxwell, who in 1874 took the additional name of Scott on his marriage with the heiress of Abbotsford. Mrs Maxwell Scott inherited some of the family literary talent, and among other books wrote two volumes about Abbotsford (1893 and 1894).

Two busts of Scott were executed by Sir Francis Chantrey: one in 1830, which was presented to Scott by the sculptor in 1828, a second in 1828, which was sent by Chantrey to Sir Robert Peel about 1837, and is now in the National Portrait Gallery, London. The 1828 bust was duplicated by Chantrey for the duke of Wellington in 1827, and there is a copy in Westminster Abbey, erected in 1887. Henry Raeburn painted Scott’s portrait for Archibald Constable in 1808; Scott sat to the same artist in 1809 for the portrait now at Abbotsford, and two or three times subsequently. Other notable portraits were executed by Sir Thomas Lawrence in 1820 for George IV.; by John Graham Gilbert in 1829 for the Royal Society of Edinburgh; by Francis Grant for Lady Ruthven in 1831; and a posthumous portrait of Scott with his dogs in the Rhymers Glen by Sir Edwin Landseer. The Scott monument in Princes Street, Edinburgh, erected in 1846, was designed by George Kemp, the statue being the work of John Steell.

Bibliography.—The Miscellaneous Prose Works of Sir Walter Scott (6 vols., Edinburgh, 1837) were subsequently printed in 30 vols. (London, 1834-1871) and in 3 vols. (1841-1849). The collected editions of the novels and tales are very numerous. Among them are that known as the “author’s favourite edition” (48 vols., Edinburgh, 1829-1833), for which Scott wrote new prefaces and notes; an edition de luxe of the Waverley novels, illustrated by A. Lalauze, E. Riou and others (25 vols., London, 1882-1889); the “Border edition” (48 vols., 1892-1894), with introductory essays and notes by A. Lang, and portraits of the authors by B. Pears; his Poetical Works were printed in 12 vols. (Edinburgh, 1826); they were edited by J. G. Lockhart (12 vols., Edinburgh, 1833-1834), with 24 steel engravings from illustrative drawings by Turner; by F. T. Palgrave for the “Globe” edition (1866); by W. Minto (2 vols., Edinburgh, 1888); by J. Logie Robertson (Oxford complete edition, 1904). Many of the novels have been adapted for the stage, the most famous adaptation of Waverley being realized in a dramatized form by Dumas fils as Lammemoor and the Ivanhoe of Sir Arthur Sullivan and J. R. Sturgis. His Minstrelsy of the Scottish Border (3 vols., 1802-1803) was edited (4 vols., 1902) by T. F. Henderson.

The standard life of Scott is by J. G. Lockhart, Memoirs of the Life of Sir Walter Scott (7 vols., Edinburgh, 1837-1838), left little new material for later biographers. It was supplemented by the list of Scott’s writings (1841-1847), Sir George Graham’s Journal, covering the years from 1825 to 1832, and of his Familiar Letters (2 vols., 1894), both edited by Scott. Some unpublished letters from Scott to the marchioness of Abercorn were sold at Sotheby’s in 1906. Shorter biographies of him include James Hogg, The Domestic Manners and Private Life of Sir Walter Scott (Glasgow, 1834); A. Lang, in Letters to Dead Authors (1886); the second edition of J. R. Lockhart’s Life of Scott (Edinburgh, 1871), prefixed by Sir W. Stirling-Maxwell (Edinburgh, 1872); Biographical Sketches, Hours in a Library (London, 1874); J. Veitch, The History and Poetry of the Scottish Border (Glasgow, 1879); L. Malagon, Le roman historique (Paris, 1891); and the Very Excellent Story and Adventures of Mr. J. B. Sturgis (Paris, 1898). An account of the portraits of Scott, and a bibliography of his works, are given in Sir W. Stirling-Maxwell’s Catalogue of the Scott Exhibition, commemorating Scott’s centenary in July-August 1871.

W. M.: X.

;SCOTT, WILLIAM BELL (1791-1865), British poet and artist, son of Robert Scott (1761-1803), the elder, and brother of David Scott, the painter, was born in Edinburgh on the 12th of September 1811. While a young man he studied art and assisted his father, and he published verses in the Scottish magazines. In 1837 he went to London, where he became sufficiently well known as an artist to be appointed in 1844 master of the government school of design at Newcastle-on-Tyne. He held the post for twenty years, and did good work in organizing art-teaching and examining under the Science and Art Department. He did much fine decorative work, too, on his own account, notably at Wallington Hall, in the shape of eight large frescoes illustrating the life and death of Sir Walter Scott, as also supplemented by eighteen pictures illustrating the ballad of Chevy Chase in the spandrels of the arches of the hall. For Penhill Castle, Perthsire, he executed a similar series, illustrating The King’s Quair. After 1870 he was much in London, where he bought a house in Chelsea, and he was an intimate friend of Rossetti and in high repute as an artist and an author. His poetry, which he published at intervals (notably Poems, 1875, illustrated by etchings by himself and Alma-Tadema), recalled Blake and Shelley, and was considerably influenced by Rossetti; he also wrote several volumes of artistic and literary criticism, and edited Keats, "L.E.L.," Byron, Coleridge, Shelley, Shakespeare and Scott. He resigned his appointment under the Science and Art Department in 1885, and from then till his death (22nd November 1895) he was mainly occupied in writing his reminiscences, which were published posthumously in 1892, with a memoir by Professor Minto. It is for his connexion with Rossetti’s circle that Bell Scott will be chiefly remembered.

Scott, Winfield (1796-1866), American general, was born near Petersburg, Virginia, on the 13th of June 1786. In 1805 he entered the College of William and Mary, where he studied law; and in 1807, entering the law office of David Livingston in Petersburg. In 1809 he removed to Charleston, South Carolina, but as war with England seemed imminent he soon left for Washington and offered his services. In 1828 he was commissioned as a captain of artillery, recruited a company in Richmond and Petersburg, and was ordered to New Orleans. His criticism of his superior officer, General James Wilkinson, led to his being suspended for a year, but the
term was eventually reduced to three months. In July 1812, as a lieutenant-colonel of artillery, he was sent to the Niagara frontier and fought at Queenston, where he was taken prisoner. He was exchanged in January 1813, became colonel in the following March, in March 1814 was promoted to the rank of brigadier-general, and in July received the brevet of major-general. In the battles of Chippewa (5th July 1814) and Lundy’s Lane (27th July) he took a conspicuous part, being twice wounded in the latter engagement. For his services he was presented with a gold medal by Congress and with a sword by the state of Virginia. Among the difficult tasks that he was called upon to perform between 1815 and 1861, for the last twenty years of which period he was the commanding general of the U.S. army, were: an expedition to the Middle West in 1832, where, after the end of the Black Hawk War, he negotiated treaties of peace with the Sauk, Fox, Winnebago, Sioux, and Menominee Indians; a journey to Charleston in the same year to watch the progress of the nullification movement, and to strengthen the garrisons of the forts in the harbor; an expedition in 1836 against the Seminole Indians in Florida; the supervision of the removal in 1838 of the Cherokee Indians from Georgia, North Carolina, Alabama and Tennessee to the reservation set apart for them by treaty W. of the Mississippi river; a visit to the Niagara river in the autumn and winter of 1838 to put an end to the acts by Canadian insurgents in violation of American neutrality; a similar mission to Maine in 1839 to restore tranquillity between the citizens of Maine and New Brunswick, who were disputing the possession of a tract of land along the Aroostook river; and a journey to the north-west in 1839 to adjust a dispute between American and British officers concerning the joint occupation of San Juan Island in Puget Sound. His greatest achievement was the brilliant Mexican campaign of 1846. As the senior officer of the army, he was placed in command of the invading expedition, and after capturing Vera Cruz (March 29th, 1847), and winning victories at Cerro Gordo (April 15th), Contreras-Churubusco (August 19th-29th), Molino del Rey (September 8th), and Chapultepec (September 13th), he crowned his campaign by the capture, on the 14th of September, of the Mexican capital. In March 1848 he received a vote of thanks from Congress, which ordered a gold medal to be struck in commemoration of his services. Scott appeared to have an excellent opportunity for a political career; his nomination for the presidency by the Whigs had been suggested in 1839 and in 1848, and in 1852 he received it; but his candidacy was doomed to failure. The Whigs, divided on the slavery question, gave only half-hearted support to their compromise candidate; and Scott made several extemporaneous addresses which did him harm. He received the electoral votes of only four states—Kentucky, Virginia, Massachusetts and Vermont. This defeat, however, detracted not from the esteem and honor in which he was held, and the brevet rank of lieutenant-general was created specially for him. Among the other honors conferred upon him were the degree of Master of Arts by Princeton in 1814, and the degree of Doctor of Laws by Columbia in 1850 and by Harvard in 1861. At the outbreak of the Civil War, though a Virginian, he remained at the head of the United States armies and directed operations from Washington until November 1861. He then visited Europe for a short time, and after returning wrote his Memoirs, published in 1864. He died at West Point, New York, on the 29th of May 1866.


SCOUNDREL, a rogue, a rascal. Etymologists have referred the word to various sources; but Skeat (Ety. Dict.) refers it to the provincial or Scottish scavenger (O. Eng. scavion, to shun), to shrink back in fear or loathing.

SCOURGE (Ital. scudra, from Lat. excoriare, to flay, corium, skin), a whip or lash, especially one used for the infliction of punishment. The typical scourge (Lat. flagellum) has several things or lashes attached to a single handle, as in the modern "cat-o'-nine-tails." The scourge or flail, and the crook, are the two symbols of power and domination depicted in the hands of Osiris in ancient Egyptian monuments; these show the unchanging form of the instrument throughout the ages.

SCOUT (from O. Fr. escouter, mod. écouter, Lat. auscultare, to listen), a soldier sent out to watch the enemy and bring information of his numbers, movements, whereabouts, &c. The name has also been applied to a particular class of light-speedy cruisers in the British navy. After the South African War of 1899-1902, the importance of military scouting received much attention in England in consequence of the prominence given to it by Major-General Baden-Powell, of Mafeking fame. Under the latter’s auspices an unofficial attempt to foster the qualities required was made by the institution of the Boy Scouts, a voluntary organization which, starting in 1908, had by 1910 enrolled many hundreds of thousands of boys throughout the United Kingdom, with branches overseas.

Various birds of the auk family, such as the guillemot and the puffin, are known as "scouts." The name is also given colloquially to college servants at Oxford and Harvard Universities. It then answers to the "gyp" of Cambridge, Trinity College, Dublin, and Durham, which has been variously explained as short for "gipsy," as taken from γψ, vulture, from a supposed reference to a grasping character, or as representing an old word "gippo" (Fr. jupeau, tunic), used of a scullion or kitchen servant.

In the above senses, "scout" must be distinguished from the word meaning to flout, or reject with ridicule and scorn, which is derived from a Latin verb meaning to scorn or spurn in the sense of to flout or mock. In the military sense, see Sir R. S. Baden-Powell, Scouting, and Scouting for Boys. The Boy Scouts’ movement in England has official papers in the weekly Scout and monthly Headquarters Gazette.

SCRANTON, a city and the county-seat of Lackawanna county, Pennsylvania, U.S.A., at the confluence of the Lackawanna river and Roaring Brook, about 162 m. by rail N. by W. of Philadelphia and about 146 m. W.N.W. of New York. Pop. (1890) 75,215; (1900) 102,926, of whom 28,973 were foreign-born (including 7193 Irish, 4704 Germans, 4621 Welsh and 3692 English) and 512 were negroes; (1910, census) 123,867. Scranton is served by the Erie, the Delaware, Lackawanna & Western, the Central of New Jersey, the New York, Ontario & Western, the Delaware & Hudson, and the Lackawanna & Wyoming Valley railways. It occupies an area of about 20 sq. m. Among the principal public buildings are the United States Government building, the County Court House, the City Hall, the Albright Memorial building, housing the public library (55,800 vols. in 1908), the armoury of the 13th Regiment, State National Guard, the Board of Trade building, some fine churches and school-houses, a Young Men’s Christian Association building and a Young Women’s Christian Association building. Scranton is the see of a Roman Catholic bishop, has a good public school system, and is the seat of the International Correspondence Schools (1891), which give instruction by mail in the trades and professions to large numbers of students; Mt. St Mary’s Seminary (1902) for girls, and the W. T. Smith (Memorial) Manual Training School (1903), a part of the public school system. The city has an Institute of History and Science, and the Everhart Museum of natural history, science and art (dedicated 1908), founded and endowed by Dr J. F. Everhart (1833-1910), of Scranton, a Soldier’s and Sailor’s Monument, and monuments to the memory of Columbus and Washington. Scranton is the largest city in the great anthracite-coal region of the United States; and 17,525,905 long tons of coal were produced within the county in 1905. The chief manufactures are silk goods (21-6% of all in value) and other textiles, but large quantities of foundry and machine-shop products, malt liquors, flour, and planing mill products are also manufactured. The total value of the city’s factory products in 1905 was $20,453,285. The Delaware, Lackawanna & Western railway has since built large machine and car shops.

A permanent settlement was established within the present
limits of Scranton in 1788, and a primitive grist-mill, a saw-mill and a charcoal iron-furnace were erected during the next few years; but there was little further development until 1840, when the Lackawanna Iron Company was formed for the manufacture of iron here. The limestone and iron ore of the vicinity proved to be of inferior quality, and the failure of the enterprise was prevented only by the persistent efforts of George Whitefield Scranton (1811-1861), aided by his brothers Tilden T. Scranton and his cousin Joseph Hand Scranton. Under the leadership of George W. Scranton better grades of iron ore and of limestone were procured, and within a decade a rolling mill, a nail factory and a manufactury of steel rails were established, and adequate facilities for railway transportation were provided. Scranton was incorporated as a borough in 1854, was chartered as a city of the third class in 1866, and became a city of the second class in 1901. See B. H. Throop, A Half-Century in Scranton (Scranton, 1895).

SCREAMER, a bird inhabiting Guiana and the Amazon valley, so called in 1781 by T. Pennant (Gen. Birds, p. 37) "from the violent noise it makes"—the Palamedea cornuta of Linnaeus. First made known in 1648 by G. de L. Marceau under the name of "Anhimia," it was more fully described and better figured by Buffon under that of Camichi, still applied to it by French writers. Of about the size of a turkey, it is remarkable for the curious "horn" or slender caruncle, more than three inches long, it bears on its crown, the two sharp spurs with which each wing is armed, and its elongated toes. Its plumage is plain in colour, being of an almost uniform greyish black above, the space round the eyes and a ring round the neck being variegated with white, and a patch of pale rufous appearing above the carpal joint, which with the lower parts of the body are white. Closely related to this bird is another similarly described by Linnaeus, a species of Parra (see Jacana), to which group it certainly does not belong, but separated therewith by Illiger to form the genus Chauna, and now known as C. chavaria, very generally in English as the "Crested Screamer," a name which was first bestowed on the Seriena (q.v.). This bird inhabits the lagoons and swamps of Paraguay and Southern Brazil, where it is called "Chajá," or "Chaka," and is smaller than the preceding, wanting its "horn," but having its head furnished with a dependent crest of feathers; while the plumage is grey. Its nest is a light construction of dry rushes, having its chaka's wings are armed, successfully discharged. Another very curious property of this bird, which was observed by Jacquin, who brought it to the notice of Linnaeus, is its emphymatous condition—there being a layer of air-cells between the skin and the muscles, so that on any part of the body being pressed a crackling sound is heard. In Central America occurs another species, C. derbian, chiefly distinguished by the darker colour of its plumage. For this a distinct genus, Ischyronyx, was proposed, but apparently without necessity, by A. B. Reichenbach (Syst. Avium, p. xxii.).

The taxonomic position of the Palamedeidae, for all will allow to the screaming-fowl of a family at least, has been much debated. Their anserine relations were pointed out by W. K. Parker in the Zoological Proceedings for 1863 (pp. 511-518), and in the same work for 1867 T. H. Huxley placed the family among his Chonemorphidae; but this view was contravened in 1876 by A. H. Garrod, who said, "The screamers must have sprung from the primary avian stock as an independent offshoot

1 Hence J. Latham's name for this species is "Faithful Jacana"—he supposing it to belong to the genus in which Linnaeus placed it.

2 Tacta manu cutis, sub pennis etiam lanosa, crepat ubique fortiter (Syst. Nat. ed. 12, i. p. 260).

at much the same time as did most of the other important families." P. L. Sclater in 1880 placed them in a distinct order, Palamedoidea, which he, however, placed next to the true Anseres, and they are now generally regarded as forming a sub-order of anseriform birds.

SCREEN (usually, but very doubtfully, connected with Lat. scrutum, a box for holding books, from scribere, to write; a connexion with Ger. Schranke, barrier, has been suggested), in architecture, any construction subdividing one part of a building from another—as a choir, chantry, chapel, &c. The earliest screens are the low marble podia, shutting off the chorum cantantium in the Roman basilicas, and the perforated cancelli enclosing the bema, altar, and seats of the bishops and presbyters. The chief screens in a church are those which enclose the choir or the place where the breviary services are recited. This is done on the continent of Europe, not only by doors and screen-work, but also, when these are of open work, by curtains, the laity having no part in these services. In England screens were of two uses: towards the end of the 16th century, the other, massive enclosures of stonework enriched with niches, tabernacles, canopies, pinnacles, statues, and, as at Canterbury, York, Gloucester, and many other places both in England and abroad (see Rood and Jtubé).

As an article of furniture, the screen is an ornamental frame, usually of wood, but sometimes of metal, for protection from observation, draught, or the heat of a fire. Screens are made of all shapes and sizes, and may consist of leather, paper or textile materials fastened to the framework; they may have several divisions and be moved about; thus a fourfold screen has four leaves. Fire-screens are usually designed to protect the hearth, and are often almost as large as the fireplace itself. They are made of stained or painted Spanish leather or canvas, with some device, such as tapestry; at a later date lacquer was extensively used. They were tall enough to conceal the person sitting behind them, and were frequently exceedingly handsome and stately.

SCREW (O.E. scruce, from O. Fr. escreou, mod. écreou; ultimate origin uncertain; the word, or a similar one, appears in Teutonic languages, cf. Ger. Schraube, Dan. skru, but Skæt, following Díaz, finds the origin in Lat. scrubs, a ditch, hole, particularly used in Low Latin for the holes made by pigs boring in the ground with their snouts), a cylindrical or conical piece of wood or metal having a groove running spirally round it. The surface of the thus formed constitutes an external or male screw, while a similar groove cut round the interior of a cylindrical hole, as in a nut, constitutes an internal or female screw. The ridge between successive turns of the groove is the "thread," and the distance between successive turns of the thread is the "pitch." The present article will deal with the standard pitches in common use and with modern methods of manufacture, the earlier history of which, down to the time of Sir Joseph Whitworth, may be read in Holtzapfel's Turning and Mechanical Manipulation. For the screw as a mechanical power see MECHANICS; for the screw used to propel steamships see STEAMBOATS.

Standardisation of Screws.—All screws made to-day are copies of pre-existing or master screws, which are familiarly known as "guide screws," "hobs" or "leaders," "chasers" or "comb tools," "taps," and "dies" in numerous forms. These are so standardized that a thread cut to a given standard in England fits its fellow thread cut to the same standard in America, Germany or elsewhere. At one time screws cut by one firm would not match those cut by another. Formerly there was no "tack," but large screws were cut with chisel and file, and a nut was cast around them and used for correction, until gradually
the coarser errors were eliminated. Another method was that of the mathematical instrument makers, who used a screw and tangent wheel by which a cutter was moved along synchronously with the revolution of the screw blank, a method only suitable for short screws. The first attempt at standardizing the screw by Sir Joseph Whitworth, who communicated a paper on the subject to the Institution of Civil Engineers in 1843. In the course of about twenty years the Whitworth system generally displaced the previous heterogeneous designs of threads, by the existence of which engineers' repairs had been rendered most inconvenient and costly, almost every establishment having its own "standard" set of screwing tackle. In fact it was suspected that firms thought their interest lay in this separation of practice in order to capture repairs, each of its own work.

When Whitworth began his work he made an extensive collection of screw bolts from the principal English workshops, and an average observed for diameters of ⅛ in., ⅜ in., and ½ in. chiefly was taken and tabulated in exact numbers and equal fractional parts of threads per inch, the scale being afterwards extended to 6-in. diameter. In cases above an inch the same pitch is maintained for two sizes, the object being to avoid small fractions, and to simplify the construction of screwing apparatus. The system is therefore a practical compromise based on previous practice. The proportion between pitch and diameter throughout the series, and at the extremes, the amount of power required to turn a nut is either in excess or insufficient.

When the Whitworth threads were accepted in England, Germany and the United States, it appeared as though they were established for ever in an impregnable position, as a unification evolved from chaos. Moreover, Great Britain at that time occupied a position of pre-eminence in manufacturing engineering, which was favourable to the establishment of an English system. But two things were wanting to permanence,—the facts that the new world of railways were not based on the metric system, and that the United States was destined to come into rivalry with Great Britain. Metric systems became standardized on the continent of Europe and the Sellers thread in America overshadowed the Whitworth, though it is impossible to doubt that the Sellers like the Whitworth must in time be swallowed up by some one metric system.

It is easier to devise new standards than to induce manufacturers to accept them. Change means the purchase of a very costly new equipment of screwing tackle, both hand and machine, besides the retention of the old for effecting repairs. There is no economy either in the accommodating or bringing in the threads of one system to others nearly like them. They either fit or do not fit, they are right or wrong, so that a clean sweep has to be made of the entire screwing tackle in favour of the new. The two great attacks that have been made on the Whitworth thread came, one from the Franklin Institute in 1864, when the Sellers thread was adopted and recommended to American engineers, and the other in 1873, when Delisle of Carlsruhe initiated a metric system. As a result, after several years of effort, the Society of German Engineers took the matter up, and the appointment of a committee gave birth to the International Screw Thread Congress, which has met from time to time for the discussion of the matter. We have thus two broad lines of departure from the Whitworth standard.

The history of the battle of the screw threads in England, America, Germany, Switzerland and France would occupy a volume. The subject is highly technical, involving practical points concerned with manufacture as well as with questions of strength and durability. We can merely state the fact that the threads now recognized as standard are included in eight great systems, out of about sixty that have been advocated and systematized. Their elements are shown by the diagram, fig. 1; but tables of dimensions are omitted, since they would demand too much space.

Methods of Cutting Screws.—There are four methods employed for the cutting of screw threads: one by means of a single-edged tool held in the saddle of the screw-cutting lathe, and traversed horizontally only; the other which is to revolve the thread whilst revolving the whole; another by means of short master screws, hobs or leaders, controlling chasers or comb tools; the third by means of screw taps

![Fig. 1.—Sections of principal Screw Threads.](image-url)

Formulæ: \( p = \text{pitch}, \) or distance between centres of contiguous threads; \( d = \text{depth of thread}; \) \( r = \text{total height of thread construction}; \) \( r = \text{radius}= \text{flat}.

- A. Whitworth thread. \( h = 0.5965 \text{ p}; \) \( d = 0.6493 \text{ p}; \) leaving 4th h to be rounded at top and bottom.
- B. Whitworth, or London, or U.S. Imperial, or U.S. standard thread. \( h = 0.3666 \text{ p}; \) \( d = 0.4395 \text{ p}; \) \( f = 1/4 \text{ p}.
- C. Sharp Vee thread. \( d = 0.6660 \text{ p}.
- D. British Association standard thread. \( d = 0.6 \text{ p}; \) \( r = 1/8 \text{ p}.
- E. C.E.I. or Cycle Engineers' Institute standard thread. \( h = 0.3866 \text{ p}; \) \( d = 0.5327 \text{ p}; \) \( r = 1/4 \text{ p}.
- F. Lowenherz or Delisle thread (metric, used largely on the Continent). \( h = 0.3675 \text{ h}; \) \( f = 4/10 \text{ h}.
- G. International standard thread (metric). \( d = 0.6495 \text{ p}; \) \( f = 1/4 \text{ h}.
- H. Thury thread (metric). \( d = 1/8 \text{ p}; \) \( r = 1/8 \text{ h}.
- J. Square thread. \( d = 1/8 \text{ p}.
- K. Acme thread. \( d = 1/8 \text{ p}; \) \( h = 0.010; \) \( f = 0.0070 \text{ p}.

And dies, either the work or the tool being absolutely still. The fourth is by means of a milling cutter presented to the work in a special screw-cutting machine, both the work and the cutter revolving.

The problem of screw-cutting in the lathe in the simplest form resolves itself into the relative number of revolutions of the lathe spindle and of the lead screw (fig. 2). If the two rotate at the same speed, the thread cut on the spindle axis will be equal in pitch to that of the lead screw. If the spindle revolves more slowly than the lead screw, a thread closer than that in the latter will result; if it revolves more rapidly, one of finer pitch will be produced. The spindle is the first factor, being the driven, and the lead screw is driven therefrom through the change-wheels—the variables—which determine the number of revolutions of the latter whether the same, or slower, or faster than the spindle. Screw-cutting in all its details is an extensive subject, including the cutting of what are termed odd or unequal pitches, that is, those which involve fractions, the catching of threads for successive traverses of the tool, the cutting of multiple threads and of right- and left-hand threads, which involve much practical detail. The principle of screw-cutting may be stated briefly thus: the pitch of the guide screws is that of the screw to be cut as the number of teeth on the mandrel or (headstock) wheel is to the number of teeth on the lead screw wheel. It is therefore simply a question of ratio. Hence for cutting threads finer than that of the lead screw, the guide screw must rotate more slowly than the lathe mandrel; and for cutting threads coarser than those of the guide screw, the lead screw must rotate faster than the lathe mandrel (fig. 2, C and D). When the ratios are ascertained, these facts indicate when the larger or the smaller wheels must be placed as drivers, or as driven. "Simple trains" are those which contain only one pair of change wheels; "compound trains" have two, three, four or more pairs (fig. 2), and are necessary when the ratio between the guide screw and the screw to be cut exceeds about six to one.

A device which has become very popular under the name of Hendey-Norton gears comprises a set of twelve change wheels, mounted on a universal or "radial" axis, which in turn is keyset to the mandrel or headstock wheel. A stud wheel is made to engage through an intermediate wheel with any one of the twelve change gears, on the simple movement of a lever, giving twelve
different ratios for screw-cutting. These again are doubled or trebled by altering the ratios of other gears connected therewith, so that for each position of engagement of the stud wheel, two, or in some cases three, pitches can be cut. This avoids the waste of time involved in setting up fresh wheels on the swing-plate as often as a screw of different pitch has to be cut.

Another step in the direction of economy depends on the removal of all screw-cutting, except those screws which are of several feet in length, from the ordinary lathe to the special chasing and screwing machines. The screw-cutting arrangement of an engineer's lathe is a cumbersome apparatus to fit up and set in motion for the cutting of screws of small dimensions. When there was no other method available except that of common dies operated by hand or carried in a screwing machine, there was good reason why a true cutting tool should be operated in the lathe through change wheels. But the reason no longer exists, since for the single cutting tool of the lathe the two or three cutters of the chasing and screwing machines (figs. 3 and 4) are substituted, and the hollow mandrel embodied in the latter permits of screws being cut and parted from the solid bars of several feet in length. Except for the cutting of long screws and screws of odd pitches, the ordinary lathe is now a wasteful machine.

![Fig. 2](image2.png)

**FIG. 2.**

A, Simple train which rotates lead screw in opposite direction to mandrel, and makes slide-rest feed away from the headstock.

B, Simple train with intermediate wheel on stud, which rotates lead screw in same direction as mandrel, making slide-rest feed towards the headstock. Intermediate on "stud" does not alter ratio.

C, Typical compound train arranged for cutting a screw finer than that of the lead screw.

D, Ditto for screw coarser than that of the lead screw.

**Fig. 3.—Bolt-Screwing Machine (John Stirk & Sons, Ltd., Halifax).**


J, Handle for opening the dies. K, Lever for automatically opening the dies, operating through J. L, Rod having adjustable dog b, struck by carriage at a definite position of its travel, thus throwing the dies off the work. M, Pump drawing lubricant from reservoir in bed.

The second method of cutting screws is that by means of hobs or leaders, and either comb or single-edged tools. That is, a short
In all taps and dies the problem is to cut a screw, of which the angle of thread changes from point to root, with tools whose angle must remain constant. In taps there is no choice of angle, since they must be the exact counterparts of the tapped threads when finished. But in dies a compromise is made by cutting them with hobs, or master taps (fig. 5), one thread larger than the thread to be cut by the dies. Briefly, the practical effect is that the dies are only counterparts of the thread to be cut at about the mid-point of the action (fig. 6, B).

Though the action of taps resembles in some respects that of common dies, the results achieved are better, partly because the backing off is generally superior, partly because larger taps are usually made to start a screw hole, and smaller solid dies are also used in some kinds of turret work with the same object, namely, to facilitate the work of an inherently badly formed tool. With a tapered tap, or a tapered solid die, the full threads do not come into operation until after the tapered threads have started the cut. A properly made through-hole tap, or a tapered die, will cut an average-sized screw at one traverse, provided lubrication is ample. Taps are now made with very narrow edges and wider clearances than formerly, very different from the common taps with broad edges and narrow grooves. There is thus little friction, and there is plenty of clearance for the chips, essential conditions for cutting screws rapidly at a single traverse.

Dies are held in stocks. In the common die stocks one adjustable die is moved forward with a screw, which forms one of the handles of the stock, or a separate tightening screw is used at right angles with the handles, or the tightening screw is set diagonally in relation to the handle (fig. 6, D). Sir Joseph Whitworth's well known "guide" screw stock (fig. 7) is an example of the embodiment of the principle just stated, the dies being cut over a hob two depths of thread larger than the screw; one, a broad die, is used for guidance only, and two narrow dies do all the cutting. The guide-screw stock derives its name from the fact that it embodies a guide a distinct from the cutters b, b, the guide doing very little actual cutting; it is one of the best tools for screw-cutting outside the lathe, but some of the American types of dies, such as in fig. 8, A and B, give very accurate results, especially when they are combined with a guide in advance of the dies, to keep them truly parallel on the work. The common dies are inferior in operation to those used in the guide-screw stock. Nevertheless, the common die stocks are used most extensively.

The reason is that, although they are of faulty construction regarded as a whole, they go to the mechanist of the lathe in a very satisfactory manner if moderate care be exercised in their construction and working.

Machine Work. Hand tapping and screwing has long been confined to occasional pieces of work done by the fitter at the bench, the
manner:—(1) See whether the surface of the threads has a perfect polish. The more it departs from this, and approaches the rough torn surface as cut by the lathe tool, the worse it is. A perfect screw has a perfect polish. (2) Mount it between the centres of a lathe, and rotate it at a very slow speed. If the nut fits perfectly, if the nut moves from end to end with equal friction, the screw is uniform in diameter. If the nut is long, unequal resistance may be due to either an error of run or a bend in the screw. (3) Fix a microscope on the lathe carriage and focus its single cross-hair on the edge of the screw and parallel to its axis. If the screw runs true at every point its axis is straight. (4) Observe whether the short nut runs quite true, and that its end is parallel to its axis. If the nut is turned and the nut kept from revolving. If it wobbles the screw is said to be drunk. One can see this error better by fixing a long pointer to the nut, or by attaching it to a mirror and observing an image in a microscope. This condition is that the nut must be long, rigid, and capable of being tightened as the grinding proceeds; also the screw must be ground longer than it will finally be needed, so that the imperfect ends may be removed.

The following is a screw a little thinner than 1/8 in. diameter for cutting V taps. Now cut the screw with a triangular thread a little sharper than 60°. Above all, avoid a fine screw, using about 20 threads to the inch. The grinding nut, about 11 in. long, has now to be made. Fig. 9 represents a section of the nut, which is made of brass, or better, of Bessemer steel. It consists of four segments, a, a, which can be drawn about the screw by two collars, b, b, and the screw c. Wedges between the segments prevent too great pressure on the screw. The final clamping is effected by the rings and screws, d, d, which enclose the flanges, f, of the segments. The screw is now placed in a lathe and surrounded by water whose temperature can be kept constant to 1°C., and the nut placed on it. In order that the weight of the nut may not make the ends too small, it must be placed in a counterbalanced lathe, in which the screw is held by two arms, which revolve in pulleys in the ceiling, or the screw must be vertical during the whole process. Emery and oil seem to be the only available grinding materials, though a softer silica powder might be used. The nut may be ground in two sections, the taper being ground in the first operation, and the cylindrical portion polished in the second. Fig. 9 represents a section of the nut.

Mounting of Screws.—The mounting must be devised most care-
fully, and is indeed more difficult to make without error than the screw itself. The principle which should be adopted is that no workmanship is perfect; the design must make up for its imperfections. Thus the screw can never be made perfectly by rolling, and the device of resting one end of the carriage on the nut must be rejected. Also all rigid connexion between the nut and the carriage must be avoided, as the screw can never be adjusted by the carriage for use in many purposes, such as ruling optical gratings, the carriage must move accurately forward in a straight line as far as the horizontal plane is concerned, while a little curvature in the vertical plane produces very little effect. These conditions can be best accomplished by making the waves V-shaped and grinding with a grinder somewhat shorter than the waves. By constant reversals, and by lengthening or shortening the stroke, the waves will make themselves become nearly equal.

Duveyrier), making the秘书 secretary of the Parisian Scientific Congresses, thus: "The Prenanous, or "The Pretendu sans le savoir, was produced without his name at the Variétés in 1810, and was a failure. Numerous other plays, written in collaboration with various authors, followed, but none of die plays was a success. Moreover, when Une Nuit de la garde nationale, written in collaboration with Delestre-Poirson, made him famous. The secret of his success was the careful selection of his collaborators, and it was done with skill and success. Among his collaborators were Jean Henri Dupin (1787-1887), Germain Delavigne, Delestre-Poirson, Méteville (A. H. J. Duveyrier), Marc-Antoine Desaugiers, Xavier Saintine and Gabriel Legouvé. His début in serious comedy was made at the Théâtre Français in 1822 with Valére, the first of many successful pieces of the same kind. His industry was unrivaled and his knowledge both of the mechanism of the stage and of the tastes of the audience was wonderful. For purely theatrical ability he is unrivaled, and his plays are still regarded as models of the fine art of construction. Moreover, when his play was for fifty years the best exponent of the ideas of the French middle classes, so that he deserves respectful attention, even though his style be vulgar and his characters commonplace. He wrote a few novels, but none of any mark. The best-known of Scribe's plays after his first successful one are Une Chastine (1842); Le Verdier d'eau (1842); Adrienne Lecouvreur (1849), in conjunction with Legouvé; Bertrand et Raton, ou l'art de conspirer; and the libertine of many of the most famous operas of the middle of the century, especially those of Auber and Meyerbeer. The books of La Muette de Portici, Pia Diocese, Robert le Diable, and Les Huguenots are wholly or in part by him. Scribe died in Paris on the 20th of February 1861.

His Œuvres complètes appeared in seventy-six volumes in 1874-1885. See Legouvé, Eugène Scribe (1874).

Scribes. The word "scribe" (from Lat. scribere, to write) means generally a writer; but it has a more specific application as the English term for the Jewish class called in Hebrew Sopherim (Gr. γραμματεῖς). Both the Hebrew and the Greek word are used to denote something equivalent to secretary of state or town-clerk in general; and through the influence of these two words, the name of the Jewish nation conceived as a theocracy, both words denote in particular one learned in Scripture. Jeremiah (for example) knew of Scribes who made the law of the Lord falsehood (vi. 8), just as he knew of false prophets and profane priests (xxix.). The function of writing belongs rather to the scribe or secretary in general than to the specifically Jewish scribe, whose primary business was not only to read the Hebrew text but also to interpret the existing revelation of God's will, just as the town-clerk at Athens read public documents to the assembly (Thuc. v. 10). So Ezra, the most famous of the early
Scribes, is referred to as "the scribe of the commandments of the Lord and of his statutes to Israel" (Ezra vii. 11), and again as "a ready scribe in the law of Moses which the Lord, the God of Israel, had given." As a Scribe he read the Law to the congregation of the children of Israel and the Levites recited a paraphrase to enable them to understand it (Nehemiah viii.).

But even Jewish scribes were not only readers (as the old Greek version of 1 Esdras calls Ezra) but writers. Jeremiah (viii. 8) had a feud with the Scribes of his day, who wrote what they thought necessary as a compendium or supplement of the Law; but ben Sira, a Scribe himself, left an order or name of Scribe—which is reckoned Apocryphal, indeed, but is on its merits worthy to be "read for example of life and instruction of manners" (Thirty-Nine Articles of Religion, vi.; following Jerome). The book contains the Scribes' ideal (xxxviii. 24—xxix. 11) as well as a typical performance. To be a Scribe requires a man's whole life; a ploughman (for example) has not leisure enough to acquire such wisdom—and here it is well to notice that experience taught the Jews the necessity of teaching all their children some handicraft, even if they were to be Scribes. But a Scribe must devote himself to the study of the law, the wisdom of the fathers, and the sages. Thought the Scribes the most learned of the people, they had to strive to live the oral tradition which will teach him to unlock its secrets. He must wander through the lands of the nations and explore things good and evil among men. So trained he will stand beside the rulers of his people because the law covers all the departments of their life. And he may be inspired to speak or write the wisdom he has gained. Ben Sira's grandson (natural or spiritual) in the preface to the Greek version of this collection of such wisdom speaks of him as having been led forward to write it as an aid to the progressive fulfillment of God's law.

Such were the Scribes of the Jews, an order of learned and precise theologians who practised applied theology, a succession of religious teachers and thinkers controlled in their speculations by their oral tradition to some extent and always by the principles of the law and the other scriptures so far as they accepted them and regarded them as consistent with the teaching of Moses. Their general aim was progress in knowledge of God's will, but apart from fundamental principles there were no tests or formulae to which their teaching must conform. Necessarily they differed from one another even in the same generation according to their different temperaments and their different experiences, especially of foreign lands which accumulated and tended to crystallize into schools, or sects, or parties. They had to strive to meet themselves to different needs.

In the time of Antiochus Epiphanes (for example) they had to face the problem, Was the law of the Sabbath to be broken, or was the whole nation to perish and leave none to keep the rest of the law and that part in happier days? A company of them decided with a unanimity rare in the history of the order that the Sabbath must be broken (1 Macc. ii. 40—42). Later these Hasidaeans deserted the Maccabean rebels, when some relief had been effected on the coming of a priest of the seed of Aaron (1 Macc. vii. 12—10). Their massacre, like the murders which led to the suspension of the Sabbath law, was another fact to be assimilated for the guidance of posterity, and, as Scribes always did, they found and cited the prophecy which was thus fulfilled (Ps. lxxxix. 2, 3; 1 Macc. vii. 17).

Later they are represented as falling generally into two classes, the Pharisees and the Sadducees, for it is obvious that the Sadducees needed doctors of the law to answer the Scribes of the Pharisees as long as they could, and as long as they dared to hold out against the Pharisaic tradition, backed as it was by the popularity of the Pharisees. But it must not be supposed that the Sadducees held all held identical views or insisted upon all points in the tradition; the prophecy of the written law, and the power to receive the oral tradition which will teach him to unlock its secrets, was as of equal importance. The Sadducean position was probably more definite and more commonly held by individual Sadducees because it was mainly based on negations. The rivals may be compared roughly to theists and atheists of the present day as far as their relative solidarity is concerned. As an example of the broad and conspicuous divergences among the Pharisees it is enough to point to the Zealots; they had isolated precursors before the final coalition of the Pharisees, who thought that the time had come for the sword of Gideon as well as the sword of the Lord, with others who seemed to Josephus to love the bloodshed for its own sake. And the Talmud speaks of the Pairs of Scribes—e.g. Hillel and Shammai—as contending with one another.

In the Gospel according to St John, which is wholly, and the Gospel of St Luke, which is partially in touch with the life of the time of our Lord, the different receptions which different Scribes accorded to the new teachers is clearly recognized. St Paul was of course a Scribe, and helped St Luke, it may fairly be supposed, to resist Christian prejudice against the whole order—the name of Scribe—without any discrimination in favour of such men as Nathaniel, Nicodemus and Gamaliel. The Gospel associated with the name of St Matthew has at any rate something of the intolerance with which a tax-gatherer might well regard those of the Pharisees (i.e. the Zealots, to use the term handed down) who condemned them as breakers of God's law. But in respect of its wholesale denunciations of "Scribes and Pharisees, hypocrites," it must be said that there were many Scribes and Pharisees who were not hypocrites, and were therefore entitled to say, "Let the gallèd jade wince, our withers are unwrung." It appears that the parable of the Pharisee and the Publican ended originally with a question which went "Is it not justified?"—the Pharisee who thanked God because he had been saved from the grosser sins, or the Publican who recognized his calling was in itself sinful, and without venturing to pass beyond the Court of the Gentiles whom he served—without even promising to abandon their service—prayed for mercy to the God whom he feared? The official text of St Luke has answered the question in one way: Christian practice is, on the whole, in favour of the Pharisees.

Other views of the ancient Scribes are too notorious to need statement here. Broadly speaking they have no connexion with the real evidence, because they rest upon the denunciations of the First Gospel. If it is necessary to begin historical investigation at the wrong end, it is advisable to take into account the whole evidence available. The Scribes of the 1st century A.D. preserved Judaism in spite of the destruction of the Temple, and this fact is enough to refute the view too commonly taken of them by Christians in spite of St Luke and St John. The common view is as reasonable and just as an account of the Prophets based on Jeremiah's denunciations would be—or an estimate of the Church which consisted of summary accounts of its criminous clerks.

See Schürer's History of the Jewish People, with full authorities.

SCRAM, a light open texture, usually made of cotton or flax. It is used in bookbinding, upholstery and other industries. It is also used as a backing to strengthen paper, as in maps and packing paper. Sometimes jute scrim are made for the latter purpose, and the whole made impervious to moisture by the addition of some waterproof solution. Certain varieties of jute scrim or nets are used for supporting the branches of fruit trees, and for preventing birds from damaging the fruit.

SCRIP, properly any written document; the word is a corruption of "script" (Lat. scribere, to write), possibly from an assimilation with "scrip," a pilgrim's bag or wallet, which is borrowed from the Scandinavian (cf. Nor. streppa, knapsack), and is ultimately cognate with "scrap," "shred." In commercial usage, "scrip" is a document or certificate issued by a public company when instalments upon its shares are payable at different dates, or the whole amount to be paid has not been called up. Such a document entitles the person named to be treated as the allotee of the shares mentioned; it is transferable, and entitles the allotee on payment of all the calls to a share certificate. Scrip requires a penny stamp impressed upon it. The word is frequently loosely used for the share certificates or shares collectively.

SCROFULA (Lat. for "little'sow"), or STRUMA, the general names formerly given to the disease now termed tuberculosi (p.n.)—"scrofulous," "strumous" and "tuberculous" being nearly interchangeable. The particular characters associated with "scrofula" have, therefore, varied at different periods.
when the real nature of the disease was misunderstood; but essentially what was meant was tuberculosis of the bones and lymphatic glands, with its attendant symptoms, and it is in this sense that the word survives. The old English popular name was "king's evil," so called from the belief that the sovereign's touch could effect a cure. This superstition can be traced back to the time of Edward the Confessor in England, and to a much earlier period in France. Samuel Johnson was touched by Queen Anne in 1712 and may have been a beneficiary of royalty was exercised by Prince Charles Edward in 1745.

SCROGGS, SIR WILLIAM (c. 1623-1688), lord chief justice of England, was the son of a butcher of sufficient means to give his son a university education. Scrogs went to Oriel College, and later to Pembroke College, Oxford, where he graduated in 1640, having acquired a fair knowledge of the classics. There is some evidence that he fought on the royalist side during the Civil War. In 1653 he was called to the bar, and soon gained a good practice in the courts. He was appointed a judge of the Court of Common Pleas in 1676, and two years later was promoted to be lord chief justice, his advancement being due to his readiness to degrade the administration of justice to serve the purposes of the court. He was a man of debauched life and coarse and violent manners; and these qualities were conspicuous in his demeanour on the bench. As lord chief justice Scrogs presided at the trial of the persons denounced by Titus Oates for complicity in the "popish plot," and he treated these prisoners with characteristic violence and brutality, overwhelming them with indecent sarcasm and abuse while on their trial, and taunting them with savage mockery when sentencing them to death. Some may at first have been a sincere belief in the existence of a plot; if so he showed himself not less gullible than the ignorant multitude out of doors; at all events he did nothing to test the credibility of such perfidious witnesses as Oates, Bedloe and Dangerfield. At the trial in February 1679 of the prisoners accused of the murder of Sir Edmund Godfrey he gave a characteristic exhibition of his methods, indulging in a vituperative tirade against the Roman Catholic religion, and loudly proclaiming his satisfaction in the guilt of the accused. It was only when, in July of the same year, Oates's accusation against the queen's physician, Sir George Wakeman, appeared likely to involve the queen herself, that the implications of the plot, that Scrogs began to think matters were going too far; he was probably also influenced by the discovery that the court regarded the plot with discredit and disfavour, and that the country party led by the Shaftesbury had less influence than he had supposed with the king. The chief justice on this occasion threw doubt on the trustworthiness of Bedloe and Oates, and warned the jury to be careful in accepting their evidence. This change of front inflamed public opinion against Scrogs, for the popular belief in the plot was still undiminished. Scrogs, however, was no less violent than before against Catholic priests who came before him for trial, as he showed when he sentenced Andrew Bromwich to death at Stafford in the summer of 1679; but his proposing the duke of York's health at the lord mayor's dinner a few months later in the presence of Shaftesbury indicated his determination not to support the Exclusionists against the known wishes of the king. Acting in the assurance of popular sympathy, Oates and Bedloe now arranged the chief justice before the privy council for having discredited their evidence and misdirected the jury in the Wakeman case, accusing him at the same time of several other misdemeanours on the bench, including a habit of extorting money from the poor. A jury of peers was therefore summoned, and on 16th December 1680 the case was argued before the council and Scrogs was acquitted. At the trials of Elizabeth Cellier and of Lord Castlemaine in June of the same year, both of whom were acquitted, he discredited Dangerfield's evidence, and on the former occasion committed the witness to prison. In the same month he discharged the grand jury of Middlesex before the end of term in order to save the duke of York from indictment as a popish recusant, a proceeding which the House of Commons declared to be illegal, and which was made an article in the impeachment of Scrogs in January 1681. The dissolution of parliament put an end to the impeachment, but in April Scrogs was removed from the bench with a pension; he died in London on the 27th of October 1683.

Scrogs was perhaps the worst of the judges who disgraced the English bench at a period when it had sunk to the lowest degradation; and although his infamy is less notorious than that of Jeffreys, his character exhibited fewer redeeming features. Scrogs was the author of a work on the Practice of Law (London and Oxford, 1702), and he edited reports of the state trials over which he presided. He was the subject of many contemporary satires.


SCROLL, a strip or roll of paper, parchment, &c. The word in Mid. Eng. was scrow, and came from Fr. escrow, modern tèrou; the French form is preserved in the legal term "escrow" (see Deed); the French diminutive escrouèl gave the English form "scroll." The Fr. escrou is of Teutonic origin and is connected with "shred," "shard," and "sherd;" and meant a "shred" of paper. The term is sometimes given in architecture to the line of masonry which is formed by the joints in a wall or the line where the end of the ribs of a vault or arch joins the wall. A "scroll" is also the stylish railing of a staircase, and also to the wave-like decorations of Roman red glazed pottery, and more particularly in Samian ware.

SCROPE, the name of an old English family of Norman origin. Sir William le Scrope, of Bolton, in Wensleydale, Yorkshire, had two sons, HENRY (d. 1336) and GEOFFREY (d. 1340), both of whom were in succession chief justice of the king's bench and prominent supporters of the court in the reign of Edward II. Henry was father of RICHARD LE SCROPE, 1st Baron Scrope of Bolton (c. 1327-1403), chancellor of England, an active adherent of John of Gaunt. Having been knight of the shire of Yorkshire in the parliament of 1364, he was summoned to the upper house as a baron by writ in 1371, when he was made treasurer and keeper of the great seal. In 1378 Lord Scrope became chancellor, in which office he attempted to curb the extravagance of Richard II., an offence for which he was deprived of his office in 1382. Scrope engaged in several disputes with regard to his armorial bearings, the most celebrated of which was with Sir Richard Gresvener as to his right to the shield blazoned "Azure, a bend or," which a court of chivalry decided in his favour after a controversy extending over four years. Both as a soldier and a statesman Lord Scrope was a man of high attainments, his integrity and prudence being conspicuous. His eldest son WILLIAM (c. 1350-1390) was created earl of Wiltshire in 1397 by Richard II., of whose evil government he was an active supporter. Wiltshire bought the sovereignty of the Isle of Man from the earl of Salisbury. In 1398 he became treasurer of England. His execution at Bristol was one of the first acts of Henry IV., and the irregular sentence of an improvised court was confirmed by that monarch's first parliament. Wiltshire's father, Lord Scrope, and his other sons were not included in the list of nobles but received full patronage from Henry V. Scrope, who was the builder of Bolton Castle, his principal residence, died in 1403. He was succeeded in the barony by his second son, Roger, whose descendants held it till 1630. HENRY, 9th Baron Scrope of Bolton (1534-1592), was governor of Carlisle in the time of Elizabeth, and as such took charge of Mary Queen of Scots when she crossed the border in 1568; and he took her to Bolton Castle, where she remained till January 1569. He was grandfather of Emmanuel Scrope, 11th Baron (1584-1639), who was created earl of Sunderland in 1627; on his death without legitimate issue in 1650 the earldom became extinct, and
the immense estates of the Scropes of Bolton were divided among his illegitimate children, the chief portion passing by marriage to the marquis of Winchester, who was created duke of Bolton in 1689; to the Earl Rivers; and to John Grubham Howe, ancestor of the earls of Howe. The barony of Scrope of Bolton seems then to have become dormant; but the title might, it would appear, be claimed through the female line by the representative of Charles Jones (d. 1840) of Caton, Lancashire, F.R.S. Scrope, third son of the 1st Baron Scrope of Bolton, was descended the Scropes of Castle Combe, Wiltshire, the last of whom was William Scrope (1772-1852), an artist and author, who was an intimate friend of Sir Walter Scott. His daughter married George Poulett Thompson (1797-1876), an eminent geologist and prolific political writer, who took the name of Scrope, and who after his wife's death sold Castle Combe, of which he wrote a history. Probably from the same branch of the family was descended Adrian Scrope, or Scroope (1601-1660), who was prominent on the parliamentarian side in the Civil War, and one of the signatories of Charles I's death warrant.

Sir GEORGE JULIUS POULETT (1797-1870), English geologist and political economist, was born on the 10th of March 1797, the second son of J. Poulett Thompson of Waverley Abbey, Surrey. He was educated at Harrow, and for a short time at Pembroke College, Oxford, but in 1816 he entered St John's College, Cambridge, graduated B.A. in 1821, and through the influence of E. D. Clarke and Sedgwick became interested in mineralogy and geology. During the winter of 1816-1817 he was at Naples, and was so keenly interested in Vesuvius that he renewed his studies of the volcano in 1818; and in the following year visited Etna and the Lipari Islands. In 1821 he married the daughter and heiress of William Scrope of Castle Combe, Wiltshire, and assumed her name; and he entered parliament in 1833 as M.P. for Stratford, retaining his seat until 1868. Meanwhile he began to study the volcanic regions of Central France in 1821, and visited the Eifel district in 1833. In 1825 he published Considerations on Volcanos, leading to the establishment of a new theory of the Earth, and in the following year was elected F.R.S. This earlier work was subsequently amplified and issued under the title of Volcanos (1862): an authoritative text-book of which a second edition was published ten years later. In 1827 he issued his classic Memoir on the Geology of Central France, including the Volcanic formations of Auvergne, the Velay and the Vivarais, a quarto volume illustrated by maps and plates. The substance of this was reproduced in a revised and somewhat more popular form in The Geology and extinct Volcanos of Central France (1838). Scrope was awarded the Wollaston Medal by the Geological Society in 1857. Among his other works was the History of the Manor and Ancient

Barony of Castle Combe (printed for private circulation, 1852). He died at Fairlawn near Cobham in Surrey on the 10th of January 1876.

Biography (with portrait) in Geol. Mag. for May 1870.

SCROPHULARIACEAE, in botany, a natural order of seed-plants belonging to the sympetalous section of Dicotyledons, and a member of the series Tubiflorae. It is a cosmopolitan order containing about 180 genera with about 2000 species; the majority occur in temperate regions, the numbers diminishing rapidly towards the tropics and colder regions. About 30% of the species are annual herbs, such as eyebright (Euphrasia officinalis), cow-wheat (Melampyrum), and species of Veronica;

more than 60% are biennial or generally perennial herbs and undershrubs, such as species of Veronica, mullein (Verbascum), foxglove (Digitalis; fig. 1), &c., while shrubs and trees are rare; Pulmonaria, native of the mountains of Japan, a tree with large leaves and handsome panicles of violet flowers, is grown in European gardens.

The stem is sometimes prostrate and creeping, as in ivy-leaved toad-flax (Linaria Cymbalaria) and some of the native British Veronica, but generally erect as in foxglove, figwort, mullein, &c.; a few are climbers as Rhododendron and Monardas. The South African genera Hyobanche and Harveys are parasites almost devoid of chlorophyll with scale-like leaves; and many genera are semiparasitic, having green leaves, but attaching themselves by root-suckers to roots of grass, &c., from which they derive part of their nourishment; such are Euphrasia, Rhinanthus, Pedicularis, &c. A few

Fig. 1—Foxglove (Digitalis purpurea) 
1. Corolla cut open showing the four stamens, rather more than 
2. Unripe fruit cut lengthwise, showing the thick axial placenta bearing numerous small seeds.
3. Ripe capsule split open.
genera are aquatic, e.g. Ambulia (old world tropics), and have much divided submerged leaves and entire aerial leaves. The leaf-arrangement varies; the leaves are opposite in the lower and the upper alternate as in Antirrhinum (snapdragon), or all are opposite (Mimulus), or whorled (some Veronica species). All varieties of leaf-arrangement are found in the one genus Veronica (q.v.), in the New Zealand species of which the leaves are small and appressed to the stem. The flowers are solitary in the leaf-axils, as in Mimulus, species of Linaria, &c., or form spikes or racemes which are terminal as in foxglove, species of Veronica, &c., or axillary as in Veroncia (Gipsy-candles). Cymes and paniculoes also occur, as in Verbascum, consisting of dichasia arranged in spikes, racemes or panicles. The flowers are hermaphrodite, hypogynous and zygomorphic in the median plane of the flower. There may be six, or less, sepals joined below and persisting in the fruiting stage, five petals unites to form a corolla of very various shape, generally four stamens, the fifth (posterior) being suppressed or reduced to a rudiment, while an anterior pair are long and slender, the posterior, and two generally equal carpels in the median plane forming a two-celled ovary containing numerous anatropous ovaules on a thick axile placentae, and bearing a simple or bilobed style (fig. 2).

When a terminal flower is present it becomes regular as in toad-flax, where radial symmetry is produced by development of a spur to each petal—such flowers are termed petalce; all the flowers in a spike are sometimes petalce. In Euphrasia and many species of Veronica the posterior sepal is suppressed, and in Calceolaria the anterior petals are completely united. The form of the corolla shows great variety, depending on the length and breadth of the tube—which in Veronica is almost obsolete, while in foxglove it is large and almost bell-shaped—and the development of the limbs, which are sometimes united in Veronica, small and almost erect in figwort, or form a pair of closed lips as in Linaria and Antirrhinum. In Linaria the anterior petal is spurred; in Calceolaria a very short tube is succeeded by a two-lipped limb, a smaller upper lip representing the two posterior petals and a larger, often very long, lower lip representing the three anterior petals. In Verbascum the five segments are almost equal, forming a nearly regular corolla; in Veronica the two posterior petals have united and the corolla is four-lobed. The approach to regularity in the corolla in Verbascum is associated with the presence of five fertile stamens, but the three posterior are generally larger than the two anterior. In Veronica, Calceolaria and other genera only two stamens are present. The authors generally open itinerally by a longitudinal slit; their form shows great variety. These differences in the form of the corolla, the position and length of the stamens and the form of the anthers, are associated with their pollination by insects which probe the tube for nectar which is secreted by a disk surrounding the base of the ovary or by specific nectaries below it. Verbascum and Veronica with a short-tubed corolla represent an open type of corolla or a closed nectary, the two posterior petals and a larger, very often long, lower lip representing the three anterior petals.

Scrophulariaceae are closely allied to Solanaceae (q.v.), from which they are distinguished by the median position of the carpels, and generally by the zygomorphic flower; Verbascum and its allies, in which the flower approaches regularity, form a connecting link. An anatomical distinction is found in the arrangement of the wood and bast in the stem, which is collateral, not bicollateral as in Solanaceae.

**SCRUB-BIRD**—The name of an Australian genus, one of the most curious ornithological types of the many furnished by that country. The first examples were procured between Perth and Augusta in West Australia, and were described by J. Gould in the Zoological Society's Proceedings for 1844 (pp. 1, 2) as forming a new genus and species under the name of Atrichornis clamosa, the great peculiarity observed by that naturalist being the absence of any bristles around the gape, in which respect alone it seemed to differ from the already known genus Sphenura. Later, however, it was given its modern name Atrichornis clamosa, and on account of the discovery of its peculiar sternum (made by A. Newton) it was removed from Oscine division of the Passeres, and the family Atrichornithidae in the sub-oscine division of Passeres was made for the genus, the nearest ally being the lyre-bird (q.v.), now placed in the family Menuridae. Both the known species of scrub-bird are about the size of a small thrush—A. clamosa being the larger of the two. This species is brown above, each feather barred with a darker shade; the throat and belly are reddish white, and there is a large black patch on the breast; while the flanks are brown and the lower tail-coverts rufous. A. rufescens of New South Wales has the white and black of the fore-parts replaced by brown, barred much as is the upper plumage. Both species inhabit the thickest "scrub" or brushwood forest; but little has been ascertained as to their mode of life except that the males are noisy, imitative of the notes of other birds, and given to violent gesticulations. The nest and eggs seem never to have been found, and indeed no example of the female of either species is known to have been procured, whence that sex may be inferred to escape observation by its inconspicuous appearance and retiring habits.

**(A.N.)**

**SCRUPLE**, a term used in the two senses of (1) perplexity, doubt, reluctance or hesitation, especially the moral doubt arising from the difficulties of conscience; (2) a unit of weight, 1/4 of the ounce in apothecaries' weight, = 1 of a dram, 20 grains (1.250 grammes). The word is an adaptation of Fr. scruple, Lat. scrupulus, scrupulum, primarily a small sharp stone; also used in both the English meanings. dim. of scrupus, a rough stone, figurally unseasiness of mind, probably to be connected with the root skar, to cut, cf. Gr. σκύρος, stone-chippings, σκόπων, a razor.
SCRUTIN DE LISTE—SCULLERY

SCRUTIN DE LISTE (Fr. scrutin, voting by ballot, and liste, a list), a system of election of national representatives by which the electors of a department vote for all the deputies to be elected in that department (compare the "general ticket" in the United States). It is distinguished from the scrutin d'arrondissement, under which the electors in each arrondissement vote only for the deputy to be elected in it. See REPRES.

SCRUTINY (Fr. scrutin, late Lat. scrutinium, from scrutari, to search or examine thoroughly), careful examination or inquiry. The word is specifically applied in the early church to the examination of the catechumens or those under instruction in the faith. They were taught the creed and the Lord's Prayer, examined therein, and exorcized prior to baptism. The days of scrutiny varied at different periods from three to seven. From about the beginning of the 12th century, it became usual to baptize infants soon after their birth instead of at stated times (Easter and Pentecost), the ceremony of scrutiny was incorporated with that of the actual baptism. Scrutiny is also a term applied to a method of electing a pope in the Roman Catholic church, in contradistinction to two other methods, admission and accession. (See Conclave.) In the law of elections, scrutiny in the careful examination of votes cast after the unsuccessful candidate has lodged a petition claiming the seat, and alleging that he has the majority of legal votes. Each vote is dealt with separately, notice being given beforehand by one party to the other of the votes objected to and the grounds of objection.

SCUDERY, the name of a family said to have been of noble Italian origin and to have transferred itself to Provence, but only known by the singular brother and sister who represented it during the 17th century.

GEORGES DE SCUDÉRY (1600—1667), the elder of the pair, was born at Havre, whither his father had moved from Provence, on the 22nd of August 1601. He served in the army for some time, and, though in the vein of gascogne which was almost peculiar to him he no doubt exaggerated his services, there seems little doubt that he was a stout soldier. But he conceived a fancy for literature before he was thirty, and during the whole of the middle of the century he was one of the most characteristic figures of Paris. He gained the favour of Richelieu by his opposition to Corneille. He wrote a letter to the Academy criticizing the Cid, and his play, L'Amour tyranne (1640), was patronized by the cardinal in opposition to Corneille. Possibly these circumstances had something to do with his appointment as governor of the fortress of Notre-Dame de la Garde, near Marseilles in 1643, and in 1650 he was elected to the Academy. During the troubles of the Fronde he was exiled to Normandy, where he made his fortune by a rich marriage. He was an author of pastoral, novels, such as Les Romains, ou la domestically. His lengthy novels, such as Les Romains, ou la Scullery, a back-kitchen, the place where dishes, plates, kettles, etc., are washed and cleaned, and the rough work connected with the domestic service of a house is performed. The Med.

Ibrahim, ou l'Illustre Bassa (4 vols. 1641), Almahide, ou l'esclave reine (8 vols. 1661—1663) were the delight of all Europe, including persons of the wit and sense of Madame de Sévigné. But neither in conception nor in execution will they bear criticism as wholes. With classical or Oriental personages for nominal heroes and heroines, the whole language and action are taken from the fashionable idea of the time, and the personages can be identified either really or colourlessly with Madame de Scudéry's contemporaries. In Clidie, Herminius represents Paul Pellisson; Scarius and Lyriane were Paul Scarron and his wife (afterwards Mme de Maintenon); and in the description of Sapho in vol. x. of Le Grand Cypre the author paints herself. It is in Clidie that the famous Carte de Tendre appeared, a description of an Arcadia, where the river of Inclination waters the villages of Billet Doux, Petits Soins and so forth. The interminable length of the stories is made out by endless conversations and, as far as incidents go, chiefly by successive abductions of the heroines, conceived and related in the most decorous spirit, for Madeleine de Scudéry is nothing if not decorous. Nevertheless, although the books can hardly now be read through, it is still possible to perceive their attraction for a period which certainly did not lack wit. In that early day of the novel popularity did not repel. "Sapho" had really studied mankind in her contemporaries and knew how to analyse and describe their characters with fidelity and point. Moreover her novels had the interest always attaching to the roman à clef. She was a real mistress of conversation, a thing quite new to the age as far as literature was concerned, and the conversational parts are much admired. She had a distinct vocation as a pedagogue, and is compared by Sainte-Beuve to Mme de Genlis. She could moralize—a favourite employment of the time—with sense and propriety. Though she was incapable of the exquisite prose of Mme de Sévigné and some other of her contemporaries, her purely literary merits were considerable. Madeleine survived her brother more than thirty years, and in her later days published numerous volumes of conversations, to a great extent extracted from her novels, thus forming a kind of anthology of her work. She outlived her vogue to some extent, but retained a circle of friends to whom she was always the "incomparable Sapho." She died in Paris on the 2nd of June 1707. Her Life and Correspondence were published at Paris by MM. Rathy and Boutron in 1873. An amusing sketch of her is to be found in vol. iv. of Sainte-Beuve's Œuvres de la famille. Georges de Scudéry's Récits de Petits Théâtres Griboux. See also V. Cousin, La Société française au XVIIe siècle, vol. ii.

SCULL (the same word as "skull," cf. Swed. skäld, basin, huvud-skäld, skull of the head), a light oar with blade concave rather than the ordinary racing oar and with shorter helm, thus allowing the user to hold one in each hand. Sculling is therefore the propulsion of a boat by one man with a pair of sculls. The word is also applied to the propulsion of a boat by one scull worked over the stern, the blade being swept through the water from side to side, turning diagonally at each stroke; the sculler usually stands. The principles of sculling with a pair of sculls are the same as those of rowing (q.v.). For the type of boat used in racing see BOAT. The Wingfield Sculls, a race which forms the English Amateur championship, was instituted in 1836. It is rowed from Putney to Mortlake. The Diamond Challenge Sculls, instituted in 1844, are rowed for at Henley Regatta. The earliest professional championship sculling race was rowed on the Thames in 1837. Since 1876, when an Australian (E. Trickett, of Sydney) beat J. H. Sadler, the professional championship of the world has been held by Australians or Canadians; the principal champions have been E. Hanlan (Toronto), 1880—1884, W. Beach (New South Wales), 1884—1887; other names are H. E. Searle, J. Stanbury, G. Towns and R. Arnott (New Zealand). Most of the races have been rowed on the Parramatta river. In August 1910 the race was rowed on the Zambezi between E. Barry of England and Arnott, the latter winning.

SCULLERY, a back-kitchen, the place where dishes, plates, kettles, etc., are washed and cleaned, and the rough work connected with the domestic service of a house is performed. The Med.
SCULPTURE

Lat. scultorius, keeper of dishes and plates (scutella), became in O. Fr. escueiller or scuiller, whence in English sculler, squiler, &c. A “sergeant-squilloure” is found amongst the officials of the royal household; and the *Pomptorium parvulum*, dating about 1400, glosses *lixa*, a butler or camp-cook, by “squillare, dysche-wescheare,” “Scuillon,” a kitchen-wench, has been naturally connected with scullery, but is derived from O. Fr. escuillon, dish-cloth, cf. Span. escuillón, spring for a gun, ultimately from Lat. *scope*, birch tree, *scoopae*, broom of birch twigs.

**SCULPTURE** (Lat. *sculptura*, from *sculpere*, to carve, cognate with Gr. γυφέω), a general term for the plastic art of carving, especially in stone and marble, but also in such materials as wood (see *Wood-carving*), ivory (see *Ivory*), metal (see *Metal-work*) and gems (see *Graal*).

The production of bronze statues by the *cre perdue (anglce*, “lost wax”) process is described in the article *Metal-work*; this method was adopted by a number of sculptors in various countries where fine casting is appreciated, and where naturalistic rendering is desired. There are signs, however, of its being ousted for a certain class of handling by the “galvanoplastie” method—a system of copper deposition by an electrical process—whereby “going over” the work after it has been reproduced in metal is avoided.

For the execution of a marble statue the sculptor first models a finished preliminary sketch on a small scale in clay or wax. He then, in the case of a life-size or colossal statue, has the model cast in plaster, and from the latter a full-sized pattern is cut, the legs and arms, fixed in the pose of the future figure. This is called the “armature.” It is placed on a stand, called a *chassis*, with a revolving top, so that the sculptor can easily turn the whole model round and thus work with the light on any side of it. Over this iron skeleton well-tempered modelling-clay is laid and is modelled into shape by the help of wood and bone tools; without the sustaining assistance of the ironwork a soft clay figure, if more than a few inches high, would collapse with its own weight and squeeze the lower part out of shape. While the modelling is in progress it is necessary to keep the clay moist and plastic by sputtering water on to it with a sort of garden syringe capped with a finely perforated rose. When the sculptor is not at work the whole figure is kept wrapped up in damp cloths. A modern improvement is to mix the modelling-clay, not with water, but with starch and glycemia; this, while keeping the clay soft and plastic, has the great advantage of not being wet, and so the sculptor avoids the chill and consequent risk of rheumatism which follow from a constant manipulation of wet clay. This method, however, has not been very extensively adopted. When the clay model is finished it is cast in plaster. A “piece-mould” is formed by applying patches of wet plaster of Paris all over the clay statue in such a way that they can be removed piecemeal from the model, and then be fitted together again, forming a complete hollow mould. The inside is then rinsed out with plaster and water mixed to the consistency of cream till a skin of plaster is formed all over the inner surface of the mould, and thus a hollow cast is made of the whole figure. The “piece-mould” is then taken to pieces and the casting set free. If skillfully done by a good *formatore* or moulder the plaster cast is a perfect facsimile of the original clay, very slightly disfigured by a series of lines showing the joints in the piece-mould, the sections of which cannot be made to fit together with absolute precision. Many sculptors have their clay model cast in plaster before the modelling is quite finished, as they prefer to put the finishing touches on the plaster cast—good plaster being a very easy and pleasant substance to work on.

The next stage is to copy the plaster model in marble. The model is set on a large block called a “scale stone,” while the marble for the future statue is set upon another similar block. The plaster model is then covered with a series of marks, placed on all the most salient parts of the body, and the front of each “scale stone” is covered with another series of points, exactly the same on both stones. An ingenious instrument called a pointing-machine, which has arms ending in metal points or “needles” that move in ball-socket joints, is placed between the model and the marble block. Two of its arms are then applied to the model, one touching a point on the scale stone while the other touches a mark on the figure. The arms are fixed by screws in this position, and the machine is then revolved to the marble block, and set with its lower needle touching the corresponding point on the scale stone. The upper needle, which is arranged to slide back on its own axis, cannot reach the corresponding point on the statue because the marble block is in the way; a hole is then drilled into the block at the place and in the direction indicated by the needle, till the latter can slide forward so as to reach a point sunk in the marble block exactly corresponding to the point it touched on the plaster mould. This process is repeated both on the model and on the marble block till the latter is drilled with a number of holes, the bottoms of which correspond in position to the number of marks made on the surface of the model. A comparatively unskilled *scarpellino* or “chisel-man” then sets to work and cuts away the marble till he has reached the bottoms of all the holes, beyond which he must not cut. The statue is thus roughly blocked out, and a more skilled *scarpellino* begins the final work. Parly by eye and partly with the constant reference to the pointing-machine, which is used to give any required measurements, the workman almost completes the marble statue, leaving only the finishing touches to be done by the sculptor. In the opinion of many artists the use of the mechanical pointing-machine is responsible in a great measure for the loss of life and fire in much of modern sculpture.

Among the ancient Greeks and Romans and in the medieval period it was the custom to give the nude parts of a marble statue a considerable degree of polish, which really suggests the somewhat glossy surface of the human skin very much better than the full cold-sugar-like surface with which the marble is left on the marble by most modern sculptors. This high polish still remains in parts of the pedimental figures from the Parthenon, where, at the back, they have been specially protected from the weather. The Hermes of the Vatican Belvidere is a remarkable instance of the preservation of this polish. Michelangelo carried the practice further still, and gave certain parts of some of his statues, such as the Moses, the highest possible polish in order to produce high lights just where he wanted them; the artistic legitimacy of this may perhaps be doubted, and in weak hands it might degenerate would almost be murderous; but, however, much to be desired that modern sculptors should to some extent at least adopt the classical practice, and by a slight but uniform polish remove the disagreeable crystalline grain from all the nude parts of the marble.

A rougher method of obtaining fixed points to measure from was occasionally employed by Michelangelo and earlier sculptors. They immersed the model in a tank of water, the water being gradually allowed to run out, and thus by its sinking level it gave a series of contour lines on any required number of planes. In some cases Michelangelo appears to have cut his statue out of the marble without previously making a model—a marvellous feat of skill.

In modelling bas-reliefs the modern sculptor usually applies the clay to a slab of slate on which the design is sketched; the slate forms the background of the figures, and thus keeps the relief absolutely true to one plane. This method is one of the causes of the dulness and want of spirit so conspicuous in most modern sculptured reliefs. In the best Greek examples there is no absolutely fixed plane surface for the backgrounds. In one place, to gain an effective shadow, the Greek sculptor would cut below the average surface; in another he would leave the ground at a higher plane,

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1 Moulds made in one or few pieces, from which the cast can only be extracted by destroying the mould, are called “spoil-moulds.” A large number of casts can be made from a “piece-mould,” but only one from a “spoil-mould.”
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Sculptor's assistants.

The practice of most modern sculptors is to do very little to the marble with their own hands; some, in fact, have never really learnt how to carve, and thus the finished statue is often very dull and lifeless in comparison with the clay model. Most of the great sculptors of the middle ages left little or nothing to be done by an assistant; Michelangelo especially did the whole of the carving with his own hands, and when beginning on a block of marble attacked it with such vigorous strokes of the hammer that large pieces of marble flew about in every direction. But skill as a carver, though very desirable, is not absolutely necessary for a sculptor. If he casts in bronze by the cire perdue process he may produce the most perfect plastic works without touching anything harder than the modelling-wax. The sculptor in marble, however, must be able to carve a hard substance if he is to do his work well. Under such circumstances, he not only leaves all manipulation of the marble to their workmen, but they also employ men to do their modelling, colloquially termed "ghosts," the supposed sculptor supplying little or nothing but his sketch and his name to the work. The practice, however, is less common nowadays than formerly, owing mainly to one or two exposures which brought the matter sharply before the public. In some cases sculptors of ability who suffer under an excess of popularity are induced to employ aid of this kind on account of their undertaking more work than any one man could possibly accomplish—a state of things which is necessarily very undesirable. Under such circumstances the sculptor's scarpellino, though he may and often does attain the highest skill as a carver and can copy almost anything with wonderful fidelity, seldom develops into an original artist. The popular admiration for pieces of clever trickery in sculpture, such as the carving of the open meshes of a fisherman's net, or a chimney with all link free and movable, or a veil over and half revealing the features of the face, would perhaps be diminished if it were known that such work as this is invariably done, not by the sculptor, but by the scarpellino. Unhappily at the present day there is, especially in England, little appreciation of what it is valuable in medieval sculpture, which in the 13th and 14th centuries was cast by the delicate cire perdue process, and the whole surface of the figure was then thickly gilded. At Limoges in France a large number of sepulchral effigies were produced, especially between the 12th and 13th centuries, and many of these have been omitted. Other effigies from Limoges were imported into England, but no other example now exists in the country.

Medieval methods and materials.

In the modern attempts to reproduce the medieval polychromy with an adequate surface effect, the results of such colouring as in Notre-Dame and the Sainte Chapelle in Paris and many other "restored" churches, especially in France and Germany, are not very promising. On the tomb of Aymer de Valence (d. 1326) at Westminster a good deal of the stamped gesso and coloured decoration is visible on close inspection. One of the cavities of the base retains a fragment of gilded bronze, which, however, has been omitted. The Victoria and Albert Museum possesses a magnificent colossal wood figure of an angel, not English, but Italian work of the 14th century. A large stone statue of about the same date, of French workmanship, in the same museum is a most valuable example of the use of stamped gesso and inlay of painted and glazed foil.
SCULPTURE

5th century is the series of small panel reliefs on the doors of S. Sabina on the Aventine Hill at Rome. There are scenes from Bible history carved in wood, and in them much of the old classic style survives.4

In the 6th century, under the Byzantine influence of Justinian, a new class of decorative sculpture was produced, especially at Ravenna. Subject reliefs do not often occur, but large slabs of marble, forming screens, altars, pulpits and the like, were ornamented in a very skilful and original way with low reliefs of scenes from Christianity and from the lives of the saints. By this time the Christian artist no longer reproduced nature as it had been seen in the past. He was encouraged by the relations with the pagan world to use for Christian purposes the artistic skill and methods practised by the pagan sculptor. He was no mere designer, but the sculptor and craftsman, and the pagan artist's equipment and methods were now used to produce Christian art; the Processional friezes of Constantinople now show some of the finest examples of the art. Such works are not, however, restricted to the capital. The 6th century brought in the use of other media. The Church was now rich enough to adorn itself with mosaics, and the processional friezes of St. Vitale at Ravenna show that this use was already well understood. The 6th century was the beginning of the great period of mosaic art.

Influence of Byzantine art.

The 7th century was the period in which the great mosaicists of Ravenna and Constantinople were at their best. The mosaic of the Emperor Justinian and his Empress Theodora in the Church of S. Vitale at Ravenna is one of the finest works of art ever produced. It shows the influence of the older art, but it is still Byzantine in character. The 8th century was the period of the greatest decline. The art of the East was now dominated by the Empire. The 9th century was the period of the greatest artistic decline. The Invasions of the East by the Moslems led to the destruction of many of the works of art produced in the 8th and 9th centuries. The 10th century, however, saw the beginning of the golden age of Byzantine art. The 11th century was the period of the greatest artistic activity. The 12th century was the period of the greatest artistic decline. The 13th century was the period of the greatest artistic activity. The 14th century was the period of the greatest artistic decline. The 15th century was the period of the greatest artistic activity. The 16th century was the period of the greatest artistic decline.
of Ravenna; while the figures below the Christ are survivals of a still older time, dating back from the best eras of classic art. A river-god is represented as an old man holding an urn, from which a stream issues, and a reclining female figure with an infant and a cornucopia is the old Roman Tellus or Earth-goddess with her ancient attributes.1

While the countries of the north could not altogether resist the rising tide of Byzantinism, in Scandinavia, and to a great extent in England, the autochthonous art was not entirely obliterated. The latter is especially enriched by some Romanesque influences in England, during the Saxon period, when stone buildings were rare and even large cathedrals were built of wood, the plastic arts were mostly confined to the use of gold, silver, and gilt copper. The earliest existing specimens of sculpture in stone are a number of tall churchyard crosses, mostly in the northern provinces and apparently the work of Scandinavian sculptors. One very remarkable example is a tall monolithic cross, cut in sandstone, in the churchyard of Gosforth in Cumberland. It is covered with rudely carved reliefs, small in scale, which are of special interest as a transitional state from the worship of Odin to that of Christ. Some of the old Norse symbols and myths sculptured on it occur modified and altered into a semi-Christian form. Though rich in decorative effect and with a graceful outline, this sculptured cross shows a very primitive state of artistic development, as do the other crosses of this class in Cornwall, Ireland and Scotland, which are mainly ornamented with those ingeniously intricate patterns of interlacing knotwork designed so skilfully by both the early Norse and the Celtic races.2 They belong to a class of art which is not Christian in origin, though it was afterwards largely used for Christian purposes, and so is thoroughly national in style, quite free from the usual widespread Byzantine influence. Of special interest from their early date—probably the 11th century—are two large stone reliefs now in Chichester cathedral, which are traditionally said to have come from the pre-Norman church at Selsey. They are thoroughly Byzantine in style, but evidently the work of some very ignorant sculptor; they represent two scenes in the Raising of Lazarus; the figures are stiff, attenuated and ugly, the pose very awkward, and the drapery of exaggerated Byzantine character, with long thin lines. To represent the eyes, pieces of glass or coloured enamel were inserted; the treatment of the hair in long ropelike twists suggests a metal rather than a stone design.

The Romanesque period in art was essentially one of architectural activity. The spirit of the time did not encourage that individual thought which alone can produce a great development of sculpture and painting. Thus the plastic art of the 11th and 12th centuries, which was still entirely at the service and under the rule of the Church, was strictly confined to conventional symbols, ideas and forms. It is based, not on the study of nature, but on the later Roman reliefs. The treatment of the figures, though often rude and clumsy, and sometimes influenced by Byzantine stiffness, is on the whole dignified, solemn and serious, and bent upon the expression of the typical, and not of the individual. The tympana of the porches, the capitals of columns and the pulpit and choir-screens of the Romanesque churches, and, on a smaller scale, the ivory carvings for book-covers and portable miniature altars, provided the field for the Romanesque sculptors' activity.

In Italy the strong current of hierarchal Byzantinism had never altogether supplanted the antique tradition, though the works based upon the latter, before Niccola Pisano revived for a short while the true spirit of the antique, are of almost barbaric rudeness, like the bronze gates of S. Zeno at Verona, and the stone-carving of The Last Supper on the pulpit of S. Ambrogio, in Milan. The real home of Romanesque sculpture was beyond the Alps, in Germany and France, and much of the work done in Italy during the 12th century was actually due to northern sculptors—as, for example, the very rude sculpture on the façade of S. Andrea at Pistoia, executed about 1185 by Graumons and his brother Adeodatus,3 or the relief by Benedetto Antelami for the cathedral of the year 1178. Unlike the sculpture of the Pisani and later artists, these early figures are thoroughly secondary to the architecture they are designed to decorate; they are evidently the work of men who were architects first and sculptors in a secondary degree. After the 13th century the reverse was usually the case, and, as at the west end of Orvieto cathedral, the sculptured decorations are treated as being of primary importance—not that the Italian sculptor-architect ever allowed his statues or reliefs to weaken or damage their architectural surroundings, and the central provinces of Italy produced very few sculptors. In southern Italy, during the 13th century, there was a school of sculpture resembling that of France, owing probably to the Norman occupation. The pulpit in the cathedral of Ravello, executed by Nicola di Bartolommeo di Foggia in 1272, is an important work of this class; it is enriched with very noble sculpture, especially a large female head crowned with a richly foliated coronet, and combining lifelike vigour with largeness of style in a very remarkable way. The bronze doors at Monreale (by Barisanus of Trani), Pisa and elsewhere are among the chief works of plastic art in Italy during the 13th century. The history of Italian sculpture of the best period is given to a great extent in the separate articles on the Pisani and other Italian artists. Here it suffices to say that sculpture never became as completely subservient to architecture, as it did in the north, and that with Giovanni Pisano the almost classic repose and dignity of his father Niccola's style gave way—probably owing to northern influences—to an increased sense of life and freedom and dramatic expression. Niccola stands at the close of the Romanesque, and Giovanni on the threshold of the Gothic period. During the 13th century Rome and the other Italian cities were the headquarters of sculpture, and it was during this period that the sculptors of ability, almost the only men of note being the Cosmati.

The power acquired by Germany under the Saxon emperors, upon whom had descended the mantle of the Roman Caesars, was the chief reason that led to the great development of Romanesque art in Germany. It is true that, in the 11th century, Byzantine influences stifled the spontaneous nature of the earlier work; but about the end of the 12th century a new free and vital art arose, based upon a better understanding of the antique, and fostered by the rise of feudalism and the prosperity of the cities. Next in importance to the numerous examples of German Romanesque ivory carvings are the works in bronze, in the technique of which the German craftsmen of the pre-Gothic period stand unrivalled. This is seen in the bronze pillar reliefs and other works, notably the bronze gates of Hildesheim Cathedral, produced by Bishop Bernward (d. 1022) after his visit to Rome. Hildesheim, Cologne and the whole of the Rhine provinces were the most active seats of German sculpture, especially in metal, till the 13th century. Many remarkable pieces of bronze sculpture were produced at the end of that period, of which several specimens are in the Louvre. The bronze font of the Baptismal font, figure-subjects in relief of various baptismal scenes from the New Testament, by Lambert Patras of Dinant, cast about 1212, is a work of most wonderful beauty and perfection for its time; other fonts in Osnabrück, by Master Gerhard, and Hildesheim cathedrals are surrounded by spirited reliefs, fine in conception, but inferior in beauty to those on the Liège font. Fine bronze candelabra exist in the abbey church of Combourg and at Aix-la-Chapelle.

1 On early and medieval sculpture in ivory consult Gori, Thesaurus estuarium duphyorum (Florence, 1759); Westwood, Duhyachs of Consul (London, 1868), and his Emhymes du Louvre (Paris, 1871); William Maskell, Ivories in the South Kensington Museum (London, 1872 & 1875); Wieseler, Duhyachs Quinianum zu Pisa (Pisa, 1883); Wenzel, Duhyachs in S. Giovanni Wytsa S. Giovanni Wytsa; Scultpure in Ivory (London, 1856); Alfred Maskell, Ivories (London, 1905), one of the best treatises in the English language; E. Molinier, Les Ivories; Die Elfenbeinbearbeit (Berlin Museum, 1903).


3 The other finest examples of this early class of sculpture exist at Pisa, Parma, Modena and Verona; in most of them the old Byzantine influence is very strong.
the latter of about 1165. Merseburg cathedral has a strange realistic sepulchral figure of Rudolf of Swabia, executed about 1100; and at Magdeburg is a fine effigy, also in bronze, of Bishop Frederick (d. 1152), treated in a more graceful way. The last figure has a peculiarity which is not uncommon in the older bronze reliefs of Germany: the body is treated as a relief, while the head sticks out and is quite detached from the ground in a very awkward way. One of the finest plastic works of this century is the choir screen of Hildesheim cathedral, executed in hard stucco, one rich with gold and colours; on its lower part is a series of large reliefs of saints modelled with almost classical breadth and nobility, with drapery of especial excellence. In the 13th century German sculpture had made considerable artistic progress, but it did not reach the high standard of France. One of the best examples of the transition period from German Romanesque to Gothic is the "golden gate" of Freiburg cathedral, with sculptured figures on the jambs after the French fashion. The statues of the apostles on the nave pillars, and especially one of the Madonna at the east end (1265-1275), possess great beauty and sculpturesque breadth. Of the same period, and kindred in style and feeling, are the reliefs on the eastern choir-screen in Bamberg cathedral.

France. France is comparatively poor in characteristic examples of Romanesque sculpture, as the time of the greatest activity coincides with the beginnings of the Gothic style, so that in many cases, as for instance on the porches of Bourges and Chartres cathedrals, Romanesque and Gothic features occur side by side and make it impossible to establish a clear distinction. The two most important Romanesque monuments of the early 12th century are the sculptures on the porch of the abbey church of Conques, representing the Last Judgment; the somewhat barbaric tympanum of Autun cathedral (c. 1130); and that of the church of Moissac.

During the 12th and 13th centuries the prodigious activity of the cathedral builders of France and their rivalry to outshine each other in the richness of the sculptured decorations, led to the glorious development that culminated in the full flower of Gothic art. The façades of large cathedrals were completely covered with sculptured reliefs and thick-set rows of statues. The whole of the front was frequently one huge composition of statuary, with only sufficient purely architectural work to form a background and frame for the sculptured figures. A west end treated like that of Wells cathedral, which is almost unique in England, is not uncommon in France. Even the shafts of the doorways and other architectural accessories were covered with minute sculptured decoration,—the motives of which were often, especially during the 12th century, obviously derived from the metal-work of shrines and reliquaries studied with rows of jewels. The west façade of Poitiers cathedral is one of the richest examples; it has large surfaces covered with foliated carving and rows of colossal statues, both seated and standing, reaching high up the front of the church. Of the same century (the 12th), but rather later in date, is the very noble sculpture on the three western doors of Chartres cathedral, with fine tympanum reliefs and colossal statues (all once covered with painting and gold) attached to the jamb-shafts of the openings. These latter figures, with their exaggerated height and the long straight folds of their drapery, are designed with great skill to assist and not to break the main upward lines of the doorways. The sculptors have willingly sacrificed the beauty and proportion of each separate statue for the sake of the architecutic effect of the whole façade. The heads, however, are full of nobility, beauty, and even grace, especially those that are softened by the addition of long wavy curls, which give relief to the general stiffness of the form. The sculptured doors of the north and south aisles of Bourges cathedral are fine examples of the end of the 12th century, and so were the west doors of Notre Dame in Paris till they were hopelessly injured by "rebuidal." The early sculpture at Bourges is especially interesting from the existence in many parts of its original coloured decoration.

Romanesque sculpture in England, during the Norman period, was of a very rude sort and generally used for the tympanum reliefs over the doors of churches. Christ in Majesty, the Harrowing of Hell and St George and the Dragon occur very frequently. Reliefs of the zodiacal signs were a common decoration of the richly sculptured arches of the 12th century, and are frequently carved with much power. The later Norman sculptured ornaments are very rich and spirited though the treatment of the human figure is still very weak.1

The best-preserved examples of monumental sculpture of the 12th century are a number of effigies of knights-temples in the round Temple church in London.2 They are laboriously cut in hard Purbeck marble, and much resemble bronze in their treatment; the faces are clumsy, and the whole figures stiff and heavy in modelling; but they are valuable examples of the military costume of the time, the armour being purely chain-mail. Another effigy in the same church cut in stone, effigies in Westminster Abbey modelled and cast by William Torell, a goldsmith and citizen of London, shortly before the year 1300. These are on the tombs of Henry III. and Queen Eleanor (wife of Edward I.), and, though the tomb itself of the former is an Italian work of the Cosmati school, there is no trace of foreign influence in the figures. At this time portrait effigies had not come into general use, and both figures are treated in an ideal way. The crowned head of Henry III., with noble well-modelled features and crisp wavy curls, resembles the conventional royal head on English coins of this and the following century, while the head of Eleanor is of remarkable, almost classic, beauty, and of great interest as showing the ideal type of the 13th century. In both cases the drapery is well conceived in broad sculpturesque folds, graceful and yet simple in treatment. The casting of these figures, which was effected by the cire perdue process, is technically very perfect. The gold employed for the gilding was got from Lucca in the shape of the current florins of that time, which were famed for their purity. Torell was highly paid for this, as well as for two other bronze statues of Queen Eleanor, probably of the same design.

Although the difference between fully developed Gothic sculpture and Romanesque sculpture is almost as clearly marked as the difference between Gothic and Romanesque architecture—

1 In Norway and Denmark during the 11th and 12th centuries carved ornament of the very highest merit was produced, especially the framework round the doors of the wooden churches; these are formed of large pine planks, sculptured in slight relief with dragons and griffins, or sometimes with the heads of the knights-templars, and this is an early master-piece of decorative art, full of the keenest inventive spirit and originality.

2 See Richardson, Monumental Effigies of the Temple Church (London, 1843).
indeed, the evolution of the two arts proceeded in parallel stages—the change from the earlier to the later style is so gradual and almost imperceptible, that it is all but impossible to follow it step by step, and to illustrate it by examples. What distinguishes the Gothic from the Romanesque in sculpture is the striving to achieve individual in the place of typical expression. This striving is as apparent in the more flexible and emotional treatment of the human figure, as it is in the substitution of naturalistic plant and animal forms for the more conventional ornamentation of the earlier centuries. Statuesque architectonic dignity and calmness are replaced by slender grace and soulful expression. The drapery, instead of being arranged in heavy folds, clings to the body and accentuates rather than conceals the form. At the same time, the subjects treated by the Gothic sculptor do not depart to any marked degree from those which fell to the task of the Romanesque workers, though they are brought more within the range of human emotions.

It is only natural that in France, which was the birthplace of Gothic architecture, the sister art of sculpture should have attained its earliest and most striking development. During the 13th century, the imagers, or stone sculptors, worked hand in hand with the great cathedral builders. This century may indeed be called the golden age of Gothic sculpture.

While retaining its dignity and subordination to its architectural setting, the sculpture reached a very high degree of graceful finish and even sensuous beauty. Nothing could surpass the loveliness of the angel statues round the Sainte Chapelle in Paris, and even the earlier work on the facade of Laon cathedral is full of grace and delicacy. Amiens cathedral is especially rich in sculpture of this date, as, for example, the noble and majestic statues of Christ and the Apostles at the west end; the sculpture on the south transept of about 1260-1270, of more developed style, is remarkable for dignity combined with grace. The large row of kings on the west end of Notre Dame at Paris has, like the earlier sculpture, been ruined by “restoration,” which has robbed the statues of both their spirit and their vigour. To the latter years of the 13th century belong the magnificent series of statues and reliefs round the three great western doorways of the same church, among which are no fewer than thirty-four life-sized figures. On the whole, the single statues throughout this period are finer than the reliefs with many figures. Some of the statues of the Virgin and Child are of extraordinary beauty, in spite of their being often treated with a certain mannerism—a curved pose of the body, which appears to have been copied from stucco statuettes, in which the figure followed the curve of the elephant’s tusk. The north transept at Rheims is no less rich: the central statue of Christ is a work of much grace and nobility of form; and some nude figures—for example, that of St Sebastian—show a knowledge of the human body which was very unusual at that early date. Many of these Reims statues, like those by Torell at Westminster, are quite equal to the best work of Nicola Pisano. The abbey church of St Denis possesses the largest collection of French 13th-century monumental effigies, a large number of which, with supposed portraits of the early kings, were made during the rebuilding of the church in 1264; some of them appear to be “archaic” copies of older contemporary statues.

In the 14th century French sculpture began to decline, though much beautiful plastic work was still produced. Some of the reliefs on the choir screen of Notre Dame at Paris belong to this period, as does also much fine sculpture on the transepts of Rouen cathedral and the west end of Lyons. At the end of this century an able sculptor from the Netherlands, Claus Slater (who followed the tradition of the 14th-century school of Tournai, which is marked by the exquisite study of the details of nature and led to the brilliant development of Flemish realism), executed much fine work, especially at Dijon, under the patronage of Philip the Bold, for whose newly founded Carthusian monastery in 1399 he sculptured the great “Moses fountain” in the cloister, with six life-sized statues of prophets in stone, painted and gilt in the usual medieval fashion. Not long before his death in 1411 Slater completed a very magnificent altar tomb for Philip the Bold, now in the museum at Dijon. It is of white marble, surmounted by a group, which contains among sixty small labaster figures representing mourners of all classes adorned with much dramatic power. The recumbent portrait effigy of Philip in his ducal mantle with folded hands is a work of great power and delicacy of treatment.

While in France there was a distinct slackening in building activity in the 14th century, which led to a corresponding decline in sculpture, Germany experienced a reawakening of artistic creative energy and power. That the Gothic style had taken root on German soil in the preceding century, is proved by the fresh, mobile treatment of the statues on the south porch of the east facade of Bamberg cathedral, and even more by the equestrian statue of Conrad III. in the market-place at Bamberg, which supported by a foliated corbel, exhibits startling vigour and originality, and is designed with wonderful largeness of effect, though small in scale. The statues of Henry the Lion and Queen Matilda at Brunswick, of about the same period, are of the highest beauty and dignity of expression. Strassburg cathedral, though sadly damaged by restoration, still possesses a large quantity of the finest statues of the 13th century. One tympanum relief of the Death of the Virgin, surrounded by the sorrowing Apostles, is a work of the very highest beauty, worthy to rank with the best Italian sculpture of even a later period. Of its class nothing can surpass the purely decorative carving at Strassburg, with varied realistic foliage studied from nature, evidently with the keenest interest and enjoyment.

But such works were only isolated manifestations of German artistic genius, until, in the next century, sculpture rose to new and splendid life, though it found expression not so much in the composition of extensive groups, as in the neighbouring France, but in the carving of isolated figures of rare and subtle beauty.

Nuremberg is rich in good sculpture of the 14th century. The church of St Sebal, the Frauenkirche, and the west façade of St Lawrence are lavishly decorated with reliefs and statues, very rich in effect, but showing the germs of that mannerism which grew so strong in Germany during the 15th century. Of special beauty are the statuettes which adorn the “beautiful fountain,” which was formerly erroneously attributed to the probably mythical sculptor Sebal Schonbofer, and is decorated with gold and colour by the painter Rudolf. Of considerable importance are the statues of Christ, the Virgin, and the Apostles on the piers in the choir of Cologne cathedral, which were completed after 1350. They are particularly notable for their admirable polychromatic treatment. The reliefs on the high altar, which are of later date, are wrought in white marble on a background of black marble. Augsburg produced several sculptors of ability about this time; the museum possesses some very noble wooden statues of this school, large in scale and dignified in treatment. On the exterior of the choir of the church of Marienburg castle is a very remarkable colossal figure of the Virgin of about 1340-1350. Like the Hildesheim choir screen, it is made of hard stucco and is decorated with glass mosaics. The equestrian bronze group of St George and the Dragon in the market-place at Prague is excellent in workmanship and full of vigour, though much wanting dignity of style. Another fine work in bronze of about the same date is the effigy of Archbishop Conrad (d. 1261) in Cologne cathedral, executed many years after his death. The portrait appears truthful and the whole figure is noble in style. The military effigies of this time in Germany as elsewhere were almost unavoidable stiff and lifeless from the necessity of representing them in plate.
armour. The ecclesiastical chasuble, in which priestly effigies nearly always appear, is also a thoroughly unsculpturesque form of drapery, both from its awkward shape and its absence of folds. The Günter of Schwarzburg (d. 1349) in Frankfort cathedral is a characteristic example of these sepulchral effigies in slight relief.

In England, much of the fine 13th-century sculpture was used to decorate the façades of churches, though, on the whole, English cathedral architecture did not offer such great opportunities to the imagier as did that of France. A notable exception is Wells cathedral, the west end of which, dating from about the middle of the century, is covered with more than 600 figures in the round or in relief, arranged in tiers, and of varying sizes. The tympana of the doorways are filled with reliefs, and above them stand rows of colossal statues of kings and queens, bishops and knights, and saints both male and female, all treated very skilfully with nobly arranged drapery, and graceful heads designed in a thoroughly architectonic way, with due regard to the main lines of the building they are meant to decorate. In this respect the early medieval sculptor inherited one of the great merits of the Greeks of the best period: his figures or reliefs form an essential part of the design of the building to which they are affixed, and are treated in a subordinate manner to their architectural surroundings—very different from most of the sculpture on modern buildings, which frequently looks as if it had been stuck up as an afterthought, and frequently by its violent and incongruous lines is rather an impermeant excescence than an ornament. Peterborough, Lichfield and Salisbury cathedrals have fine examples of the sculpture of the 13th century: in the chapter-house of the last the spandrels of the walls are filled with sixty reliefs of subjects from Bible history, all treated with much grace and refinement. To the end of the same century belong the celebrated reliefs of angels in the spandrels of the choir arches at Lincoln, carved in a large massive way with great strength of decorative effect. Other fine reliefs of angels, executed about 1260, exist in the transepts of Westminster Abbey; being high from the ground, they are broadly treated without any high finish in the details.

Purely decorative carving in stone reached its highest point of excellence about the middle of the 14th century—rather later, than is, than the best period of figure sculpture. Wood-carving (q.v.), on the other hand, reached its artistic climax a full century later under the influence of the fully developed Perpendicular style.

The most important effigies of the 14th century are those in gilt bronze of Edward III. (d. 1377) and of Richard II. and his queen (made in 1395), all at Westminster. They are all portraiture, but are decidedly inferior to the earlier work of William Torell. The effigies of Richard II. and Anne of Bohemia were the work of Nicolás Broker and Godfroid Prest, goldsmiths citizens of London. Another fine bronze effigy is at Canterbury on the tomb of the Black Prince (d. 1376); though well cast and with carefully modelled armour, it is treated in a somewhat dull and conventional way. The recumbent stone figure of Lady Arundel, with two angels at her head, in Chichester cathedral is remarkable for its calm peaceful pose and the beauty of the drapery. Among the most perfect works of this description is the alabaster tomb of Ralph Nevill, first earl of Westmorland, with figures of himself and his two wives, in Staindrop church, county Durhan, (1426), removed, 1908, from a dais corner of the church into full light, a few feet away, where its beauty may now be examined. A very fine but more realistic work is the tomb figure of William of Wykeham (d. 1404) in the cathedral at Winchester. The cathedrals at Rochester, Lichfield, York, Lincoln, Exeter and many other ecclesiastical buildings in England are rich in examples of 14th-century sculpture, used occasionally with great profusion and richness of effect, but treated in strict subordination to the architectural background.

The finest piece of bronze sculpture of the 15th century is the effigy of Richard Beauchamp (d. 1439) in his family chapel in the cathedral of Warwick—a noble composite figure, richly decorated with engraved ornaments. The modelling and casting were done by William Austen of London, and the gilding and engraving by a Netherlands goldsmith who had settled in London, named Bartholomew Lambespring, assisted by several other skilful artists.

The first Spanish sculptor of real eminence who need be considered is Aparicío, who lived and worked in the 11th century. His shrine of St Millan, executed to the order of Don Sancho the Great is in the monastery of Yuso, and is an accomplishment excellent in its way, in design, grace and proportion. In the early medieval period the sculpture of northern Spain was much influenced by contemporary art in France. From the 12th to the 14th century many French architects and sculptors visited and worked in Spain. The cathedral of Santiago de Compostella possesses one of the greatest existing specimens in the world of late 12th-century architectonic sculpture; this, though the work of a native artist, Mateo,1 is thoroughly French in style; as recorded by an inscription on the front, it was completed in 1188. The whole of the western portal, with its three doors, is filled with a profusion of designs, all richly decorated with cornice, part of which still remains. Round the central arch are figures of the twenty-four elders, and in the tympanum a very noble relief of Christ in Majesty between Saints and Angels. As at Chartres, the jambs of the doorways are decorated with standing statues of saints—St James the elder, the patron of the church, being attached to the central pillar. These noble figures, though treated in a somewhat rigid manner, are thoroughly subordinate to the main lines of the building. Their heads, with pointed beards and a fixed mechanical smile, together with the stiff and ungraceful gowns, recall the Aegyptian pediment sculpture of about 500 B.C. This appears strange at first sight, but the fact is that the works of the early Greek and the medieval Spaniard were both produced at a somewhat similar stage in two far distant periods of artistic development. In both cases plastic art was freeing itself from the bonds of a hieratic archaism, and had reached one of the last steps in a development which in the one case culminated in the perfection of the Phidian age, and in the other led to the exquisitely beautiful yet simple and reserved art of the end of the 13th and early part of the 14th century—the golden age of sculpture in France and England. In the cathedral of Tarragona are nine statues, in stone, executed by Bartolomé in 1278 for the gate.

In the 14th century the silversmiths of Spain produced many works of sculpture of great size and technical power. One of the finest, by a Valencian called Peter Berneis, is the great silver reliquary at Gerona cathedral. It is divided into three tiers of statuettes and reliefs, richly framed in canopied niches, all of silver, partly cast and partly hammered.

In the 15th century an infusion of German influence was made with that of France, as may be seen in the very rich sculptural decorations which adorn the main door of Salamanca cathedral, the façade of S. Juan at Valladolid, and the church and cloisters of S. Juan de los Reyes at Toledo, perhaps the most gorgeous examples of architectural sculpture in the world. These were executed between 1418 and 1425 by a group of clever sculptors, among whom A. and F. Díaz, A. F. de Sahagun, A. Rodriguez and A. Gonzales were perhaps the chief. The marble altar-piece of the grand altar at Tarragona was begun in

1 A kneeling portrait-statue of Mateo is introduced at the back of the central pier. This figure is now much revered by the Spanish peasants, and the head is partly worn away with kisses.
SCULPTURE

PLATE I.

JACOPO DELLA QUERCIA—Tomb, Ilaria del Carretto, Lucca.

DONATELLO—Equestrian Statue, General Gattamelata, Padua.

ANDREA PISANO—The first bronze door of the Baptistry, Florence.

DONATELLO—Statue of St George, Florence.

MICHELANGELO—Head of Colossal David, Florence.

VERROCCHIO & LEOPARDI—Bronze Colossal Statue of Bartolommeo Colleoni, Venice.

LUCA DELLA ROBBIA—Girls and boys playing on musical instruments and dancing (Museo dell’Opera, Florence).
PLATE II. SCULPTURE

BENVENUTO CELLINI—Bronze Statue of Perseus and Medusa, in the Loggia del Lanzi, Florence. (Photo, Alinari.)

PETER VISCHER—Gilt Bronze Statue of King Arthur, Innsbruck. (Photo, Wurthle & Sohn.)

BERNINI—Apollo and Daphne (Borghese Gallery). (Photo, Anderson.)

JEAN GOUJON—Diane de Poitiers (as Huntress), in the Louvre. (Photo, Giraudon.)

CANOVA—Colossal Marble Group of Theseus and Centaur, Vienna. (Photo, Lévy.)

HOUDON—Voltaire (Théâtre Français, Paris). (Photo, Giraudon.)

COYSEVOX—Bust of himself, in the Louvre. (Photo, Giraudon.)
by P. Juan in 1426 and completed by G. De La Mota. The carved foliage of this period is of especial beauty and spirited execution; realistic forms of plant-growth are mingled with the Madonnas who shelter in her most maternal manner. The very noble bronze monument of Archdeacon Pelayo (d. 1400) in Burgos cathedral was probably the work of Simon of Cologne, who was also architect of the Certosa at Miraflores, 2 m. from Burgos. The church of this monastery contains two of the most magnificently rich monuments in the world, especially the altar-tomb of King John II, and his queen by Gil de Siloe—a perfect marvel of rich alabaster canopy-work and intricate undercutting. The effigies have little merit. From the 16th century onwards wood was a favourite material with Spanish sculptors, and the more profuse production of that century has been realistically treated, such as the "Scene from Taking of Granada" by El Maestro Rodrigo, and even for portraiture, as in the Bust of Turiano by Alonso Berruguete (1480-1561).

During the 14th century Florence and the neighbouring cities were the chief centres of Italian sculpture, and there numerous sculptors of successively increasing artistic power lived and worked, till in the 15th century the city had become the aesthetic capital of the world. But the Gothic sculptor's activity was by no means confined to the production of such a multitude of figures and groups. The subject of painting being from the 14th century of the highest importance, the sculptors have a part in the decorated statues of medieval cathedrals. But in the whole of that century the sculptor was often called on to execute at the same time large altars and tabernacles, beautiful gates, and moreover the tombs of the great. The production of sculpture is not to be summed up in the admirable works of a single master, but in the whole/modern era of painting, but in his relief sculpture, and more particularly by the influence he exercised upon Andrea Pisano, carried the art of sculpture beyond the point where it had been carried by Giovanni Pisano. In Andrea we find something of Niccola's classic dignity grafted on to Giovanni's close observation of nature. His greatest works are the bronze south gate of the Baptistery, and some of the reliefs on Giotto's Campanile. The last great master of the Gothic period is Andrea di Cione, better known as Orcagna (1308? to 1368), who, like Giotto, achieved fame in the three sister arts of painting, sculpture and architecture. His wonderful tabernacle at Or San Michele is a noble testimony to his efficiency in the three arts and to his early training as a goldsmith. Very beautiful sepulchral effigies in marble are in the church of San Miniato, especially the tomb of the lady of the Medici at Florence.

The tomb of Lorenzo Acciaioli, in the Certosa near Florence, is a fine example of about the year 1400, which has absurdly been attributed to Donatello. The similarity between the plastic arts of Venice in the 5th or 4th century B.C. and of Florence in the 15th century is not one of analogy only. Though free from any touch of copyism, there are many points in the works of such men as Donatello, Luca della Robbia, and Antonio Pisano which strongly recall the sculpture of ancient Greece, and suggest that, if a sculptor of the later Phidian school had been employed by the same masters of the 15th century, among which the Italians lived, he would have produced plastic works closely resembling those of the great Florentine masters. Lorenzo Ghiberti may be called the first of the great sculptors of the Renaissance. But between him and Orcagna stands another master, the Sienez, Jacopo della Quercia (1371-1438) who, although in some minor traits connected with the Gothic school, heralds at this early date the boldest and most vigorous and original achievements of two generations hence. Indeed, Jacopo, whose chief works are the Fonte Gaia at Siena (now reconstructed) and the reliefs on the gate of S. Petronio at Bologna, stands in his strong muscular treatment of the human figure nearer to Michelangelo than to his Gothic precursors and contemporaries. Contemporaneously with Ghiberti, the sculptor of the world-famed baptistery gates, and with Donatello, and to a certain extent influenced by them, worked some men who, like Ciaffagni, were still essentially Gothic in their style, or, like Nanni di Banco, retained unmistakable traces of the earlier manner. Luca della Robbia, the founder of a whole dynasty of sculptors in glazed terra-cotta, with his great purity of style and the freshness of the modern world, in order. Unusual beauty elevated by religious spirit was attained in the highest degree by Mino da Fiesole, the two Rossellinis, Benedetto da Maiano, Desiderio da Settignano and other sculptors more or less directly influenced by Donatello. Through them the tomb monument received the definite form which it retained throughout the Renaissance period. Two of the noblest equestrian statues the world has probably ever seen are the Gattamelata statue at Padua by Donatello and the statue of Colleoni at Venice by Verrocchio and Leonardo. A third, which was probably of equal beauty, was modelled in clay by Leonardo da Vinci, but it no longer exists. Among other sculptors who flourished in Italy about the middle of the 15th century, are the Luccese Matteo Civesali; Agostino di Duccio (1418-6. 1487), whose principal works are to be found at Rimini and Verona; the bronze-worker Bertoldo di Giovanni (1420-1491); Antonio del Polliaiuolo, the author of the tombs of popes Sixtus IV. and Innocent VIII. at St Peter's in Rome; and Francesco Laurana (1424-1507?), a Dalmatian who worked under Brunelleschi and left many traces of his activity in Naples (Triumphal Arch), Sicily and southern France. Finally came Michelangelo, who modelled the face and the most of the marble by which we regard to its highest pitch of magnitude, and at the same time sowed the seeds of its rapidly approaching decline; the head of his David at Florence is a work of unrivalled force and dignity. His rivals and imitators, Baccio Bandinelli, Giacomo della Porta, Montelupo, Ammanati and Vincenzo de' Rossi (pupils of Bandinelli) and others, copied and exaggerated his faults.

1 See Ruskin, Stones of Venice; and Moreau, Gesch. der Bauk. u. Bildh. Venedig (Leipzig, 1890); also H. v. d. Gabelentz, Mittelalterl. Plastik in Venedig (Leipzig, 1902).

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The latter part of the 15th century in France was a time of transition from the medieval style, which had gradually been deteriorating, to the more florid and realistic taste of the Renaissance. To this period belongs the tombs of rich reliefs and statues on the choir-screen of Chartres cathedral. Those on the screen at Amiens are later still, and exhibit the rapid advance of the new style.

The transition from the Gothic to the Renaissance is to be noted in many tomb monuments of the second half of the 15th and the beginning of the 16th centuries, notably in Rouland de Roux's magnificent tomb of the cardinals of Amboise at Rouen cathedral. Italian motifs are paramount in the great tombs of the period. One of the most pleasing of artistic thought followed the direction indicated by the founding of the italicizing school of Fontainebleau Jean Goujon, (d. 1572) was the ablest French sculptor of the time; he combined great technical skill and refinement of modelling with the florid and affected style of the age. His nude figure of "Diana reclining by a Stag," now in the Louvre, is a graceful and vigorous pose of work, superior in sculpuresque breadth to the somewhat similar bronze relief of a nymph by Cellini. Between 1540 and 1552 Goujon executed the fine monument at Rouen to Duke Louis de Brézé, and from 1555 to 1562 was mainly occupied in decorating the Louvre with sculpture. One of the most pleasing and graceful works of this period, thoroughly Italian in style, is the marble group of the "Three Graces," bearing on their heads an urn containing the heart of Henry II., executed in 1560 by Germain Pilon for Catherine de Médicis. The monument of Catherine and Henry II. at St Denis, by the same sculptor, is an inferior and coarser work. Maitre Ponce, probably the same as the Italian Ponzio Jacquiou, chiselled the noble monument of Albert of Carpi (1553), now in the Louvre. Another very fine portrait effigy of about 1570, a recumbent figure in full length of the Duke of Longueville, preserved in the Louvre is the work of Barthélemy Primatix. François Duquesnoy of Brussels (1594-1644), usually known as II Fiamingo, was a clever sculptor, thoroughly French in style, though he mostly worked in Italy. His large statues are very poor, but his reliefs in ivory of boys and cupids are modelled with wonderfully soft realistic power and graceful fancy.

To these sculptors should be added Jacques Sarrzin, well known for the colossal yet elegant caryatides for the grand pavilion of the Louvre; and François Augier, the sculptor of the splendid mausoleum of the duc de Montmorency.

In the Netherlands the great development of the 15th century, preserved in the Louvre, was not accompanied by a parallel movement in plastic art. Of the few monuments that claim attention, we must mention the bronze tomb of Mary of Burgundy at Notre-Dame, Bruges, executed about 1495 by Jan de Baker, and the less remarkable though technically more complete companion tomb of Charles the Bold (1558).

The course of the Renaissance movement in Germany sculpture differs from that of most other countries in so far as it appears to grow gradually out of the Gothic style in the direction of individual, realistic treatment of the figure which in late Gothic days had become somewhat conventional and schematic and idealized. Marked physiognomic expression, careful rendering of movement, costume and details, and the suggestion of different textures, together with almost tragic emotional intensity, are the chief aims of the 15th-century sculptors who, on the whole,

1 See Yriarte, Rèmi au XVè siècle (Paris, 1880).
The Italian influence, which did not make itself felt until the early days of the 16th century, led to brilliant results, whilst the workers retained their fresh northern individuality and keen observation of nature. But in the latter half of the 15th century it began to change; there was a swing of fashion, and led to somewhat theatrical and conventional classicism and mannerism.

One speciality of the 15th century was the production of an immense number of wooden altars and reredoses, painted and gilt in the most gorgeous way and covered with subject-reliefs and statues, the former often treated in a very pictorial style. Wooden screens, stalls, tabernacles and other church-fittings of the greatest elaboration and clever workmanship were largely produced in Germany at the same time, and on into the 16th century. Jörg Syrlin, one of the most able of these sculptors in wood, executed the gorgeous choir-stalls in Ulm cathedral, richly decorated with statuettes and canopied work, between 1460 and 1474; his son and namesake sculptured the elaborate stalls in Blaubeuren church of 1496 and the great pulpit in Ulm cathedral. Another exceptionally important work of this type is the magnificent altar at St Wolfgang in Upper Austria, carved by the Tirolean, Michael Pacher, in 1481. Veit Stoss of Cracow, who later settled in Nuremberg, a man of bad character, was a most skilful sculptor in wood; he carved the high altar, the tabernacle and the stalls of the Frauenkirche at Cracow, between 1472 and 1481. One of his finest works is a large piece of wooden panelling, nearly 6 ft. square, carved in 1495, with central reliefs of the Doom and the Heavenly Host, framed by minute reliefs of scenes from Bible history. It is now in the Nuremberg town-hall.

Wolgelmuth (1454-1519), the master of A. Dürer, was not only a painter but also a clever wood-carver, as was also Dürer himself (1471-1528). He executed a tabernacle for the Host with an exquisitely carved relief of Christ in Majesty between the Virgin and St John, which still exists in the chapel of the monastery of Landau. Dürer also produced altars, which stand in the new residential church at Mergentheim (1506), of which the British Museum (print-room) possesses one of the finest examples. Adam Kraft (c. 1455-1507) was another of this class of sculptors, but he worked also in stone; he produced the great Schreyer monument (1492) for St Sebald's at Nuremberg,—a very skilful though merely sculptured piece of marble, with very realistic figures in the costume of the time, carved in a way more suited to wood than stone, and too pictorial in effect. He also made the great tabernacle for the Host, 80 ft. high, covered with statuettes, in Ulm cathedral, and the very spirited "Stations of the Cross" on the road to the Nuremberg army camp.

The Vischer family of Nuremberg for three generations were among the ablest sculptors in bronze during the 15th and 16th centuries. Hermann Vischer the elder worked mostly between 1450 and 1505, following the earlier medieval traditions, but without the originality of his son, Peter Vischer.

Next to Nuremberg, the chief centres of bronze sculpture were Augsburg and Lübeck. Innsbruck possesses one of the finest series of bronze statues of the first half of the 16th century, namely twenty-eight colossal figures round the tomb of the emperor Maximilian, which statue-piece is the central ornament of the cloister of the Imperial Abbey of St Jacob, the mausoleum of heroes and ancestors of the emperor. The first of the statues which was completed cost 3000 florins, and so Maximilian invited the help of Peter Vischer, whose skill was greater and whose work less expensive than that of the local craftsmen. Most of them, however, were executed by sculptors of whom little is now known. They differ much in style, though all are of great technical merit. The finest is an ideal statue of King Arthur of Britain, in plate armour of the 14th or early 15th century, very remarkable for the nobility of the face and pose. That of Theodoric is also a very fine work. This class of large wooden relatable was much imitated in Spain and Scandinavia. The metropolitana cathedral of Röskilde in Denmark possesses a very large and magnificent example covered with subject reliefs enriched with gold and colours.

C. A. Waagen, Kunst und Künstler in Deutsch. (Leipzig, 1842-1845).
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—for example, the choir reliefs at Toledo cathedral, and those in the Colegio Mayor at Salamanca by Alonso Berruguete, sculptor, painter and architect, trained in Rome and Florence, and the greatest designer of Spain up to that time. He worked under Michelangelo and Vasari, and on his return to Spain in 1520 was appointed court painter and sculptor to Charles V. The same position was occupied under Philip II. by Gaspar Becerra (1520-1570), whose masterpiece is a figure of Our Lady of the Solitude, in Madrid. Esteban Jordan, Gregorio Hernandez and other Spanish sculptors produced a large number of elaborate retablos, carved in wood with subjects in relief and often richly decorated in gold and colours. These sumptuous masses of polychromatic sculpture resemble the 15th-century retablos of Germany more than any Italian examples, and were a sort of survival of an older medieval style. J. Morlanes was the first of Spanish sculptors to adopt the style of Albert Dürer, which afterwards became general. Philip de Vigarn, Christopher de Salamanca, and Paul de Cespedes, who was native of Cordova, are names of great prominence up to the end of the century. Alonso Cano (1600-1667), the painter, was remarkable for clever realistic sculpture, very highly coloured and religious in style. Montañes, who died in 1674, was one of the ablest Spanish sculptors of his time. His finest works are the reliefs of the Madonna and Saints on an altar in the university church of Seville, and in the cathedral, in the chapel of St Augustine, a very nobly designed Conception, modelled with great skill.

In the 17th century sculpture in Spain was still in its infancy. The statue of St Bruno of Montañes seems to have inspired others to repeat the subject in the same material: Juan de la Jun (d. 1614) is a case in point. Pedro de Menà and Zarcillo achieved great success in this class of sculpture. A Pujol of Catalonia and Peter Roldan carried on the Spanish tradition. The chief names in the 18th century are those of Don P. Duque de Cornos de Seville, Don J. de Henestrosa, A. Salvador (known as "the Roman," d. 1756), Philip de Castro of Galicia, one of the most eminent sculptors of his time (d. 1775), and F. Gutierrez (d. 1782).1

If the immediate followers of Michangelio showed a tendency to turn the characteristics of the master’s style into exaggerated mannerism, the beginning of the 17th century finds Italian sculpture in a state of complete decadence, statuesque dignity having given way to fluttering movement and florid excesses, such as was revived in a later century. From Italy this "baroque" style spread over the whole continent of Europe and retained its hold for nearly two centuries. The chief sculptor and architect of this period was the Neapolitan, J. L. Bernini (1598-1680), who, with the aid of a large school of assistants, produced an almost incredible quantity of sculpture of the most varying degrees of merit and hideousness. His chief early group, the Apollo and Daphne in the Villa Borghese, is a work of wonderful technical skill and delicate high finish, combined with soft beauty and grace, though too pictorial in style. In later life Bernini turned out work of brutal coarseness, designed in a thoroughly unsculpturesque spirit. The churches of Rome, the colonnade of St Peter’s, and the bridge of S. Angelo are crowded with his clumsy colossal figures, half draped in wildly fluttering garments,—perfect models of what is worst in the plastic art. And yet his works received perhaps more praise than those of any other sculptor of any age, and after his death a scaffolding was erected outside the bridge of S. Angelo in order that people might walk round and admire his works to the fullest extent.

For all that, Bernini was a man of undoubted talent, and in a better period of art would have been a sculptor of the first rank; many of his portrait-busts are works of great vigour and dignity, quite free from the mannered extravagance of his larger sculpture. Stefano Maderna (1571-1636) was the ablest of his contemporaries; his clever and much-admired statue, the figure of the dead S. Cecilia under the high altar of her basilica, is chiefly remarkable for its deathlike pose and the realistic treatment of the drapery. Another clever sculptor was Alessandro Algardi of Bologna (1598-1634), who formed a school, which included G. Brunelli, D. Guidi and C. Mazzu of Bologna.

In the next century at Naples Queirolo, Corradini and Sammarco produced a number of statues, now in the chapel of S. Maria de’ Sangri, which are extraordinary examples of wasted labour and neglect of the simplest canons of plastic art. These are marble statues enmeshed in nets or covered with thin veils, executed with almost deceptive realism, perhaps the lowest stage of tricky degradation into which the sculptor’s art could possibly fall.2 In the 18th century Italy was naturally the headquarters of the classical revival, which spread thence throughout most of Europe. Canova (1757-1822), a Venetian by birth, who spent most of his life in Rome, was perhaps the leading spirit of this movement, and became the most popular sculptor of his time. His work is very unequal in merit, mostly dull and uninteresting in style, and is occasionally marred by a meretricious spirit very contrary to the true classic feeling. His group of the "Three Graces," the "Hebe," and the very popular "Dancing-Girls," copies of which in plaster disfigure the stairs of countless modern hotels and other buildings on the Continent, are typical examples of Canova’s worst work. Some of his sculpture is designed with far more of the purity that distinguished antique art; his finest work is the colossal group of Theseus slaying a Centaur, at Vienna. Canova’s attempts at Christian sculpture are singularly unsuccessful, as, for example, his pretentious monument to Pope Clement XIII. In St Peter’s at Rome, that of Titian at Venice, and Alieri’s tomb in the Florentine church of S. Croce. Fiesole in the 19th century produced one sculptor of great talent, named Bastianini. He worked in the style of the great 16th-century Florentine sculptors, and followed especially the methods of his distinguished fellow-townsmen Mino da Fiesole. Many of Bastianini’s works are hard to distinguish from genuine sculpture of the 15th century, and in some cases great prices have been paid for them under the supposition that they were medieval productions. These frauds were, however, perpetrated without Bastianini’s consent, or at least without his power to prevent them. Several of his best terra-cotta works may be seen in the Victoria and Albert Museum.

Whilst monumental sculpture in France during the 17th century continued to be influenced by Italy, the national tradition was carried on to a certain extent by such portraitists as the two Courous and their master Coysevox (1640-1729), whose works are marked by a great sense of life and considerable technical skill. The exaggerated elegance in the treatment of the female figure, which became so marked a characteristic of French sculpture during this period, is the chief trait of Francois Girardon (1639-1715), who was chiefly employed on the sculptural decorations at Versailles, and on the famous equestrian statue of Louis XIV., which was destroyed during the Revolution and for which hundreds of exquisite drawings and studies were made, now in the French national collection. Far more strength and grandeur mark the work of Pierre Puget (1622-1694), who is best known by his "Milo of Crotona" for Versailles. His training was entirely Italian, and in style considerably influenced by Bernini. He worked for some considerable time in Italy, particularly in Genoa. The same opposed movements which run side by side in French 18th-century painting, academic allegory and frivolous sensuality, can be traced in the sculpture of this period. Of

1 For the earlier history of Spanish sculpture, see Don Juan Augustin Ceas Bernex, Diccionario den los mas ilustres y conocidissimos profesores de las bellas artes en Espafia (Madrid, 1800, 6 vols.). For the later sculptors, see B. Händke, Studien zur Geschichte der spanischen Kunst (Strasbourg, 1904).

2 The Ludovisi group of Pluto carrying off Proserpine, now in the Borghese Gallery, is a striking example, and shows Bernini’s deterioration of style in later life. It has nothing in common with the Cain and Abel or the Apollo and Daphne of his earlier years.

3 In the 19th century an Italian sculptor named Monti won much popular repute by similar unworky tricks; some veiled statues by Del Tredici on the London Exchange, which, in the 20th century, then copies or imitations of them have enrapured the visitors who have crowded round the Italian sculpture stalls at every subsequent international exhibition.
the first, the chief representatives are Lemoyne and his pupil Falconet, who executed the equestrian statue of Peter the Great at St Petersburg; of the other, Clodion, whose real name was Claude Michel (c. 1745-1814). The latter worked largely in terracotta, and modelled with great spirit and invention, but in the sensuous unsculptural manner prevalent in his time.

In the later part of the 18th century France produced two sculptors of great eminence in Jean-Baptiste Pigalle (1714-1785) and Jean Antoine Houdon (1741-1828). Houdon may be regarded as the precursor of the modern school of French sculpture of the better sort. Towards the end of the 18th century a revolution was brought about in the style of sculpture by the suddenly revived taste for antique art. A period of dull pseudo-classicism succeeded, which in most cases stifled all original talent and reduced the plastic arts to a lifeless form of archaeology. Regarded even as imitations the works of this period are very unsuccessful; the sculptors got hold merely of the dry bones, not of the spirit of classic art; and their study of the subject was so shallow and unintelligent that they mostly picked out what was third-rate for special admiration and ignored the glorious beauty of the best works of true Hellenic art. Thus in sculpture, as in painting and architecture, a study which might have been stimulating and useful in the highest degree became a serious hindrance to the true etchings on stone and on metal, and all true imitation of Napoleon on the top, and also modelled the classical quadriga on the triumphal arch in the Place du Carrousel. Jacques Pradier of Geneva (1790-1852) produced the "Chained Prometheus" of the Louvre and the Niobe group (1822). He possessed great technical ability, but aimed in most of his works at a soft sensuous beauty which is usually considered to be specially unsuited to sculpture. François Rude (1784-1853), worked in a style modelled on Graeco-Roman sculpture treated with some freedom. His bronze Mercury in the Louvre, is a clever work and the enormous high-relief on the Arc de l'Étoile in Paris, representing "The Song of Departure to Battle," is full of vigour and movement, but his statues of Marshal Ney in the Luxembourg Gardens and of General Cavaignac (1847) in the cemetery of Montmartre are conspicuously poor. The reliefs on the pediment of the Panthéon are by Pierre Jean David of Angers (1789-1856); his early works are of dull classic style, but later in life he became a realist and produced very unsavoury results. A bronze statue of a Dancing Fisher-lad modelled by François Joseph Duvet, now in the Luxembourg collection, is an able work of the genre class. Other French sculptors, who were highly esteemed in their time were Otto Courtois, Siméon, Etié and Carpeaux. The last was an artist of great ability, and produced an immense number of clever but often, sculptural interestingly considered, offensive statues. He obtained the highest renown in France, and, hailed as a great innovator by those who welcomed a greater measure of naturalism, he was denounced by the "pure" and classic school as a typical example of the sad degradation of taste which prevailed under the rule of Napoleon III.

The modern schools of French sculpture are the most important in the world; they are dealt with in a separate section later. Technical skill and intimate knowledge of the human form are possessed by French artists to a degree which has probably never been surpassed. Many of their works have a similar fault to that of one class of French painters: they are much injured by an excess of sensual realism; in many cases nude statues are simply life-studies with all the faults and individual peculiarities of one model. Very unsavoury results are produced by treating a statue as a representation of a naked person,—one, that is, who is obviously in the habit of wearing clothes,—a very different thing from the purity of the ancient Greek treatment of the nude. Thus the great ability of many French sculptors has been degraded to suit, or rather to illustrate, the taste of the voluptuary. An extravagance of attitude and an undignified arrangement of the figures do much to injure some of the large groups which are full of technical merit, and executed with marvellous anatomical knowledge. This is specially the case with much of the sculpture that adorns the buildings of Paris. The group of nude dancers by Carpeaux outside the opera-house is a work of astonishing skill and sensual imagination, unsavoury in style and especially unflattering to decorate the comparatively rigid lines of a building. The egotism of modern French sculptors, with rare exceptions, has not allowed them, when professedly aiming at providing plastic decoration for buildings, to accept the necessarily subordinate reserve which is so necessary for architectonic sculpture. Other French works, on the other hand, have frequently erred in the direction of a sickly sentimentalism, or a petty realism, which is fatal to sculptural art; or they seek to render modern life, sometimes on the scale of life-size, even to the point of securing an atmospheric effect. This exaggerated misconception of the function of sculpture can only be passed over, yet it may be that movement issuing from Paris finds adherents in other countries, the effect upon sculptors and upon public taste can hardly be otherwise than mischievous. The real power and merits of the modern French school make these faults all the more conspicuous.

Whatever work of importance was produced by Netherlandish sculptors in the 17th and 18th centuries, was due entirely to Italian training and influence. François Duquesnoy (usually called "The Fleming") (1594-1644) has already been mentioned in Rome, in rivalry with Bernini, and most of his works have remained in Italy, but, inasmuch as his style is conspicuously French, he is here included in the French school. His pupil Arthur Quellinus is best known by his allegorical groups on the pediments of Amsterdam town-hall, and has also left some traces of his activity in Berlin. P. Buystner, native of Brussels (b. 1695), passed into France and is also often classed as a French sculptor.

By far the greatest sculptor of the classical revival was Bertel Thorwaldsen (1770-1844), an Icelander by race, whose boyhood was spent in Copenhagen, and who settled in Rome in 1797, when Canova's fame was at its highest. The Swedisch sculptors Tobias Sergell and Johann Bryström belonged to the classic school; the latter followed in Thorwaldsen's footsteps. Another Swede named Fogelberg was famed chiefly for his sculptured subjects taken from Norse mythology. H. W. Bissen and Jerichau of Denmark produced some able works,—the former a fine equestrian statue of Frederick VII. of Copenhagen, and the latter a very spirited and widely known group of a Man attacked by a Panther.

During the troublous times of the Reformation, sculpture, like the other arts, continued to decline. Of 17th-century monumental effigies that of Sir Francis Vere (d. 1607) in the north transept at Westminster is one of the best, though its design—a recumbent effigy overshadowed by a slab covered with armour, upheld by four kneeling figures of men-at-arms—is almost an exact copy of the tomb of Engelbert II. of Vianden-Nassau.¹ The finest bronze statues of this century are those of George Villiers, duke of Buckingham (d. 1628), and his wife at the north-east of Henry VII. of Westminster. The effigy of the duke, in rich armour of the time of Charles I, lies with folded hands in the usual medieval pose. The face is fine and well modelled and the casting very good. The allegorical figures at the foot are caricatures of the style of Michelangelo, and are quite devoid of merit, but the kneeling statues of the duke's children are designed with

¹ See Arendt, Chateau de Viandens (Paris, 1884).
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German sculpture.

example of baroque sculpture which to this day is known as the Donner fountain. In the second half of the 18th century there was a strong revival in sculpture, especially in the classic style; and since then Germany has produced an immense quantity of first-rate and pretentious sculpture, mostly of a second-rate execution. Gottfried Schadow of Berlin (1764–1850) finished a number of portrait figures, not in the customary antique guise, but in the costume of the period. Some of his works are ably modelled. He was followed by Christian Rauch (1777–1857), whose works are, however, mostly weak and sentimental in style and approach, and his recumbent statue of Queen Louisa at Charlottenburg (1813), and his statues of generals Bilow and Scharnhorst at Berlin. Rauch became the leader of an important school in Berlin, but will be most honourably remembered by his splendid monument of Frederick the Great in Berlin—an elaborate work, modern in feeling and of great technical accomplishment. Friedrich Drake was the ablest of Rauch's pupils, but he lived at a very unhappy period for the sculptor's art. His chief work is perhaps the colossal bronze equestrian statue of King William of Prussia at Cologne. Albert Wolff was a sculptor of more ability; he executed the equestrian portrait of King Ernest Augustus at Hanover, and a "Horseman attacked by a Lion" now in the Berlin Museum. Augustus Kiss (1802–1865) produced the companion group to this, the celebrated Amazon and Panther in bronze, as well as the fine group of Frederick the Great, a meaningless classicism to serious realism. It was his task to erect monuments in memory of some of the greatest intellectual heroes of Germany, such as his Lessing monument in Braunschweig, the monument to Goethe and Schiller in Weimar, and to Martin Luther at Worms. Some revival of a better style is shown in certain sculpture, especially reliefs, by Hännel, whose chief works are at Dresden. Schwantaler (1802–1848), who was largely patronized by King Louis of Bavaria, studied at Rome and was at first a feeble imitator of antique classic art, but in later life he developed a more romantic and pseudo-baroque style, an imitative and pseudo-classic purity. Many of his works are contained in the Glyptothek at Munich and in the Walhalla, also the colossal but feeble bronze statue of Bavaria, in point of size one of the most ambitious works of modern times.2

1 In size, but not in merit, this enormous statue was surpassed by the figure of Liberty made in Paris by Bartholdi and erected as a beacon in the harbour of New York city.

EIGHTEENTH CENTURY IN ENGLAND.

The Villiers monument is evidently the work of two sculptors working in very opposite styles. These sculptures, however, are not included in the list of his works drawn up by Stone himself and printed in Walpole's Anecdotes of Painting, i. 239-243. This sculptor's receipts, recorded by his kinsman, Charles Stoakes, amounted to £10,886—an enormous sum for an English sculptor and "tomb-maker" of those days.

grace and pathos. A large number of very handsome marble and alabaster tombs were erected throughout England during the 17th century. The effigies are poor and coarse, but the rich architectural ornaments are effective and often of beautiful materials, and these are combined with much spirit and bravura in a very skilful way. Nicholas Stone (1656–1647), who worked under the supervision of Inigo Jones and was master-
reliefs of Peace and War, and the Neptune fountain, both in front of the imperial palace, and the Schiller monument before the royal theatre, all in Berlin, are perhaps his most successful works. The Bismarck in front of the Reichstag building suffers from the excessive use of allegorical motifs and from other errors of taste.

Of Begas's many pupils, who participated in the execution of the numerous statues that flank the Siegessaeule in the Berlin Tiergarten, the most distinguished is Joseph Uphues (b. 1838), who is the creator of the Moltke monument in Berlin, and of the Frederick the Great in the Siegessaeule, a replica of which is to be found in Washington. Adolf Brütt (b. 1835) and Gustav Eberlein should be mentioned among the most successful Berlin sculptors; Robert Dietz, as the founder of an important school in Dresden; and Wilhelm Ruemann (d. 1906) and Rudolf Maizon among the modern sculptors of Munich.

The closing years of the 19th century were marked by an enormous advance, not only in public appreciation of sculpture but in productive activity. The younger generation of Berlin sculptors includes such distinguished artists as Frits Klimsch, who is best known by "The Triumph of Woman" and "The Kiss"; Hugo Lederer, the designer of the Bismarck monument in Hamburg; August Gaul, who excelled in statuettes of animals; Max Kruse, a woodcarver of great ability; and Louis Touailhon, who spent his early years in Rome, and became famous for his excellent anatomy and action of his equine studies. Karl Seffner, of Leipzig; August Hudler, of Dresden; Georg Weba, Fritz Christ, Erwin Kurz, Hermann Hahn, Theodor von Gosen and Hugo Kaufmann, all of Munich, should also here be mentioned. Adolf Hildebrand (b. 1847) is best known by his Wittelsbach fountain in Munich and his Reinhard fountain in Strassburg. He has also executed some excellent medals and plaquettes. Franz Stuck, who has ranked among the leading painters of modern Germany, has also produced some powerful pieces of sculpture, such as the Beethoven, and the "The Helper" (b. 1876), whom we may regard as painter and etcher, revived Albrecht Dürer's tradition in Germany. His Beethoven monument, at the Leipzig Museum, is the best known example of his work in this direction. The great composer is conceived as Jupiter enthroned, with the eagle at his feet. The work caused an enormous sensation on its first appearance before the public and became a veritable apple of discord around which a worldly war was waged by the different factions. The Leipzig Museum also owns his Cassandra and a rough-hewn portrait bust of Liszt. One of his most striking works is the Nietzsche bust at Weimar. At the Albertinum, in Dresden, is an important late work by this, a marble group of three beautiful women, Karl Seffner, "The Drama." (J.H.M.; M.H.S.; P.G.K.)

During the first half of the 19th century the prevalence of a cold, lifeless pseudo-classic style was fatal to individual talent, and robbed the sculpture of England of all real vigour and spirit. Francis Chantrey (1782-1841) produced a great quantity of sculpture, especially sepulchral monuments, which were much admired in spite of their limited merits. Allan Cunningham and Henry Weekes, who excelled in busts of men, worked in some cases in conjunction with Chantrey, who was distinguished by considerable technical skill. John Gibson (1790-1865) was perhaps after Reychman the most successful of the English classic school, and produced some works of real merit. He strove eagerly to revive the polychromatic decoration of sculpture in imitation of the circum stylisti of classical times. His "Venus Victrix," shown at the exhibition in London of 1862 (a work of about six years earlier), was the first of his coloured statues which attracted much attention. The prejudice, however, in favour of white marble was too strong, and both the popular verdict and that of other sculptors were strongly adverse to the "tinted Venus." The fact is that Gibson's colouring was timidly applied; it was a sort of compromise between the two systems, and thus his sculpture lost the special qualities of a pure marble surface, without gaining the richly decorative effect of the polychromy either of the Greeks or of the medieval period. The other chief sculptors of the same inartistic period were Banks, the elder Westmacott (who modelled the Achilles in Hyde Park), R. Wyatt (who cast the equestrian statue of Wellington, removed from London to Aldershot), Macdowell, Campbell, Calder Marshall, and Bell. Samuel Joseph (d. 1850), working in the naturalistic spirit, produced some strikingly realistic (in 1840) the remarkable statue of Samuel Wilberforce, now in Westminster Abbey. The brilliant exception of its period is the Wellington monument in St. Paul's cathedral, probably the finest plastic work of modern times. It was the work of Alfred Stevens (1817-1875), a sculptor of the highest talent, who lived and died almost unrecognized by the British public. The value of Stevens's work is all the more conspicuous from the feebleness of most of the sculpture of his contemporaries.

During the last quarter of the century a great change came over British sculpture—a change so revolutionary that it gave a new direction to the aims and ambitions of the artist, and raised the British school to a level wholly unexpected. It cannot be pretended that the school yet equals either in technical accomplishment, in richness or elasticity of imagination, or in creative freedom, the schools of France and Belgium, for these have been built up upon the example of national works of many generations of sculptors during several centuries. British sculptors, whose training was far less thorough and intelligent than that which is given abroad, found themselves practically without a past of their own to inspire them, for there existed no truly national tradition, with them it was a case of beginning at the beginning.

The awakening came from without, brought to England mainly by a Frenchman—Jules Dalou—as well as by Lord Leighton, Alfred Gilbert and, in a lesser degree, by Onslow Ford. Carpeaux, no doubt—despised of the classicists—the new inspiration was in a great measure due; for Carpeaux, who infused life and flesh and blood into his marble (too much of them, as has been here shown, to please the lovers of purism), was to his classic predecessors and contemporaries much what in painting Delacroix was to David and the cold professors of his formal school. But it was to Jules Dalou that was chiefly due the remarkable development in Great Britain. A political refugee at the time of the Commune, he received a cordial welcome from the artists of England, and was invited to assume the mastership of the modelling classes at South Kensington. This post he retained for some years, until the amnesty for political offenders enabled him to return to his native land; but before he left he had succeeded in making it clear that severe training is an essential foundation of good sculpture. If, without a past of their own to inspire them, for there existed no truly national tradition, with them it was a case of beginning at the beginning.

The whole conception of sculpture seemed to be modified, and intelligent enthusiasm was aroused in the students. When he departed, he left in his stead Professor Lantéri, who became a naturalized Englishman, and who exercised a beneficent influence over the students equal to that of his predecessor. Meanwhile, the Lambeth Art Schools—where Mr W. S. Frith, a pupil of M. Dalou, was conducting his modelling class under the directorship of John Sparkes (d. 1907)—were being maintained with great success. At the request of the Duke of Edinburgh, who was a pupil of his, and who reins particular period, was revived after many years, the inspiring genius of Alfred Gilbert aroused the students to an enthusiasm curiously contrasting with the comparative apathy, which passed as dignified restraint, of earlier days. British sculpture, therefore, when it is not coloured directly from the Italian Renaissance, is certainly influenced from France. But it is remarkable that in spite of this turning of British sculptors to romantic realism as taught by Frenchmen and Italians, and in spite of the fact that the spirit of colour and decoration and greater realism in modelling had been brought from abroad, the actual character of British sculpture, even in its most decorative forms, is not in the main other than British.

Nevertheless, there has been shown a tendency towards reviving the application of colour in sculpture which has not
met with universal approval. Although the polychromatic work of the Renaissance, for example, may keep its place, it is held to clash with the idea of sculptural art; for though there is no absolute approach to imitation, there is a very strong suggestion of it. The use of a variety of marbles and metals, or other materials, such as has been increasingly adopted, does not offend in the same measure, as the result is purely formal. Yet, in the final result, the work becomes not so much sculpture broadly seen, as an "object of art," amiably imagined and delicately wrought.

Indeed, the sculptor has been greatly reinforced by the artificer in metal, enamel, and the like. But the revival of metal-work, cut, beaten, and twisted, however fine in itself, does not help sculpture forward very much. It may even keep it back; for, popular and beautiful as it is, it really tends to divert the attention from form to design, and from light and shade, with planes, to ingenuity, in pleasing lines—a very beautiful and elevated art, but not sculpture. As an adjunct, it may be extremely valuable in the hands of a fine artist who does not mistake the mere wiggles and doublings which are the mark of the more extravagant phase of the so-called "New Art" for harmonious "line." But it must always suggest the man with the anvil, shears, and pincers, rather than the man with the clay and the chisel. It is mainly to Alfred Gilbert that is due the delightful revival of metal-work in its finest form wedded to sculpture, with the introduction of marbles, gems, and so forth, felicitous and in invention and ornament, and yet so far removed from the idea of this his school that this interest, is subservient to the monumental character of his sculpture.

The first effectual rebellion against the Classic, and the birth of Individualism, dates back to Alfred Stevens. The picturesque fancy of the Frenchman Roubillac (who practised for many years in England), with his theatrical arrangement and skillfully inherited from his master Coustou, had left little mark on the Englishmen of his day. They went on, for the most part, with their pervasive English spirit. Plaxton's "Nymph" is the highest point. But until Stevens, few in England thought of instilling real life and blood and English thought and feeling into the clay and marble. It was not only life that Stevens realized, but dignity, nobility of form, and movement, previously unknown in English work. Follower though he was of Michelangelo and the Italian Renaissance, he was entirely personal. He was no copyist, although he had the Italian traditions at his fingers' ends, and his feeling for architecture helped him to treat sculpture with fine decorative effect. Yet even Stevens and his brilliant example were powerless to weaken the passion for the Greek and Roman tradition that had engrossed England for a century at the time. The late Mr. Frampton's "Minos" in the Tate Gallery, and for his classically-inspired relief "Virgilia lamenting the Banishment of Coriolanus"—probably his most admirable and most exactly touching work—Meanwhile, Baron Carlo Marochetti (1800-1867; A.R.A., 1861; R.A., 1866), an Italian of French parentage, had tried to introduce a more modern feeling, and his "Richard Cœur de Lion" at Westminster, though now without reserve the incongruity of the 12th-century king; mounted on a modern thoroughbred, and raising arm and weapon with an action lacking in vigour. The intention was excellent and fruitful, notwithstanding, and the statue is not without merit. It was he who cast for Landseer the lions of the Nelson monument in Trafalgar Square.

Later on Charles Bell Birch (1832-1863; A.R.A., 1866), with his "Wood Nymph," introduced a new picturesque element in his "Wod Nymph," "Retaliation," "The Last Call," and the "Memorial to Lieut. Hamilton, V.C., dying before Kaloo"; but neither the work of his later period, or the sculpture of his contemporaries to any extent, doubtless on account of the strong Teutonic feeling it displayed.

Sir Joseph Edgar Boehm, R.A. (1834-1890), an Australian by birth, who married Celia, and his brother, helped to develop the scale of able studio-assistants (Professor Lanteri, Alfred Gilbert, and others), contributed somewhat to thaw the chill which the cold marble still seemed to shed around. There was not much inspiration in his monument of "General Gordon" in St. Paul's cathedral, and his "Wellington Memorial" is cold and empty, though correct in handling, and besides being the "Carlyle" on Chelsea Embankment, among his portrait-statues, had the right feeling in them. His busts were usually excellent.

J. H. Foley (1818-1874; A.R.A., 1849; R.A., 1850), who at first worked under the influence of the "Celtic" manner, and was able to throw his previous convictions to the winds, when he produced the finely spirited equestrian statue of "General Sir James A. Y. Gordon," and erected it at the request of Lord Eldon, in the Tate Gallery. This statue was welcomed with enthusiasm in the art world, and helped to remind the public that monuments need not be staid to dulness, nor stiff and dead in their imparturbance.

Meanwhile Henry Hugh Armstead (1828-1905; A.R.A., 1875; R.A., 1890), who had begun by devoting himself to the art of the silversmith, fashioning the St George's Vase," "The Packington Monument," "The Recumbent Shepherd," "The Female Shepherd," and the "London Milkmaid," with their "Memorial to the Nymph," "David and the Lion," now fixed in the Guards' Chapel. It is in very flat relief; ninevite in character of treatment, and carved wholly by the artist directly from the living model, it is, in point of execution, one of his best productions and his marble statute "Remorse," bought for the Chantrey Collection, is a remarkable example of combined intensity of expression and elevated purity of style. The work of Armstead is monumental in character—the mint has been so rare among British sculptors that there is a certain quality of all; and in almost everything he did there is a "bigness" of style which assures him his place in the British school.

"Antique" and "Moorish" are two of his first public appearance, as being the most convenient and the only consistent method that will prevent overleaping, we come to F. J. Williamson (b. 1853), who executed many works for Queen Victoria; John Landseer, R.A. (b. 1829), a sculptor of the family, who was one of his best productions and his marble statue "Remorse," bought for the Chantrey Collection, is a remarkable example of combined intensity of expression and elevated purity of style. The work of Armstead is monumental in character—the mint has been so rare among British sculptors that there is a certain quality of all; and in almost everything he did there is a "bigness" of style which assures him his place in the British school.

Landseer's "A Stag at Bay," his four colossal lions for the Nelson monument in Trafalgar Square, London, constitute his principal plastic works. They engaged him from 1859 to 1867, the year in which they were set up. The casting of them, as already stated, was carried out by Baron Marochetti. Each is 20 ft. in length and weighs 7 tons. They have great nobility and dignity of pose, and although they are not altogether sculptural in treatment, they are finely impressive with a good sense of reality.

George Simonds (b. 1844) is a product of the foreign schools. He is the author of many monumental works and not a little decorative. His "Dionysus astride his Leopard" (his finest work), "The Goddess Gerd," "The Falconer" (in the Central Park, New York), "Cupid and Campaspe" and "Anemone, the Wind Flower." His treatment of the woman, and his sense of caricature, add to his ability. One of the most intellectual realities about his best work, as well as imagination in conception. A. Bruce-Joy (b. Dublin, 1842) has produced ideal work and statues of public men for public spaces, and many busts.

James Brock (1846-1922) is a sculptor whose work is prodigious in amount as well as solid and scholarly, came to London from Worcester in 1866 and fell early under the influence of the English style. He is a man of high intellectual gifts and of considerable ability, and his work a merge of skill and good taste to the public. When his chief died, in 1874, Brock was appointed to carry out the great unfinished works in the studio—the "O'Connell Monument" in Dublin, the Lord Canning in Calcutta, and the "Wellington" in the City. But the prosperity of the '70s, and the nature of his style was formed, his career being already assured, he was percceptive enough to modify it, and, so developed, he left his master very far behind. The ideal work that marked this transition was "The
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Moment of Peril," a famous sculpture by Thomas Gainsborough, the Yorkshire sculptor who was the vice president of the Royal Academy and a sculptor of the 18th century. This sculpture, erected in the Strand, London, there is little trace of the classicism. In this work, being a bronze statue of Bishop Creighton in St Paul's Cathedral, there is a modern feeling entirely responsive to the feeling of the period. Onslow Ford's "Glory to the Dead," Tennyson (1909) in Trinity College, Cambridge, is one of his finest portrait figures, full of dignity and excellent in likeness—a worthy memorial.

J. Havard Thomas began in 1872 to exhibit portrait sculpture, and soon turned his attention to ideal work, but he did not attract widespread attention until 1886, when he produced "The Slave Girl," a work of considerable power. Girls by other sculptors—that by Hiriam Powers, for example. Somewhat struck in form, she is nevertheless full of very human grace and well-realized realism, and is a good example of the artist's power of obtaining the right idea of the work of the few to carve his own marbles, often without taking the intermediate step of making a clay model. This of course cannot be the case with his large sculpture, such as his great statue of "The Kt. Hon. W. E. Peckham," at Bradford, and his "Samuel Morley, M.P.", and Edmund Burke, M.P., "both at Bristol; but the beautiful small heads of peasants and children—such as the Donatelloque "Pepinella"—of Capri, where he lived two years from 1889 onwards, are mostly carved direct from life.

The beauty of his chisel work can be seen to perfection in the exquisite bust of Mrs Wertheimer in the Tate Gallery; the marble seems to turn to flesh under his chisel and to palpitate with life: it is in truth archaistic, with over-attention to which Mr Thomas has curiously and quite inadecately been reproached. It is true that such a mechanism can be achieved only by a 'rule of thumb' working, for it is in truth archaistic, but with an aim altogether different from that of the Greek. It is Classic in a sense, full of life and wonderfully modelled, but the attainment of perfection of human beauty was not the only aim of Thomas, as is seen in one of his later works, observing as but a rafacimento. There is a vivid sense of style in Mr Thomas's work, and sometimes a search for beauty in subjects which to the common eye may suggest the ugly. But Mr Thomas must be recognized as an artist of great power and originality and to the last degree conscientious. Sculptural subtleties he loves, and he works in a low key, quiet and unobtrusive, and severe though he may be, he is never austere. "Psyche and the Casket of Venus," to the last degrees, is a refined and decorative. His best figure is probably that of "Cain—My Punishment is Greater than I can Bear," executed in 1896; his latest work, "The Sisters" (1900), shows considerable grace. Mullins' Dudley (1889) and architectural embellishment was good in style, appropriate and effective.

Joseph Swynnerton (1871) was a sculptor who spent a good deal of his life in Rome and was under the influence of the National school. His best work is the fountain of flowers, zephyrs and splashing nymphs is, on the contrary, rather roccoco in style, with charming passages. On the other hand, Love's Chalice is Classic in feeling. Generally speaking, Swynnerton's work has an appearance of strength, without common-
Sculpture

[Modern British]

archaeology, must in such matters be the guide. There are, besides, the "Marlowe Memorial," set up in Canterbury—graceful and refined, but rather trifling in manner—and the "Jowett Memorial," a wall decoration, in the style of the Italian Renaissance. The work of Quatremère de Quincy, for he was the only sculptor who succeeded in the Grévin school of academic sculpture, was of the same character and true beauty, with insufficient power. But for his delight in decorative detail, he would have been far greater; for, however enriched they were beyond expression, the decorative details of his compositions were lost in the refinement of the composition. To explain the variety and abundance of small details im³poses poorness of effect. But against Ford's taste, especially against his admirable dexterity, little can be said. The high degree of refinement which his modelling, grace of line and composition, sweetness of feeling, which are the note of his work, are in a great measure a set-off against occasional weakness of design and character, and lack of monumentality.

H. R. Hope Pinker is primarily a portrait-sculptor. Of all his works the seated statue of "Dr Martinus" is perhaps the best, for it seems to indicate his technical development. His other works are numerous as his statues, of which the most popular is the "Henry Fawcett in the Market Place of Salisbury, but his most important work is the colossal statue of Queen Victoria executed for the government of British Guiana.

The most remarkable work executed by any British amateur-sculptor is the "Shakespeare Memorial," presented to the nation by Lord Ronald Sutherland Gower, set up by himself outside the Shakespeare Memorial Theatre (Stratford-on-Avon). The work was carried out in Paris, represents the poet on the summit, attended below by the four great characters—"Hamlet," "Henry V.," "Pygmalion," and "P. A." He has shown skill and happy display of symbolic inventiveness. Lord Ronald also modelled statues of "Marie Antoinette," "The Dying Guardsman," and other works which have secured wide attention.

The most ambitious work undertaken by a living sculptor, in the person of Sir J. R. (afterwards Lord) Leighton (1830-1896; A.R.A., 1864; R.A., 1868), who, in the following year, was to be the president of the Royal Academy, his first work was "An Athlete Struggling with the Python." No piece of sculpture of modern times made a greater stir on its appearance; for here was a work, by a painter, a work, it was declared, which would have done honour to the ancients, and which, if worthy its type and form, inserted in the group of the picture it displayed, original and strong in pose, in action and movement; scholarly in execution and instinct, with the manner of the painter himself. The group was hailed as a masterpiece by one who has been called the most eminent sculptor of modern times, and declared by the most exacting critics to be worthy to rank with the best examples of all but the finest periods. Yet it is somewhat lacking in expression—in that kind of humanity which every really great master of art should exhibit; and connoisseurs applauded the technique, the superb condition and the like, when they should have been caught by the sentiment. But Leighton was seeking only the beauty and expression of form, to the neglect of sentiment, he was well content with the reception and world-wide recognition of his work. One day the model for the "Athlete," tired out, rose and stretched himself, and the sculptor was so enraptured by the pose that he modelled it, and the model is a model on which the "Athlete," is in its way of still higher accomplishment than the "Athlete." It is just as Greek as the other in its devotion to form and its worship of the type of the human frame. But it is a condition, a sensation, an idea rather than an imitation of the human; it is certainly the higher conception. And it has some of the mystery which is distinctive of the finest art of ancient times, in which modern sculpture is, in comparison, a commonplace. As compared, in idea, with the relatively debased "Laocoon," which it seems in some degree to follow if not to challenge, the "Sluggard" belongs to a more elevated expression of a distinctly pagan art, and, as it were, to a better period. Great was the sensation made by these works, and by the charming little statue of "Needless Alarm" (cast by the "lost-wax" process), Leighton seems to have left no distinction in favour in the younger men.

T. Stirling Lee, by natural ability, and by the assistance of culture, is an artist of unusual elevation of mind and execution of excellence, and in his composition he aims at securing beauty by the arrangement of his figures in the panel, rather than at enriching them with details, as a designer would do. He is an acetic in choice of materials, so that his works generally remain beautiful sculptures of the human form, draped or undraped. It is for his power of telling a story beautifully in relief, and the pointed history of his work, that Mr St. T. Lee is among the finest work of their kind in England—that Mr Lee will continue to be admired: he is, beyond almost all others, a sculptor's sculptor. The "Wild Boar," extremely simple in conception, is a masterpiece of expression.

John M. Swan (1837-1910; A.R.A., 1894; R.A., 1905) a pupil of the Royal Academy and of Gérôme and Frémiet, specialized as a sculptor of natural flowers. He was a master of the art of his time, and his is his essay in his art, whose work is full of beauty and importance. For the most part, by no means exclusively, his sculptures are studies of flowers, mainly of the feliœa, but he would pass from the accretions of action to the covering skin and hair, with art seeking much to emphasize the bone and flesh, because they alone display, with the fascinating expressiveness of their sinuous bodies, the whole range of the passions in the most concentrated form. In the "Leopard Playing with a Tortoise," "Leopard Running," "Puma and Macaw," and similar works, we have the note of his art—sinuosity and grace, the sinuosities of movement, the sinuosity of sinew, to be felt with enjoyment. The note of Barye, the great Frenchman, from whom in some measures Swan drew inspiration, is power and strength and decorative form, but Swan is rather at fine, grim, naturalistic, and decorative, as the great artist's creation of a member of the animal world. In certain groups, such as "Orpheus" and "Boy and Bear Cubs," the sculptor combines the human figure with animal forms. In the composition of these, he is most effective.

Another student of animal life is Harry Dixon, whose bronze "Wild Boar" is in the Tate Gallery. "A Bear Running," excellent alike in character, form and construction, and especially in movement, has enraptured artists and admirers. "The Slain Enemy," a prehistoric man with a dead wolf—are among his chief works.

Mr Lucchesi is one of the few who, in spite of all discouragement, has not only persisted in concentrating his attention on ideal work, but has devoted most of it to the rendering of the female form. Prominent among his figures are those called "Destiny." The "Death of a Poet," "Carthage," "The Revolt of the Carthaginians," and "Verity and Illusion." Mr Lucchesi's main excellence is in the treatment of nude forms, in which he has succeeded, through agreeable working out of idea and excellent technique, in interesting a public usually indifferent to this branch of sculpture.

Alfred Gilbert (b. 1854; A.R.A., 1887; R.A., 1892), resigned, in 1892, the post of Superintendent of the British Museum. He has been a biographer of various kinds, and he is a graphic, fluent, and a naturalistic sculpture, not only as being a master of his art, but as having preserved in his work a great movement, and in less than a decade effected more than any other man for the salvation of the British school. His "Melrose Memorial," "Caraghue," and "Carmilla," are among the finest of the sculptors of the country. Among his earlier works are two fine heads of a man and a girl, pure in style and incisive in character, which were cast by the "écorché," or "lost-wax," process, which he had learned in Naples. His introduction into Great Britain—or it may be more correct to say, its revival—had considerable influence on the treatment of bronze sculpture by British artists. In Gilbert's "Memorial of Classical Sculpture," which first appeared in the biographies full of character, with a spiritual and decorative as well as a physical side, and the mental quality displayed with many sympathy. Flesh and textures are perfectly realized, yet broad, light, and with the greatest freedom, as in his handling of the portrait-statues, such as the fine effigy set up to "John Howard in the market-place of Bedford. The monument with which Gilbert's name will ever be associated is the "Statue of Queen Victoria," set up at Bournemouth, which, since its erection and re-erection in that city, has been irretrievably injured by depredations, and remains incomplete in its decorative details. The queen is shown with extraordinary dignity. Large in its masses, graceful in its lines, the person of the queen enveloped by all the symbolical figures and fanciful ornaments with which the artist has chosen to enrich it, the monument marks the highest level in this class to which any artist has brought his talent. The "Queen Victoria," of the Swan's jubilee of 1887, typifying Britannia's realm and sea power in endless poetic and dainty suggestions of beautiful devices. Around, Gilbert's memorials, not mentioned elsewhere, are those to "Frank Holl, R.A.," and to "Randolph Caldecott," both in the crypt of St Paul's cathedral, London; the "Henry Fawcett" memorial in Westminster Abbey, and the "Prince Albert" monument at St James, to which has been added a "little garden of sculpture." The finest work of its kind in England is the "Tomb of the Duke of Clarence" in St George's chapel, which in 1910 still awaited final completion. Perhaps his best composition expressive of emotion is the half-length group "Mors Janae Vitae," a terra-cotta group designed to be executed in bronze for the hall of the Royal College of Surgeons. It is a work of great nobility, and the figures are those of the doctor and sculptor. Gilbert is fond of dealing with a subject which allows his fancy full play. His work is full of colour; it is playful and bold; but the smallest details are in treatment, and it is carefully thought out and thoroughly designed. His playfulness has taught him at times to be somewhat too florid in manner; but his taste is so just, and his fancy so inexhaustible, that he has safely emerged from a temptation where another man would have run riot and come to grief.

Robert Stark is an animal sculptor who has usually attracted the notice of connoisseurs rather than of the greater public, and his fame has been built up by a work that has not been seen in the Chantrey Collection. Mr Stark has a profound knowledge of
SCULPTURE—BRITISH (a)

PLATE III.

ALFRED STEVENS—The Wellington Monument, St Paul's Cathedral, London.

SIR GEORGE FRAMPTON, R.A.—The Dr Barnardo Memorial.

LORD LEIGHTON, P.R.A.—The Sluggard.

HARRY BATES, A.R.A.—Homer.

H. H. ARMSTEAD, R.A.—Lieutenant Waghorn.

G. F. WATTS, R.A.—HUGH Lupus.

A. GILBERT, M.V.O.—Icarus.
Plate IV.

SCULPTURE—British (b)

E. ONISLOW FORD, R.A.—Shelley Memorial.


W. HAMO THORNYCROFT, R.A.—Teucer.

ALFRED DRURY, A.R.A.—Innocence.

F. DERWENT WOOD, A.R.A.—Psyche.

BERTRAM MACKENAL, A.R.A.—Diana Wounded.

ALBERT TOFT—Antigone.

HAvARD THOMAS—Lyceum.

W. HAMO THORNYCROFT, R.A.—Dean Colet.

W. GOSCOMBE JOHN, R.A.—St John the Baptist.
animal anatomy; his range is considerable, and he is as easy with a rhinoceros as with a cart-horse or a hunter.

Conrad Dreassler is best known for his busts of distinguished men, but his statue of "A Girl Tying up her Sandal," and his two large marble statues in the New Broadcasting House, London, are, as a matter of position. There is a cleverness, a daring, in his marked style, vigour of treatment, and a tendency towards emphasis, in his decorative work, much of which is designed for execution in Della Robbia technique. He is, however, a sculptor of the utmost versatility, and has executed some important work, including a bronze "Sacristane."

In the work of Harry Bates (1850-1899; A.R.A., 1892), especially in his portrait busts and figure work, and in his decorative treatment, it has been shown up to that time. Style and a genuinely modern treatment of classic form, which is not weakened by touchés of naturalism, were prominent in his work. His most characteristic work, however, is "The Death of Promethus," and "The Thorn" (exhibited in bronze in 1910), graceful and quaintly charming, with elegance in the pose and in the action. Little of his decorative work includes the sculptural figures in Stamford Hill Church.

The name of Captain Adrian Jones was for many years chiefly associated with the spirited work called "Duncan's Horses," a group of laying horses, with the national emblem, the Union Jack, between them, and his work generally is sculptural, with movement and animation. A. G. Waller has produced notable work in the class of pure sculpture, including the relief representing "The Last Plague; The Plague of Rage," and "First and Last," and in portrait busts and figure work, with movement and animation. Since then his equestrian statue of "The Duke of Cambridge," erected in Whitehall, London, outside the War Office, has been recognized as a vigorous performance. His most important work is the monumental quadriga designed to crown Burton's great Arch at Hyde Park Corner, London.

W. Reynolds-Stephens (b. 1862), more devoted to goldsmiths' figures than to purely sculptural searching, must be considered less as a statuary than as a designer. A relief, after Sir L. Alma-Tadema's "We men of Amphissa" (1889), was followed by a "Wall Fountain," "Truth and Justice," and the "Panther and Pallas Athene," both of which are very striking in conception. In the highly decorated "Launcelot and the Nestling," "Guinevere and the Nestling," and similar works, the artist makes use of various coloured metals, ivory, gems and the like, with pretty symbolism. Apart from this work, which is purely decorative, and is based on the study of the line and the form of the figures, "the flora and fauna" of art, there is seen the influence of the ancient world about the lines of his figures and reliefs, which display a charming feeling and refined taste. By his working dance he has done much to bring the English plainer in form and ornament into a style. His bronzes have a power of a sort, too anecdotal "A Royal Game" and "The Scout in War," exhibited in 1908, an equestrian group of great refinement and excellence.

Alfred Drury (b. 1857; A.R.A., 1900) was a pupil of Dalou, whose assistant he was for a time in Paris. The first result was the curiously自家 of the master's style, "The Triumph of Silenus" (1885). "The Genius of Sculpture" and "The First Reflection" (bought by the Tate Gallery); "The Giving of the Sword" (1890); "The New Zealand Prayer" (1890, Manchester Corporation Gallery) were followed by the "Colonnade," a work, which, through its grace, elegance of line, and symbolic realisation of the subject, achieved a great popular success and was acquired by Leeds. The bronze head of "St Agnes" (1894) is one of the first examples of Mr Drury's later style, belonging to the higher order of conception which, generally speaking, he has since maintained. This may be seen also in "Griselda" (bought for the Chantry Chapel at Lambeth Palace in 1904). The "Brunnenstatue," which, as the "Birth of Venus," is a clear representation of the lost statue of "St Agnes" (1894) at the Free Church of England, and in the series of "The Months," at Barrow Court. For the decoration of the City Square at Leeds Drury executed the "Garden of Eden," a large facade, consisting of the colossal figure entitled "Even." His colossal groups fill the large decorative spaces, three-dimensional panels in high relief for the piers of Lambeth Bridge, and the decorative sculpture for the facade of the new Victoria and Albert Museum. In all of these works, or at least the first among the latter are the figures of "Inspiration" and "Knowledge," executed in 1907. Drury's quiet, suave, and contemplative art lends itself well as decorative sculpture to architectural embellishment. His portrait is also good, reticent, and full of character, and as a manipulator of clay he represents the highest contemporary standard of English sculptors.

Frederick W. Pomeroy (A.R.A., 1906), pupil of the Lambeth and Royal Academy Schools, and of Mercié, is of equal taste and ability. After 1888, when he exhibited the bronze statueette "Giotta," he produced many ideal works—Love, the Conqueror (Walker Art Gallery, Liverpool); Peace (Osborne House, Isle of Wight); "In the Piping," "Dionysos," and "The Nymph of Locoh Awe" (both in the Tate Gallery). A Nymph Finding the Head of Orpheus, "Undine," "Pensée," and the clever study of the nude called "The Potter," as well as "The Fiddler," and an india-rubber cat, "Barnaby Collin," that of "A British Boy" is an original and powerful work. "Feronia" (1909) is a nude statue, in bronze, remarkable for grace and sculptural animation. In ideal portraiture he has produced the statues of "Admiral Blake," "Dean Hook" (a colossal work for Leeds), "Oliver Cromwell" (also colossal, for St Ives, Huntingdonshire), Robert Burns for Paisley, as well as R. P. Bonington (1910), "The Duke of Wellington," and the "Earl of Elgin and the Melvin," and similar work, together with the life-size panel of "Archbishop Temple," in bronze, for St Paul's cathedral. In true portraiture, Pomeroy executed the Liberal Memorial Statue of Mr Gladstone, in the Reform League (1903), the "Queen Victoria Monument", and the Duke of Westminster, for Chester cathedral. His work is strong and sculptural, and his statues stand well. He sees nature in a big way, and his development is effective and well designed.

Alfred Toft became known by his statute of "Lillie" (1897), and
emphasized the impression then created by "Fate-Led" (1892, Walker Art Gallery), "Age and the Angel of Death," "In the Sere and Yellow Leaf" (a remarkable study of old age), "The Goblet of Life," and "Hagar." The "Spirit of Contemplation" and "The Cup of Conscience" (1908) belong among the most striking of the sculptor's later works. His portrait busts are often remarkable for their intensity and refinement. His memorials of the Boer War, at Cardiff and Birmingham, in design and silhouette, are among the most striking in the country. In "Mother and Child" (1903) and "Maternity" (1905) he has produced several of the most successful, after dignity, harmony, evenness of balance, and relation of the whole.

Professor Édouard Lantéri, a naturalized Englishman, to whom Britain is deeply indebted, was born in Paris, and came to this country in 1849. He was the pupil of the sculptor, Théodore G. Raingo, and has produced some of the most refined and exquisite works in the country. He is the son of the celebrated sculptor, Jules Lantéri, and has been a resident of this country for many years. His portrait busts are often remarkable for their intensity and refinement. His memorials of the Boer War, at Cardiff and Birmingham, in design and silhouette, are among the most striking in the country. In "Mother and Child" (1903) and "Maternity" (1905) he has produced several of the most successful, after dignity, harmony, evenness of balance, and relation of the whole.

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SCULPTURE—BRITISH (c)

PLATE V.

W. R. COLTON, A.R.A.—Maharajah of Mysore

SIR CHARLES LAWES-WITTEWRONGE—
The Punishment of Dirce.

G. F. WATTS, R.A.—Clytie

SIR J. EDGAR BOEIM, R.A.—Carlyle.


D. C. FRENCH—Indian Corn; Bull by E. C. POTTER.

AUGUSTUS ST GAUDENS—Memorial to Robert Gould Shaw.

FREDERICK MACMONNIES—Nathan Hale.
(By permission of Theodore B. Starr, New York. Copyrighted by Frederick MacMonnies.)
SCULPTURE

representing the arts for the Kelvingrove art gallery at Glasgow. A great mural tomb followed, with “Love Sacred and Profane” as its motif, together with a series of other works of growing artistic importance, which were displayed in the Royal Scottish Academy. The sculptural figure, is in powerful contrast to the three works that appeared in successive years; “Abundance” (a group of a woman and two children) and the marble statues “Atalanta” and “Psyche” and “Chase” (of a young girl), are all in keeping with this trend in form and style. At the same time Derwent Wood produced the two boy figures on the piers to the southward of the Queen Victoria Memorial in front of the Albert Hall, which, in form and expression, does, sculptural character, firmness and delicacy of handling, with a richness of style and appreciation of breadth and simplicity.

Paul Montford, the son of Horace Montford, after a brilliant academic career, has made this mark in decorative sculpture, and is not by such work as “Court Favourites” (1906) that he sustains his reputation, but rather by the sculptural embellishments wherewith the archway connecting the Local Government offices with the Hall of the University of London, to which he has contributed, and one of his best ideal figures, and the 18th century “Viscount Boling- broke’s” and “The Storm Waves” are characteristic of his vigorous style and personal conception and execution.

John Tweed, who studied under Falguière and Rodin, was influenced more by the latter than by the former, and inclines rather to the impressionistic school than to the academic. His statue of Cecil Rhodes (1902) embodied a further development of the School of the South African sculptures.

Sculptors include such accomplished amateurs as H.R.H. the Duchess of Argyll (“A Crucifix” —the Colonial Memorial in St. Paul’s cathedral) and Countess Gleichen. The life-size figure of a soldier killed in the Boer War, “The Harpy”, E. M. Rope (“Springtime”, relief); Lord Blundell (“Fishermen hauling a Net”), Margaret Winser (“Mourners”, a relief), Esther Moore ("At the Gates of the Past"), Edith Maryon (“The Fox”), and Conan Wilson Williams (“The Lorelei, 1907, and charming groups of children."

The sculptor-decorators make a group of workers of striking fancy and ability. Lynn Jenkins, whose frieze in bronze, ivory and mother-of-pearl for Lord Lloyd’s is a remarkable achievement; and he has one of the leaders. He has latterly devoted himself to pure sculpture, such as the life-size bronze figure on a sarcophagus, “Destiny” (1909) and the group of the “three Graces” (1910). His works display a feeling and delicacy of carving. Walter Crane designed for Manchester a sculpture that is remarkable for beauty of conception and felicity of symbolism. Alexander Fisher and Nelson Dawson should be included in the groups. Other sculptors already mentioned, including Thornycroft, Gilbert, Frampton, Pomeroy, Colton and Toft, have all devoted themselves to sculptural decoration pure and simple, whether in metal, stone, or marble.

A man of similar force is Joseph Epstein, who replaces refinement by vigour, archaic simplicity, and primitiveness of outlook, as though caught up in the sweep and passion of the garden of the Tuileries. His work, in which he leans towards the modern German view, is mainly decoration for buildings; his most discussed productions are the statues (1907) on the topmost story of the South Africa Building in the Strand.

Richard Garbe, a sculptor of equal strength, was a pupil of the London County Council School of Arts and Crafts and began to exhibit in 1898. Rugged power both in subject and execution mark his productions. His ideal works, such as “The Egoist” (1906), “Man and the Ideal” (1907), “The Idealist” (1908) and “Undine” (1909), illustrate his range of thought and reveal his uncommon vigour which amounts, it might be said, to well-controlled, idealistic brutality; they are broad and impressive, and are conceived in a monumental spirit.

Charles L. Hartwell has grace and strength combined. The nude figures, with their lyricism, recall the work of the West of Ireland’s, and the “Bathers” (1907), are both works of refinement and elegance, and “Dawn” (1909) displays unusual charm and, like the others, offers a silhouette of much interest. With the exception of “Chantrey”, his “Sirens” (1910), vigour is the note of the small group “A Foul in the Giants’ Race”, which was acquired by the Chantrey trustees in 1898.

Benjamin Clemens, pupil of Professor Lantéf and the Royal College of Art, is another member of this talented group. His life-size group, “Sappho” (1902), “Cain” (1904), “Eurydice” (1906), and “The Three Graces” (1907) and his life-size group, “The Grandfather”, (1906) and “Ariadne”, which, translated into marble and re-exhibited in 1908, was bought by the trustees of the Chantrey Collection and is now in the Tate Gallery. His other more important works include “The Long, Long Dreams of Youth” (1906), “Narcissus” (1906), and “Prometheus” (1909). Without revealing any striking originality, “Ariadne” reveals a good sense of the sculpturalsque, and his busts are refined and good.

Oliver Whelstey, formerly assistant to Brock, and pupil of Aman-Jean, has done much decorative work. His life-size recumbent statue of the Boulougne (1906) is a relief of high standard of beauty. F. Tyrrell, who first attracted attention by his decorative figures on Professor Pite’s house in Mortimer Street, London, has shown much fanciful grace in his “The Ideal”, such as “The Whips” (1906).

Reuben Sheppard has shown himself poetic and pleasing in symbolic suggestion in his striking half-length group “The Music of Destiny”, and his “The Eve of” of the same year, produced a greater work.

The Irish sculptor, John Hughes, achieved a great success by his monument to Queen Victoria erected in Dublin. It is a fine combining of sculpture and architecture, with a feeling of sincerity and simple beauty; and although it reveals too great a love of ornament it is impressive alike in mass, design, silhouette, and general arrangement. There should also be mentioned, among the younger sculptors, Mortimer Brown (“St John the Baptist”), David B. Brown (“The Spirit of Ivy”), Bertram Pagram (“Down to the Sea”), the scoppers, McFarlane Shannan (“The Arcadian Shepherd’s Dream”), Ken- sc Stops, and J. Crossland Mclure (“Leicester War Memorial”); Herbert Ward (bronze of South African savages, “The Idol Maker” and the like), Alfred Turner, Charles Pitlworth, and F. Arnold Wright.

The sculptors who have produced works of the same order as that of their colleagues include the following names: Alfred Stevens, Sir Edwin Landseer, Lord Leighton, J. M. Swan, W. Reynolds-Stephens, George Richmond, and G. F. Watts. George Richmond’s real talent may be said to be in the sphere of architectural sculpture. His son, Sir William Richmond, K.C.B., has also practised in sculpture—the memorial tomb of Mr and Mrs Gladstone is his. Watts educated himself artistically on the Elgin Marbles, and in the works of the great sculptors he found his source of inspiration. He is high among the world’s finest sculptors of the 19th century. The recumbent effigy of “Bishop Londsdale” in Lichfield cathedral was an epoch-marking work, not only in the technical matter of the bold treatment of the drapery, but in largeness and breadth and its remarkable sense of style, and the “Lord Lothian” in Bickling church is also very remarkable. The artist then produced the colossal equestrian group of “Hugh Lupus” for the duke of Westminster (Eaton Hall), a composition as imaginative and original as it is grand and sculpturalsque. Then followed “Physical Energy,” another equestrian group, which, after being about twenty years in progress, was cast in 1909. The group is an example of unostentatious strength; and one of his best works is the statue of Sir George Cayley, which is to be seen at Bunratty Castle. His “Clytie” is surpassed in bigness and classic purity of style and feeling by nothing ever produced in England; it is a complete and noble thing. There is no sculptor who has more power to obtain the grandeur of form which is so wonderful in the Greek masterpieces. Simple in line, intense in character, full and rich in modelling, Watts’s work is instinct with vigour, breadth and movement. It seems to represent the plastic expression of the life of the sculptors of the younger school not to be led away by the dainty and fanciful, however alluring. Especially it warns them against what has become a feature with a certain section—the devotion to materialism and embellishment, with the result that it is not he who can make statues necessary, but is he who is the necessary sculptor. Watts himself created a style of his own, and although it has coloured the work of some of the younger sculptors of the day, it is not likely to obtain any very wide hold, or
to exercise permanent influence for evil. The variety and independ-
ence of the British School are such that it is impossible to define any
particular tendency in its practice other than towards an ever-
increasing rise in the level of technical excellence and the plastic
design. There is, broadly speaking, a general stand against the
"modernity" imported into sculpture by the younger members of the
British School; this is being carried out to the art to the illustra-
tion of everyday life and to the rendering of effects which
seems considered to be the function of the plastic arts.
(M. H. S.)

After 1870, when a great artistic movement marked the
resuscitation of France after the Franco-German War, sculpture
especially revived with exceptional vigour, and the last
thirty years of the 19th century were a memorable
epoch in its history. Not that many men of genius suddenly arose, for most of the artists
who then came to the front had already distinguished themselves by equally noble work; but sculpture, like the other arts,
benefited by the pause for thought, and by the ripe and manly
tone stamped on the national mind by the discipline of events.
Intense ardour animated the admirable group of French sculptors:
the oldest still found some lofty expression; the men in their prime showed their powers with unwonted force and fire;
and the younger generations grew up in rapid succession, a
close phalanx of artists who, in the most increasing, for if we include only living artists, and those who lived
honours in the Salons, we find a list of seven hundred exhibitors.
The first generation of survivors of the war, who led the way
in the new period, still boasted of such men as Dumont (1801-
1884), Cavelier (1814-1894), Bonnassieux (1810-1892), Jouffroy
(1806-1884), Schoenewerck (1820-1885), Carrier-Belleuze (1824-
1887), Aimé Millet (1819-1891) and Clésinger (1814-1883).
These artists, born in the first quarter of the 19th century, were
for the most part each the head of a studio, their teaching being
carried on till the end of the century. Next to them followed
their immediate pupils, already their rivals, and some indeed
famous before the new era; such were Guillaume, Dubois and Frémiet;
others, fresh from the Academy at Rome, at once rose to
distinction, and all combined to form the remarkable group
of artists to which the modern school of French sculpture owes
its world-wide fame. At this time Eugène Guillaume (1822-
1905) was exhibiting his "Roman Marriage," his "Bust of Mgr
Darboy," his "Orpheus," and "Andromache," works of learned
skill and severe distinction. Paul Dubois (1829-1909) executed his
"Narcissus," and the "Tomb of General Lamoricière," on
which the decorative figures of Chappu, Lagier, Fauchez, and
Cardinal Courage are popular favourites, full of grave and pathetic
feeling. Chappu (1833-1891) executed his exquisite figure of
"Youth" for the tomb of Henri Renoult, and that of
"Thought" for the tomb of Daniel Stern, his monuments to
Berruyer and to Mgr Dupanloup. Barrias' (1842-1909) "First
Interment" won him the medal of honour in 1878; besides his
patrician group of the "Defence of Paris." Falguière
(1831-1900) produced a remarkable series of statues, character-
ized by their life-like power; some dignified or pathetic, as
"St Vincent de Paul," "La Rochefoucauld," and "Cardinal
Lavigerie"; some full of bold and dashing spirit, as his "Diana,"
his "Nereids," and "Hunting Nymphs." Mercié gave us
"Gloria Victis," "Quand Même," and his monuments, among
which that called "Memory" must be mentioned; his pediment
for the Tuileries; his "Genius of Art," &c. Delaplanche
(1836-1890) produced his "Mother's Teaching," "Music,
"The Virgin with a Lily," and "Aurora," and Allar "The
Death of Alcestis," and to these names must be added those of
Degeorge, Delaplanche, with Chappu, gave so powerful an impetus to the
art of the medalist; of Gauthier, Huyot, Thomas, Cauchoix,
Lafrance, Maniglier and Moreau-Vauthier—one of the men who
with Gérôme (the painter) and Frémiet, revived the taste for
coloured sculpture, a style first attempted long before by Simart;
besides many more. These artists created a supremely healthy
and vital school of sculpture, dignified and elegant, learned and varied,
fresh and charming, and, above all, as single-hearted and as well trained as in any period of history.

To understand, however, the position of contemporary sculpture in France, it will be necessary to look back even
further than 1870. It must be remembered that the whole
history of French sculpture, as far back as the 17th century,
is connected with the invasion of Italian influence in the 16th
century, which remained paramount over French art for more
than three hundred years. Statue-making, until then an art
of expression—national, popular, human and Christian—lost
its primitive character under the dilettante refinement of an
aristocratic society closely gathered round a king who made art
subservient to his splendour or his pleasure; it sank into
superficial and conventional beauty, and became almost ex-
clusively the interpreter of these ideas of ingenious or flattering allegories
derived from the dead fables of heathen mythology. Among
that which would be expected from this was choice elegance of line,
a harmonious treatment of mass and composition, a loving
study of the nude—in short, a purely plastic type of art. And
sculpture had become the art of the nobility and of the court,
having no hold, as it had in the past, on the great human family—
the nation. Still, even at the high tide of Louis XIV.'s reign,
some dissatisfaction became evident, even some rebellion, in
the great though solitary spirit of Puget, who strove to animate
the marble. Barye and Cézanne, with their convention,
asserted their right to infuse life and passion and movement
into their statues, seeking them in the despised province of stern
reality. The great cataclysm of the Revolution, which might
have been expected to break the bonds of thought, turned men's
minds to contemplate the Antique, and though it certainly
modified the style of sculpture, was far from changing the source
of its inspiration, since it sent it once more to the Antique.
Indeed, at the beginning of the 19th century, when the teaching
of the Antique was paramount in spite of Gros, who, then in the
master's studio, was unconsciously sowing the seed of romanticism
in painting, a robust individuality was developing among
French sculptors—a spirit somewhat rugged, independent,
and partly trained, beyond the academic pale, prepared to carry
on the tradition of Puget, and quite simply, without any revolu-
tionary airs of innovation, to shake off torpid conventionalism.

By the mere force of a strong plebeian temperament Rude quite
naturally happened on a style of art—high art—at once expressive
and popular. He was the first to raise the cry of liberty in
sculpture, and he left successors who bravely worked out what
he had begun. Barye and Cézanne were both in 1875 on the
threshold of an era to which they bequeathed a fruitful era. The
Barye carried on Rude's tradition of expression, and transformed
what had previously been mere decorative carving into a new
style and branch of art now adopted by a whole phalanx of admirable artists: the sculpture, namely, of animals, the first
glance that sculpture had till then bestowed on nature apart from
man. Carpeaux, who was much younger, was in his day—
as Puget had been—an exceptional personality; he carried on
the slow revolt of two centuries which was to break the narrow
mould of school-training and infuse a soul of more ardent vitality
into sculptured forms.

The importance of these two great artists in relation to con-
temporary art was not fully seen till after the July revolution. In point
of fact Painting had until now amply filled the new part assigned to Art; its vehement efforts had strongly influenced public
opinion; and as, in the early years of the 19th century, it had
largely extended the field of human vision over the remote
past and the domains of feeling, with the promise of surveying
all nature, space and time, the spirit of the age asked no more,
and did not expect sculpture, too, to abandon old-world myths.
It must also be said that those sculptors who at that time carried
on the classical tradition had renewed its youthful by their learned
and enthusiastic revolting; they had reverted to the past,
but it was the past of the really great masters, either of antiquity
or of the early Florentine school, no less enamoured of life,
beauty and nature. Guillaume and Paul Dubois, Chappu and
Falguière, Mercié, and Delaplanche were the rivals in sculpture of the
great idealist painters—Poussin de Chavannes, Gustave
Moreau, Ricard, Delaunay, Baudry, and Henner—who were
working at the same time.

SCULPTURE

[MODERN FRENCH]
SCULPTURE—French (a)

A. FALGUIÈRE—St Vincent de Paul.

E. BARRIAS—The First Funeral.

E. DELAPLANCHE—The Virgin with the Lily.

A. IDRAC—Mercury inventing the Caduceus.

JUSTE BECQUER—St Sebastian.

L. GÉRÔME—Bonaparte at Cairo.

L. MARQUESTE—Galatea.
PLATE VIII.

SCULPTURE—FRENCH (b)

FRÉMIET—The Bear Hunter.

L. LONGEPIED—Immortality.

D. PUECH—The Siren.

E. GUILLAUME—The Roman Marriage.

R. DE SAINT-MARCEAUX—Genius guarding the Secret of the Tomb.

A. MERCIE—Souvenir.

A. RODIN—The Kiss.
Sculpture

This is what accounts for the fact that romanticism then found so little acceptance among sculptors. But in the next generation the sowers of the seed might see their harvest. The pupils of Rude, of Barye and of Carpeaux, allied by school sympathies—the little drawing-school conducted by Lecocq de Boisbaudran, which, in despite of the studios of the Beaux Arts, created a group of independent and highly original artists—formed the centre of a distinct force which increased day by day. Young men, fresh from Rome, persistently kept up the spirit of the Antique. A galaxy of learned and refined artists was represented (1837-1838-1839-1841). "Orpheus," Idrac (1840-1884) ("Mercury inventing the Caduceus," "Salammbo"), Marqueste ("Galatea," "Eros," "Perseus beheading the Gorgon," "The Rape of Europa"), and Coutan ("Eros," "A Woman carrying Leaves," "A Sergeant-at-Arms," &c.), Lanson ("The Iron Age"), Longepied (1845-1888) ("Immortality"), Peinte ("Orpheus charming Cerberus to Sleep"), Gustave Michel ("In a Dream," "Meditation"), Carles ("Innocence," "Abel"), A. Boucher ("Earth," "Au but"), besides Carlier, Léonard and Turcan (1845-1850-1851), soon to be followed by another generation: Puech ("The Siren," "The Muse of André Chénier"), Verlet ("The Monument to Maupassant," "Orpheus"), Larche ("The Brook and the Meadow," "Violets"), Sicard ("Hagar and Ishmael"), and Daillon, Escoula, St Lami, and many more. In opposition to these there stood a group of sculptors, young and old, who sought their subjects in mythology, legend, history or poetry, or merely in the scenes of daily life, and aimed at presenting the ideal of their time under its external aspects, but more especially the deepest emotions of the modern mind. It was Frémiet, with his striking and vivid conceptions, who led the advance with new and dramatic subjects: primal man and the fierce beasts with which he disputed his rule ("A She-Bear and a Man of the Stone Age," "An Oran-utan and a Savage," "Gorillas"), or embodiments of the heroes of the past ("Joan of Arc," "Saint Louis," "Saint George," "Louis of Orleans," &c.;), then followed Just Bequet (1829-1897), the excellent artist who represented the stricken figures of "Ishmael" and "Saint Sebastian"; Christophe (1827-1892), with his symbolical pre-sentiments of The Human Comedy, "Fortune" and "The Supreme Kiss"; Aubé ("Monument to Gambetta," "Dante," "Bouilly," &c.); A. Legros the naturalised English painter and sculptor, "common man" with his "legend," "Egyptian" or "Ishmael," or "Saint John the Baptist," "The Age of Bronze" or "The Burgesses of Calais," "Victor Hugo" or "Balzac," he avoids all the conventional details and attributes of his personages to embody the very essence of humanity as expressed in the quivering flesh. He, like Carpeaux, has gone back, to Dante and to Michelangelo to force the "Gates of Hell"—the subject chosen for the entrance to the Musée des Arts Décoratifs—and to read the deepest mysteries of the human soul. His is the art of suffering, anguish and terror, of cruel and despairing pleasure—a wild cycle of proud and bitter melancholy. All the efforts made in the past to infuse life into Art, all that Puget, Walpurg, Figale and Houdon tried to effect, and that Rude, Barye and Carpeaux strove for in their turn—all this was part of the endeavour of these their successors, but with a clearer purpose and more conscious aim. By good hap or providence they were greeted on their way by the voice of the most devoted apostle who was to preach the new doctrine, namely, Louis Courajod, the founder of the French sculpture gallery in the Louvre. From his professor's chair in the schools he cursed the Italian intruders of the 16th century for having debased French art subject "nobles chimeres," extrava-gant gestures and allegorical antites; and he carried his pupils and his successors back to the great national period of French sculpture, which, in the dark medieval ages, had created the splendid stone images of the noble French cathedrals.

A marked individuality now appeared in protest against academic traditions—Albert Bartholomé. He, after beginning as a painter, was tempted by sculpture, more particularly, in the first instance, by a wish to execute a monument to a comrade he had loved. From this first effort, carried out in his studio, without any school training, but with a firm determination to master technical difficulties and fulfil his dream, followed a broader purpose to execute a great expressive and vitally human work which should appeal to the heart of the populace. From this arose the idea of a "Monument to the Dead" in Père Lachaise. Bartholomé had started without a guide, but he instinctively turned to the great tradition of Northern Christianity, which his mind subsequently associated with that of the antique race who had ever done most honour to Death, the people of Egypt.

Thus two currents contended, as it were, for the guidance of French sculpture, on either of which may be traced the influence of the Italian, of the Greek, of the Roman, of the Latin and Hellenic origin, to which the French school, since the time of Jean Goujon, has owed three centuries of glory. This is the pagan art of the South; its marks are balance, reasonableness and lucidity; it was the composer of apotheoses, the preserver of the ideal of beauty. The other, reverting, after centuries of resignation or of impotent rebellion, to the genuine French past which produced the noble works of the 12th, 13th
and 13th centuries—to the tradition of Flanders and of Burgundy, which was smothered in the 16th century by Italian art—to the Christian and naturalistic art of the North, which renounced the canons of antiquity, and expressed itself by methods essentially human and mutable, living and suffering—appeals to all mankind. The immediate result of this antagonism was no doubt a period of agitation. The outcome, on the whole, is confusion. But the Luxembourgeois art, the "chapels of fops" and "tumult"—so vividly inspired by the facts or ideals of contour, colour, and contrast—the young artists like Jean Boucher ("Evening," "The Antique and the Modern"), Roger Bocche ("Childhood," "Cold"), Derré, Boverie, Hippolyte Lefebvre, Deurnelles, Gaston Schnegg, Pierre Roche, Fix-Masseau, Coutelhans, and others seem to show that French sculpture is about to assume a solid position on a sound foundation, while not ceasing to keep in touch with the tastes, aspects, and needs—in short, the ideal—of the day. Thus, while painting engaged the attention of the public by its new departures, its daring, and its very extravagance, sculpture, which by the conditions of its technique is less exposed to transient influences, has, since the close of the 19th century, developed normally but with renewed vigour. If the brilliancy of the school was not so conspicuous and its works gave rise to little discussion or speculation, it is not the less certain that at the beginning of the 20th century the younger generation offered the encouraging prospect of a compact group of sculptors who would probably leave works of permanent merit. Yet sculpture too had gone through a crisis, and been deeply stirred by the currents which so violently agitated all modern thought. We have already spoken of its "state of mind," that consciousness of a glorious past which link it to the antique, and the craving to render in its own medium, with greater freedom and fuller force of expression, all those unuttered meanings of the universe and of contemporary thought which the other arts—painting, literature, the drama, and even music—have striven to identify and to record. But the acute stage of tentative and incoherent effort seemed in 1910 to be past; inspiration had returned to its normal channel and purely plastic expression.

The powerful individuality which had the most vital influence on modern sculpture is French, and, it may be added, on many foreign schools, is that of Rodin. During the ten years which followed the Great Exhibition in Paris (1900) and the special display of his works, his reputation spread throughout the countries of the world and his fame was fully established. The state liberally contributed to his triumph by commissions and purchases, and in the Luxembourg Gallery may be seen five and twenty of his finest works. His productiveness was unbroken, but it was chiefly evolved in relation to his first great conception, "The Gate of Hell"; its leading features were taken up again, modified, expanded, and added to by their natural, if careless and impulsive, or pathetic ideas—of which there is need to name only "Les ombres" (the Shades) and "Le penseur" (the Thinker), now placed in front of the steps of the Panthéon; several monuments, as for instance to Victor Hugo, to Whistler, and to Puis de Chavannes; besides a large number of portrait busts. Enthusiastic literary men, and the critics of the day who upheld Rodin in his struggles, more from an instinct of pugnacity and a love of paradox than from conviction and real comprehension of his prodigious and fertile genius, have tended to give him a more "real" or unadorned form than appears to him, as he appears as a sort of Dante in sculpture. Though his art is vehement in expression, and he has revealed in the presentment of agonized suffering and the poignant melancholy of passion, it is by the methods of Michelangelo and essentially plastic treatment than power of modelling. His modelling is indeed the most wonderful that modern sculpture has to show, the most purely plastic technique, and this characteristic is always evident in his work, combined with reverence for the antique. Rodin made his home in the midst of Greek statues, a museum of the antique which he collected at Meudon; and there, long after his late work, such as the male torso which he exhibited at the salon, has a direct relationship to the marbles of the Parthenon—the Ilyssus and the Theseus. It is the fuller understanding of these
SCULPTURE—FRENCH (c)

Plate IX.

J. DALOU—The Triumph of the Republic.

G. MICHEL—Dreaming.

P. AUBÉ—Bailli.

H. CHAPU—Youth (Monument to Henri Regnault).

ROGER BLOCHE—The Child.

GARDET—Fighting Panthers.

BARTHOLOMÉ—Young Girl dressing her Hair.
PLATE X. SCULPTURE—OTHER FOREIGN COUNTRIES

S. SINDING—The Captive Mother. (Danish.)

REINHOLD BEGAS—Statue and Memorial of Emperor William I. (German.)

ETTORE XIMENES—Revolution. (Italian.)

A. QUEROL—Memorial to Alphonso XII. (From the Model.) (Spanish.)

M. ANTOKOLSKI—Satan. (Russian.)

JEF LAMBEAUX—The Human Passions. (Belgian.)

C. MEUNIER—Unloading. (Belgian.)
characteristics of Rodin's work, apart from some exaggeration of expression to which they have given rise, that has had the most valuable influence on the younger generation.

Nothing need be particularly noted as to the development of masters long since recognized, whatever branch of the school they belong to; such as Frémiet, Mercié, Marqueste, Injalbert, Saint-Médard, etc., who, to judge by their maturer works, continued the school of the old masters and in particular the "Vulgarité of Bartholomé, after asserting itself in his crowning effort the "Monument of the Dead," found very delicate expression in numerous works on a more modest scale, nude figures, monumental groups, and portraits. "Hippolyte Rousseau for the Panthéon (1909) is a fine example of his art.

We must not omit, after the elder generation, the name of Alfred Lenoir, who, after a long career marked by great successes both at home and abroad, dealing successfully with the difficult problem of modern dress, as in the monuments of Berlioz, to César Franck, to Marshal Conrobert, in the bust of M. Moreau, &c.; nor that of Gustave Michel, a spirit lof tender sensibility, a spirit of poetic feeling, and a spirit of tender feeling, in those delicate and profound paintings of."Le rêve" (the Dream), "La pensive" (Thought)—both in the Luxembourg Gallery,—'Au soir de la vie" (in the Evening of Life), and "Amour." H. Gréber, after some realistic works, such as "Le Grisou" (Fire-damp) and portrait-statuettes, as the tiny full-length figures of "Frémiet" and of "Gévina," distinguished himself in the Salon of 1909 by a statue of "Narcissus" at the edge of a fountain, in the form of a kneeling Alexander, with two maidens first, the younger men of the school we must name Verlet, Gass Vermeire, Ernest Dubois, and Larche, all employed on important works.

It must indeed be said that in France, apart from the select committee of the Municipal Fine Arts, the government is not a supporter of the younger sculptors. The former Council of Fine Arts in Paris in 1856 entitled the sculptors to bring their works to the Academy, and often to decorate the park of Saint Cloud; the present council has encouraged a strong competition among our sculptors by deciding, at the request of Carabou, that in 1909 the Palais de la Découverte should be decorated by carrying on the decorative work in the Panthéon, &c. They have thus given commissions to a group of rising artists, who quickly made a distinguished reputation. The names of these younger sculptors have been seen and recognized here; in the Luxembourg Gallery, they came into the front rank of their contemporaries by their conspicuous talent and the firm expression of their ideals. The first fact to be noticed in them is the extraordinary elevation to importance of their time. Many artists before them were indeed tried by this idea: Legrand towns with monumental statues, the government has always taken an interest in encouraging the art of sculpture. Any considerable work is encouraged to be executed without its support. The former Council of Fine Arts in Paris in 1856 entitled the sculptors to bring their works to the Academy, and often to decorate the park of Saint Cloud; the present council has encouraged a strong competition among our sculptors by deciding, at the request of Carabou, that in 1909 the Palais de la Découverte should be decorated by carrying on the decorative work in the Panthéon, &c. They have thus given commissions to a group of rising artists, who quickly made a distinguished reputation. The names of these younger sculptors have been seen and recognized here; in the Luxembourg Gallery, they came into the front rank of their contemporaries by their conspicuous talent and the firm expression of their ideals. The first fact to be noticed in them is the extraordinary elevation to importance of their time. Many artists before them were indeed tried by this: Dalou, the Belgian sculptor Constantin Meunier, the American St Gaudens, and among their immediate predecessors Alfred Lenoir. But now, this purposeful bias is more strongly marked; the new men do not restrict themselves to the merely monumental or commemorative aspect, to the picturesque treatment of the miners or the tillers of the soil. Every type of the people, even the middle-class citizen, is initiated in the presentment of a radiant spirit in feeling. And 1909, was one of the earliest of these younger realists, and he gave it expression not only in sculpture proper, but in medal work, and bas-reliefs inserted in draped figures in decorative furniture and in every form of ornamental sculpture. Thus he represented the "Sucking her Infant" (1883) and a large bas-relief of "Bakers," executed in stone and placed in the square of St Germain des Prés, Paris. "Baban," the popular crocodiles gave a wider outlet to the same ideas. An instructive fact is that one of these men was a pupil of the Ecole des Beaux Arts and of the academy at Rome. Hippolyte Leféivre devoted himself to proving that the common aspects of modern life are not an insuperable problem for the sculptor's art; may, that they actually afford him new subjects most suitable to his methods. He persisted in this purpose, and finally won the admission of his fellow-artists and the medal of honour for his "Jeunes aveugles" (Blind Boys), in the Luxembourg Gallery. They have also by him in this manner of the day, handled with truly synthetic breadth, "Summer," a youthful female figure in an ordinary walking attitude, modelled over a nude figure derived from the people, and in episodes of daily life, as in the "Accident," a recumbent figure surrounded by about twenty other figures, drawn from every rank of society and rendered with that firm decision and breadth of treatment with which he is the first and constant of art. This work earned him a first prize in the Salon of 1909. These awards are an unmistakable sign of official recognition of these artists, who have long been disregarded and disapproved. Such encouragement has borne fruit. Frédéric Soulié who both had won the prix de Rome, started boldly on the new road, one in his monumental sculpture (a "Monument of the War of 1870" at "Tours") and another in a monument to Bertagna; a medal for a college for girls at Tours), the offshoot in works of popular feeling of Constantin Meunier by subjects of labour, in town or country, small figures in bronze, or large and important decorative groups, as "La Carrière" (the Quarry) and "Le Défrichement (Turning the Sod), a group of six oxen led by two men. This was intended to decorate the Champ de Mars.

Meantime the study of beauty in the nude, far from being neglected, succeeds charmingly on the part of a sculptor who represents an antagonistic school. Mademoiselle Camille Claudel, whose works, born of Matisse typify the extremes of this manner; Emile Bourdelle, Aristide Maillot and Lucien Schnegg might be regarded as some of the artistic thoughts, the same science as that in their opposition to that, and vehement or equable temperament they all reveal in the highest degree a fine sense of purely plastic qualities; in them we find no lapse into the pictorial, no purpose or "arrière-pensée" that is not of the essence of sculpture. Emile Bourdelle, who loves us busts of Beethoven, Carpeaux, Heracles (in the Luxembourg Gallery), Pallas Athena, and the large group of "Wrestlers of Tarn et Garonne" for completion in bronze. Maillot for his part prefers to work in marble and stone with large surfaces, after the tradition of the ancients; he exhibited in the autumn Salons several heads of girls and of old women, a figure of a youth in bronze (1909) and a stooping nude figure in plaster. Lucien Schnegg's (1909) reputation would have been assured by one bust only from his hand, that, namely, of his pupil "Mademoiselle Jane Poupée." This in the Luxembourg Gallery, and is a masterpiece for grace and dignity in the hands of the famous sculptor.

Besides these there should be mentioned Jean Boucher, who has executed a monument to Renan, the "Evening of Life" and "Ancient Dance," a most elegant and tasteful exponent of the modern art, with social tendencies and graceful emotional feeling; Max Blondel, ("Au moulin," a very witty, as is seen in a fountain with frogs entitled "Jeunesse" (exhibited in the Royal Academy, 1910) and "Love" (in the Luxembourg and the Paris "Salon," 1910); and Auguste Carabin, who, by an intimate and personal touch, shows various materials—marble, stone and lead; Moreau-Vautrin, D. Poisson, Fix-Masseau, Gaudissard, David, Jaccquot, Despiau, known by a few busts, Drivel, Nicauxse and Michel Cazin.

Sculpture on a small scale was effectively carried on by L. Dejenne, Vollgren, Carabin, who carves in wood, Cavallion and Fèmont-Meurice. The sculpture of animals, since G. Gardet and P. Péter, has always been a specialty of the artists. We see, for example, J. Buti, Christophe, Navpellier, Bigot, Perrault-Harry, Marie Gautier, Berthier and others (L. Bé).

The inevitable reaction in Belgium following upon the long period of dry and lifeless academic sculpture is difficult to trace to any particular pioneer or leader. Nevertheless the three men who certainly mark this period of reaction are Guillaume Geefs, De Bay and Simonis. There is, however, very little to be remembered of these men except that they were the best of their time. Geef's work was marred greatly by his frivolous and unessential details and poverty of thought, together with a frigid coldness of expression in his modelling. In his statue of General Belliard at Brussels, however, he shows the tendency to search for a broader and truer interpretation that warrants his being mentioned as belonging to the movement against the academic school. De Bay was a sculptor of a more artistic temperament, and though some of his works are charming and sympathetic when judged by the standard of his own day, few show evidence of advanced ideas. The work of Simonis is very different. Beyond the mere endeavour to grasp something more true, his work is fresher and perhaps more honest, more bold and gifted with more life. Such qualities are shown in his "Young Girl," in the museum at Brussels, and "Godefroid de Bouillon," in the Place Royale. Besides these three sculptors there was no man of note to strengthen the revival of sculptural art until Paul de Vigne (1843–1901). His early work bears the unmistakable influence of the Italian Renaissance. In "Young Girl," De Bay became a follower of the true classic ideal, nor that the so-called classicism of Canova and his followers. He was a prolific artist, and from his numerous works it is difficult to pronounce one as his masterpiece. Perhaps that most generally considered his best is the sepulchral marble figure of "Immortality" in the museum at Brussels. Almost its equal in beauty and truthful rendering are his two bronze groups, "The Triumph of Art," on the façade of the Palais des Beaux Arts at Brussels, and the monument to Breydel and De Koninck at Bruges. Among his other works are "Fra Angelico of Fiesole,
SCULPTURE

the bust of Professor Moke, at Antwerp, "Heliotrope" in the museum at Ghent, "Portrait of M. Charles van Hütten," the Wilson monument in the Musée Communal, Brussels, the statue of "Marnix de Sainte Aldegonde" in Brussels, the monument erected at Courtrai to Mgr de Hearne, the monument of Meddepenningen at Ghent, and the monument of the Gevau family in the Cemetery at Evere.

The art of Charles van der Stappen (b. 1843) is decorative in character, mostly applied to architecture, though he proved himself a capable sculptor-produging many statues, reliefs, groups, and mental works, and statuettes. His works include a silver centre-piece executed for the town of Brussels, the statuette of William the Silent, the Petit Sablon, Brussels, a bust for the monument of Edouard Agneessens in St Isaac Leopold, St Michael in the Gothic hall of the Hôtel de Ville, Brussels, the monument to Baron Coppens near Shaeld, the Alexandre Gendebien monument at Brussels, statues for the Albionara theatre and Caryatids for the architect de Curtis' house in the city, and the group of tired workmen, called "The Builders of Cities."

The work of Thomas Vincente is characterized chiefly by its vigour and vitality. Vincente is classed by some authorities as belonging to the classic group, but his work is less graceful than that of d'Vigne and more vigorous and life-like than Van der Stappen's. There is perhaps more than ordinary life in his work than in that of any of his contemporaries. The many portraits he has executed reveal a great power in grasping the essentials of portraiture as well as the discrimination necessary to discard everything that does not contribute to the whole and to the expression of character. His work was shown at the exhibitions in the Brussels Museum, "Music," on the façade of the Palais des Beaux Arts, the Godecharle monument in the Park, the bronze group of the "Bride and the Groom." When the "Denkmal des Deutschen" was erected in the Avenue Louise, and the statue "Agneessens" in the Boulevard Anspach, Brussels. There is also a bronze group of horses and Tritons for the park of the Château d'Ardenne.

Some men have exercised such influence upon Belgian sculpture as Jef Lambeaux (1852–1908), the Flemish artist. He was born in Antwerp of poor and obscure parents. At an early age he showed great aptitude for drawing, and after a very meagre education he was apprenticed to a wood carver. While there he studied at the Belgian art schools. At sixteen he completed his course and undertook his first important commission, that for two reliefs for the tympanum of the French theatre. He was successful for a time in producing statuettes, but the work of sculpture he succeeded in acquiring was an abandonment of sculpture and to take any work he could get. After a period devoted to odd employments—sometimes painting, sometimes modelling—he again saved money to enable him to produce some good works. The first of these, "The Kiss," was exhibited at the Brussels Exhibition. It had a great success and was bought by the Antwerp Museum. This discovery of a sculptor of talent led the town of Antwerp to find the means for sending Lambeaux to Italy. After studying in Florence he returned to produce "La Folle Chanson," which by some is considered his masterpiece. The group of "Intoxication" produced as much animation and motion as is satisfactory. The figures show a curious and unpleasant development everywhere. The bust of "The Hunchback" in the Chamber of Deputies is as good as any of its class. The library of his are "The Robber of the Eagle's Nest," "The Wonderful Colossal Relief," "The Passions of Humanity," "The Wrestlers," and "The Orgy."

Less bold and energetic than Lambeaux is the work of Julien Dillens (b. 1849). Though it does not possess that sense of life and the distinctness which is characteristic in his brother sculptor, his standard of excellence was steadier. He will be remembered as one of Belgium's finest decorative sculptors, for his best work has been done in architectural enrichment. His pediment for the Hospice des Trois Alliés at Namur, a group of three griffins in the roof space of modern times. Dillens' masterpiece is without doubt the group of "Justice" in the Palais de Justice at Brussels. He is responsible for many other important works, the chief of which are the busts of De Pode Etienne Lemaître, Van Orley in one of the squares of Brussels, "The Lanquenets," on the summit of the Royal Palace (before its reconstruction), a statue of Jean de Nivelles on the front of the Palais de Justice at Nivelles, and the marble statues of St Victor and St Amand at Epernay.

There is yet another artist who ranks as one of the greatest sculptors of Flanders. This is Jules Legaë (b. 1862). He was a pupil of Jef Lambeaux and was sent to study in Paris. For further work he took the suggestion from that of Dillens and Lambeaux, than that it is what may be termed "delicate" and possessed a distinctive charm of spontaneity fresh to a manner which is so much the vogue. "The Father and Child," shown at Florence in 1891, is a good example of this quality, while "The Kiss," a terra-cotta bust, shows his spontaneity.

In the Walloon provinces two sculptors have done much for the renown of Belgium. Achille Chainaye and Jean Marie Gaspar. Achille Chainaye (b. 1862) is not a prolific sculptor, but all his work is inspired, it would seem, by similar motives and ideas to those which inspired the early sculptors of Florence. The scarcity of his works may be accounted for by the fact that his productions were few and his work, though richly conceived and seemingly with scant success, he abandoned sculpture and devoted himself to painting.

The work of Jean Marie Gaspar (b. 1864) shows the inspiration of a whole gamut of emotions, but hardly the continuity of purpose necessary to carry his work far. He studied under Lambeaux, and, while still in his master's studio, produced a wonderful group, "The Abduction," two men on furious, just-rising, horses wrestling for the possession of a struggling woman. This group was shown at the Paris Exhibition, and immediately gave him immesured fame to the then unknown sculptor. Of his other finished works may be cited "The Brave," an Indian on horseback; "The Embracing Parents," a group for the second place in Amsterdam Children's Home; "The Young Girl on a Rock," and the "Panther," destined for the botanical gardens at Brussels.

From the death in 1904 of Constantin Meunier (b. 1831) up to the present day, Belgian sculpture has made a great advance. Meunier is the creator of the pseudo-classic, but is influenced by the masters of the Renaissance. He is simple, free and straightforward, true almost to brutality, but withal inspired by a love of doing homage to the people of the people. His style is Neo-Classic, and it is much influenced by him, and he soon forsork sculpture for painting. He was for some years one of the group of independent painters. His chief productions are "Fire-damp," in the Brussels Museum, "The Mower," in the Jardin Botanique at Brussels, "The Gile," and "Puddlers at the Furnace," both in the Luxembourg Museum. "The Hammerman," the statues on the façade of Notre Dame de la Chapelle, and the monument to Father Damien at Louvain. What is the Lelangie is the author of the masterly monument erected at Evere to the English officers and men who fell at Waterloo, an elaborate work full of imagination and sculptural force and an admirable work of imagination and sculptural force, and an admirable work of invention. From this time Meunier continued on the lines of his earlier works which gained to him new believers and friends. Among his most recent works are "Fire-damp," in the Brussels Museum, "The Mower," in the Jardin Botanique at Brussels, "The Gile," and "Puddlers at the Furnace," both in the Luxembourg Museum. Among the leading sculptors of to-day is to be reckoned Charles Samuel, who leans towards the traditions of yesterday.

Canova so dominated the world of sculpture at the beginning of the 19th century that the pseudo-classic style which he introduced remained typical of all the Italian sculpture of note until Bartolini led the movement which finally crushed it. In Rome Canova completely overshadowed all other sculptors except perhaps Thorvaldsen, the Danish sculptor, who resided for some time in that city. It is true that Pompeo Marchesi (1789–1858) at the outset of his career enjoyed great popularity, but at the time of his death he was well-nigh forgotten. The interval between the death of Canova and the rise of Bartolini and the next school was filled in by men of mediocre talent, in whose work the influence of the leader of classicism is strongly marked. Little beyond his leather apron—attired in his workmen's garb—showed the man who made the monuments destined to grace the front of the Louvre, the Eglise de la Madeleine, the Palais de la Cité, and the Louvre, the Eglise de la Madeleine, the Palais de la Cité, and the Louvre.
in his time, he applied himself to the study of actual life. Instead of the expressionless faces of the pseudo-classic, he gave vitality and energy.

A sculptor who was much talked of in his day was Pietro Tenerani (1789-1869), a native of Torano near Carrara. He worked for some time as assistant to Thorwaldsen. Later these two sculptors jointly accepted a commission for the monument of Eugène Beauharnais, and as Thorwaldsen wished to suppress the younger man’s name, they quarrelled and finally separated. Tenerani visited Munich, and which he found to be unbearable, he returned to London. During the disturbances of 1848 and 1849 he was obliged to leave Rome with his family, in consequence of his sympathy with the Papists and his friendship for Count Pellegrino Rossi, who was assassinated in 1848.

Among Tenerani’s works are a statue of Count Rossi, a monument to Pius VIII. in the sacristy of St Peter’s, “The Angel of Resurrection” in the Friedenskirche at Potsdam, a low relief in the church at Castle-Ashby, Northamptonshire, and “The Descent from the Cross,” in the Torlonia chapel in St John Lateran. The last-named reveals the close study of nature so characteristic of his work.

The most distinguished Piedmontese sculptor of this period was Marochetti, who is referred to above in connexion with the British school.

Although Vincenzo Vela (1820-1891) was Swiss by birth, he was Italian both by adoption and in his sympathies. In 1838 he won the prize offered by the government to the students of the Lombard-Venetian provinces of Austria, and became known by his statue of Spartacus. His chief works are a statue of Bishop Lui at Lugano; Desolation, at the Villa Gabrìna, Lugano; Madonna della Carità, at Lugano; and statues of De Gasparo at the university, and of Cesare Balbo, all at Turin; the statues of Tommaso Grossi and Gabrio Piola at the Brera, Milan; Dante and Giotto at Padua; Joachim Murat at the Certosa, Bologna; and Cavour at Genoa. His masterpiece is the seated figure of Napoleon at Versailles.

After Bartolini, sculpture in Italy slowly developed along the lines of “naturalism” suggested by that leader. Perhaps the greatest activity and advance are to be recorded around Naples, a city till then of subordinate importance in art. Tommaso Solari (b. 1820), who may be regarded as one of the group belonging to Naples, produced work which is hardly distinguishable from that of Vela. His statue of Carlo Poerio, which occupies an important position in the city, is of considerable merit. He worked for some time by several sculptors whose works betray but little originality except in some cases in the forcing of qualities they wished to accentuate, and the selection of daring or dramatic subjects—qualities which are quite foreign to the work of Raffaele Belliazzari, another Neapolitan (b. 1835), like that of Solari, is of conscientious study, but his naturalism shows no genius. Among his works may be mentioned “A Woman and Child,” and two terra-cotta busts at Capodimonte. Emilio Franceschi (1839-1890) and Achille D’Orsi (b. 1845) both belonged to the Neapolitan group of sculptors. Though the former was not a native of Naples, he resided there from 1869 until his death. But while Franceschi was influenced to a very large extent by the Neapolitan school, D’Orsi broke away from it and created a distinctive style of his own. He studied in Rome, and in 1876 received a medal at the; he produced “Il Cabalist,” followed by “The Parasites,” the latter establishing his fame by its singularity both of subject and treatment. It represents two gluttons in a state of extreme intoxication. The group is remarkable as showing D’Orsi’s powers of characterisation.

A man of perhaps greater original thought was Francesco Jenec, who seems to have been entirely free from the “academic” smallness which characterised the followers of the naturalistic movement. He was born at Polistena in Calabria in 1853. His work bears the impress of his personality and his rather marked aloofness from his contemporaries. He is the author of the monument to Mary Somervill, wife of the Duke of Sutherland, which he produced at Naples; Vittoria Colonna, exhibited at the Brera, Milan, in 1894; and the Beethoven exhibited at Venice, 1893. At Bergamo there is a statue of the musician Donizetti, which was placed there in 1897.

Vincenzo Gemito was born at Naples in 1852 of parents in a very humble position. He picked up a living in various occupations under his own hand, and is the pupil of Antonio Caggiano (1866). He worked hard and to some purpose, for two years after he modelled “The Gamester,” which is at Capodimonte. This work shows evidence of astounding precocity. His work is realistic, but forcible and more alive than that of many sculptors of his day. Gemito was supremely confident of his powers, and in a manner this was justified by his early recognition both amongst students and public. He was set a task to sculpt the façade of the Royal Palace at Naples. A small figure of a water-carrier upon a fountain is now in the Gallery of Modern Art at Rome; in the same gallery are his statuette of Meissonier and a terra-cotta figure of theahbasus. A sculptor of quite a different class of subject is Costantino Barbella, born at Chieti in 1853, who gave his entire attention to the portrait. About 1887-9 he embarked upon the monument of Beethoven in Berlin, was successful enough to win a commission of a statue of the composer for Naples. 

For some years the activity amongst what may be called the Southern school of sculpture was centred at Naples, especially under the influence of the sculptor Infante. Tenerani’s pupil of Dupré, but his work bears little impress of his master’s influence; it is characterized mostly by its force and meaning of gesture and facial expression. His statue of “The Youth Dying” at the moment of the first meeting with Beatrice, and his seated figure of “The Young Caesar” are both works which successfully show his power of pose and facial expression. He is the author also of the famous Caritas group, the Christ in Gethsemane, “The Dead Christ,” a group of the siege of Missolonghi, and a group of seventeen life-size figures representing the last stand of the Italians at the massacre of Dogali.

The family of Ximenes and Bertiles of Palermo is reckoned as one of the three members which each became well known in the world of art: Empedocle, the painter, Eduardo, the writer, and Ettore, the sculptor. Ettore was a pupil of Morelli. His earliest work of note was an amusing small figure of a ball player, “The Art of ton-". He also produced "La Rize," "Le marmiton," "Cuore del Re," "The Death of Ciceruacchio," "Achilles," and many others. His statue of "Revolution" is one of his best works.

Gugli Monteverde’s work is marked by facile and artistic grace and sparkle, but though he had some influence upon the recent sculptors of Italy, his work shows the naturalistic precepts laid down by his master. A group of three figures, fully of impressive moment, is in the Palazzo Bianco at Genoa; a Madonna and Child is in the Camposanto, and a statue of Victor Emmanuel stands in the square in the centre of Bologna.

The last of the school of Barrea (1849) is another sculptor whose works show remarkable care and love of what is called finish. He has produced the statues "Portari," the medieval revolutionary, "Ovdi," Jacopo Ortis, "A Roman Slave," Giordano Brunoni in the Campo di Fiori, and "Abraham Lincoln," in the New York Museum.

To the Roman group of sculptors also belong Encole Rosa (b. 1840). That he was a man of considerable talent is shown by his group of the Cairoli at Rome and his monument of Victor Emmanuel near the cathedral at Milan. Emilio Gallori, who studied at the Florence academy, is the author of the colossal statue of St Peter on the façade of the cathedral at Florence. He won the competition for the well-known, the monument of St Anthony, by which he has become a friend of Tenerani. Being a man of independent views, however, he was but little affected by Tenerani’s work. He was then twenty-five years of age. After a prolonged period of travel for personal artistic interest, he returned to Venice, where he produced a statue of St Anthony of Padua, one of Petrarch and another of Galileo. In 1880 he completed his statue of Titian for the master’s birthplace, Pieve di Cadore, and in 1883 he finished the figure of Goldoni in Venice. He is also author of a statue of Victor Emmanuel and a monument of Tartini the violinist, the former in the memorial tower on the battlefield of S. Martino near Brescia, the latter in a picturesque church at Pirano.

Turin boasts many sculptors who are known throughout the country. Chief of these is Odoardo Tabacchi (b. 1831). He is the author of a seated figure of Antonio Canova—now in the great monument at Milan. He has modelled several subjects of a lighter type, such as “The Bather,” exhibited in Milan in 1894. Lorenzo Bistolfi, a younger man, conquered recognition chiefly by his composition of Castiglione covered by the Milanese tricolor, which must be mentioned Luigi Belli, author of the Raphael monument at Urbino, and Davide Calandra, whose L’Aarto’’ is in the national gallery at Rome.

As everywhere in western and central Europe, national sculpture in Austria during the first half of the 19th century was altogether influenced by the classicism of the Italian Canova—in Austria perhaps more than in other countries, since two of Canova’s most important works came to Vienna in the early years of the century. The famous tomb of Marie Christine in the Augustinerkirche,
which was ordered by Duke Albrecht of Saxony, in 1805, at the price of 20,000 ducats; and the Thesaurus group, bought by the emperor Francis, in Rome, which is now in the Vienna Museum. Canova's pupil, Pompeo Marchesi, was the author of the emperor Francis monument, unveiled in 1846, in the inner court of the Hofburg.

The first national sculptor of note was the Tirolese Franz Zanzer (1746-1822), who was knighted in 1807 (the year in which his Kaiser-Joseph monument was unveiled) and became director of the Vienna gallery and academy. Among his works are the tomb of Leopold II. in the Augustinerkirche; the tomb of Johann Baptist von Heisterbach at the Karlskirche, which is designed by Heinrich von Collin in the Karlskirche in Vienna; and a number of busts in the Empire style, which are by no means remarkable as expressions of artistic individuality. Leopold Kiesling (1770-1827), another Tirolese, whose first work on a large scale is the Mars, Venus and Cupid, in the Imperial gallery, was sent by his patron, Count Cobenzl, to Rome, where he was more attracted by Canova than by the antique or the late Renaissance. Joseph Klieber (1773-1839), also Tirolese, enjoyed the protection of Prince Johann Liechtenstein, who employed him in the decorative art and architecture. His reputation as sculptor of colossal figures for imperial triumphal arches and lofty tombs was so widespread that he was given the commission for the catafalque of Louis XVIII. in Paris. Many middle-class houses of the Empire period in Vienna were decorated by him with reliefs of children. The elaborate relief figures on the Andreas Hofer monument in Innsbruck are the work of his hand. His followers were less favoured by powerful protection and were forced into a definite direction: among them must be mentioned Johann Martin Fischer (1740-1820), who succeeded Zanzer as head of the academy; his best-known work is “The Muscle-man,” which still serves as model to students.

Of the greatest importance for the development of Austrian sculpture in the second half of the 19th century was the influence of Joseph Daniel Boehm (1794-1860), director of the academy of coin-engravers, and discriminating collector of art treasures. He was the father of Sir Joseph Edgar Boehm, R.A. Emanuel von Max (1810-1900), who in conjunction with his brother Joseph modelled the Radetzky monument in Prague, wrote in his autobiography, concerning the year 1833 in Vienna: “Art, particularly sculpture, was at the lowest ebb. The appearance of a statue or bust at an exhibition was considered an event.” But a strong movement began towards the end of the five. Professor Franz Bauer, of the Vienna academy (1797-1872), exercised a most stimulating influence upon the rising generation. Among the earlier artists, whose life overlapped into the new era, were Anton Dietrich (1799-1872), who is best known by “The Three Magi,” on the porch of the church of St John, and by a very beautiful ivory crucifix; and Johann Preleuthner (b. 1816).

The architectural rejuvenation of Vienna led to the rise of an original local school of sculpture. J. D. Boehm devoted himself almost entirely to goldsmith-work and medals, but with the aid of his great collections he taught the new generation and helped to develop original talent. Hans Casper (1817-1868) devoted himself to his introduction to society, for whom he produced many busts. He modelled the empress Elisabeth monument at the western railway station in Vienna, the famous “Donauweschen” in the Vienna town park. His brother, Joseph Gasser von Wallhorn (b. 1816), was a sculptor of saints, many of which decorate St Stephen's Cathedral and the Votive Church in Vienna. Anton Fernkorn (1813-1878), born at Erfurt, was Austrian by his art. He started as a metal worker, and studied in Munich, but not at the academy. His talent was only fully tested and developed at the academy. He modelled the bold equestrian bronze monuments of Archduke Charles (1839) and Prince Eugene of Savoy (1866). He became director of the imperial bronze foundry, in which post he was followed by his pupil Franz Schonauer (b. 1840), whose work is marked by great realism. Another sculptor of the last generation is Max Seidl (b. 1849), who has executed many large monuments and portraits.

In the provinces under the Austrian emperor's rule, the best-known sculptors are the Carnide Marcell Guicci (1830-1894), Lewandowski, Buracz, and the Tirolese Gurschner, who follows the modern style.

In the art of the medallist, Professor Karl Radnitzky the elder (b. 1818) led the way after J. D. Boehm; but he was surpassed by his pupil Joseph Tautenhayn (b. 1837), whose large shield “Struggle between Greece and the Centaurs” at the imperial Vienna exhibition of 1873 was a revelation. Tautenhayn has been director of the academy since 1876. More important still is Anton Scharff (b. 1845), a real master of the delicate art of the medallist.

At the beginning of the 19th century the art of sculpture was practically dead in Spain—or at least was mainly confined to the mechanical production of images of saints. But towards the middle of the century the two brothers Agapito and Venancio Vallmitjana, of Barcelona, encouraged by the enthusiasm with which some of their works had been received by local connoisseurs, took part
in the Paris Figaro competition for the figure which decorates the entrance to the offices of that journal, and carried off the second prize. They afterwards obtained the first prize in other competitions at Madrid and other Spanish centres. Their chief works are: "Beauty dominating Strength," "St Vincent de Paul," the large statue erected at Valencia to Don Jaime Conquistador, and groups of Queen Isabella with the Prince of the Asturias, and Queen Marie Christine with Alfonso XIII.

Another sculptor of distinction is Andres Aleu, professor of the Barcelona School of Fine Arts, whose principal works are the "St George and the Dragon" on the façade of the Barcelona Chamber of Deputies, and Marshal Concha, the equestrian statue in Madrid. Rosendo Novas, of Catalan birth, like his Spanish colleagues of influence, is best known by his masterpiece, "The dead Torero." Manuel Omis, another Barcelona sculptor who leans to the naturalistic school, is the author of the monument to Isabella the Catholic, erected at the end of the Paseo de la Castellana in Madrid in 1883. Antonio Fabrés, who at the beginning of his career was an eminent sculptor, devoted himself subsequently to painting. Agustín Querol, and Mariano Benlliure, of Valencia, were for many years the official favourites of the Spanish government, who entrusted them with numerous important commissions, though their work was neither so many nor particularly remarkable as regards execution, and occasionally, as in Querol's monument of Alfonso XII.—especially in the completed sketch of its baroque in the extreme. Indeed, the genius of the Spanish race at all times, and particularly in the 19th century, found its expression in painting rather than in sculpture. Querol's group called "Tradition" is well imagined and expressive, and a good example of the best work achieved by a school in which freedom is the chief note.

Towards the end of the 19th and in the early years of the 20th centuries, Joseph Limona y Bruguna ("The Communion") and Blay, both of Catalan birth, were the most distinguished sculptors of Spain. The fame of Blay, who was a pupil of Chapu in Paris, has extended beyond the frontiers of his native country. His style has at the same time strength and delicacy. His chief works are the miners' monument at Bilbao, and a group of an old man seated on a bench protecting a little girl from the cold. He also produced a great number of delicately wrought marble busts before his career was prematurely cut short. Joseph Llimona is the most personal and distinguished of all modern Spanish sculptors. His art ranges from the greatest delicacy to real power. At the International Exhibition at Barcelona in 1902 he was awarded the grand prix of honour for a group intended for the monument to Dr Robert in that city; and for a small marble figure of Pain, a work in which he has been thought to rival the Florentines of the best period. José Alcaraz, the younger of the brother Alcaraz Abril and later José Abril Embil, and the brothers Osle are prominent members of the younger school and aim at giving the personal note. The vigour displayed by them illustrates the revivification and rejuvenation of Spanish sculpture.

Russian sculpture has practically no past to record. In its beginnings Russian art was entirely ruled by the Church, whose laws were inspired by Byzantinism, and who forced all artists to submit to strictly fixed rules as regards form and formula. Before the 18th century, Russian sculpture was practically non-existent, except in the form of peasant wood-carving. The early stone idols (Kamennyia Gliad) were all the product of a popular superstition rather than of art. Real sculpture only appears at the end of the 18th century, when Peter the Great, to use his own expression, "opened a window upon Europe," and ordered, together with a radical change in Russian society, the introduction of western art in Russia.

From all European countries artists streamed into Russia and helped to educate native talent, and at the same time the tsar sent young artists abroad to study in foreign art centres. Among the foreign artists of this period were Conrad Hausner, Egelerener and Schpelke, among the Russians Koulomzjn, Issaiev and Woyton. About 1756 Falconet and his wife arrived in Russia; then Gilet, whose pupil Schubin ranks among Russia's most gifted artists. Among his best-known works is the monument of Catherine II. His fame was rivalled by that of Schedrine. Koikovski is known by his Souvorine monument. Other early sculptors of distinction were Demouth-Malinowski, the sculptor of the Soussanav monument; Pimenow, Martos, and the medallist Count Theodor Tolstoy, who is known as an able illustrator. Orlovsky, Vitali and the whole preceding group represent the pseudo-classic character acquired at foreign academies. Among animal sculptors Baron Klodt is known by his horses which decorate the Anitschkin bridge at St Petersburg.

About the beginning of the 19th century the sculptor Kamenski inaugurated a more realistic tendency by his work which was inspired by contemporary life. He entered the academy after having exhibited a series of sculptures among which the most interesting were "The First Step" and "Children in the Rain." Indeed, his work shows this change of style as he has never ceased to use his art with the utmost freedom, but devoted himself subsequently to the execution of commissions which did not give full scope to his gifts.

The greatest talent of all was unquestionably Marc Antokolsky (1845-1902), a Jewish sculptor permitted to work outside the Pale, of whom the Paris correspondent of The Times wrote, about 1888, that French sculptors would benefit by studying under Antokolsky, and by learning from him the power of the inspiration drawn from the study of nature. The artist himself held his statue of Sphoza to be his finest achievement. Indeed, he says: "I have been brought up in the Jewish tradition, and have developed the Jewish character of my mind in the Jewish environment. In the hard moments of life I can find peace only before this work." Equally beautiful is "The Christian Martyr," in the creation of which Antokolsky definitely broke all the fetters of tradition and strove no longer to express linear beauty, but intense truth. The martyr is an ugly, deformed woman, tortured and suffering, but of such beautiful sentiment that under the influence of religious exaltation her very soul seems to rise to the surface. Among his other works few are better known than "Mephistopheles" (which he wanted to call "The 19th Century") and the powerful "Ivan the Terrible," which the Russian critic Starloff called "The Tortured Tormentor." The strange psychology of this ruler, whose compeer in history can only be found perhaps in the person of Louis XI., is strikingly expressed by Antokolsky. Very beautiful is the statue of Peter the Great, which breathes strength, intelligence, genius and devouring activity. To the works already mentioned must be added the statues of Ermak and of Nestor. Antokolsky has left to the world a gallery of the most striking figures in Russian history, giving to each one among them his proper psychology. His technique is always marked by perfect sureness and frequently by dazzling bravura.

Antokolsky was twenty-one years of age when he left St Petersburg. To be nearer his native country he made a journey of complete ideation under the rule of worthy old professors who remained strangers to their pupils, just as their pupils remained strangers to them. When Professor Minoff and Rainiers died, soon after, the academy seemed quite deserted; but just at that time a number of very gifted students began to work with energy, learning all they could from one another, fired by the same purpose and spirit. Antokolsky was in close touch with his friend, the painter Repin, with whom he worked much, and so failed to come under the influence of the idealist M.V. Praklow, who soon began to deliver certain lectures on art which excited keen interest among the young artists. Antokolsky, who had been the Berlin, was more interested in the Russian style by the same routine, he returned before long to St Petersburg, where within a short time he executed the statue of "Ivan the Terrible" to which he put into this place. This epic became the starting-point of Russian sculpture, so that Antokolsky deserves an eminent position in the history of Russian art.

Among his pupils was his faithful follower and friend Ila Ginsburg (b. 1854), who devoted himself to genre scenes and portraits in the spirit of his master, but with a degree of sincerity and enthusiasm which save him from the reproach of plagiarism. Lancere (1854-1887) is known by his military statuettes. Libich (1828-1897) who was one of the few remarkable sculptors of a new generation, was but little practised in Paris; among his works are a great number of portraits and a few monuments that are not without merit. Among contemporary sculptors, whose number is still restricted in Russia, and who are not less remarkable than the old masters, are Esipoff, Brechkoff, and with little evidence of evolution, are Beklemischew, Bach, Breisky, Mikhovitch, Tourgement, Auber and Bernstein, Prince Trozeretzlo, who is named among the sculptors of Russia, though he was educated and worked in Italy, acquired some reputation by
his skill in the rapid execution of cleverly-wrought impressionist statuettes of figures and horses as well as busts. Their value lies in the vivid representation of the type of Russian life and types. Among the most original modern Russian sculptors is Naum Aronson (b. 1872), whose best-known work is his Beethoven monument at Bonn. At Godesberg is his Narcissus fountain, whilst other works of his are at the Berlin, St Petersburg and Dublin museums.

(M. H. S.; P. G. K.)

The early names in American sculpture—Shem Drowne, the maker of the Puritan's statue; Patience Wright (1727-1785); William Rush (1765-1833), carver of portraits and of figure-heads for ships; John Frazer (1790-1890), the stonecutter; and Hezekiah Augur (1791-1838)—have the interest of chronicle at least. Hiram Powers (1805-1873) had a certain technical skill, and his statues of the "Greek Slave" (carved in 1843 in Rome and now at Raby castle, Darlington, the seat of Lord Barnard, with a replica at the Corcoran Gallery, Washington, and others elsewhere) and Eve before the Fall were important agents in overcoming the Puritan asceticism of the nude. Horatio Greenough (1805-1852), Joel T. Hart (1810-1877), S. V. Clevever (1812-1843) and Clark Mills (1815-1883) all received many commissions but made no additions to the advancement of a true art-spirit.

Thomas Crawford (1814-1857) began the bas-reliefs for the bronze doors of the Capitol, and they were finished by William H. Rinehart (1825-1874), whose "Latona" has considerable grace. Henry Kirke Brown (1814-1886) achieved, among less noteworthy works, the heroic "Washington" in Union Square, New York City. It is one of the noblest of equestrian statues in America, both in breadth of conception and in the certainty of handling. It reflects the rebirth of the sculptor's craft in the United States.

Erastus D. Palmer (1817-1904) was the first to introduce the lyrical note into American sculpture; his statue, "The White Captive," and still more his relief, "Peace in Bondage," may be named in proof. There is undeniable skill, which yet lacks the highest qualities, in the work of Thomas Ball (b. 1810). William Wetmore Story (1809-1860), whose "Cleopatra," though cold, shows power; Randolph Rogers (1825-1892), best known for his blind "Nydia," and for his bronze doors of the Capitol at Washington; John Rogers (1829-1904), who struck out a new line in actuality, mainly of an anecdotal military kind; Harriet Hosmer (1830-1901), a classicist, whose recumbent "Beatrice Cenci" is perhaps her most graceful work; J. S. Hartley (b. 1834); Launt Thompson (1833-1894) are among the leaders of their day. The works of Olin L. Warner (1844-1896) and J. Q. A. Ward (1830-1910) reveal at times far greater originality than any of these. Warner's two graceful classical figures for a fountain in Portland, Oregon, and his admirable portrait statue of William Lloyd Garrison, reveal a nice discernment of the fitness of manner to matter. He has also succeeded in modelling medallions. The statue has stability, dignity, and individuality quite his own, and may be considered at the head of his own generation. In addition to these should be mentioned Larkin G. Mead (b. 1835), George Bissell (b. 1839), Franklin Simmons (b. 1839), Martin Milmore (1844-1883), Howard Roberts (1843-1900), Moses Ezekiel (b. 1844), all of whom are prominent in the history and development of sculpture in America. By their time the sculptors of America had wakened completely, artistically speaking, to a sense of their own nationality.

It was however later that came that inspired modernity, that sympathy with the present, which are in some senses vital to a genuinely emotional art. American sculpture, like American painting, was awakened by French example. The leading spirit in the new movement was Augustus St Gaudens (q.v.), a great sculptor whose work is sufficiently dealt with in the separate article devoted to him. Two other Americans stand out, with St Gaudens, among their contemporaries, Daniel Chester French (q.v.) and Frederick MacMonnies (q.v.). French's "Gallaudet teaching a Deaf Mute" is an example of how a difficult subject can be turned into a triumph of grace. His "Death and the Sculptor," a singularly beautiful rendering of the idea of the intervention of death. In collaboration with E. C. Potter he modelled various important groups, particularly "Indian Corn" and the equestrian "Washington," in Paris. The "Bacchante" of MacMonnies, instinct with Renaissance feeling, is a triumph of modelling and of joyous humour; while his statue of "Nathan Hale in City Hall Park, New York, his "Horse Tamers," and his triumphal arch decorations for the Soldiers' and Sailors' Memorial at Brooklyn, show the artist's power in the treatment of a serious theme.

The strenuous achievements of George Grey Barnard have borne both high and deep sincerity. His "Two Natures," his "Brother Love," his "Pan" and the design for a monumental Norwegian stave are among the strongest efforts of modern American statuary. Ranking with him, though different in thought and method, stands William R. Burd Barr (1839-1908). He was joined to the fine works of John J. Boyle, William Couper, twenty years of whose life were passed in Florence, William O. Partridge, Hermon MacNeil and Lorado Taft. The beautiful and beautiful artefacts of Mrs Clio Hinton Bracken; the graceful figures of Mrs Potter Vonnah; Edwin F. Elwell's "Egypt" and "Orchid"; and the work of F. Wellington Ruckstuhl should also be mentioned; also J. W. Rhind, a Scotchman by birth and artistic education, John Donoghue, Charles H. Niehaus, Roland H. Perry ("Fountain of Neptune"), Andrew O'Connor, Jerome Conner, John H. Rude, Louis Potter, Equally well worthy of note are Bela Lyon Pratt (b. 1836), Karl Frederick Lembke (b. 1846); Cyrus E. Dallin (with Wild West subjects), Richard E. Brooks, Charles Graily ("Fountain of Life"), Alexander S. Calder, Edmund A. Stewart, Edward Kemeys, Edward Berge ("Luther Fountain," San Francisco). The leading "animators" include Edward Kemeys (representing the Southern states), Edward C. Potter, Philmster Proctor, Solon H. Borglum, Frederick G. Roth, the late William R. Burd Barr (an animator, par excellence), J. W. Kitson, Mrs Hermon A. MacNeil, Miss Helen Mears, Miss Evelyn Longman, Miss Elise Ward, Miss Yandell and Miss Katherine Cohen.

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The recent literature on the subject is too copious to be catalogued here; every phase of the art has been critically dealt with and nearly every important subject has been represented. The leading authorities, e.g. John Addington Symonds, The Life of Michelangelo Buonarroti (2nd ed., London, 1898); Sir Charles Holroyd, Michael Angelo Buonarroti (London, 1903); Lord Balcarres, Dante Alighieri (London, 1907). For répertoires of sculptural works, see collections such as Reale Galleria di Firenze.
SCURVY—SCUTAGE

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SCURVY (Scorbutus), a constitutional disease, characterized by debility, morbid conditions of the blood, spongy gums, impairment of the nutritive functions, and the occurrence of haemorrhagic extravasations in the tissues of the body. In former times this disease was extremely common among sailors, and gave rise to a frightful amount of mortality. It is now, however, of rare occurrence at sea, the simple means of prevention being well understood. Scurvy has also frequently broken out among soldiers on campaign, in beleaguered cities, as well as among civilians in some cities of the United States and in New York and London (pub. by Archæological Institute, 1866), p. 159 seq.; G. G. Scott, Gleanings from Westminster (London, 1862); W. Bell Scott, British School of Sculpture (London, 1873); W. M. Rossetti, "British Sculpture," in Fraser's Mag. (April 1860). The subject of recent British literature has been curiously neglected, except in newspaper notices and occasional articles in the periodical press, such as Edmund Gosse's "Living English Sculptors" in the Century Magazine for July 1883. The only volume published is M. H. Spielmann's British Sculpture and Sculptors of To-day (London, 1901).

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that scutage was first introduced in 1156 or on the occasion of Henry II.'s expedition against Toulouse in 1159; but it is now recognized that the institution existed already under Henry I. and Stephen, when it occurred as scutageum, scutagium or escuage. Its introduction was probably hastened by the creation of fractions of knights' fees, the holders of which could only discharge their obligation in this fashion. The increasing use of mercenaries in the 13th century would also make a money payment of greater use to the crown. Levies of scutage were distinguished by the names of the districts for which they were raised, as "the scutage of Toulouse" (or "great scutage"), "the scutage of Ireland" and so forth. The amount demanded from the fee was a marc (138.4 d.), a pound or two marks, but anything between these was deemed abnormal. Under Henry I.'s reign, when levies of two marks were made in most years without even the excuse of a war. The irritation caused by these exacts reached a climax in 1214, when three marks were demanded, and this was prominent among the causes that led the barons to insist on the Great Charter (1215). By its provisions the crown was prohibited from levying any scutage save by "the common counsel of our realm." In the reissue of the Charter in 1227 it was provided, instead of this, that scutages should be levied as they had been under Henry II. In practice, however, under Henry III. scutage was usually levied in twos, but the assessment of the barons was deemed realistic, and they were only levied on adequate occasions.

Meanwhile, a practice had arisen, possibly as early as Richard I.'s reign, of accepting from great barons special "fines" for permission not to serve in a campaign. This practice appears to have been based on the crown's right to decide whether personal service should be exacted or scutage accepted in lieu of it. A system of special composition thus arose which largely replaced the old one of scutage. As between the tenants-in-chief and villeins, and between holders of the fief and tenants of the fief, the amount of scutage continued and was often stereotyped by the terms of charters of subinfeudation, which specified the quota of scutage due rather than the proportion of a knight's fee granted. For the purpose of recouping themselves by levying from their under-tenants the tenant-in-chief received from the crown writs de scutaggio habendo. Under Edward I. the new system was so completely developed that the six levies of the reign, each as high as two pounds on the fee, applied only in practice to the under-tenants, their lords compounding with the crown by the payment of large sums, though their nominal assessment sometimes continued. The form of the writs was Scutage and Marshals' (Knutgur Service). Scutage was rapidly becoming obsolescent as a source of revenue, Edward II. and Edward III. only imposing one levy each and relying on other modes of taxation, more uniform and direct. Its rapid decay was also hastened by the lengths to which subinfeudation had been carried, which led to constant dispute and litigation as to which of the holders in the descending chain of tenure was liable for the payment. Apart from its financial aspect it had possessed a legal importance as the test, according to Bracton, of tenure by knight-service, its payment, on however small a scale, proving the tenure to be "military" as with all the consequences involved.

The best monograph on the subject (though not wholly free from error) is J. F. Baldwin's *The Scutage and Knight Service in England* (1897), a dissertation printed at the University of Chicago Press. Madox's *History of the Exchequer* was the standard authority formerly, and is still of use. The view now held was first set forth by J. H. Round in *Feudal England* (1895). In 1896 appeared the *Red Book of the Exchequer* (Rolls series), which, with the *Testa de Nevill* (Record Commission), and the *Pipe Roll* (published by the Record Commission and the Pipe Roll Society), is the chief record authority on the subject; but many of the scutages are wrongly dated by the editor, which conclusions have been severely criticized by J. H. Round in his *Studies on the Red Book of the Exchequer* (privately printed, 1906), and his *Commune of London and other Studies* (1899). Pollock and Maitland's *History of English Law* (1895) should be consulted.

**SCUTARI** (Turkish, Uşkudar, anc. Chrysopolis), a town of Turkey in Asia, on the E. shore of the Bosporus, opposite Constantinople of which it forms the 9th Cercle Municipale. Its painted wooden houses and white minarets piled upon the slopes of the shore and backed by the cypresses of the great cemetery farther inland present a very picturesque appearance from the sea. The town contains eight mosques, one of them, the Valideh Jami, built in 1547, of considerable beauty. Other remarkable buildings are the vast barracks of Selim III. and a hospital used during the Crimean War (see NIGHTINGALE, FLORENCE). The chief industry of Scutari is the manufacture of silk, muslin and cotton stuffs. The population is estimated at 105,500, of which two-thirds are Mahommedan. The most striking feature of Scutari is its immense cemetery, the largest and most beautiful of all the cemeteries in and around Constantinople; it extends through an area of nearly 300 acres. Between Scutari and Haidar Pasha the English army lay camped during the Crimean War, and in a cemetery on the Bosphorus are buried the 8000 English who died in hospital. At Haidar Pasha is the terminus of the Angora, Konia and Smyrna railways. Chrysopolis ("Golden City"), the ancient name of Scutari, most probably has reference to the fact that there the Persian tribute was collected, as at a later date the Athenians levied there a tenth on the ships passing from the Euxine. Scutari was formerly the post station for Asiatic troops in the Bosphorous (a platoon of cavalry, as guards). As also down to the introduction of steam the terminus of the caravan routes from Syria and Asia.

**SCUTARI** (anc. Scodra, Slav. Skadar, Albanian Shkodër, or with the definite article Shkodër), the capital of the vilayet of Scutari and principal city of Albania, European Turkey; on the south-eastern shore of Lake Scutari, near the confluence of the Drin and Boyana rivers, and 14 m. inland from the Adriatic Sea. Pop. (1905) about 32,000. The plain in which Scutari is built extends southwards to Alessio and northwards to the Montenegrin frontier. It is enclosed by lofty mountains on every side except where it adjoins the lake. It is very liable to be flooded, and this liability was greatly increased towards the close of the 19th century by the deflection of the Drin and its junction with the Boyana. Its bazars and mosques give Scutari an oriental appearance, but the finest of its buildings are Italian—an old Venetian citadel on a high crag, and a Roman Catholic cathedral. The city is the seat of a Roman Catholic archbishop and a Jesuit college and seminary, which are subsidized by the Austrian government. The trade of Scutari extends to the Balkan ports and to the Adriatic, and has been very greatly augmented by the extension of the railway connection with Boyana and also by the opening of the line to Skadar (a postal and commercial link), as also down to the introduction of steam the terminus of the caravan routes from Syria and Asia.

**SCUTARI**

Livy relates that Scodra was chosen as capital by the Illyrian king Gentius, who was here besieged in 168 B.C. and carried captive to Rome. In the 7th century Scutari fell into the hands of the Servians, from whom it was wrested by the Venetians, and finally, in 1479, the Turks acquired it by treaty.

**LAKE SCUTARI** is almost bisected by the line of the Montenegrin frontier. It occupies one of the depressions, known as poljes, which are common throughout the Illyrian Karst region. It generally forms part of the estuary of the river Moratcha, and by a long, narrow inlet which stretches towards the North is connected with the sea. The depth of the lake is usually less than 10 ft., but a series of soundings taken in 1901 by Dr Jovan Cvijic revealed the existence of a series of deep holes south-west of the lake, one of which attained a depth of 144 ft. The surface is 20 ft. above sea-level. The principal affluent of Lake Scutari is the Moratcha, which enters it, after forming two small lakes, near the Montenegrin port of Valvatiza. It is drained by the Boyana, which issues from its south-eastern extremity and flows to the Adriatic. Lake Scutari abounds in aquatic birds and fish; its brilliantly clear water, its archipelago
of wooded islets, and its setting of rugged mountains, some of which are covered with snow during the greater part of the year, render it one of the most beautiful lakes in Europe.

SCUTTLE, a term formerly applied to a broad flat dish or platter; it represents the O. Eng. scutel, cognate with Ger. Schlüssel, dish, derived from Lat. scutella, a square salver or tray, dim. of scutum, a platter, probably allied to scutum, the large oblong shield, as distinguished from the clupeus, the small round shield.

In the Romance languages the term scuttle was adapted to the coal-scuttle, styled "purdonium" in English auctioneers' catalogues. The assumption was made that this piece was conceived of as a maiden above, with dogs or wolves' heads growing out of her body, and the tail of a fish.

Another Scylla, confounded by Virgil (Ecl. vi. 74) with the sea-monster, was a daughter of Nysus (q.v.), king of Megara.

See O. Waser, Skylla und Charybdis in der Literatur und Kunst der Griechen und Römer (1894); and D. Jobst, Skylla und Charybdis (Würzburg, 1902), who endeavours to show that the Homeric description really referred, as the ancients assumed, to the Sicilian straits.

SCYMNUS of Chios, the name assigned to a Greek geographer of uncertain date, commonly taken to be the author of a fragmentary anonymous Paraphrasis in verse describing the northern coasts of the Mediterranean and the shores of the Black Sea, a work which, in the first edition (Augsburg, 1660) was ascribed to Marcianus of Heraclea. Meinke's edition (Berlin, 1846) and later classical authorities have shown that this piece cannot be by Scymnus. It is dedicated to a King Nicomedes, probably Nicomedes III. of Bithynia (91-76 B.C.), and so would date from the beginning of the 1st century B.C. Its most valuable portions relate to the Euxine regions and to the Hellenic colonies of those shores as well as of the coasts of Gaul, Italy, and Spain.

See Meinke's edition (Berlin, 1846; C. Müller, Geographi Graeci minores, vol. i., where the poem is edited with sufficient prolegomena, pp. lxxix.-lxviii.); E. H. Bunbury, Ancient Geography, i. 99, 100, 102, 128, 183; ii. 26, 69-74.

SCYMMODEUSAE or ACALYPHAE, one of the two subdivisions of the Hydrozoa (q.v.), the other being the Hydroidea (q.v.). The subclass Scyphomedusae contains a number of animals which in the adult condition are medusae or jellyfishes (see MEDUSA), exclusively marine in habitat and found in all seas. They are chiefly pelagic organisms, floating at or near the surface of the water, but occur also at great depths, and are sometimes fixed and sessile in habit. Many species attain a large size and by their brilliant coloration are very conspicuous objects to the mariner or traveller. In spite of the soft nature of their bodies, a number of Scyphomedusae have been found fossil; see especially Maas (g and 12).

A scyphomedusa is distinguished from a hydrozoan medusa chiefly by the following points. The umbrella has a lobed, indented margin, a character only seen amongst Hydrozoidea in the Scyphomedusae, and it is without the characteristic veil of the Hydrozoa; hence the Scyphomedusae are sometimes termed Hydrozoa Acraspeda. The sense-organs are always concealed by flaps of the umbrellar margin (hence "Stegonophthalmata"), and are always tentaculocysts, that is to say, reduced and modified tentacles, which bear usually both ocelli and otocysts, and are hollow. The gonads are formed in the endoderm (hence "Entocarpaea"), and the generative products are shed into the gastric cavity and pass to the exterior by way of the mouth. The development from the egg may be direct, or may take place with an alternation of generations (metagenesis), in which a non-sexual individual, the so-called scyphistoma or scyphopolyp, produces by budding the sexual medusae.

Morphology of the Scyphomedusa.—As already stated, a medusa of this order may be free-swimming or sessile in habit. Intermediate between these two types are species which have the power of temporal fixation by the exumbral surface. Such forms when undisturbed fix themselves to the bottom and rest with their mouths and tentacles uppermost. If disturbed they swim about like other medusae until a favourable opportunity presents itself for resuming the sedentary habit. A well-known example of a permanently sessile form is Lucernaria, common on the Atlantic coasts of Europe, in Zostera beds, attached to the weed. It resembles in general appearance a polypl, lacking even the characteristic medusan sense-organs, which are present,
The mouth may be a simple structure at the extremity of the manubrium, or may be four-cornered, with the corners drawn out into so-called oral arms, each of which bears on the inner side a groove continuing the angle of the mouth (fig. 2a). In some genera the oral arms are of great length, and in the suborder Rhizostomeae they usually form a concrescence (fig. 2b, c), in such a way that the mouth becomes nearly obliterated, and is reduced to a system of fine canals opening to the exterior by small pores.

The mouth leads into the spacious stomach, which is typically four lobed (fig. 2b, e). On the floor of the stomach are borne the conspicuous gonads (ov), and also tentacle-like processes termed gastric filaments or phacellae, projecting into the cavity of the stomach. The gonads are of the endoderm containing generative cells, and are primitively four in number, situated interradially, but each gonad may be divided into two by the partition which separates the adjacent lobes of the stomach, that is to say, by one of the areas of concrescence between exumbral and subumbral endoderm, whence arises a condition with eight gonads which is by no means uncommon. As a rule these medusae are of separate sexes, but hermaphroditic forms are known, for example, the conspicuous British (east-Atlantic) medusa Chrysaora (fig. 3, b).

Immediately below each gonad the subumbrelal ectoderm is pushed in, as it were, to form a pit or deep cavity (fig. 2a)

x, y) opening by a wide aperture (GP). These cavities are known as the subumbral or subgenital cavities. They serve probably for the aeration of the gonads by admitting to their vicinity water with its dissolved oxygen; they never serve as genital ducts, since the generative products are always dehisced into the stomach and pass out by the mouth. In some genera, for instance, Cyanea and its allies the gonad as a whole protrudes through the subgenital cavity as if it had undergone a hernia, and hangs down in the subumbrelal space as if suspended by a mesentery (fig. 15). Usually the four subgenital cavities are distinct from each other (so-called tetrademmic condition), but in many Rhizostomeae, for example, Craspedoa, the subgenital cavities join together under the subumbrelal floor of the stomach (so-called monodemmic condition) and coalesce to form a so-called subgenital portico placed on the oral side of the stomach, opening by four interradial apertures between the oral arms, that is to say, by the four primitive apertures of the subgenital pits. In Nausithoe subgenital pits are absent altogether, and the same condition may be found in Charybdea.
Fig. 2b.—Half of the lower surface of Aurelia aurita. The transparent tissues allow the enteric cavities and canals to be seen through them. (From Gegenbaur.)

a, Marginal lappets hiding tentaculocysts.  
b, Oral arms.  
t, tentacles.  
v, Axial or gastric portion of the enteric cavity.  
gv, Radiating and anastomosing canals of the enteric system.  
o, Ovaries. The gastric filaments near to these are not drawn.  

off branches, and both stem and branches ending in the eight tentaculocysts, which are lodged in the notches between the lobes of the umbrellar margin. The adradial canals are unbranched and run to the middle point of one of the marginal lobes. The system of canals shows great variation even in the same species.

The muscular system of the Scyphomedusae is developed on the subumbonal surface as a system of circularly disposed fibres which by their contraction make the umbrella more concave and diminish its

cavity. The circular muscles usually form two chief portions, a peripheral wreath-muscle (Kranzmuskel), subdivided into four, eight or sixteen areas, and an oral ring-muscle round the mouth. The radial muscles are found in the phacellae, and in such forms as Lucernaria, longitudinal (vertical) muscular tracts or bands are found in the taeniodae, which, according to some authorities, are of endodermal origin, but which, according to recent observations, are formed in the walls of the infundibular cavities, and are therefore of ectodermal origin.

The nervous system consists as in Hydrodela of a diffuse plexus beneath the ectoderm, concentrated in certain places to form a central nervous system. In these medusae, however, the central nervous system does not form continuous rings, but occurs as four or eight separate concentrations at the margin of the umbrella, centred each round one of the sense-organs (tentaculocysts). Each nerve-centre controls its own antimere or segment of the body, receiving sensory impressions from the tentaculocysts and inverting its special subdivision of the muscular system. The separate nerve-centres are placed in communication only by the general nerve-plexus, but in Charybdea there is a zigzag marginal nerve connecting them up. The sense-organs of the Scyphomedusae are on the whole of a very uniform type. They are always tentaculocysts, as already stated, and they always have a hollow axis, unlike the tentaculocysts of Hydrodela, in which group these organs, when they do occur (as in Trachy- 
linea) are always solid. Two types of tentaculocyst must be distinguished, the former occurring only in the order Stauron- 
edusae, the other in all orders of the group. The second and commoner type is known as a rpohalium (fig. 6) and consists of a short hollow rod, the wall of which is composed of the two body layers, ectoderm and endoderm, enclosing a cavity continuous with that of the gas- 

trovascular system. At the apex of the rhopalium the endoderm is greatly thickened and cons- 
sists of concentric cells secreting ooliths (Ccm). The more proximal portion of the rhopalium usually bears one or more ocelli (oc). The rhopalia are lodged in the notches be- 

tween the marginal lobes of the umbrella, and each rhopalium is covered over by a little protecting flap or lappet. On the external (i.e. exumbrella) surface of the lappet there is usually a patch of sensory ciliated epithelium regarded as olfactory in function and termed the olfactory pit (fig. 6, 4). Each rhopalium is a centre round which, as already stated, nervous tissue is concentrated.

In Aurelia there are found numerous ooliths arranged irregularly. In Charyb- 

dea (fig. 7, o) the ooliths are larger but fewer in number and have a definite arrangement. In Nautilia a single large oolith is found.  

Fig. 3.—Scyphomedusae. a, Rhizostoma pulmo; b, Chrysaora hyoscella.  

Fig. 4.—Charybdea marplesiis. (After Claus.)

A, Natural size.  
B, View of the margin of the umbrella, natural size.  
C, Horizontal section through the umbrella and manubrium.  
D, Vertical section, to the left in the plane of an interradius, to the right in the plane of a perpendicular.  
SU, Stauromedusae.  
Ma, Manubrium.  
EaAx, Axial enteron.  
GH and FG, Gastral filaments (phacellae).  
CG, Corner groove.  
CR, Corner ridge.  
SK, Side ridge.  
D. S., Endoderm lamella (line of concrescence of the walls of the endoderm cavity of the umbrella, whereby its single chamber is broken up into four pouches).  
EU, Enteric pouch of the umbrella, in the left-hand figure, points to the cavity uniting neighbouring pouches near the margin of the umbrella and giving origin to TCa, the tentacular canal.  
Ve, Velarium.  
Fr, Frenum of the velarium.  
TCa, Tentaculocyst.
The ocelli vary greatly both as regards number and complexity of structure. In some genera they are absent, as, for instance, in *Pelagia*, *Cyanea* and *Rhistesena*. In * Aurelia* there are two on each rhopalium, a simple ocellus on the exumbral side, and a capped ocellus on the subumbral side (not present in young individuals). In *Charybdaea* there are no less than six ocelli on each of the four rhopalia (fig. 7); on the exumbral aspect there are two median ocelli (oc², oc³), a distal and a proximal, each of them a vesiculate ocellus with a lens, and on the sides of the rhopalium are two pairs of ocelli without lenses (oc¹); sometimes also an exceptional seventh ocellus occurs, a pit-like structure without a lens, either between the two median ocelli, or placed asymmetrically near the median proximal ocellus.

**Fig. 5.**—Scattered Nerve Ganglion Cells. (After Schrötzer.)

**Fig. 6.**—Tentaculocyst and Marginal Lappets of *Aurelia aurita*. (After Eimer.)

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**In the left-hand figure—**

ML, Marginal lappets.  
T, Tentaculocyst.  
A, Superior or aboral olfactory pit.  
MT, Marginal tentacles of the disc. The view is from the aboral surface, magnified about 50 diameters.

**In the right-hand figure—**

A, Superior or aboral olfactory pit.  
B, Inferior or aboral olfactory pit.  
H, Bridge between the two marginal lappets forming the hood.  
T, Tentaculocyst.  
End, Endoderm.  
Ent, Canal of the enteric system continued into the tentaculocyst.  
Con, Endodermal concretion (oc).  
Ectodermal pigment (ocells). The drawing represents a section, taken in a radial vertical plane so as to pass through the long axis of the tentaculocyst.

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The interior of which the pigment-cells secrete a gelatinous substance forming a rudimentary vitreous body. As a further advance, the pit becomes widened out into a cup, as in the lateral ocelli of *Charybdaea*. The acomplaining stage of evolution is seen in the median ocelli of *Charybdaea* (fig. 8); the primitively open cup has now closed over to form a vesicle lying beneath the ectoderm; the outer wall of the vesicle becomes thickened to form a cellular lens (l), while the proximal wall consists of sensory and pigmented cells and forms a retina. In this way the ocellus becomes a true eye, very similar in plan to the eyes of *Gastropods* and other molluscs. The ectoderm continued over the optic vesicle forms a transparent cornea (fig. 8, c) (better perhaps termed a conjunctiva), below which the spherical lens projects into the optic vesicle, imbedded in the vitreous humour (v.b) which fills it; the retina (r) consists of visual cells with long cones (fig. 9) alternating with pigment-cells. The high development of the eyes of *Charybdaea* is very remarkable, and so of their close resemblance to the eyes found in other groups of the animal kingdom, with which they have no genetic relation. Highly developed eyes, with ectodermal pigment and lens, are found also on the rhopalia of *Paraphyllia* (Mats [2]).

The subumbrellar ocellus of *Aurelia* is found to be of the inverted type, with the visual cones turned away from the light, as in *Tiaraopsis* amongst Hydromedusae, and here also the pigment is furnished by the endoderm, forming a typical ocellus, which the ectodermal visual cells project (Schewiakoff [1]).

In the Stauromedusae tentaculocysts are either absent altogether, as in *Lucernaria*, or represented by peculiar structures termed "colletocystophores" or "marginal anchors" (fig. 1, IV). Each such body has a basal hollow portion (en) surrounded by a glandular cushion (kl), from the centre of which projects a small, solid, club-shaped process or tentacle (t). The basal portion bears an ocellus (oc) of simple structure. The distal club corresponds to the crystal-sac of an ordinary rhopalium, but bears a battery of nematocysts in place of the true ocelli. These organs are said to be used for purposes of adhesion, for fixing a cup-like holdfast which the animal sinks into the substrate of sand or mud. These organs have the function of sense organs.

The histological structure of the ocelli, \( \text{o}_1 \), \( \text{o}_2 \), Distal and proximal median of the Scyphomedusae is in the main similar to that of \( \text{o}_1 \), Lateral ocelli. The Hydromedusae, see the mesogloea is more abundantly developed in the free-swimming forms, and contains special mesogloeaal corpuscles, derived by inheritance from the ectoderm, and generally occurring in the form of stellate or bipolar cells.

*Development of the Scyphomedusae.—* No adult Scyphomedusae are known to reproduce themselves by budding or by any method other than the sexual one. The course of the development in this group is best made clear by taking as a type *Aurelia*, which, together with certain other common genera, such as *Chrysaoa* and *Cotylorhiza*, has been studied in detail. Unfortunately the statements concerning some points are very contradictory.

**Fig. 7.**—Tentaculocyst of *Charybdea*.  
**Fig. 8.**—Vertical section of the Median Distal Ocellus (\( \text{o}_3 \)) of the preceding figure of *Charybdea*.  
**Fig. 9.**—Nerve supply of the Tentaculocyst.
The ovum undergoes total cleavage, giving rise to a bластula which forms a gastrula (fig. 10, A) by invagination (see article HYDROZOA). This is a type of germ-layer formation never found in the Hydrozoa, though of universal occurrence in all groups of animals is about the Coelentera. We may regard it as a form of uninodal invagination in which the immigrating cells pass into the interior in a connected epithelial layer, instead of going in singly and independently. The embryo is set free as a planula larva (fig. 10, B) in the gastrula stage, and the orifice of invagination is blastopore, which persists, at the hinder pole. After a time the planula fixes itself by the anterior pole, with the blastopore uppermost. The larva after fixation changes into a polyplacoid organism termed a scyphistoma or scyphophy (fig. 10, C, D). The body becomes in shape like a vase or urn attached by a narrow stalk, round which a free collar is secreted. The edges of the vase the four primary tentacles grow out, each a slender filament with a solid endodermal axis. The tentacles border a broad, flattened peristome, from the centre of which arises the hypostome with the mouth at its extremity; the hypostome is at first low, but soon becomes high and prominent like a tube. This has been sought to prove that the interior of the hypostome is lined by ectoderm, so as to form a stomodeum or ectodermal oesophagus similar to that of the Anthozoa, but this has been disproved by the most recent investigations of Hein (4) and Friedemann (5), who have shown that the mouth at the extremity of the hypostome represents the persistent blastopore of the gastrula stage. 

The internal gastric cavity of the scyphistoma is not a simple space as in the hydrophysol, but is subdivided by four ridges or taeniola, arising one in each interradius (fig. 11, B). Each taeniola is similar in its anatomical relations to the similarly named structures in the Hydrozoa, and becomes perforated in the same way at its outer side by a "septal ostium," forming as it were the rudiment of a ring-canal. Each taeniola bears a strongly developed longitudinal muscle-band, stated by Claus and Chun to be developed from the endoderm, like the reticulum muscles of the anthophysol, but by other investigators it is affirmed that this reticulum muscle of the scyphistoma arises from the lining of a funnel-shaped ectodermal ingrowth ("Septaltrichter") growing down from the peristome inside each taeniola, in a manner similar to the infundibular cavities of Lucernaria, which in their turn are homologous with the subintestinal cavities of other Scyphomedusae. It is asserted, however, by Friedemann (5), a recent investigator of the subject, that the infundibular cavities appear late in the scyphistoma and have nothing either to the septal muscles or to the subintestinal cavities of other Scyphomedusae. It is so formed that the peristome may become a projecting, chimney-like tube. The mouth, the hypostome and the subintestinal cavities are attached to the peristome and extend downwards as a tube with orifice at its upper end and broad base at its lower end. The subintestinal cavities remain in this position until the animal reaches the medusa stage, when they undergo a transformation and become the gonads. 

The scyphistoma with four pericentral tentacles and horny basal perisarc. 

The oral surface of the scyphistoma of Aurelia, with commencement of four interradial tentacles. 

The four gastric interradial ridges are seen through the mouth. 

The first constriction of the Aurelia scyphistoma to form the pile of ephyrae or young medusa. The single ephyra carries the sixteen scyphistoma tentacles, which will atrophy and disappear. The four longitudinal gastric ridges are seen by transparency.

The four primary interradial cathammatas disappear in the fully formed ephyra and become replaced by sixteen subradial concrescence-areas without any ostia or ring-canal at the margin. 

1 The four primitive interradial cathammatas disappear in the fully formed ephyra and become replaced by sixteen subradial concrescence-areas without any ostia or ring-canal at the margin.
SCYPHOMEDUSAE

ephyra grows in size it gradually takes on the form and structure of the young medusa. The adradial regions grow (fig. 11, F) so as to change the star-like contour into one more evenly circular, the tentacles grow out and the various parts become complicated and take on the structure of the adult medusa.

The course of development sketched out above is that which is typical of the higher forms of Scyphomedusae, and is by no means to be regarded as the most primitive type of development. The complicated alternation of generations seen in such a form as Aurelia does not occur in the more primitive genera. Thus in Pelagia the scyphistoma-stage is free-swimming and changes directly into the ephyra, which in its turn grows into the adult form. On the other hand, such a form as Lucernaria or Halicyclis may be regarded simply as a scyphistoma which has become adult and mature.

The comparison of the metagenetic type of development, such as that of Aurelia, with the more primitive genera of Scyphomedusae, indicates clearly that the scyphistoma and ephyra are re-capitulative larval stages which are represented by the adult forms of the conclusive organ, making such allowances as are necessary when comparing adult and larval forms. The metagenesis has arisen through the scyphistoma-larva acquiring the power of larval proliferation by budding. A similar origin for metagenesis has been discussed under the Hydromedusae (q.v.).

The above comparison further indicates that the scyphistoma should not be regarded as a polyp, but rather as a medusoid organism. The only certain criterion of a medusa-individual is the presence of definite sense-organs, but in cases where the organism is much reduced, this criterion may fail us, as it does in the genus Lucernaria. Nevertheless a comparison between Lucernaria and its close ally Halicyclus shows clearly that the absence of sense-organs in the former is the result of secondary reduction, so that a true medusa, may lose its most characteristic feature. Hence the absence of sense-organs in the scyphistoma does not necessarily disprove its medusoid character, while its anatomical structure resembles that of a simple scyphomedusa, such as Lucernaria, rather than that of a polyp.

Affinities of the Scyphomedusae.—By some authorities the Scyphomedusae have been removed from the Hydrozoa and united with the Anthozoa in a common group termed Scyphozoa. The diagnostic features of the class Scyphozoa thus constituted are supposed to be (1) an ectodermal oesophagus or stomoaema, (2) a gastrica cavity subdivided by mesenteries, (3) gonads formed in the endoderm. It appears, however, that the first of these characters is non-existent, and that the so-called mesenteries are simply the concrescence-areas found in all medusae. There remains only the third feature, the endodermal gonads, as an argument for uniting the Scyphomedusae with the Anthozoa, against which must be set all the peculiarities of medusan organization in which the Scyphomedusae resemble the Hydrozoa. The fact that the Scyphomedusae have a number of well-marked peculiarities of form and structure is not incompatible with placing them in the Hydrozoa as a distinct sub-class, contrasting sharply in many ways with the Hydrozoa.

Classification of the Scyphomedusae

Order I. Cubomedusae or Charybdeidae.—Medusae more or less cubical in form, with four perradial rhopalia alternating with four interradial tentacles or groups of tentacles; oral arms short; stomach a wide cavity bearing four interradial groups of phacellae and giving off four broad perradial pouches completely separated from each other by four interradial septa (i.e. ring-canals absent); gonads divided each into two by the septa, hence eight in number; sub-oral pits small or absent.

This order stands very much apart from the other orders of the Scyphomedusae. It has been proposed by Maas to divide the first entire subclass Acraspeda into A, Charybdeidae and B, Acraspeda typica. The Charybdeidae comprise three families:

1. Charybdeidae.—With four interradial tentacles. Charybdea morsupialis (fig. 4) is a familiar Mediterranean medusa; the wonder-ful development of the ciliature organs in this genus has already been described (figs. 7-9). The species of Charybdea are stated to be quick and active in their movements and to be voracious feeders.

2. Chirodroidae.—With four interradial groups of tentacles. Chirodrysus.

3. Tripedaliidae.—With four interradial groups of tentacles, three in each group. Tripedalia.

Order II. Stauromedusae or Lucernariidae.—Medusae of deep pyramidal form, often sessile, attached by a stalk developed from the oral disk; the endodermal surface; rhopalia absent or represented by colletocystophores. Four families:

1. Lucernariidae.—Sessile, stalked, with capitellate tentacles arranged in groups on eight projecting marginal lobes. Eight gonads. Lucernaria, without, and Halicyclus (fig. 1) with colletocystophores, two well-known genera.

2. Tesseridae.—Free, with eight or more tentacles, without tentaculocytes. Tesseria, &c.

3. Paraptylidae.—Sessile, stalked, with eight shallow marginal lobes bearing one or more rows of tentacles; without tentaculocytes; with four gonads. Depastrum is a British genus.

4. Stenocyphidae.—Sessile, with the margin undivided; with eight colletocystophores and eight adradial groups of capitellate tentacles. Stenocyphinus inaba, from Japan.

Order III. Coronata.—Free medusae with rhopalia of the normal type; the umbrellae is divided by a circular, so-called coronal groove, into two parts, a central portion, which is conical, thimble-shaped, or domed in form, and a peripheral portion, the pedal zone, which bears the marginal lobes, tentacles and rhopalia; the pedal zone is subdivided into areas termed pedalia, from each of which arises a tentacle or rhopallum in the inter-space between two adjacent lobes of the margin. The order contains the following families:

1. Periphyllidae.—With sixteen marginal lobes, four rhopalia and twelve tentacles; the rhopalia are interradial. Periphylla (fig. 13), a widely distributed deep-sea genus.

2. Paraptylidae.—With sixteen marginal lobes, four rhopalia and twelve tentacles; the rhopalia perradial in position corresponding to the angles of the stomach. Paraptylina recent; Paraptyllidae fossil (see Maas (8 & 12)).

3. Aioellidae.—With twelve marginal lobes, six rhopalia and six tentacles. Aioella.

4. Pteropidae.—With eight marginal lobes, four rhopalia and four tentacles. Pteropida. Linergidae (Aioellidae).—With sixteen or thirty-two rhopalia, marginal lobes and tentacles often very numerous. Aiolida (fig. 14) is a well-known deep-sea genus.

5. Ephyreopidae.—With sixteen marginal lobes, eight rhopalia and eight tentacles. Nausifera, a small medusa of world-wide distribution, the type of the subfamily Nausioidae; the subfamily Linergidae includes the genera Linerges, &c., medusae confined to tropical seas. By Maas and others the Nausioidae and Linergidae are ranked as independent families.

Order IV. Discophora.—Medusae with umbrella flattened or disk-like, without coronal groove; lips always prolonged into long oral arms. The most prolific and dominant group of the Scyphomedusae, containing two suborders; the Semaeostomeae, in which the oral arms remain separate, and the Rhizostomeae, in
which the oral arms become fused together to form a proboscis. Nine families, three of Semaeostomeae, six of Rhizostomeae:—

1. Pelagiidae.—Semaeeostomeae with wide gastric pouches not united by a ring-canal. Pelagia, an oceanic genus with direct development. Chrysaora (fig. 36), a common British medusa, with a scyphistoma stage and alternation of generations, Dactyloaetra, a common American medusa of the Atlantic shores, differs from Chrysaora in small points.

2. Cyaneidae.—Semaeeostomeae with sixteen gastric pouches sending off canals to the margin not united by a ring-canal; tentacles in branches on the margin. Cyanea (fig. 15), represented in the British fauna by two species.

3. Ulmaridae.—Semaeeostomeae with gastric pouches relatively small, sending off branching canals to the margin, where they are united by a ring-canal. Ulmaris, from the South Atlantic, has only eight adradial tentacles. Aurelia (fig. 2), with numerous marginal tentacles, is one of the commonest and most familiar of jelly-fishes.

4. Cassiopeidae.—Rhizostomeae with subumbllar musculature arranged in feather-like arcades (Arcadiumyria, Maas); oral arms pinnate. Cassiopea.

5. Cebethidae.—Rhizostomeae with subumbllar musculature in radial tracts (Radiomyria, Maas); oral arms bifid. Cephea, Cotylorhiza.

6. Rhizosomatidae (Pilemidae).—Rhizostomeae with subumbllar musculature in circular bands (Cyclomyria); oral arms bifid or very complicated; sixteen radial canals. Rhizostoma (Pilema) is a very common genus (fig. 36).

7. 8. 9. The families Lyschnorhizidae, Leptobrachidae and Catostomidae resemble the preceding in the arrangement of the musculature. In Lychenorhizidae only eight of the sixteen radial canals are much the ring-canal; the genus Crambessa is the best-known representative of the family. In the other two families there are eight radial canals, and between them a network of canals with many openings into the ring-canal.


SCYROS, a small rocky barren island in the Aegean Sea, off the coast of Thessaly, containing a town of the same name. In 469 B.C. it was conquered by the Athenians under Cimon, and it was probably about this time that the legends arose which connect it with the Attic hero Theseus, who is said to have been treacherously slain and buried there. A mythic claim was thus formed to justify the Athenian attack, and Cimon brought back the bones of Theseus to Athens in triumph. The inhabitants of Scyros, or the Athenians who conquered the island, were descendants of Pelasgians or Carians as the earliest inhabitants. There was a sanctuary of Achilles on the island, and numerous traditions connect Scyros with that hero. He was concealed, disguised as a woman, in the palace of Lycomedes, king of the island, when his mother wished to keep him back from the Trojan War; he was discovered there by Odysseus, and gladly accompanied him to Troy. An entirely different cycle of legends relate the conquest of Scyros by Achilles. The actual worship on the island of a hero or god named Achilles, and the probable kinship of its inhabitants with a Thessalian people, whose hero Achilles also was, form the historical foundation of the legends. Scyros was left, along with Lemnos and Imbros, to the Athenians by the peace of Antalcides (387 B.C.). It was taken by Philip, and continued under Macedonian rule till 196, when the Romans restored it to Athens, in whose possession it remained throughout the Roman period. It was sacked by an army of Goths, Heruli and Peucini, in A.D. 269. The ancient city was situated on a lofty rocky peak, on the north-eastern coast, where the modern town of St George now stands. A temple of Athena, the chief goddess of the island, was on the shore near the town. The island has a small stream, called in ancient times Cephissus.

SCUTHAE (Gr. Σωθά), in Herodotus (iv. 1-142) and Hippocrates (De aere, 24 sqq.), a definite nation giving its name to Scythia (q.v.); in later writers a general term for the inhabitants of that country without distinction of race.

SCYTHE, an implement for mowing grass or reaping corn or grain, consisting of a curved steel blade fastened to a long wooden handle with a slight double curve from which project two small pieces by which the handle is held. The handle is
technically known as the "anaeth, " snead " or " snead " (sneadan to cut, cf. Ger. schneiden). The word in O.E. is sice or sige M.E. sike; the mis-spelling " scythe " is paralleled by " scint " and is possibly due to the Fr. scier, saw; the word means " an instrument for cutting," and is derived from the root sok-, seen in Lat. secure, to cut, " saw " and " sickle," the oldest of reaping implements, with deep curved blade and short handle. The same root is seen in the " sedge," i.e. cutting or sword-grass, strictly applied to plants of the genus Carex, but loosely used of flags, rushes and other grasses growing in marshy places (see reading).

SCYTHIA. (Gr. Σκύθεα), originally (e.g. in Herodotus iv. 1-142), the country of the Scythaec or the country over which the nomad Scytheaems were lords, that is, the steppe from the Carpathians to the Don. With the disappearance of the Scytheaec as an ethnic and political entity, the name of Scythea gives place in its original seat to that of Sarmatia, and is artifically applied by geographers, on the one hand, to the Dobrudzha, the lesser Scythea of Strabo, where it remained in official use until Byzantine times; on the other, to the unknown regions of northern Asia, the Eastern Scythea of Strabo, the " Scythea inetr et extra Imaum " of Ploene; but throughout classical literature Scythea generally means regions in which, in our sense, we do not find nomads, but roving tribes, and a Scythian (Scythea) any barbarian coming from those parts. Herodotus (i.e.), to whom Hippocrates (De aere, &c. 24 sqq.) we owe our earliest knowledge (Homer, II. xiii. 5, speaks of " mere-milkers," and Hisiod, op. Strabo viii. 3 (7) mentions Scythea) of the land and its inhabitants, tries to restrict this merely geographical usage and to confine the word Scythe to a certain race or at any rate to that race and its subjects, but even he seems to slip back into the wider use. Hence there is much doubt as to his exact meaning.

His account of the geography falls into two irreconcilable parts; one (iv. 90 sqq.), in connexion with the tale of the invasion of Darius, makes of Scythea a kind of chessboard 4000 stades square on which the combatants can make their moves quite unhindered by the great rivers: the other (16-20), founded on what he learned from Greeks of Olbia and supplemented by the tales of the 7th century traveller Aristoc of Proconnesus, is not very far removed from first-hand information and can be made more or less to tally with the lie of the land. In accordance with this we can give the relative positions of the various tribes, and an excursus on the rivers (47-57) lets us define their actual seats. In western Scythea, starting from Olbia and going northwards, we have Cappadocia on the lower Hypanis (Bug), Alazenes where the Tyrans (Dniester) and Hypanis come near each other in their middle courses, and Arotetes (" Ploughmen ") above them. These tribes raised wheat, presumably in the river valleys, and sold it for export; in the eastern half from west to east were Georgi (perhaps the same as Arotetes) between the Ingul and the Borysthenes (Dnieper), nomad Scythea and Royal Scythea between the Borysthenes and the Tana (Don). Above all these stretched a row of non-Scythea tribes from west to east: on the Maris (Maros) in Transylvania the Agathyrsi; Neuri in Podolia and Kievi, Androphi and Melanchlaeni in Poltava, (Ryazan) and Tarnov. On the lower Don and Volga we have the Sauromatae, and on the middle course of the Volga the Budini with the great wooden town of Gelonos and its semi-Greek inhabitants. From this region started an important trade route eastward by the Thyssagetae among the southern Uralis, the Irycne on the Tobol and Irtysh to the Kirgiz steppe. west, where dwelt other Scythea, regarded as colonists of those in Europe: then by the Argippaei in the Altai and the Issedones in the Tarym basin, to the Asts, steppe on the borders of Chirmeralo, stole their gold from the watchful griffins, and who marched with goat-footed men and Hyperboreans reaching to the sea.

To the south of Scythea the Crimean mountains were inhabited by a non-Sythic race, the Tauri. (See also articles on these tribes.)

Ethnology.—Herodotus expressly divides the Scytheaems into the Agriculturists, Callipodae, Alazones, Arotetes and Georgi in the western part of the country, and the Nomads with the Royal Scythea to the east. The latter claimed dominion over all the rest. The question arises whether we are to do with the various tribes of one race in different stages of civilization, or with a mixed population called by foreigners after the ruling tribe. The latter seems by far the more probable. The affinities of this tribe have been sought in various directions, and the evidence suggests that it was itself of mixed blood. We know that in the 2nd century A.D., when the stelae were dominated by the Sarmaeae (sarmae), the majority of the barbarian names in the inscriptions of Olbia, Tana, and Panticapaeum were Iranian, and can infer that the Sarmaeae spoke an Iranian language. Perhaps the seed of their or less native shape, is shortly this. The tribe is autochthonous, claiming descent from a son of the river Borysthenes Targaros, who lived a thousand years before. Of his three sons the youngest Colaxas is preferred by an ordeal of picking up certain objects which fell from heaven,—a plough, a yoke, an axe and a cup,—and becomes the ancestor of the ruling clan of Paralatae; from the other sons, Lipoxaesi and Harpoxaesi, are descended minor clans, and the name of the whole people is Sclothi, not Scythea, which is used by the Greeks alone. In this story the names make sense in Iranian, the tribes are not again mentioned except when this passage is copied, the objects are rarely such as would be held sacred by nomads. The form of ordeal is to be paralleled in Iranian legends, and the people say themselves that they are not really Scythea. Surely this is the national legend of the agricultural Scytheaems about Olbia, and the name Sclothi, by which careful modern writers designate the Royal Scythea, is the true designation of the subject race. The royal line of these is quite distinct from the true Royal Scythea, who, like most nomad conquerors, allowed their subjects to preserve their own organizations.

The third account fails chiefly in being too plausible, but there seems no reason to reject it as an artificial combination of unconnected facts. According to it the Scythea ems dwell in Asia, and were forced by the Massagetae over the Araxes (Volga?) into the land of the Cimmeria. Aristaeas says that the first impulse came from the Arimasi, who displaced the Issedones, who in turn fell upon the Scythea. This comes to much the same thing, as the Massagetae seem to have contained an element which had come in from the land of the Issedones. The Scythea having fallen upon them from the north-east, the Cimmeria appear to have given way in two directions, towards the south-west, where the tombs of their kings were shown on the Tyrsus (Dniester) and one body joined with the Tereres of Thrace in invading Asia Minor by the Hellespont; and towards the south-east where another body threatened the Assyrians, who called them Gimuria (Hebrew Gomer; Gen. xi.). They were followed by the Scythea (Ashguzai, Heb. Ashkenaz) whom the Assyrians welcomed as allies and used against the Cimmeria, against the Medes and even against Egypt. Hence the references to the Scythea in the Hebrew prophets (Jer. iv. 3, vi. 7). This
The physical features of the Scyths are not described by Herodotus. Hippocrates (i.e.) draws a picture of them which makes them very similar to the Mongols as they appeared to the Franciscan missionaries in the 13th century. He says they are quite unlike any other race of men, and very like each other. The main point seems to be a tendency to slackness, fatness and excess of humour. The men are said to be in appearance very like eunuchs, and both sexes have a tendency to sexual indifference amounting in the men to impotence. When a man finds himself in this condition he assumes the women's dress and habits. Herodotus mentions the existence of this class, called the ἢνεγγες, as a step made to save them from the woe owing to the wrath of the goddess of Ascalon whose shrine they had plundered. Reinegg describes a similar state of things in the Nogai in the 18th century. The whole account suggests a Tatar clan in the last stage of degeneracy. Hippocrates says that this only applies to the ruling class, not to the slaves, but gives as the reason the want of exercise among the former. The skulls dug up in Scythic graves throw no light on the question, some being round and some long. The representations of nomads on objects of Greek art show people with full beards and shaggy hair, such as cannot be reconciled with Hippocrates; but the only reliefs which seem to be accurate belong to a late date when the ruling clan was Sarmatian rather than Scythian.

Custums.—Herodotus gives a good survey of the customs of the Scyths: it seems mostly to apply to the ruling race. Again the closest analogy is the state of the Manes in the 13th century, but too much weight must not be put on this, as the naturopathical conditions of steppe-ranging nomads dictated the greater part of them. Still the correspondence of religion and of funeral rites is very close. The Scyths lived upon the produce of their herds of cattle and horses, their main food being the flesh of the latter, either cooked in a cauldron or made into a kind of haggis, and the milk of mares from which they made cheese and kumiss (a fermented drink resembling butter) and sour cream. In the spring the grounds were covered with patches of fresh pasture, spending the spring and autumn upon the open steppe, the winter and summer by the rivers for the sake of moisture and enough water. If they were attacked by a tribe, the women in wagons with felt tilts. These were drawn by horses, both the men and homes of each family. Hence the Greek names, Abi, Hippomolgi, Hamaoochi. The women were kept in subjection, and were far from being regarded as equals. They married young, the day of their marriage marked, and they did not join the army; but they rode on horseback and engaged in war. Polygamy was practised, the son inheriting his father's wives. Both men and women avoided washing, but there was something of the nature of a vapour bath, with which Herodotus has confused a custom of using the smoke of hemp as a narcotic. The women daubed themselves with a kind of cosmetic paste. The dress of the men is well shown upon the Kol Oba and Chertomyk's vases, and upon other Greek works of art made for Scythic use. It must not be confused with the fanciful barbarian costumes that are so common upon the Attic pots. They wore coats confined by belts, trousers tucked into soft boots, and various kinds of head-dresses, coats, robes, tall pointed caps, and veils descending over most of the figure. Both sexes wore many stamped gold plates sewn upon their clothes in lines or bands. Their horses had severe bits, and were adorned with ornaments. The Scyths were distinguished in battle, when they were not alone. The commander honoured the warriors who had slain one or more of their enemies. As early as the 6th or 7th century, such prowess, and as a token of his right to a share of any spoil, the warrior was accustomed to scalp his enemy and adorn his bridle with it. The horseman was also the one habitually in the house of special enemy or to attack him. He would select a private or public enemy, enter into a private dispute before the king, he would make a cup of the skull, mounting it in bull's hide or in gold. The tactics in war are described in the traditional nomad tactics of harassing the enemy on the march, by raiding and in the use of the bow engaging. Their weapons consisted of bow and arrows, short swords, spears and axes. The government was a despotic, but a

king who aroused the extreme dissatisfaction of his subjects was liable to be murdered.

Religion.—The religion of the Scyths was nature worship. Herodotus (iv. 59) gives a list of their gods, but with Greek deities corresponding to all these, but we can hardly be wrong in thinking the authenticity of the list is in question. He says they chiefly reverence Tabiti (Hestia), the god of home and family. And the Nymphae of the Scyths.1 They set up no images or altars or temples save to Ares only. To Ares they make a heap of faggots three stades square, with the heaviest trees at one inclined, and bring to it a hundred and fifty fresh loads of logs every year, and hold up a sword which is the image of Ares; to this they sacrifice captives, pouring their blood over it. The account of the cult of Ares, for whom the Scythian soldiers were to be consecrated, and the mention of such masses of faggots suggests the wooded district of the agricultural Scyths, not the treeless steppe of the Royal tribes. The Scythian pantheon is not distinctive, and can be paralleled among the Tartars and among the Irmakians. The Scyths had a method of divination with sticks, and the Enarces, who claimed to be soothsayers by grant of the goddess who had afflicted heathen another method, splitting hazel sticks. They intervened in case of the king's falling sick, when it was assumed that some man had sworn by the king's heart and broken his oath. If a man accused of this denies it, other diviners are called, and if they all agree, the accused is burnt. The diviners are chosen by lot, and 37, and not by the king. They held in their honour, and then burned forty days after death. They buried the deaths of the kings were much more elaborate. They removed to the extreme corner of the hill as a principle of surrounding the dead man with everything in which he found any pleasure in life.

The tombs of the kings were in the land of Gurrhus near the great bend of the Dnieper where the chief tumuli have been excavated. The body was embalmed and placed in a coffin with a saddle on it and a sword by its side, with a great deal of clothing which was burned with the body. The coffin was closed with a stone, and two or three layers of faggots, which were burned. Arrived at the place of burial, the body was set in a square pit with spears marking out its sides and a roof of matting. Then one of the chief bedfellows of the dead, a groomsman, messenger and horses were strangled and laid by him, and round about were offered all of his gold and cups of gold—no silver or bronze. After this they raised a great mound, striving to make it as high as possible. A year later they strangled fifty youth of the dead man's servants (all Scyths born) and fifty of the best horses, studded them and mounted them in a circle about the mound.

Tombs.—The description is generally borne out by the evidence of the tombs opened in the Crimea and southern Russia but almost every detail finds a close parallel in some tomb or other. The chief divergency is in the presence of silver and copper objects, and in the profusion and variety of the ornaments. They are also the most distinctively Scythian of all the tombs. The Scythian tombs are generally opened in the tombs. Arrived at the place of burial, the body was set in a square pit with spears marking out its sides and a roof of matting. Then one of the chief bedfellows of the dead, a groomsman, messenger and horses were strangled and laid by him, and round about were offered all of his gold and cups of gold—no silver or bronze. After this they raised a great mound, striving to make it as high as possible. A year later they strangled fifty youth of the dead man's servants (all Scyths born) and fifty of the best horses, studded them and mounted them in a circle about the mound. The tombs are cut into the mountains. They are generally opened in the tombs. Arrived at the place of burial, the body was set in a square pit with spears marking out its sides and a roof of matting. Then one of the chief bedfellows of the dead, a groomsman, messenger and horses were strangled and laid by him, and round about were offered all of his gold and cups of gold—no silver or bronze. After this they raised a great mound, striving to make it as high as possible. A year later they strangled fifty youth of the dead man's servants (all Scyths born) and fifty of the best horses, studded them and mounted them in a circle about the mound.
they were heaped up, before the beams supporting the central chamber had rotted, slaves made a practice of driving a mine into the mound straight to where the valuables were deposited, and it is only by the collapse of this mine and the crushing of the robber after his death that we have the chance to see what it was that the Chortomlyk barrow, on the whole the most typical, were preserved to us. This was 60 ft. high and 1100 ft. round; it was a stone plinth, and it was approached by a kind of stone aisle. A huge mound of earth covered the whole, and from each corner of it at the bottom opened out side chambers. The north-west chamber communicated with a large irregular chamber containing a wonderful brazier, shaped like a central pit all was in confusion, but here the king seems to have lain. His belongings, found piled up near the mine, seem to have included a combined bow-case and quiver and a sword sheath, each with its own separate gold plate, the three were covered with gold hafts, a hone with gold mounting, a whip, many other gold plates and a heap of arrow-heads. In the north-west chamber was woman's skeleton, and she had her jewels, mostly of Greek work. She was attended by a number of men, and she had heaps in the other chambers. They were supplied with simpler weapons and adornments, but even so their clothes had hundreds of stamped gold plates and strips of various shapes sewn on to them, every skeleton were drinking vessels. Store of wine was contained in six amphorae, and in two bronze cauldrons were mutton-bones. The most wonderful object of all was a great two-handled vase standing in the middle of the main chamber. The greatest of its beauty is covered by a pattern of acanthus leaves, but on the shoulder is a frieze showing nomads breaking in wild mares, our chief authority for the use of these vessels. The way in which the main shaft were three square pits with horses and their harness, and by them two pits with men's skeletons. In the heap itself was found an immense quantity of pieces of harness and what may be remains of a funeral car. Greek work would seem to date the burial as of the 3rd century B.C.

At Alexandria in the same district was an even more elaborate tomb, but its contents were in even greater confusion. Another tomb in this region, Melgunov's barrow, found as long ago as 1760, contained a dagger-sheath and pommel of Assyrian work and Greek things of the 6th century. In the Kul Oba tomb mentioned above there was gold work and one or two objects, of purely Greek workmanship, but the ideas underlyng the are the same—the king has his wife, his servant and his horse, his amphora with wine, his cauldron with mutton-bones, his drinking vessels, and his clothing, all with the one object of barbarian style. One of the cups has a frieze with reliefs of natives supplementing that on the Chortomlyk vase.

East of the Maeotis on the Kuban we have many barrows; the most interesting are the groups called the Seven Brothers, and those of Karagodemush, Kostromskaya, UI and Kelermes, the latter remarkable for objects of Assyrian style, the others for the enormous slaughter of horses; on the UI were four hundred in one grave.

Art.—Certain of the objects which occur in these Scythian graves are of special forms typical for the Scythian area. Most interesting of these is the dagger or sword, always very short, save in the later grave types, where a dagger was found one or two combinations, of purely Greek workmanship, but the ideas underlyng the are the same—the king has his wife, his servant and his horse, his amphora with wine, his cauldron with mutton-bones, his drinking vessels, and his clothing, all with the one object of barbarian style. One of the cups has a frieze with reliefs of natives supplementing that on the Chortomlyk vase.

Further, there is the peculiar cauldron on one conical foot, round which the fire was built, the cylindrical horn pierced for suspension, and the cup with a rounded bottom. Assyrian and afterwards Greek craftsmen working for Scythian employers were compelled to decorate these outlandish forms, which they did according to their own fashion; but there was also a native style with considerable beast decoration, which was almost always employed for the adornment of the handles and weapons.

This style and the types of dagger, cauldron, bit and two-looped socketed axehead run across from Hungary to the upper Volga, and from the Caucasus to the Cimmerian Bosphorus. Age culture seems to have developed largely the Scythian Rome and the zoomorphic decoration of the early middle ages.

The Scyths from the Yenisel to the Caspatians are of distinct style of art which, whatever its original elements may have been, seems to have taken shape as far east as the Yenisel basin is an additional argument in favour of a certain movement of population from the east, which may have finally made the Scythian types which correspond in time with the movement of the Scyths of which Herodotus speaks, and it may be inferred that immigrants coming from those regions were rather allied to the Tatar family of nations than to the Scyths. It is possible that the Scyths of the early Scythian period, who lived on the same lands, have already penetrated into the Yenisel basin, and that the resemblance between the dress and daggers of certain classes of warriors on the sculptures of Persopolis and those shown on the Kul Oba vase in the Iranian origin would not account for the presence of analogous types on the Yenisel.

History.—To sum up the history of Scythia, the oldest inhabitants of whose hearth in Scythia were the Cimmerii; the Scythia of the country makes it probable that some of them were nomads, while others no doubt filled the river valleys and in the Crimea, where they left their name to ferrys, earthworks and the Cimmerian Bosporus. They were probably of Iranian race: among the Persians Herodotus describes a similar mixture of nomadic and settled tribes. In the 7th century B.C. these Cimmerians were attacked and partly driven out by a horde of newcomers from upper Asia called Scytoi; these imposed their name and their yoke upon all that were left in the Euxine steppe, but probably their coming did not really change the basis of the population, which remained Iranian. The new owners adopted the language of the conquered, but brought with them new customs and a new artistic taste probably largely borrowed from the metal-working tribes of Siberia. About the same time similar peoples harassed the northern frontier of Iran, where they were called Sakas (Sace), and in later times Saka and Scythi, whether they were originally the same or not, were regarded as synonymous. It is difficult always to judge whether given information applies to the Saces or the Scyths.

About 575 B.C. Darius, having conquered Thrace, made an invasion of Scythia, which, according to the account of Herodotus, he crossed as far as the Oarus, a river which Pliny says was burnt the town of Gelenus and returned in sixty days. In this march he was much harassed by the nomads, with whom he could not come to close quarters, but no mention is made of his having any difficulty with the rivers (he gets his water from wells), and no reason for his proceedings is advanced except a desire to avenge legendary attacks of Scyths upon Asia. After losing many men the Great King comes back to the place where he crossed the Danube, finds the Ionians still guarding the bridge in spite of their attempts the Scyths to make them desert, and safely re-enters his own dominions. Ctesias says that the whole campaign only took fifteen days and that Darius did not get beyond the Tyres (Dinister). This is also the view of the reasonable Strabo; but it does not account for the genesis of the other story. It seems best to believe that Darius made an incursion in order to secure the frontier of the Danube, suffered serious reverses and retired with loss, and that this offered too good a chance to be missed for a moral tale about the discomfiture of the Great King by a few poor savages. The Greeks had been trading with the Scyths ever since their coming, and when Darius retired the Ionians re-entered the Scythian lands, and some time before 512 B.C. the Scyths had were received as allies by the Ionians and by the King of Thrace, who had been made subject to the Great King. It is possible to make a list of Scythian kings—Sparagapetles, Lycurgus, Saulius (whose brother, the famous Anacharsis (q.v.), travelled over all the world in search of wisdom, was reckoned a sage among the Greeks and was slain among his own people because they did not like his foreign ways), and Idanthrysus, the head king at the time of Darius, probably the father of Ariapheites. This latter had three wives, a Greek woman from Istris, Opea a Scythian, and a Thracian daughter to the great chief Teres. Syles, his son by the Greek mother, affected Greek ways, had long hair, and even took part in Bacchic rites. When this came to the knowledge of his stepfather, he was murdered, and Ocamatas, his son by the third wife, reigned in his stead. Herodotus adds this to show how much the Scyths hated foreign customs, but with the things found in the graves it rather prove how strong was the attraction exercised upon the nomads by the higher culture of their neighbours. Ocamatas died shortly before the time of Herodotus. We cannot place Arianthes, who made a kind of census of the nation by exacting an arrow-head from each warrior and cast a great cauldron out of the bronze, nor Taxacis and Scoropis, the under-kings in the time of Idanthrysus. After the retreat of Darius the Scyths made a raid as far as Abydos, and even sent envoys to King Cleomenes III. of Sparta to arrange that they should attack the Persian Empire from the Phasis while the Spartans
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should march up from Ephesus. The chief result of the embassy was that Cleomenes took to the Scythian habit of drinking his wine neat and went mad therefrom (Herodotus vi. 84). Henceforward the Scyths appear as a declining power; by the middle of the 4th century their eastern neighbours the Sarmatae have crossed the Tanaiss (Don) and the pressure of the Scyths is felt on the Danube. Here Philip II. of Macedon defeated and slew their king Atæas in 339 B.C., and from this time on the representatives of the old Scythic power are petty chieftains in the western part of the country about Olbia, where they could still be dangerous, and about Tomi. Towards the second half of the 2nd century B.C. this kingdom seems to have become the nucleus of a great state under Scillus, whose name appears on coins of Olbia, and who at the same time threatened Chersonese in the Crimea. Henceforward the name “Scythian” is purely geographical. Meanwhile Scythia had become the land of the Sarmatae (q.v.). These, as has been seen, spoke a cognate dialect, and the tombs which belong to their period show exactly the same culture with Greek and Siberian elements. It is probable that the Iranian element was stronger among the Sarmatae, whose power extended as the ruling clan of the Scyths became extinct; but it is quite likely that they in their turn were offered by some new horde from the north. The Sarmatae, like the Scyths, seem to have been a sea-faring nation, and the west by yet newer swarms, and with the coming of the Huns Scythia enters upon a new cycle, though still keeping its old name in the Byzantine historians.

AUTHORITIES.—(1) Ancient: Herodotus iv. 1-142 (editions of Blakelsey, Rawlinson, Macan); Hippocrates, De Aere, &c., c. 24 sqq.; for geography alone: Strabo vii. cc. 3, 4; xi. cc. 1, 2, 5; Pliny iv. 75 sqq.; Ptolemy, Sarmatia; Diodorus Sic. ii. 2, 45-47; and Justin i. cc. 8, 11; ii. 1. 4, do not seem to add anything of which we can be certain. (2) Modern: E. H. Minas, Scythians (Cambridge, 1900), gives a summary of various opinions and a survey of the subject from all points of view. See also for ethnological questions, Mongolian hypothesis: K. Neumann, Die Hellenen im Scythienland (1901). See also Deo, Pravato, F. K. Müllenhoff, “Über Herkunft und Sprache der Pontischen Skythen und Sarmaten,” in Monatsh. d. Berlin. Ak. (1866), reprinted in Deutsche Altertumskunde, vol. iii. For the archaeology: Konstakoff, Tolstoy and Reinaich, Antiquités de la Russie d’Herodote et Compte rendu de la commission archéologique de St.-Pétersbourg, passim. (E. H. M.)

SEA (in O. Eng. see, a common Teutonic word; cf. Ger. See, Dutch Zee, &c.; the ultimate source is uncertain), in its widest sense that part of the surface of the globe which consists of salt water, in distinction from dry land. The greater divisions of the sea, according to expression, are the ocean, or the sea proper, for which name, as the name of the part of the globe which is covered with the heaving Ocean and Oceanography, the latter being the term now generally applied to the scientific study of the sea. The word “sea,” however, is also used, in a restricted sense, in application to specific parts of the great oceans, more or less clearly defined by a partial land-boundary. Such are the Mediterranean Sea and the Caribbean Sea, connected with the Atlantic Ocean; the Arabian Sea, a division of the Indian Ocean, and the China and Japan Seas of the western Pacific Ocean. Subdivisions of great seas are similarly defined (e.g. the Adriatic Sea), and a few large bodies of salt water entirely land-locked are also sometimes called seas, for example, the Dead Sea. Sea-level is the assumed mean level of the sea, serving as a datum from which to calculate the elevation of land in surveying (q.v.).

SEA, COMMAND OF THE, a technical term of naval warfare, which indicates a definite strategical condition. (For its difference from “sea-power,” see the separate article on that subject.) The term has been substituted sometimes for the much older “Dominion of the sea” or “Sovereignty of the sea,” a legal term expressing a claim, if not a right. It has also been sometimes treated as though it were identical with the rhetorical expression “Empire of the sea,” Captain A. T. Mahan, instead of it, uses the term “Control of the sea,” which has the merit of precision, and is not likely to be misunderstood or mixed up with a form of words meaning something different. The expression “Com-
Dutch in objecting to pay the old-established mark of respect to the English flag was quite reason enough: in the eyes of most Englishmen, and probably of most Dutchmen also, to justify hostility which other reasons may have rendered inevitable.

The remarkable thing about the Dutch wars is that in reality what England gained was the possibility of securing an absolute command of the sea. She came out of the struggle a great, and in a fair way of becoming the greatest, naval power. It is this which prompted Vice-Admiral P. H. Colbom to hold that there are various kinds of command, such as "absolute or assured," "temporary," "with definite ultimate purpose," &c. An explanation that would make all these terms intelligible would be voluntary by explanation of the event. Enough is certain to say that the absolute command—of which, as Colbom tells us, the Anglo-Dutch were the most complete example—is nothing but an attribute of the nation whose power on the sea is paramount. It exists and may be visible in time of peace. The command which, as said above, expresses a definite strategical condition is existent only in time of war. It can be easily seen that the former is essential to an empire like the British, the parts of which are bound together by maritime communications. Inability to keep these communications open can have only of real strength the power be destroyed and destroyed. Experience of war as well as reason will have made it evident that inability to keep open sea-communications cannot be limited to any single line, because the inability must be due either to incapacity in the direction of hostilities or insufficiency of force. If Great Britain has not force enough to keep open all the communications of her widely extended empire, or if—having force enough—she is too foolish to employ it properly, she does not hold the command of the sea, and the empire must fall if seriously attacked.

The strategic command of the sea in a particular war of campaign has equal concern for all maritime belligerents. Before seeing what it is, it will be well to learn on high authority what it is not. Mahan says that command, or, to use his own term, "control of the sea, however real, does not imply that an enemy's single ships or small squadrons cannot steal out of port, cannot cross more or less frequented tracts of ocean, make harassing descents upon unprotected points of a long coast-line, or enter blockaded harbours. On the contrary, history has shown that such evasions are always possible, to some extent, to the weaker party, however great the inferiority of material force. See "Of Sea-Power on History," London, 1890, p. 14). The Anglo-French command of the sea in 1854-1856, complete as it was, did not enable the Allies to intercept the Russian ships in the north-western Pacific, nor did that held by the Federals in the American Civil War put an early stop to the cruises of the Confederate vessels. What the term really does imply is the power possessed from the first, or gained during hostilities, by one belligerent of carrying out considerable over-sea expeditions at will. In the Russian war just mentioned the Allies had such overwhelmingly superior sea-power that the Russians abandoned to them without a struggle the command of the sea; and the landing in South Africa (1899-1902), more than six thousand miles away, of a large British army without even a threat of interruption on the voyage is another instance of unchallenged command. In wars between great powers and also between secondary powers, if nearly equally matched, this absence of challenge is rare. The rule is that the command of the sea has to be won after hostilities begin. To win it the enemy's naval force must be neutralized. It may be driven into its ports and there blockaded or "masked," and thus rendered void of use, or it must be defeated and destroyed. The latter is the preferable, because the more effective plan. As was perceptible in the Spanish-American War of 1898, as long as one belligerent's fleet is intact or at large the other is reluctant to carry out any considerable expedition over-sea. In fact, the command of the sea has not been secured whilst the enemy continues to have a "fleet in being" (see Sea-Power).

In 1782 a greatly superior Franco-Spanish fleet was covering the siege of Gibraltar. Had this fleet succeeded in preventing the revictualling of the fortress the garrison would have been starved into surrender. A British fleet under Lord Howe, though much weaker in numbers, had not been defeated and was still at large. Howe, in spite of the odds against him, managed to get his supply-ships in to the anchorage and to fight a partial action, in which he did the allies as much damage as he received. There has never been a display of higher tactical skill than this operation of Howe's, though, curiously enough, he owes his fame much more to his less meritorious performance on the 1st of June. The revictualling of Gibraltar surpassed even Suffren's feat of the capture of Toulon. Incomparable as this was, it was only temporary. Assuming that a temporary superiority in the Mediterranean had given them a free hand on the water, sent a great expedition to Egypt. Though the army which was carried succeeded in landing there, the covering fleet was destroyed by Nelson at the Nile, and the army itself was eventually forced to surrender. The French had not perceived that, except for a short time and for minor operations, you cannot separate the command of the Mediterranean or of any particular area of water from that of the sea in general. Local command of the sea may enable a belligerent to make a hasty raid, seize a relative importance from its opponent's communications, or even be able to effect anything requiring considerable time for its execution, or, in other words, anything likely to have an important influence on the course of the war. If Great Britain has not naval force enough to retain command of the Mediterranean she will certainly not have force enough to retain command of the English Channel. It can be easily shown why it should be so. In war danger comes less from conditions of locality than from the enemy's power to hurt. Taking up a weak position when confronting an enemy may help him in the exercise of his power, but it does not constitute it. A maritime enemy's power to hurt resides in his fleet. If that can be neutralized his power disappears. It is in the highest degree improbable that Great Britain could attain this end by splitting up her fleet into fragments so as to have a part of it in nearly every quarter in which the enemy may try to do her mischief. The most promising plan—as experience has often proved—is to meet the enemy when he shows himself with a force sufficiently strong to defeat him. The proper station of the British fleet in war should, accordingly, be the nearest possible point to the enemy's force. This was the fundamental principle of Nelson's strategy and is still applicable now as ever it was. If Great Britain succeeds in getting into close proximity to the hostile fleet with an adequate force of her own, her foe cannot obtain command of the sea, or of any part of it, whether that part be the Mediterranean or the English Channel, at any rate until he has defeated her. If he is strong enough to defeat her fleet he obtains the command of the sea in general; and it is for him to decide whether he shall show the effectiveness of that command in the Mediterranean or in the English Channel.

In smaller operations of war temporary command of a particular area of water may suffice for the success of an expedition, or at least will permit the execution of the preliminary movements. When the main fleet of a country is at a distance—which it ought not to be except with the object of nearing the opposing fleet—a small hostile expedition may slip across, say, the English Channel, throw shells into a coast town or burn a village, and get home again un molested. Its action would have no sort of influence on the course of the campaign, and would, therefore, be useless. It would also most likely lead to reprisals; and, if this process were repeated, the war would probably degenerate into the antipodal system of "cross-raiding," discarded centuries ago, not at all for reasons of humanity, but because it became certain that war could be more effectually waged in other ways. The power in command of the sea may resort to raiding to expedite the formal submission of an already defeated enemy, as Russia did when at war with Sweden in 1719; but in such a case the other side cannot retaliate. Temporary command of local waters will also permit of operations rather more considerable than mere raiding attacks; but the
duration of these operations must be adjusted to the time available. If the duration of the temporary command is insufficient the operation must fail. It must fail even if the earlier steps have been taken successfully. The command of the English Channel, which Napoleon wished to obtain when maturing his invasion project, was only temporary. It is possible that a reminiscence of what had happened in Egypt caused him to falter at the last; and that, quite independently of the proceedings of Villeneuve, he hesitated to risk a second battle of the Nile and the loss of a second army. It may have been this which justified his later statement that he did not really mean to invade England. In any case, the British practice of fixing the station of their fleet wherever that of the enemy was, would have seriously shortened the duration of his command of the English Channel, even if it had allowed it to be won at all. Moreover, attempts to carry out a great operation of war against time as well as against the efforts of the enemy to prevent it are in the highest degree perils.

In war the British navy has three prominent duties to discharge. It has to protect the maritime trade, to keep open the communications between the different parts of the empire and to prevent invasion. If Great Britain commands the sea these duties will be discharged effectually. As long as she does that, the career of cruisers sent to prey on her commerce will be precarious, because command of the sea carries with it the necessary protection of cruisers. Even as long as the condition mentioned is satisfied her ocean communications will be kept open, because an inferior enemy, who cannot obtain the command required, will be too much occupied in seeing to his own safety to be able to interfere seriously with that of any part of the British empire. This being so, it is evident that the greater operation of invasion cannot be attempted, much less carried to a successful termination, by the side which cannot make head against the opposing fleet. Command of the sea is the indispensable preliminary condition of a successful military expedition. In the above cited Chartist article it is said that he possesses it to attack its foes where it pleases and where they seem to be most vulnerable. At the same time it gives to its possessor security against serious counter-attacks, and affords to his maritime commerce the most efficient protection that can be devised. It is, in fact, the main object of naval warfare.

Authorities for the above may be given as naval histories in general, placing in the first rank the well-known works of Captain A. T. Mahan, U.S.N. The book which must be specially referred to is Vice-Admiral P. H. Colomb's Naval Warfare (3rd ed., London, 1900). See also the article Navy.

SEABURY, SAMUEL (1720-1796). American missionary. Born on the 30th of November 1720, in Ledyard, Graven, Connecticut. His father, Samuel Seabury (1706-1764), originally a Congregationalist minister in Graven, was ordained deacon and priest in the Church of England in 1731, and was a rector in New London, Conn., from 1732 to 1743, and in Hempstead, Long Island, from 1743 until his death. The son graduated at Yale in 1748; studied theology with his father; studied medicine at Edinburgh in 1752-1753; was ordained deacon by the bishop of Lincoln and priest by the bishop of Carlisle in 1753; was missionary in New Brunswick, New Jersey and New York; was consecrated bishop in New York, in 1777-1776, and of St. Peter's, Westchester, New York, in 1766-1775. He was one of the signers of the White Plains protest of April 1775 against "all unlawful congresses and committees," in many other ways proved himself a devoted loyalist, and wrote the Free Thoughts on the Proceedings of the Continental Congress (1774) by "A. W. Farmer" (i.e. a Westchester farmer), which was followed by a second "Farmer's Letter," The Congress Conquessed (1774), answered by Alexander Hamilton in A Full Vindication of the Measures of the Congress, from the Calumnies of their Enemies. A third "Farmer's Letter" replied to Hamilton's View of the Controversy between Great Britain and her Colonies, in a broader and abler treatment than in the previous pamphlets. To this third pamphlet Hamilton replied with The Farmer Refuted (1775). These three "Farmer's Letters"—a fourth was advertised but apparently was never published—were forcible presentations of the pro-British claim, written in a plain, hard-headed style; their authorship was long in question, but it is certain that Seabury claimed them in England in 1783 when he was seeking episcopal consecration. At the same time he claimed the authorship of a letter, not signed by the Westchester farmer, which under the title An Alarm to the Legislature of the Province of New York (1775) discussed the power of this the only legal political body in the colony. He was arrested in November 1775 by a mob of lawless Whigs, and was kept in prison in Connecticut for six weeks; his parochial labours were broken up, and after some time in Long Island he took refuge in New York City, where he was appointed in 1778 chaplain to the king's American regiment. On the 25th of March 1783 he was chosen their bishop by ten Episcopal clergymen of Connecticut, meeting in Woodbury;—he could not then take the British oath of allegiance, Seabury was shut out from consecration by the English bishops, and he was consecrated by Scotch bishops at Aberdeen on the 14th of November 1784. He returned to Connecticut in 1785 and made New Haven his home, becoming rector of St. James's Church there. The validity of his consecration was at first questioned by many, but was recognized by the General Convention of his church in 1789. In 1790 he took charge of the diocese of Rhode Island also. In 1792 he joined with Bishops William White and Samuel Provost, who had received English consecration in 1785, and James Madison (1749-1812), who had received English consecration in 1790, in the consecration of Bishop Thomas J. Cragglett of Maryland in 1792, thus uniting the Scotch and the English successions. He died in New London on the 25th of February 1796. He was a great organizer and a strict churchman: it is noteworthy that after his consecration he used the signature "Samuel Bp. Connect." Seabury's "Farmer's Letters" rank him as the most vigorous American loyalist controversialist and as one of the greatest masters of style of his period.

His son Charles (1770-1844) was rector in various Long Island churches. He and his brother, Samuel Seabury, who graduated at Columbia in 1825, were rector of the Church of the Annunciation in New York in 1838-1868, and from 1862 professor of Biblical learning and the Interpretation of Scriptures in the General Theological Seminary. William Jones Seabury (b. 1837), son of the last named, was rector of the Church of the Annunciation from 1868 to 1898, professor of ecclesiastical polity and law in the General Theological Seminary from 1875, and published a Manual for Choristers (1878), Lectures on Apostolic Succession (1893) and An Introduction to the Study of Ecclesiastical Polity (1894).

S. E. Edwards Beardsley, Life and Correspondence of the Rt. Rev. Samuel Seabury (Boston, 1884).

SEADIAH (or SAADIA; in Arabic Sa' id) BEN JOSEPH (920-942) was born in A.D. 892 at Dilaz in the Fayyum, whence he is often called al-Fayyūmī. Although he is justly regarded as the greatest figure in the literary and political history of medieval Judaism, nothing certain is known of his father or of his early life. Even the names of his teachers, generally recorded in the case of Jewish scholars, are unknown, with the exception of a certain Avai Katri, who is himself obscure, and left no writings. Saadia's principal work, and it is in fact the only one that appears, is his Talmud commentary, which he wrote at a comparatively early age. This appears at a time when learning seemed to be dead both in East and West. Since the completion of the Talmud very little of any literary importance, if we except certain midrashim, had been produced among the orthodox (Rabbinate) Jews, although the Babylonian schools at Sura and Pumbeditha continued to enjoy a somewhat intermittent prosperity. On the other hand, learning was cultivated among the Qaraite (q.v.; see also Hebrew Literature), a sect of Jews who rejected the oral tradition, restricting their practice to the ordinances of scripture (miqr'ah). It even seemed for a time as if conservative hereay would prevail against progressive orthodoxy. In Saadia, however, the Rabbanites found a powerful champion. Almost his first work, written at the age of twenty-three, was an attack on the teaching of 'Anan, the founder of Qaraism, who lived in the 8th century. This, like most of Saadia's polemical writings, is no longer extant,
but we can gather something of its contents from references in the author’s other works, and from the statements of his opponents. The controversy turned largely on the calendar, which of course involved the dates of festivals, and, since the Rabbanite calendar had come down from ancient times, opened up the whole question of oral tradition and the authority of the Talmud. The conflict raged for many years, the chief representative of the other side being Solomon ben Yeruham, a virulent if not successful opponent. It was not, however, the only controversy in which Saadia was engaged. In 932 Ben Meir, a person of importance in the Antioch synagogues, attacking the Rabbanite calendar, against the authority of the Babylonian schools. Saadia, who was then at Baghdad, warned him of his errors, refused him a work called Sefer ha-Moadidim (The Book of the Festivals), and finally procured his excommunication by David ben Zakkaï, the exilarch or head of the Jewish community in Babylon. The vigorous action of Saadia seems to have brought him more prominently to the notice of the exilarch, and that at a time of more than usual difficulty. The honourable rivalry of the two schools of Sura and Pumbeditha, as the recognized authorities in matters of halakha, eventually came to a reconciliation and Saadia was the author of a work called the Gaon to the Rabbinic authorities and Gaon. The Gaon (931) or President of Pumbeditha, taking advantage of his own position and of a vacancy in the Gaonate of Sura, wished to abolish the rival school. The exilarch, however, no doubt in recognition of his recent services, appointed Saadia as Gaon of Sura, although it was against the usual custom to appoint a person who was not a member of the school. Unfortunately this step did not lead to peace. Pumbeditha was jealous: the exilarch was weak and not very scrupulous. Money had to be raised not only for the support of the schools, but also to buy immunity from the government, and Saadia was not the man to hesitate at the corruption and oppression practised by the exilarch to raise it. Within two years matters had come to a crisis, and the exilarch dismissed Saadia, while Saadia retorted by declaring the exilarch deposed (930). After three years of contention David succeeded in sufficiently bribing the new and newly Caliph (Qāhir, 932-934; see Caliphate, § 13), who definitely forbade Saadia to act as Gaon. The next four years, spent in retirement at Baghdad, were devoted to literary labours, which had no doubt been impossible during the previous years of trouble, and in fact it was at this time that most of Saadia’s works were produced. Even a treatise on theology was effected with David, favoured probably by the new Caliph Rādi (934-940; see Caliphate, § 20), and Saadia was reinstated as Gaon of Sura in 938. Under his rule the school attained the highest reputation among the Jewish communities of East and West—but it was not of long duration. His health had been impaired by the strenuous life he had led, and in his later years he suffered from melancholia. In 942 he died, two years after the exilarch.

That some of the many works of Saadia, in spite of their merits, have been neglected, and others partly or entirely lost, is not as surprising as it appears at first sight. They were for the most part written in Arabic, the vernacular of the Jews in the East, so that after the break-up of the Babylonian schools in the middle of the 11th century, they would only be studied in Spain, the new centre of Jewish learning, and in Egypt. After the expulsion of the Jews from Spain, Arabic practically ceased to be used by them for literary purposes, and in the rest of Europe (except perhaps in S. Italy) it was never understood. Even some Hebrew works, of great interest to us now, must have been regarded at the time as of purely temporary value, such as e.g. the Sefer ha-Mozairit, fragments of which have only recently been recovered in the Geniza at Cairo. The anti-Qaraite works against ’Aanān, Ibn Sīkawayh, and Ben Zakkaī, the Kitāb al-tamyez, Kitāb al-Shara‘, Kitāb al-l‘ibbur (calendar) and a book on anthropomorphisms, all in Arabic, are now lost or forgotten from quotations. So also are the refutation of the sceptic Hīfī of Balikh, and the Sefer ’Orayyōth (on prohibited marriage, against Qaraite). Of the Sefer ha-Moadidim and Sefer ha-Galūd (against David ben Zakkaī), both in Hebrew, some fragments have been recovered recently.

Closely allied to his polemical writings are his exegetical works. He translated most of the Bible into Arabic, and commented on at least some of the books. The memorial edition contains (1) the version of the Pentateuch (1853), (3) of Isaiah (1865), (4) of Job (1869), (5) of Proverbs (1864), the last three with commentary. The translation of the 5 Meghillot, and of Daniel (with commentary), usually ascribed to Saadia, is not really by him, but a genuine translation of Daniel, with commentary, from the Arabic. There is also an excellent work on the Decalogue. These all, no doubt, exhibit the defects necessary to the time in which their author lived. But it must be remembered that Saadia was a pioneer. Hayyuj, the father of Hebrew grammar, was not yet born, nor had the scientific and comparative study of the language begun. In this respect Saadia contributed little to the subject. Moreover, he shows a tendency, common at all times and perhaps due to a particular theory of inspiration, to get more out of the text than it contains, and to interpret it in accordance with preconceived philosophical opinions. Numerous other works are remarkable for their great learning, sound sense and an honest endeavour to arrive at the true meaning of the original. They were thus admirably suited for their purpose, which was, like the earlier Targums and the later work of Moses Mendelssohn, to render the sacred text more intelligible to the faithful generally and to check the growth of error.

The grammatical work called Agor, a sort of dictionary, is now lost, as are also the Kitāb al-Lughah and perhaps other treatises on Hebrew grammar. The explanation of the 70 (really 90) hapsagœmena in the Bible is still extant, and a poem on the number of letters in the Bible.

On Talmudic subjects again little is preserved beyond the Kitāb al-Mawārith, which was published as vol. ix. of the Œuvres complètes, together with the short treatise in Hebrew on the 13 Midrash or canons of exegesis of R. Ishmael and some Responsa mostly in Hebrew. The translation of the Mishna, the introduction to the Talmud and other works of the kind are known only by repute.

Of the Siddur or arrangement of the liturgy by Saadia, a large part exists in a single manuscript at Oxford, and several fragments have been recovered from the Cairo Geniza. Numerous other liturgical poems, or parts of them, have been obtained from the same source, and several have been published in periodicals. His Asharōth, a poetical enumeration of the 613 precepts, in Hebrew, is included in vol. ix. of the Œuvres complètes.

His philosophical works are (1) a commentary on the Sefer Yeẓira, a mystical treatise ascribed to the patriarch Abraham, which, as the foundation of the Kabballa, had great influence on Jewish thought, and was the subject of numerous commentaries; (2) the Kitāb al-Amadāt wa-l-imādāt (Book of Beliefs and Creeds), written in 933, called, in the Hebrew translation by Judah ibn Tibbon, Emdanūd ve-Dafōth. Its system is based on reason in conjunction with revelation, the two being not opposed, but mutually complementary. It is thus concerned, as the title implies, with the rational foundation of the faith, and deals with creation, the nature of God, revelation, free will, the soul, the future life and the doctrine of the Messiah. It shows a thorough knowledge of Aristotle, on whom much of the argument is based, and incidentally refutes the views of Christians, Moslems, Brahmins and sceptics such as Hīfī. From its nature, however, the work, although of great interest and value, has never had the wide influence which R. Joseph, mentioned above, had.

The Arabic text was published by S. Landauer (Leiden, 1880), the Hebrew version at Constantinople in 1562 and frequently since.


1 Œuvres complètes de R. Saadia, ed. by J. Derenbourg (Paris, 1893 ff.).

2 Œuvres complètes de R. Saadia, ed. by J. Derenbourg (Paris, 1893 ff.).
SEAFIELD, EARLS OF—SEA-HORSE

The 1st earl of Seafield, in the Scottish peerage, was James Ogilvy (1663-1730), son and heir of James Ogilvy, 3rd earl of Fidlistarter. Although in the convention parliament of 1689 he had spoken for James II., he took the oath of allegiance to William and Mary, and after filling some minor official positions he was made secretary of state in 1696, and lord chancellor in 1702. In 1707 he was made chief baron in the court of exchequer. In 1710 he was created earl of Seafield, and in 1711 succeeded to his father's earldom of Fidlistarter. When his great grandson, James, 7th earl of Fidlistarter and 4th earl of Seafield died in October 1811 the earldom of Fidlistarter became dormant or extinct, while the earldom of Seafield passed to a cousin, Lewis Alexander Grant (1677-1840), who was descended from Margaret, a daughter of the 2nd earl. He took the name of Grant-Ogilvy and was succeeded as 6th earl by his brother, Francis William Ogilvy-Grant (1778-1853), whose descendant, James Ogilvie-Grant (b. 1876) became the 11th earl in 1888. The earl of Seafield is a peer of the United Kingdom as Baron Strathspey.

SEAFORD, an urban district and watering-place in the Eastbourne parliamentary division of Sussex, England, 58 m. S. by E. from London by the London, Brighton & South Coast railway. Pop. (1901) 3355. In recent years there has been a considerable increase in the number of visitors. The climate is bracing, and the town is sheltered by high cliffs. There are golf links on the neighbouring downs. The church of St Leonard is Norman of various dates, but received large additions in the Perpendicular period. In former days the river Ouse entered the English Channel here, and the natural harbour so formed accounts for the origin of Seaford (Safford, Sufford, Seford), probably in Roman times. In the "Domesday of Cinque Ports" (which entered this reign of Edward III., but was lost before 1728) it stood first among the members of Hastings, and was doubtless of considerable importance until about the end of the 14th century, when its rapid decline began owing to the constant alteration of the sea-coast and the decay of the harbour. In the 16th century the town was finally deserted by the Ouse, which now runs into the sea at Newhaven, 2 m. westward, and no revival of its prosperity occurred until the early 19th century, when it began to be frequented as a watering-place. Fishing has always been the chief industry.

Seaford is not mentioned in Domesday Book, but evidently pertained to the wardship of the 1st Earl Warren and his descendants, who were succeeded in 1347 by the earls of Arundel. It was probably a mesne borough in the 12th century, growing up under the protection of the earls of Warren and, was certainly a borough in 1326. Balliffs are mentioned in the 14th century, but the town was not incorporated until 1544, when notwithstanding its decayed condition Henry VIII. annexed it to Hastings by charter, and incorporated it under the title of ballif and commonalty, presumably as a reward for assisting the head port to provide its proportion of ships to the crown. The corporation was dissolved by an act of 1885. The town returned two representatives to parliament from 1326 until 1832 when it was disfranchised. In the 15th century the earls of Warren held a market or fair, or both, apparently by prescriptive right. In 1792 the fair days were Whit-Monday and the 10th of August, and the market-days Wednesday and Saturdays, but no market or fair now exists.

SEAFORTH, EARL OF, a Scottish title held by the family of Mackenzie from 1633 to 1716, and again from 1771 to 1781. The Mackenzies trace their descent to one Colin of Kintail (d. 1278), and their name is a variant of Mackenneth. Kenneth, the 12th head of the clan, was made Lord Mackenzie of Kintail in 1609, and his son Colin, who succeeded his father as 2nd Lord Mackenzie in March 1611, was created earl of Seaforth in 1623. Colin's successor was his half-brother George (d. 1651), who became the 2nd earl in 1653. George was alternately a royalist and a covenantor between 1636 and 1646, and was afterwards in Holland with Charles II., who made him secretary of state for Scotland. His grandson, Kenneth, the 4th earl, followed James II. to France and was with the deposed king in Ireland. Sent by James in 1692 to head a rising in Scotland, he was captured and imprisoned, but in 1697 he was released and he died in Paris in January 1701. His successor was his son William, who joined the Jacobite standard at Braemar in 1715, and then, having raised 3000 men, was present at the battle of Sheriffmuir and was appointed lieutenant-general of the northern counties. He also took part in the Jacobite enterprise of 1719, being wounded at Glenshie. In 1716 he was attainted and his titles and estates forfeited; before his death in January 1740, he had been relieved of some of the penalties of his treason, although the title was not restored. His son Kenneth (c. 1718-1761), who but for the attainder would have been the 6th earl, helped the English government during the rising of 1745, and was a member of parliament for some years. His son Kenneth (c. 1744-1781) was created earl of Seaforth in 1771, but his peerage became extinct when he died in August 1781, although there were still heirs to the older earldom, which was under attainder. This earl raised the regiment of Highlanders, the 78th, known later as the 2nd battalion of the Seaforth Highlanders.

SEAHAM HARBOUR, a seaport and urban district, in the South-eastern parliamentary division of Durham, England, 6 m. S. of Sunderland by the North-Eastern railway. Pop. (1901) 10,163. The harbour was built (1828) by the 3rd marquis of Londonderry to facilitate the export of coal from the mines on his adjacent property. Besides the coal trade there are extensive bottle and chemical works.

SEA-HORSE. Sea-horses (Hippocampus) are small marine fishes which, with pipe-fishes (Syngnathina), form the Lophophor-branchiate division of the suborder Thoracocephali. The gills of the members of this group are not arranged in leaf-like series as in other fishes, but form a convex mass composed of small rounded lobes attached to the branchial arches, as shown in the accompanying figure (fig. 1) of the head of a sea-horse, in which the gill-cover has been pushed aside to show the interior of the gill-cavity. Sea-horses differ from pipe-fishes by having a prehensile and invariably finless tail; it is long, slender, tapering, quadrangular in a transverse section, and, like the rest of the body, eneased in a dermal skeleton, which consists of horny segments, allowing of ventral, and in a less degree of lateral, but not of dorsal, flexion. The typical sea-horse (Hippocampus) can coil up a great portion of its tail, and firmly attach itself by it to the stems of sea-weeds or similar objects. The body is compressed and more or less elevated, and the head terminates in a long tubiform snout, at the end of which is the small mouth. The configuration of the fore part of the body, as well as the peculiar manner in which the head is joined to the neck-like part of the trunk, bears a striking resemblance to a horse's head. Sea-horses are bad swimmers and are unable to resist currents. With the aid of their single dorsal fin, which is placed about the middle of the fish's body and can be put into a rapid undulatory motion, they shift from time to time to some object near them, remaining stationary among vegetation or coral where they find the requisite amount of food and sufficient cover. Their coloration and the tubercles or spines on the head and body, sometimes with the addition of skinny flaps and filaments, closely resemble their surroundings, and constitute the means by which these defenceless creatures escape detection by their enemies. These protective

![Fig. 1. Gills of Hippocampus abdominalis.](image-url)
structures are most developed in the Australian genus Phyllopteryx, one of the most singular types of littoral fishes.

Sea-horses belong to the tropics and do not extend so far north as pipefishes. They are abundant at suitable localities, chiefly on the coral-banks of the Indo-Pacific Ocean. Some forty species are known, of which the majority belong to the genus Hippocampus. They vary from 2 to 12 in. in length; but in China and

SEA-KALE—SEAL

Australia a genus (Solenogatus) occurs, the species of which attain to a length of nearly 2 ft.; they, however, in form resemble pipe-fishes rather than sea-horses. The species which may be sometimes seen in European aquariums is Hippocampus antiquorum, common in the Mediterranean and on the coasts of Portugal and France. It is rare on the south coast of England, but it has often been captured on the Essex coast. About 1885, according to Dr. J. Murie, two Leigh fishermen when shrimp-fishing at Harwich during the summer season succeeded in procuring altogether between 100 and 120 specimens. The food of the sea-horses consists probably of very small invertebrates, and the fry of other fishes. Like the other Lophophorids, they take great care of their progeny. The male Hippocampus carries the ova in a sac on the lower side of the tail, in which they are hatched; in the other genera no closed pouch is developed, and the ova are embedded in the soft and thickened integument of either the abdomen or the tail.

All that is known of the habits of these interesting fishes will be found summarized in a valuable paper by T. Gill, "The Life History of the Sea-Horses (Hippocampi)," in Proc. L. S. Nat. Mus. xviii. (1905), p. 805.

SEA-KALE, Crambe maritima, a hardy, perennial, a member of the natural order Cruciferae, which grows wild along the coasts of England, of Ireland and of the Scottish lowlands, along the western coasts of Europe, and on the Baltic, reappearing on the Black Sea.

In cultivation sea-kale prefers a light dry soil, and when manure is necessary it should consist of sea-weed or well-rotted dung; or a dressing of 8 oz. or of nitrate of soda may be given. When raised from seeds, they should be sown in March or April in rows 1 ft. asunder, the plants being thinned to 6 in. apart. In the following March these should be planted out in trenched well-prepared ground, 2 ft. asunder, in rows 2 to 3 ft. apart. The top with the crown buds should be cut off before planting to prevent them from running to seed. In the spring of the second year the young shoots if blanched will be fit for use, and therefore the summer growth should be promoted by the use of water and liquid manure. Tolerably blanched stalks may be produced by plants only nine months old from the seed, and after two summers seedling plants will have acquired sufficient strength for general cropping. The seeds, instead of being sown in rows and transplanted, may be deposited in patches of three or four together, where they are to remain. In the autumn, after the leaves have been cleared off, the ground should be forked up, and 6 or 8 inches' depth of leaves or of light sandy soil laid over the plants, by either of which means they will be blanched, though not forced. The blanched sprouts should be cut for use whilst they are crisp, compact and from 3 to 6 in. in length, the stem being cut quite down to the base.

Sea-kale beds may be made from cuttings of the roots of very healthy plants, the extremities of the roots, technically called “thongs,” being best adapted for this purpose. They should be taken up at a suit, cut into lengths of about 4 in., and laid in a heap of sand or earth till spring, when they should be planted out like the seedlings.

Forcing—Sea-kale may be forced in the open beds by the aid of sea-kale pots or covers, which are contracted a little at top, with a movable lid. One of the earthenware covers, or an inverted flower-pot, is placed over each plant, or each patch of plants, and leaves are closely packed round the pots, and raised to about 1 ft. above them. When fermentation commences, the temperature within should not exceed 60°F. If the crowns are thus covered up by about the end of October, the crop may be cut by about the third week of December, and by starting a batch at various times a supply may be kept up till the middle of May.

Strong plants may also be taken up and planted on hotbeds, the ashes being kept covered close; or they may be set thickly in boxes as recommended for rhubarb, and placed in any heated structure, or in the mushroom house; but, to have the shoots crisp and tender as well as blanched, light must be completely excluded. Besides the common purple-leaved, there is a green-leaved sort, which is said to blanch better.

SEA, strictly speaking the name of the common European representative of that group of marine carnivorous mammals constituting the suborder Pinnipedia of the order Carnivora, but in a wider sense used to designate all the members of that group, except the walrus. The common seal (Phoca vitulina) is the typical representative not only of that group (see Carnivora), but also of the family Phocidae and the subfamily Phocinae, and it is to this latter group that the present article is restricted.

Although seals swim and dive with the greatest ease, often remaining as much as a quarter of an hour or more below the surface, and are dependent for their sustenance entirely on living prey captured in the water, all the species frequently resort to sandy beaches, rocks or ice-floes, either to sleep or to bask in the sun, and especially for the purpose of bringing forth their young. The latter appears to be the universal habit, and the young seals—of some species at least—take to the water at

![Fig. 1.—Common Seal (Phoca vitulina).](image1)

![Fig. 2.—Phyllopteryx eques.](image2)
use the fore-paws, either alternately or simultaneously, pressing the palmar surface on the ground and lifting and dragging the body forwards in a succession of short jumps. In this way they can move so fast that a man has to step out beyond a walk to keep up with them; but such rapid action costs considerable effort, and they soon become exhausted. These various modes of progression appear to be common to all species so far as has been observed.

Most kinds of seals are gregarious and congregate, especially at the breeding season, in immense herds. Such is the habit of the Greenland seal, which roared in the spring to the ice-floes of the North Sea around Jan Mayen Island. Others, like the common seal of the British Islands, though having a wide geographical range, are never met with in such large numbers or far away from land. This species is chiefly seen among the more sequestered coastlands or among the ice and snow, and is there alone or in small herds. The California or northern elephant-seal (Mirounga angustirostris), in the first place the abnormal season of reproduction in this species is unique; it is the only seal which has its young in the late autumn. Other species are more or less inoffensive to man, but there are others whose presence is a perpetual menace to the fisher. The grey seal (Halichoerus grypus) is of considerably larger size, the males attaining when fully adult a length of 8 ft. from the nose to the tail. The American or ringed seal (Phoca barbula), the following account, by T. Southwell, of the distinctions between the two may be quoted:—

As to the external features by which the grey seal may at any age be distinguished, it is the large size of its ears, by which it can be distinguished from the others. In winter, it is not unamusing to observe the extraordinary contrast between the short ears of the others and the erect ears of the Bear-seal. The shape of the head is peculiar to each species, the mouth and nostrils of the grey seal being more oblong than those of its congeners, and the distance of the latter from the body is greater.

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A new and enlarged collection of sea laws, purporting to be an extract of the ancient laws of Oléron, made its appearance in the latter part of the 15th century in Le Grand routier de la mer, printed in London by John Gough. The text contains forty-seven articles, of which the first twenty-two are identical with articles of the "Judgments of the Sea," in the Liber Memorandum, the remaining articles being evidently of more recent origin. A black-letter edition of this work in French, without a date, is preserved in the Bodleian Library at Oxford, and to the library of the Admiralty at London. In this edition, the copies of the first three articles are identical with the text of the Maritime Law of Oléron. On the other hand, the introductory clause which ushers in the fortieth article is identical with the title that is generally prefixed
to MSS. of the maritime Ordinances of Amsterdam, and the text of this and of the following articles down to the sixty-fifth inclusive is evidently of Dutch origin and more or less identical with Verwer's text of the usages of Amsterdam. M. Fardessus, in his valuable "Colloquia de Nautica," pub. at Paris, 1871, and of which Breuning and Schlyter made known the result of his researches, justly remarked "that the provision of various articles of the last division of the sea law, standing by itself nothing, is mutually corroborated by analogies in the national law of different countries." It may be observed that the sixty-sixth article of the MS. is, a Lübeck law identical with the first article of the first series, which is of Lübeck origin. No colophon is appended to this final article in the MS. of 1494, but in the MS. of 1537, which breaks off in the middle of the sixty-sixth article of the MS., has the following colophon: "Here end the Gotland sea laws, which the community of merchants and skipper have ordained and made at Visby, that all persons who are found therein, and may God send us His grace, Amen." We are disposed to think that Gemen himself devised this colophon. He was engaged in printing textbooks of merchant law for commercial purposes, and yet not long after his death, the government, and, as Gottenland was at that time a possession of Denmark, he may have thus distinguished the sea laws from another collection, namely, of land laws. Professor Schlyter, however, believes that some other printer, who wrote it, may have inserted it at all events without the knowledge of Gemen himself. There seems to be no help to this view in the fact that in the archives of the guildhall of Lübeck there is preserved a MS. of 1573 which contains a Low German version of the same collection of sea laws, with a rubric prefixed to the first article, announcing to be the "water law or sea law, which is the oldest and highest law of Visby," and there are good reasons for supposing that there was at the same time an English MS. in the possession of the Copenhagen MS. The same observation will apply to a second MS. of a similar character preserved in the library of the gymnasion of Lübeck, which purports to have been written in 1537. But as regards the MSS. of 1494 and 1537, there is nothing to show of its having contained colophon as proofs of the facts recited in them, though they may be valuable as evidence of the reputed origin of the sea laws at the time when the scribe completed the MS. In illustration of this view it may be stated that in the same year in which the more recent of these two MSS. purports to have been completed—namely 1537 there was printed at Lübeck an enlarged edition of the sea laws consisting of seventy-two articles, being a Low German translation of a Dutch text, in which six additional Dutch laws were inserted which are not found in the Copenhagen MS., nor have a place in Gemen's text, yet to this edition is prefixed the title, "This is the highest and most useful of all the laws which shipmasters have ordained and made at Visby, that all persons who would be secure may regulate them by it." Further, it has an introductory clause to its thirty-seventh article which is the one upon which the controversy on the title of the "visby sea laws" has been resolved upon, themselves as ship law, which the men of Zealand, Holland, Flanders hold, and with the law of Visby, which is the oldest ship law." At the end of the seventy-second article there follows this colophon: "Here ends the Gotland sea law, which the community of merchants and mariners have ordained and made at Visby, that each may regulate himself by it. All honour be to God, mission, etc." Each article of this edition has prefixed to it, after its particular number the word "believing" (judgment). It would thus appear that the Visby sea laws have fared like the Oleron sea laws: they have gathered bulk with increasing years. Even so much of the French text of the Lübeck sea laws acquire the title of the "Visby sea laws" outside the Baltic, for under such title they were received in Scotland in the 17th century, as may be inferred from extracts from them cited in Sir James D. Smith, "History of the Church in Scotland," chapter xi, page 1641 in his "Us et coutumes de la mer," and is abbreviated, and in many respects mutilated, version of the original sea laws. This inquiry, however, would open a new chapter on the subject of the nature of the Visby law which, for the history of Visby exercised in the 13th century through their factories at Novgorod, linking thereby the trade of the Baltic to that of the Black Sea.


**SEAL-FISHERIES.** Seals of all descriptions (see Seal)—whether belonging to the typical family Phocidae, or true seals, or to the Otariidae, or sea-lions and sea-bears—are of great commercial value. Whereas, however, the true seals and the sea-lions are hunted only for the sake of their hides and blubber, the sea-bears are sought on account of their valuable "seal-skin" (see Carnivora; also Fur). Walruses (Odoabenaes) are hunted not only for their hides and blubber but also for the ivory of their tusks, which is, however, far less valuable than elephant-ivory. Among the more important species of sea-bears or fur-seals, which yield commercial "seal-skin," may be mentioned Otaria (Arctocephalus) ursina of South America and the adjacent islands, including the Galapagos group and Tierra-del-Fuego; O. (A.) antarctica or pusa of South America and the Crozets; O. (A.) gazella of Kerguelen Island; and O. (A.) Forsteri of the coasts of New Zealand and South-Western Australia. This group was widely distributed over the pelagic islands of the southern hemisphere, but is now practically extinct in the greater part of its habitat, although remnants of importance exist on Lobos Island in the mouth of the river Plata in Uruguay, and on the islands off Cape Horn, both of which are under the protection of the government. A second group is represented by Otaria (Callorhinus) ursina of the Commander Islands and Pribilof Islands in Bering Sea, Robben Island and the Kurile Islands, Sea of Okhotsk, and other parts of the North Pacific; the forms from the different islands having received distinct specific names.

Of the southern herds little authentic information exists, but the records for the northern herds are fairly complete. At the period of its maximum development, 1870 to 1880, the herd of the Pribilof Islands numbered about 2 million animals; the island is now under government supervision. A second group in the Sea of Okhotsk is one of minor importance, numbering in 1897 less than 1,000 animals on Robben Island. All these herds became greatly reduced, and in 1866-1879 numbered in all not more than 60,000 animals. The typical adult male or bull (sikatch) of the second group attains maturity about the seventh year, and weighs from 400 to 500 lb. It is 6 ft. in length, with a girth of 4½ ft. The fur is blackish or dark brown, with long yellowish-white hairs, especially long and firm on the back of the neck, forming the so-called "wig" or mane. The animal stands erect and runs or "lopolo" along the ground when young. The adult female (female), is much smaller, averaging about 80 lb in weight, with length and girth in proportion. The fur is of varying shades of brown; she bears her first young at the age of three years.

The breeding-grounds are boulder-strewn beaches or rocky hill slopes near the shore. On these the sea-bears congregate in close-set masses called "rookeries." The unit of rookery life is the family group, or "harem," each bull collecting as many females as he can control. The number ranges from 1 to 100 or more, averaging about 30. The bulls reach the islands early in the year and take up their places on the shores in the last week in June. The number on the rookeries from day to day grows steadily to a climax about the middle of July, when about one-half are present, the number actually on the ground diminishing to about one-fourth and after the close of the breeding season with the end of July. The single young, or pup (kotik), weighing 10 to 12 lb and jet black in colour, is born within six to forty-eight hours after the arrival of the cow. Within a week the latter is served by the bull, and by the end of another week he goes to sea to feed, returning at gradually lengthening intervals through the summer to nourish her young, left in the meantime to care for itself on the rookeries. The bulls, having fasted since their arrival in May, go away in August to feed. The pups learn to swim at the age of a month or six weeks, and in November, with the approach of winter, swim away with their mothers to the south. The winter migration of the
SEALING WAX

Pribiloff seals extend as far south as the latitude of southern California, to return course following the coast. The Commander seals reach the latitude of southern Japan and return on their course. The fur-seals find their food, chiefly squid, Alaska pollack, and especially a small smelt-like fish (Theragra chalcogramma), in deep water, and their feeding-grounds in Bering Sea and on the migrations lie mainly along the 100-fathom curve.

The Commander Islands were discovered by Vitus Bering in 1741, and our first knowledge of the northern fur-seal herds comes from the notes of Georg Wilhelm Steller, a German naturalist accompanying Bering's expedition. The Pribiloff Islands were discovered in 1812, and in the intervening years there was no seals shipped to the United States in 1867. Up to 1867 the catch taken by the Russian Company holding the Alaska monopoly was about 75,000 yearly. Between 1868 and 1897 the reported catch of seals from the Pribiloff herd on land was 2,440,213, and 63,282 were reported as taken by pelagic sealing; but the latter is certainly greatly under the truth. From 1867 to 1902 the fur-seal catch was worth, it has been estimated, about $30,000,000. From 1870 to 1890 the United States government leased the islands to the Alaska Commercial Company, and in 1890 the monopoly of the Commander Islands was transferred to the Russian Company, which culminated in 1892 by a treaty by which it was agreed to submit to arbitration the claims of the United States to jurisdiction in Bering Sea in regard to the northern fur-seal herd when beyond the ordinary territorial limits. The Arbitral Tribunal met in Paris in 1893 (see BERING SEA ARBITRATION). Its decision was adverse to the contents of the United States, and equally adverse to the life of the northern fur-seals. It is agreed upon that skins shipped in 1893, 1894, 1895, and 1896 for investigation of the fur-sea fisheries in 1896–1899; besides this, from 1890 to 1895 the government expended $1,410,722 for the policing of Bering Sea and the prevention of illegal pelagic hunting.

The Russians worked out the principle, based on the polygamous habitat of the animals, of affording absolute protection to the breeding female herd, and confining the killing to the superfluous males. The young males, or bachelors, "haul out" to rest and sleep on beaches adjacent to, but distinct from, the breeding grounds, and are thus protected. The sealing, by the sealing gangs, rounded up in droves from 1000 to 3000, and driven inland to the killing-grounds. The large droves of males to success to escape. The females, of which from 20 to 50, of which the "killing" (animals of three years of age or approximating to such in size) are knocked down with clubs, those too large or too small being allowed to escape. The skins are removed, the bladders and viscera are exported. Two important processes in dressing the skins are the removal of the long hairs which grow out through the short thick fur, and the dying of the fur itself black.

The decline in the fur-seal herds of Bering Sea is due to the growth of a rival sealing industry—the hunting of the animals at sea with spear or shot-gum, known as pelagic sealing.1 Stragglers from the migrating herd had from the earliest times been taken by the Indians of Cape Flattery and Vancouver Island, going out from the shore in their canoes, but the number so captured was small. In 1879, however, sealing vessels began to be used to carry the hunters and their equipment to the main body of the herd, and to follow its movements. The industry developed rapidly, by 1892 employing a fleet of 122 sealing vessels, each with from five to twenty hunting crews. The catch at sea grew to a maximum in 1894 of 131,422, and was annually increased until 1899, when an effort was made to cover the entire migration route of the herd, and in 1893 the sealers entered its summer feeding-grounds in Bering Sea. Pelagic sealing, necessarily indiscriminate, affected most seriously the herd of breeding females. Investigations carried on in Bering Sea in 1895 and 1896 show that from 62 to 84% of the pelagic catch were of this class, the death of the female involving the death of her unborn offspring, as well as that of the unwed young. From 1890 to 1902 the "pelagic" catch has been estimated (Jordan) as 1,000,000, nearly half the corresponding total for the land-catch.

1 A temporary cause for the shrinkage of the herd was the ravages of the Uncinia, a worm which attacked the infant seals; in 1906 it seemed no longer to be present.

SEALING WAX

In medieval times, when the principal use of sealing wax was for attaching the impression of a seal to official documents, the composition used consisted of a mixture of Venice turpentine, beeswax and colouring matter, usually vermilion. The preparation now employed contains no wax. Fine red stationery sealing wax is composed of about seven parts by weight of shellac, four of Venice turpentine, and three to four of vermilion. The resins are melted together in an earthenware pot over a moderate fire, and the colouring matter is added slowly with careful stirring. The mass when taken from the fire is poured into oiled tin moulds the form of the sticks required, and when hard the sticks are polished by passing them rapidly over a charcoal fire, or through a spirit flame, which melts the superficial film. For the brightest qualities of sealing wax bleached lac is employed, and a proportion of neutral matter, as balsam or balsam of Peru—is added. In the commmoner qualities of sealing wax, talc, carbonate of magnesia, baryta white or other earthy matters are employed, and for the various colours appropriate mineral pigments. In inferior waxes ordinary resin takes the place of lac, and the dragon gum of Australia (from Xanthorrhoea hastilis) and other resins are similarly substituted. Such waxes, used for bottling, parcelling and other coarser applications, run thin when heated, and are comparatively brittle, whereas fine wax should soften slowly and is tenacious and adhesive.
SEALS

The idea of testifying the personal presence or the agency of an individual on some particular occasion, by affixing the impression of his seal (Lat. signillum, O. Fr. seal) to the record or object connected with the transaction of the moment, can be traced back among the nations of the old world when advanced only a comparatively short way on the path of civilization.

In the East the custom which has prevailed for centuries, and which is a practice at the present day, of using the seal as a stamp wherewith to print its device in ink or pigment in authentication of a document is parallel to our western habit of inscribing a signature for the same purpose. In the West, too, the impression of the seal has, at certain periods, had the same value as the signature; and at all times the connexion between the signature and the seal has been intimate in European practice (see AUTO-GRAPHS and DIPLOMATIC).

But the western method of obtaining the impression has differed from the eastern method. With us, the notion of a seal is an impression in relief, obtained from an incised design, either on a soft material such as wax or clay, or on a harder material such as lead, gold or silver. By common usage the word "seal" is employed as a term to describe both the implement for making the impression, and the impression itself; but in the latter case, the grave impression being technically called the matrix.

The earliest examples of seals, both matrices and impressions, are found among the antiquities of Egypt, Babylonia and Assyria. On the clay stoppers of wine jars of the remote age which goes by the name of the pre-dynastic period, and which preceded the historic period of the first Pharaohs, there are seal impressions which must have been produced from matrices, like those of Babylonia and Assyria, of the cylinder type, the impression of the design having been repeated as the cylinder was rolled along the surface of the moist clay. Two such engraved cylinders of this archaic period are in the British Museum collections. The cylinder, however, seems to have been generally superseded in Egypt by the engraved scarab, or beetle-shaped object, which, it may be assumed, was used at an early time, as it certainly was in later Egyptian history, for sealing purposes, although its proper function was that of an amulet. Still, the fashion for cylinders appears to have revived at intervals, for they are found in the 6th, the 12th and the 18th dynasties. Even in the 1st dynasty, about 4500 B.C., the Egyptian Pharaohs had their official sealers, or, to use a modern expression, keepers of the Royal Seal. Egyptian signet-rings, which were used for sealing, date back to the 12th dynasty.

As already stated, the matrices of ancient Babylonian and Assyrian seals, usually cut on precious stones, are in cylinder form.

The fine collection in the British Museum presents us with Babylonian specimens of even archaic times, followed by an historical series, the earliest of which is of nearly 4500 years B.C. The Assyrian series is not so full. The engraved subjects are chiefly mythological. Impressions are to be found on many of the cuneiform clay tablets. Early in the 7th century B.C. the cylinder seal gave place to the cone, the impression being henceforth obtained after the fashion followed to the present day.

The Phoenicians, as was only to be expected of those traders and artisans of the ancient world, appear to have adopted both the cylinder of Assyria and the scarab of Egypt as patterns for their seals. Examples indeed are rare, but that these people were acquainted with both forms is certain. Phoenician names are found cut both on cylinder matrices and on scarabs by the Phoenician engravers employed in Assyria and Egypt, and, when the cone-shaped matrix superseded the cylinder in Western Asia, the Phoenicians conformed to the change.

In Europe, the use of seals among the early Greeks is well known. Of the Mycenaean period numerous seal-impressions in clay have been found. Also from ancient times have survived the numerous engraved stones or pebbles, technically called gems, which served as matrices and in most instances were undoubtedly mounted as finger-rings or were furnished with swivels. At first being used in their natural forms, these pebbles or gems have been grouped as lenticular or bean-shaped, and glandular or of the sling-bolt pattern; later, from the 6th to the 4th century B.C., they were fashioned as scaraboids, that is, in the general form of the Egyptian scarab, but without the sculptured details of the beetle's body. To these, by a natural process, succeeded the matrix formed of only a thin slice of stone, which was more conveniently adapted for the bezel of the ring; and in this shape the engraved matrix passed on from the Greeks to the Romans. Signet-rings also with fixed metal bezels were in common use among the Greeks from about 600 B.C.

But while the scarab met with little favour in Greece, where, as just stated, the scaraboid was preferred, among the Etruscans its adoption was complete, and with them it became the commonest form of the seal-matrix, dating from the latter part of the 6th century B.C., engraved chiefly with subjects derived from Greek art.

Impressions of late Greek or Roman gems in clay have survived in a few instances. A series of impressions from Greek seals was found at Selinus in Sicily, dating before 249 B.C.; a small collection of sealed Greek documents on papyrus of the 4th and 3rd centuries B.C. was discovered at Cyzicus and Tarsus in Pontus; while in recent times a number of the Ostraca and Stelae of the fifth and fourth century B.C., found at Eryx, have been published. These, though not bearing the impress of a proper seal, are of importance as instances of the forms of seals in use among the Etruscans.

The Etruscan seals.

It is not the object of this article to deal further with the history of antique seals (see NUMISMATICS; also GEMS, JEWELRY and KING), but to give some account of European seals of the middle ages, when the revival of their use for the authentication of documents resulted in their universal employment among all classes of society. Hence it is that we are in possession of the vast number of impressions still to be found in public museums and archives, and in private muniment rooms and antiquarian collections, either attached to the original charters or other deeds which they authenticated, or as independent specimens. Hence, too, have survived a fairly large number of matrices.

The connecting link between the general use of the signet, which was required by the Roman law for legal purposes, but which had died out by the 7th century, and the revival of seals in the middle ages is to be found in the chanceries of the Merovingian and Carolingian sovereigns, where the practice of affixing the royal seal to diplomas appears to have been generally maintained (see DIPLOMATIC). Naturally, surviving examples of such seals are rare, but they are sufficient in number to indicate the style adopted at different periods. The seal-ring of Childeric II. (d. 673) was found in his tomb, bearing a full-face bust and his name; and impressions of seals of later monarchs of the Merovingian line, engraved with their busts and names, have survived. Pippin the Short and the early Carolings made use of intaglios, both actual antiques and copies from them; their successors had seals of ordinary types usually showing their busts. One of the oldest matrices is an intaglio in rock crystal, now preserved at Aix-la-Chapelle, bearing a portrait head of Lothair II., king of Lorraine (A.D. 855-860), and the legend "Xπ [Christe] Adiva hltharum Reg." At time advanced there was a growing tendency to enlarge the royal seal. Under Hugh Capet there was (A.D. 889) a further development, the king being represented half-length with the royal insignia; and at last under Henry I. (A.D. 1031-1060) the royal seal of France was complete as the seal of majesty, bearing the full effigy of the king enthroned. In Germany, however, this full type had already been attained somewhat earlier in the seal of the emperor Henry II. (A.D. 1002-1024); and it had been used even earlier by Arnulf, count of Flanders, in 942. The royal seal thus developed as a seal of majesty became the type for subsequent seals of dignity of the monarchs of the middle ages and later, the inscription or legend giving the name and titles of the sovereign concerned.

All the early royal seals which have been referred to were affixed to the face of the documents, that is, en placard; but in the 11th century the practice of appending the seal from thongs or cords came into vogue; by the 12th century it was universal.
SEALS

Naturally, the introduction of the pendant seal invited an impression on the back as well as on the face of the disk of wax or other material employed. Hence arose the use of the counter-seal, which might be an impression from a matrix actually so called (contra sigillium), or that of a signet or private seal (secretum), such countersealing implying a personal corroboration of the sealing. The earliest seal of a sovereign of France to which a counter-seal was added was that of Louis VII. (A.D. 1141), an equestrian effigy of the king as duke of Aquitaine being impressed on the reverse. When, in 1154, Aquitaine passed to the English crown, this counterseal disappeared, and eventually in subsequent reigns a fleur-de-lis or the shield of arms of France took its place. In the German royal seals the imperial eagle or the imperial shield of arms was the ordinary counterseal.

To turn to England: it appears that the kings of the Anglo-Saxon race, or at least some of them, imitated their Frankish neighbours in using siglets or other seals. There are still extant an impression of the seal of Offa of Mercia (A.D. 799) bearing a portrait head; and one of the seal of Edgar (A.D. 960), an intaglio gem. The first royal seal of England which ranks as a "great seal" is that of Edward the Confessor, Impressions of which were furnished with a counterseal, the design being nearly identical with that of the obverse (fig. 1). William the Conqueror, as duke of Normandy, used an equestrian seal, representing him mounted and armed for battle. After the conquest of England, he added a seal of majesty, copied from the seal of Henry I. of France, as a counterseal. In subsequent reigns the order of the two seals was reversed, the seal of majesty becoming the obverse, and the reverse being the equestrian seal: a pattern which has been followed, almost uniformly, down to the present day.

Besides the two royal seals of Anglo-Saxon kings that have just been noticed above there are extant a few other seals, and there is documentary evidence of yet others, which were used in England before the Norman Conquest; but the rarity of such examples is an indication that the employment of seals could not have been very common among our Anglo-Saxon forefathers. Berhtwald the thane, in 788, and Æthelwulf of Mercia, in 857, affixed their seals to certain documents. In the British Museum are the bronze matrices of seals of Æthelwald, bishop of Dunwich, about 800; of Æthelric, alderman of Hampshire, about 858; and the finely carved ivory double matrix of Godwin the thane (on the obverse) and of the nun Godcythe (on the reverse), of the beginning of the 11th century. In the Charter Library of Durham there is the matrix of the monastic seal of about the year 970; and in the British Museum, appended to a later charter (Harl. 45 A. 36), is the impression of the seal of Wilton Abbey of about 974.

The official practice of the Frankish kings, which, as we have seen, was the means of handing down the Roman tradition of the use of the signet, was gradually imitated by high officials of state. In the 11th century the mayors of the palace are found affixing their personal seals to royal diplomas; and, once the idea was started, the multiplication of seals naturally followed. From the end of the 10th century there was a growing tendency to their general use. From the 12th to the 15th century inclusive, sealing was the ordinary process of authenticating legal documents; and during that period an infinite variety of seals was in existence. The royal seals of dignity or great seals we have already noticed. The sovereign also had his personal seals: his privy seal, his signet. The

provinces, the public departments, the royal and public officers, the courts of law: all had their special seals. The numerous class of ecclesiastical seals comprised episcopal seals of all kinds, official and personal; seals of cathedrals and chapters; of courts and officials, &c. The monastic series is one of the largest, and, from an artistic point of view, one of the most important. The topographical or local series comprises the seals of cities, towns and boroughs and of corporate bodies. Then come the vast collections of personal seals. Equestrian seals of barons and knights; the seals of ladies of rank; the armorial seals of the gentry; and many examples, chiefly of private seals, of all kinds, sacred and profane, ranging from the finely engraved work of art down to the roughly cut merchant's mark of the trader and the simple initial letter of the yeoman, typical of the time when everybody had his seal. The ordinary shape of the medieval seal is round; but there are certain exceptions. Ladies' seals and some classes of ecclesiastical and monastic seals are of pointed oval form, which is best adapted to receive the standing figure of lady, bishop, abbot or saint: the common types in such classes. Fanciful shaped seals also occur, but they are comparatively rare.

In the middle ages the metal chiefly employed in the manufacture of matrices was bronze. Among the wealthy, silver was not uncommon; among the poor, lead was in general use. The matrices of steel were more made at a later time in the 16th and 17th centuries. In the 11th century a fairly large number of matrices were cut in ivory. The use of engraved gems in the early middle ages had already been indicated; but the taste for antique intaglios was not confined to any one period. In the later centuries also, particularly in the 14th century, they were set in seal matrices and finger rings. A fine Graeco-Roman gem, bearing a female head, full face and set in a medieval setting, does duty for the head of Mary Magdalcn as seen in the accompanying cut (fig. 2).

The ordinary matrix of the middle ages was provided with a ridge on the back (or, in some instances, with a vertical handle), by which it could be held while being used for sealing, and which might be pierced for suspension. Sockets for the insertion of handles are of comparatively late make. The matrix was in most instances simple, the design giving a direct impression once and for all. But there are examples of elaborate matrices composed of several pieces, from the impressions of which the seal was built up in an ingenious fashion, both obverse and reverse being carved in hollow work, through which figures and subjects impressed on an inner layer of wax are to be seen. Such examples are the seal matrix of the Benedictine priory of St Mary and St Blaise of Boxgrove in Sussex, 13th century, in the British Museum (fig. 3); and the matrix of Southwick Priory in Hampshire, of the same period (Archaeologia, xxii. 374). The matrix of one of the seals of Canterbury Cathedral was also constructed in the same manner.

It has usually been the custom to break up or deface the matrices of official seals when they have ceased to be valid, as, for example, at the commencement of a new reign. The seals of deceased bishops or abbots were solemnly broken in presence of the chapter or before the altar. But the legal maxim that corporations never die is well illustrated by the survival of the matrix of the fine series of the great seals of the crown, indeed, but very full, of the matrices of English corporations, beginning with the close of the 12th century. A fine example is the corporate seal of Rochester, of the 13th century, showing the keep and battlements of the castle (fig. 4) in high relief.

The common material for receiving the impressions from the matrices was beeswax, generally tempered with various other substances, such as resin, pitch and even hemp and hair. The employment of chalk as an ingredient in many seals of the 12th century has caused them to become extremely fragile; it was a common practice to apply to such seals a coating of brown varnish. Besides the transparent yellowish-brown of the wax when used in its natural state, as it very frequently was used in the earlier middle ages, many other colours,
especially red, dark green and dark brown, and even black, are found in medieval seals. Any attempt to classify examples by their colours fails, for, while at some periods the particular tints employed in certain chanceries may have been connected with the device or with the occupation of the owners, to marking the character of the documents so sealed, such practice was not consistently followed.

For the protection of the impression, in the 12th and 13th centuries, when it was an ordinary custom to impress the seals on thick cakes of wax, the surrounding margin was almost always formed into a suitable fender; at other times, as in the 14th century, a so-called wreath, or twisted shred of parchment, or plaited grass or reed, was placed in the wax round the impression. But the most common process was to sew up the seal in a cloth or canvas bag, which was called a reed, and the fender that it supported was known as a bulwark or buldow.

Seals of cloth or canvas, with the mistaken notion that this would ensure the seal's integrity; the ordinary result being that, on the assumption that seals thus protected needed no further care, they have been in most instances either broken or crushed to powder. In later times, seals, especially great seals, have been frequently fitted in metal or wooden boxes.

The medieval seal may be said, in general, to be composed of two essential parts: the device, or type, as it is sometimes called, and the inscription or legend. It is the existence of the legend, surrounding the device as with a border, that distinguishes such a seal from the gem, which rarely bore an inscription and then only its field. Such antique gems as were adopted for matrices in the middle ages were usually set in metal mounts, on which the legends were engraved. The first and obvious reason for an inscription on a seal was to ensure identification of the owner; and therefore the names of such owners appear in the earliest examples. Afterwards, when the use of seals became common, and when they were as often a signet as a signet, fanciful legends or mottoes appropriate to the devices naturally came into vogue. Examples of such mottoes will be given below.

A few words may be said regarding the different kinds of types or devices appropriate to particular classes or groups of medieval seals; and, although these remarks have special reference to English seals, it may be noted that there is a common affinity between the several classes of seals of all countries of western Europe, and that what is said of the seal-devices of one country may be applied in general terms to those of the rest. The types of the great seals of sovereigns have already been mentioned: a seal of majesty on the obverse, an equestrian seal on the reverse. Other devices were borne on the obverse the king enthroned or mounted, and the royal arms on the reverse. Among other official seals a very interesting type is that of the Lord High Admiral in the 15th century, several matrices of the seals of holders of the dignity having survived and been exhibited in the British Museum. That of John Holland, earl of Huntingdon, Admiral of England, Ireland and Aquitaine, 1435-1442, is here given (fig. 5), having the usual device of a ship, on the mainail of which are the earl's armorial bearings. In ecclesiastical seals generally, in the seals of religious foundations, cathedrals, monasteries, colleges and the like, sacred subjects naturally find a place among other designs. Such subjects as the Ascension, the Trinity, the Annunciation, the Nativity, the Crucifixion, the Coronation of the Virgin, are not uncommon. Episcopal seals more generally show the prelate prominently as a kneeling figure, sometimes conspicuously, as kneeling in prayer before the Deity or patron saint; the counterseal, the figure of patron saint or founder, or of abbot or abbess; or the conventual building. If there be a counterseal, the figure of patron saint or founder may stand there, while the building occupies the obverse. Each abbot, too, would have his own seal of dignity, generally showing him standing. Local seals of town or borough may have the image of a patron saint, or armorial device, or crest of the bridge or other building (see fig. 4), or the town itself. A seal-press will be indicated by a ship on the waves. The baronial seal bears the armed and mounted knight. On ladies' seals the owner is often gracefully depicted standing and holding lower or higher, with shields of arms. After the 14th century, the figures of ladies, other than queens, vanish from seals. Armorial devices of the gentry first appear on seals at the close of the 12th century, and from that time there is a gradual development of the heraldic seal, which in the 14th century was often a work of fine decorative sculpture. And, lastly, the devices on fancy seals are without end in their variety.

As in all other departments of medieval art, the engraving of seals in the middle ages passed through certain well-marked developments and changes characteristic of different periods. Fine seal engraving is to be found in the productions of many of the continental nations; but in the best periods nothing can excel the work of English cutters. Beginning with the examples of the 11th and 12th centuries, we find the subjects generally of an archaic style, which is evidence of an early stage of the art. In the 13th century this undeveloped stage has passed, and a fine, but still restrained, quality of engraving ensues, which, like all the allied arts of that century, charms with its simple and unpretending precision. For example, in the great seals of Henry III., something of the antique stiffness remains, but the general effect and the finish of the details are admirable. We may refer also again to the Boxgraves seal (fig. 3) as a fine specimen of 13th century architectural carving. But the most beautiful seal of this period, perhaps, is the monastic seal of the most beautiful medieval seal in existence, the monastic seal of Merton Priory, in Surrey, of the year 1241. An engraving of the obverse, the Virgin and Child, is here given (fig. 6). The Merton seal is the work of a master hand treating his subject with wonderful breadth and freedom. As the century advances, a more graceful movement in the figures is discernible. For instance, the great seal of Edward I. shows a departure from the severe simplicity of his predecessor in the addition of decorative architectural details, and in the easier action of the equestrian figure, which in this instance is of a strikingly fine type. Comparable with it is the remarkable baronial equestrian seal of Robert Fitz-Walter (fig. 7), 1298-1304, the silver matrix of which is in the British Museum collections.

The work of the 14th century is marked by a great development in decoration. Where the artist of the former century would have secured his effect by simple, firm lines, the new school trusted to a more superficial style, in which ornament rather than

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**Fig. 4.—Corporate Seal of Rochester.**

- A corporate seal typically represents the authority of a city or corporation. It may feature symbols associated with the city's history, such as a castle or a coat of arms.

**Fig. 5.—Seal of Lord High Admiral Huntingdon.**

- This seal is marked with a ship, which could symbolize the owner's connection to the sea or maritime activities.

**Fig. 6.—Merton Priory Seal.**

- This seal showcases the Virgin and Child, reflecting the religious significance and artistic style of the period.

**Fig. 7.—Seal of Robert Fitz-Walter.**

- This seal depicts a more ornate style, with intricate designs that reflect the artistic trends of the 14th century.
form is the leading motive. The new style is conspicuous in the
great seals and other official seals of Edward III., as well as in
other classes. The 14th century is also the period of enriched
canopies, of niches and pinnacles and of other details of mono-
mental sculpture reproduced in its seals. A very beautiful and
typical example of the best work of this period is to be seen in the seal
of Richard de Bury, bishop of Durham from
1333 to 1345 (fig. 8). It
is to be remarked that
the standing figure of the
bishop in episcopal
seals, of the abbot in
monastic seals and of
the lady in ladies' seals,
which was so persistent
in the 13th century onwards, proved to be
the happy cause of the maintenance of
the elegant oval shape in examples of these
classes, wherein some of the best balanced de-
signs are to be found.

The 15th century brought it to seal-
engraving, as it did to other departments of
medieval art, the elements of decadence.
The execution becomes of a more mechanical type; the strength of
the 13th century and the gracefulness of the 14th century have
passed; and, while examples of great elaboration were still
produced, the tendency grows to overload the decoration. This
defect is noticeable, for example, in the elaborate great seals of
the Henries of the 17th century, as compared with the finer
types of their predecessors. As a good example of the middle
of the century, the seal of King's College, Cambridge, of about
the year 1443, is here given (fig. 9), showing the Virgin in glory in
the centre, between St Nicholas and King Henry V. E.

With the rise of the period of the Renaissance, like other
medieval arts, seal-engraving passed out of the range of the
traditions of the middle ages and came under the influence of
the derived classical or pseudo-classical sentiment. There is,
therefore, no need to pursue the subject further.

We close this portion of the present article with specimens of
the legends or mottos which are to be found on the innumerable
personal seals of the 13th, 14th and 15th centuries.

Mottos. They are of great variety, and many of them are very
interesting, both on account of the devices which they accompany
and the sentiments which they express. In English seals they
are found composed in Latin, in French, and in the vernacular.
First there are legends describing the quality of the seal or
conveying a message to the recipient of the missive, as:—Prévè su
su (suiss); privé su et poi conu (peu connu); sigillum secreti;
secreti nuntius; je su mutè; le l(eoil) ami mutè; je su sel bon c
leel; veidi pardi lel; clausa secreta tego; signo secreta signo;
secreta gero; si frangis, reveolo; frange, lege, tege; brusset,
liet, et celet; accipe, frange, lege; clade, repone, tege; missa
lege, lecta tege; tecta, lege, tege; briset, vaee, lize;
creas; tene fidem; tenet la foy; softe and fayre. Seals with
love mottos are numerous:—sigillum pacis et amoris; je su
amurs; je su seel damar lel sel de sulu ex damur; de li
penset par ki me avet; jeo su ci en lu dami; penset de li par ki
su ci; ase for the tresveste; ami amet, car lel ami avet; amye
amet, mon quer avet; mun quer avet, ben le gardè; mun cuer
avet, ne le deceve; penset de moi, e je de vus; mon quer jolye
a vos doin, amye; je suy fluer de lel amur; love me and I the;
if the liket, mi love holde; poi vaut vivre sans lel ami. The lion
is a not uncommon device:—Je su lion bon par avisoun; sum
leo, quovis eo, non nisi uero veho; je su rey des bestes; leo
tegit secretum. A lion dormant:—Ci repose le lion; ici dort
le lion fort; wake me no man. A lion dormant on a rose, the
symbol of secrecy:—Ben pur celer, gis sur rose; ici repose le
in la rose; de su la rose le lion repose. Rustic life is represented
by a squirell:—I crake notis; I krak notis; I bite notes:—by
a hare, or a hare riding a dog:—Sooh, sohou; sohou, mutel;
sohou, Robiin; sohou, je le voii; sohou, je la trouyve; je vois
a bois; by a hare in a tree:—Sooh, scut, ware I cut: by a monkey
riding a dog or goat:—Allone I ride, I hunt; allone I ride, have
I no swyan: by a stag:—Alas, Bowles: by a dog:—hobbe,
dogge, hobbe; garez ben le petit chen: by a hawk seizing a
bird:—Alas, je su pris. And more than one example bears the
motto:—By the road, woman and wood (mad).

Bullae. As stated above, metal seals, as well as seals in soft
materials, have been employed in European countries under
certain conditions. These are technically called "bullae" (Lat.
bulla, a boss, or circular metal ornament), and necessarily they
were in all cases suspended from the documents, and they bore a
design on both obverse and reverse. In the southern countries
of Europe, where wax would be affected by the warmth of the
climate, it was natural that a harder material should also be used.
Hence the leaden bulla was a recognized form of seal during the
middle ages in the Peninsula, in Italy, Great Britain, and, to a
lesser extent, in France. In the East, bullae seem to have been
common in the Latin East. The best-known series is the papal series
of leaden seals which have lent their name to the documents of
the papal chancery which they authenticate, popularly known as
papal "bulls." The earliest extant example of this series is of
the year 746 (see DIPLOMATIC). Leaden seals were also used by
the archbishops of Ravenna and other prelates of Italy; also
to some extent by officials of a lower rank, and by certain
communes. The official seals of the doges of Venice and of Genoa
and of other dignitaries of those states were also of lead. The
seals of Spain, too, made use of the same material; and in
the Byzantine empire leaden bullae seem to have been universally
employed, not only by emperors and state officials but also by
private persons. Even in the north, metal bullae were also
occasionally in use. Certain Carolingian monarchs, probably
copying the practice of the papal chancery, issued diplomas
authenticated by leaden seals, examples of the reign of Charles
the Bald being still extant. The fashion even spread to Britain,
as is proved by the existence in the British Museum of a leaden
bull of Conwull of Mercia, A.D. 800–810. In Germany, too,
hierarchs occasionally made use of leaden seals. But, while lead
was the ordinary material for the metal seal, a more precious
substance was occasionally used. On special occasions golden
bullae were issued by the Byzantine emperors, by the popes,
by the Carolins, although no actual examples of the last have survived, by the emperors of Germany, and by other sovereigns and rulers. Such specimens as have descended to us show that the golden bulla of the middle ages was usually hollow, being formed of two thin plates of metal stamped with the designs of obverse and reverse, soldered together at the edges and padded with wax or plaster. On rare occasions it was of solid gold. The popes attached golden bullae to their confirmations of the elections of the emperors in the 12th and 13th centuries; and they issued them on such occasions as when Leo X. conferred on Henry VIII. the title of Defender of the Faith, in 1521; on the coronation of Charles V., 1530; on the erection of the archbishopric of Lisbon into a patriarchate in 1716, &c.; and quite recently papal golden bullae have been conferred on royal persons. comparatively few examples of golden bullae have survived. The value of the metal sufficiently accounts for their scarcity. Some examples are in the British Museum, viz. of Baldwin II. de Courtenay, formerly emperor of Constantinople, attached to a charter of 1269; of Edward of England, and of the emperor Henry III. of England; and of the emperor Frederick III., 1452-1503. In the Public Record Office, of Alfonso X. of Castile, ceding Gascony to Edward, son of Henry III. of England, 1254; of Clement VII. confirming to Henry VIII. the title of Defender of the Faith, 1524 (this example being the work of Benvenuto Cellini); and of Francis I. of France, ratifying the treaty with Henry VIII., 1527 (the counterpart with Henry's bulla being in Paris).

JOHN BYSSON, the 4th Earl of Glocester, and di G. Burch, Catalogue of Seals in the British Museum (6 vols., 1885-1900); A. Wyon, The Great Seals of England (1887); G. Pedrick, Borough Seals of the Gothic Period (1904); H. Laing, Catalogue of Ancient Scottish Seals (1858, 1866); Douet d'Arbo, Collection de sceaux (Inventaires et documents des archives de l'Empire) (3 vols., 1865-1868); G. Demay, Inventaire des sceaux de la Flandre (2 vols., 1873), de l'Artois et de la Picardie (1877), de l'Aisne et de l'Oise (1878); Onslow, Sigillographie de l'Empire byzamien (1884); J. Walther, Hartung, Catalogue des sceaux armor. pontificalc Romanorum (for papal bullae) (1885-1897); Catalogue of Engraved Gems in the Dept. of Greek and Roman Antiquities (1893); Catalogue of Engraved Gems in the Dept. of Etruscan, Greek and Roman Seals, etc., in the British Museum (1907); E. Babelon, Histoire de la gravure sur gemmes en France (1902). There are also numerous papers on seals in Archaeologia and in the Journal of Glass and China. Handbooks on diplomatic devote some attention to seals, e.g. A. Giry, Manuel de diplomatique (1894); H. Bresslau, Handbuch der Urkundenlehre für Deutschland und Italien (1896). (E. M. T.)

SEALSFIELD, CHARLES, the pseudonym of KARL ANTON PREUSCHER (1831-1906), was born at Leisnig, Saxony, on 2nd March 1830 at Popitz near Znaim in Moravia. His schooling completed, he entered the Kreuzherrenorden in Prague, where he became a priest, but in the autumn of 1852 he fled to America, where he assumed the name of Charles Sealsfield. In 1856 he returned to Germany and published a book on America (Die Vereinigten Staaten von Nordamerika), which was followed by an outspoken criticism of Austria, written in English (Austria as it is, 1858) and published anonymously in London. Meanwhile he had returned to America, where he published his first novel, also in English, Tokeh, or the White Rose (1858). He now turned journalist, first in New York and subsequently in Paris and London, as correspondent for various journals. In 1832 he settled in Switzerland, and in 1856 purchased a small estate near Solothurn. Here he died on the 26th of May 1864. His will first revealed the fact that he was the former monk, Postl.

It is as a German novelist that he is best known. His Tokeh appeared in German under the title Der Legende und die Republikaner (1838), and was followed by Der Virey and die Aristokraten (1835). "Lebensbilder aus beiden Hemisphären (1835-1837), Staats-, Land- und Seebilder (1838), Das Kabinet, oder Nationale Charakter-. "The development of the German historical novel at a period when Scott's influence was beginning to wane. He endeavoured to widen the scope of Peter Hain, great national and political movements, without forfeiting the sympathy of his readers for the individual characters of the story. Sealsfield's Gesammelte Werke appeared in 16 vols. (1843-1846): his chief novels are also to be obtained in modern reprint. See Kerbény, Erinnerungen an Sealsfield (1864); L. Schmolle, Charles Sealsfield (1875); L. Hamburger, Sealsfield-Postl, bisher unveröffent- lichte Briefe (1879); A. B. Faust, Charles Sealsfield, der Dichter beider Hemisphären (1896).

SEAMAN, OWEN (1861— ), English humorist and author, was educated at Shrewsbury school and Clare College, Cambridge, where he took a first class in the classical tripos in 1883; in the next year he became a master at Rossall school; and in 1890 he was appointed professor of literature at the Durham College of Science, Newcastle-on-Tyne. He was called to the bar at the Inner Temple in 1897. He was introduced to Punch in 1894, with his "Rhyme of the Kipperling," a parody of Rudyard Kipling's "Rhyme of the Three Sealers." He also wrote for The National Observer and The World. In 1894 he published a volume of parodies which is a classic of its kind, Horace at Cambridge, followed by The Battle of the Bays (1896), In Cope and Bells (1899), Borrowed Plumes (1902), A Harvest of Chaff (1904). He joined the staff of Punch in 1897, and shortly afterwards became assistant-editor, succeeding Sir F. C. Burnand as editor in 1906.

SEAMANSHIP, the general term for the art by which vessels of all classes and sizes are handled in all conditions of weather. It is commonly distinguished from "boatmanship," but the distinction is arbitrary. In ordinary speech it is frequently used as meaning the same thing as navigation (q.v.). But the two subjects are essentially different. Navigation is a science based on observation of the sun and stars in their apparent movements, on their bearings to one another, and the earth, and on time. It may be acquired from the study of books, and it is possible, although it would be difficult, for one to have a general sight of it as an art. Its principles may be stated in literary form, but a mastery of it can only be acquired by actual practice on the sea. The art is far older than the science, but because of its practical character its history is much more difficult to trace. Navigation, being one form of the study of mathematics and astronomy, has been written about from the beginning. Seaman ship has been practised in perfection by men who were perfectly illiterate for thousands of years before any treatise on it appeared. Seamen have at all times been, as Clarendon noted, a people apart. Till recently they have believed in practice only, and being jealous of, and hostile to, landmen, have generally endeavoured to preserve their knowledge as an "art and mystery" to be handed down by oral instruction from master to apprentice. Sir Henry Manway ring, whose Seaman's Dictionary appeared in 1694, claimed that it was the first treatise on seaman ship ever written. After explaining that a writer who had not acquired the art by practice could not expound it, he goes on: "And as for the profess ed Seamen they either want ability and dexterity to express themselves, or (as they do generally) will, to instruct others. If there was a will among the vulgar sort of Seamen hate landmen so much, either he or I shall never find out why they are so unwilling to instruct them in their art, whence it is that so many gentlemen go long voyages, and return (in a manner) as ignorant and as unable to do their country service as when they went out." Though the Seaman's Dictionary did not appear in print till 1694, it is described on the title-page as having been presented to George Villiers, duke of Buckingham, the lord high admiral of Charles I., who was murdered in 1628. Manway ring's book is therefore probably, if not the first treatise on seaman ship written in English, at least as old as its only rival, the Accidents, or the Pathology necessary for all young seamen, published in 1626, by the famous Captain John Smith, of Virginia. On the continent of Europe, as in England, while works on navigation and gunnery were common, treatises on practical seamanship date from the 17th century. The books of Manway ring and Smith are rather glossaries of terms than expositions of principles. We are therefore left with very few documents from which to learn what the seaman ship of antiquity and the middle ages was. But such testimony as we have confirms the conclusion to be drawn from our general knowledge of the construction of their ships, and of the scientific learning of their times. The old seamen were coasters, who acted on the fisherman's adage—
SEAMANSHIP

"If you cannot steer by the compass, steer by the land," because they had no choice. War ship and merchant ship alike clung to the coast—or if they ventured out to sea, they did so for a voyage to be counted by the hour, as, for instance, from the south-west of Sicily to the opposite coast of Africa—or they relied on regular trade winds, like the seamen who sailed from the Red Sea to the coast of Malabar going and coming with the monsoons. In spite of exceptions, more apparent than real, contact of the British with the commerce of the Orient and of the Norsemen to that island, and to Greenland, seamanship continued to be the art of the coast till the close of the middle ages. Chaucer's sailor has hardly lost sight of the coast. Such treatises as were written for seamen were books of pilotage. Examples will be found at the end of the Hakluyt Society's edition of *Hues Tractatus de globis*. The warships, Phoenician, Greek, Roman, Norse, Byzantine and Italian throughout the middle ages, used sails only when not in action. They were rowed in battle, and the mast was lowered, or left on shore. We know how they avoided passing the lee side. Their galleys were beached or anchored close to the shore and the men landed. We know from Thucydides' narrative of the expedition to Syracuse, that the crews were landed even for their meals; from the chronicle of Ramon de Muntaner, we know that this was also the case with the best Mediterranean squadrons at the end of the 13th century. The Athenians, clinging to the coast, spent two months in going from Athens to Syracuse. Roger di Lauria, the admiral of Aragon, when coming from Sicily in circumstances of great urgency to Catalonia, went round by the coast of Africa and Spain. In 1450, a group of English merchants alike had, at the outside, very few sails, and generally only one great course (see *Sails*) square and slung by the middle of the yard. It could be trained fore and aft by bowlines, so as to enable the vessel to sail on the wind. Under these restrictions seamanship was necessarily a limited art. From Marco Polo we learn that the seamen of the China Sea and of the Indian Ocean were coasters as their European contemporaries. Though the art of seamanship is distinct both from the art of shipbuilding and the science of navigation, it has naturally developed with them. The discovery of the marine compass, the advance of astronomical knowledge, the invention of the rude early instruments of navigation, the astrolabe, the back staff, the quarter staff, loosened the dependence of the sailor on the shore. Thence came the need for larger ships, and they demanded a more developed rigging (q.v.). Modern seamanship begins with the voyage of Columbus. The previous and contemporary voyages of the Portuguese were coasting voyages round Africa. But Columbus struck across the ocean, and within thirty years Sebastian de Elcano, who accompanied Magellan, had sailed the world.
SEAMEN, LAWS RELATING TO

In most legal systems legislation has interfered to protect the seaman from the consequences of that impudence which is generally supposed to be one of his distinguishing characteristics. In the United Kingdom legislation has dealt with the interests of seamen with unusual fulness of detail, proving the care bestowed by a maritime power upon those to whom its commercial success is so largely due. How far this legislation has had the efficiency which was expected may be doubtful.

For legislative purposes seamen may be divided into three classes—seamen in the royal navy, merchant seamen, and fishermen.

Seamen in the Royal Navy.—It is still lawful to impress men for the naval service (see IMPRESSMENT), subject to certain exemptions (13 Geo. II. c. 17, 1740). Among persons exempt are seamen in the merchant service. In cases of emergency officers and men of the coastguard and revenue cruisers, seamen and riggers and pensioners may be required to serve in the navy (Naval Volunteers Act 1853). There appears to be no other instance (now that balloting for the militia is suspended) where a subject may be forced into the service of the crown against his will. The navy, however, at the present day wholly re-狂欢 acts of a compulsory enlistment (see the Naval Enlistment Acts, 1825 to 1884). Special advantages are afforded by the Merchant Shipping Act 1894 to merchant seamen enlisting in the navy. They are enabled to leave their ship without punishment or forfeit in order to join the naval service. The discipline of the navy is, unlike that of the army, for which an annual act is necessary, regulated by a permanent act of parliament, that now in force being the Naval Discipline Act 1866. In addition to numerous hospitals and infirmaries in the United Kingdom and abroad, the great charity of Greenwich Hospital is a mode of provision for old and disabled seamen in the navy. At present such seamen are out-pensioners only; the hospital has been for some years used as the Royal Naval College for officer students. The enactments of the Merchant Shipping Act 1854 as to savings banks are extended to seamen in the navy by the Merchant Shipping Act 1894, s. 148. Enlistment without the licence of the crown in the naval service of a foreign state at war with another foreign state that is at peace with the United Kingdom is an offence punishable under the Foreign Enlistment Act 1870. Any person buying from a seaman or enticing a seaman to sell government property is liable to the penalties under the Seamen’s Clothing Act 1864 (see NAVY).

Merchant Seamen.—Most of the acts dealing with this subject, commencing with 8 Eliz. c. 13, were repealed in 1854 and have since been consolidated and extended by the Merchant Shipping Acts 1894 and 1906; the act of 1894 being the longest act on the statute roll. The main part of the legislation affecting seamen in the merchant service occurs in the second part of the act of 1894 and the fourth part of the act of 1906. The act of 1894 defines a seaman to be “every person (except, masters, pilots, and apprentices duly indentured and registered) employed engaged and on any capacity on board any ship” (s. 742).

The act of 1894 is largely a re-enactment of the previous acts of 1825, 1826, and 1842. The law as to the engagement and discharge of seamen has not been altered. These must take place before a superintendent only when the employment is on a foreign or adjacent vessel. If the signing on and discharge take place before a superintendent only if the master so desire. But if the signing on does not take place before a superintendent, the master must cause the agreement to be read and explained to the seaman, and the seaman must sign it in the presence of a witness; copies of all such agreements must be transmitted to the Board of Trade. A copy of every agreement with the crew must be posted in some part of the ship. In any British possession abroad other than that in which the ship was originally registered, a seaman who is engaged on a British ship bound to the port in His Majesty’s dominions at which he was originally shipped, or to a port in the United Kingdom agreed to by the seaman, shall be furnished, at any place where he obtains the sanction, endorsed on the agreement with the crew, of the like officials or, in their absence, of merchants there resident. A seaman discharged in a foreign country is entitled to be provided with a written certificate of discharge, and of any port abroad where he was engaged when he was discharged or versioned, or on his return. Discharge of a seaman is not an offence punishable with imprisonment or fine. If a seaman is discharged by the master, the warrant of discharge is to be delivered to the seaman when he is discharged. It is an offence punishable with imprisonment to discharge a seaman without his consent or without the consent of the master. In discharge, if the master’s discharge is opposed by the seaman, the consular officer of the ship may give the discharge. A seaman discharging in a country where the master is not resident shall obtain the discharge of the return of the ship to the United Kingdom. The only persons by whom seamen may be engaged or supplied in the United Kingdom are a superintendent, the master, the mate, a servant bond fide in the constant employ of the owner, and any person holding a licence from the Board of Trade.

At common law there was no obligation of the owner to provide a seaworthy ship, but by the act of 1894, part v, every person who sends or attempts to send, or is party to sending or attempting to send, a British ship to sea in such unseaworthy state that the life of any person is likely to be endangered by reason of any negligence is guilty of a misdemeanour, and that he used all reasonable means to ensure her being sent to sea in a seaworthy state, or that her going to sea in such unseaworthy state was under the circumstances reasonable and justifiable. A master may be held guilty of a breach of this act as to the supply of seamen, and that the life of any person is likely to be thereby endangered is guilty of a misdemeanour. Every contract of apprenticeship, an obligation is implied that the owner, master and agent shall use all reasonable means to ensure the seaworthiness of the ship. By the act of 1906 many of the provisions as to seaworthiness have been extended to foreign ships, and they may be detained in a proper case. A return of certain particulars, such as lists of crews and of distressed seamen sent home from abroad, reports on discharge, births and deaths at sea, must be made to the registrar of shipping and be available for inspection. (See also SHIP.)

The seaman is privileged in the matter of wills (see WILL), and is exempt from serving in the militia (42 Geo. III. c. 90, s. 43). Assaults upon seamen with intent to prevent their working at their occupation are punishable summarily by the Offences against the Person Act 1861, s. 40. There are special enactments in favour of Lascars and foreign seamen on British ships, e.g. s. 125 of the act of 1884.

In addition to this legislation directly in his interest, the seaman is indirectly protected by the provisions of the Merchant Shipping Acts requiring the possession of certificates of competence to engage seamen, the annual survey and examination by the Board of Trade, and the enactments against deck cargoes, and overloading, as well as by other acts, such as the Registration of Apprentices and Apprenticeship Acts, against the strength of cables and anchors, and the Passenger Acts, under which a proper supply of life-boats and life-buoys must be provided. The duties of the seamen appear to be to obey the master in all lawful orders, to guard against the misuse of a ship, and to encourage him in which he may become entitled to prize money under 22 and 23 Car. II. c. 11 (see PRIZE). Any services beyond these would fall under the head of salvage service and be recompensed accordingly. There are certain offences for which the seaman is liable to be summarily punished under the act of 1894. They comprise desertion, neglect or refusal to join his ship or absence without lawful cause, disobedience of lawful commands, consorting in security, wilful disobedience to a lawful command, either on one occasion or continued, assault upon a master or mate, combining to disobey lawful commands or to neglect duty, or to impede the exit of the ship from port, or to attempt, or attempt to extort from the ship, or embezzlement of or willful damage to her stores or cargo and smuggling. The punishment varies from forfeiture of all or part of his wages to twelve weeks’ imprisonment. Any offence involving his being the owner, master, or any other person who has any interest in the ship, forgery of a certificate of service or discharge is an offence punishable by summary jurisdiction by the Seamen’s and Soldiers’ False Character Acts, 1906.

Engagement and discharge of Seamen.

There are numerous Orders in Council dealing with seamen, especially as to the registration of fishing boats and the rights to be shown by them. XXIV. 18

Duties of Masters and Seamen.
SEAMEN, LAWS RELATING TO

The Steam Trade Acts. A riotous assembly of seamen to prevent the loading or unloading of any ship or to prevent others from working is an offence under 33 Geo. III. c. 67. Deserters from Portuguese ships are punishable by 12 and 13 Vict. c. 35, and from any foreign ships by 18 & 19 Vict. c. 196, as well as with Portugal and other foreign powers. The rating of seamen is now regulated by the Merchant Shipping Act 1894, s. 126. By that act a seaman is not entitled to the rating of "A.B." unless he has served for six months on a British registered vessel. This act also makes it possible for a master or owner desiring to secure registered decked fishing vessel and one year at sea in a trading vessel.

The act of 1894 enables contributions to seamen's refuges and hospitals to be charged upon the mercantile marine fund. There appears, however, to be no grant in support of seamen's hospitals out of any public funds. The principal seamen's hospital is that at Greenwich. Seamen may also contribute to the fund for the expense of the hospital from the funds of the hospital. These "Greenwich Hospital six-

The remedies of the seamen for wages are an ordinary action in the king's bench division or plaint in a county court, an action in

Wages cannot be attached. They may be forfeited or reduced by desertion, smuggling, and other kinds of misconduct. In O'Neill v. Armstrong, 1895, 2 K.B. 418, it was held by the court of appeal that a seaman, though he had not completed the voyage, could recover his full wages where war breaking out alleged a risk to the employment which amounted to a breach of contract at the time of his engagement. In actions in all courts of admiralty jurisdiction the seaman has a maritime lien on the ship and freight, ranking next after claims for salvage and lawful expenses in the payment of wages. The limit of the amount of wages recoverable is £50. Orders may be enforced by distress of the ship and her tackle. Proceedings must be taken within six months. A naval court on a foreign station may determine questions as to the payment of wages and contributions, and the rule a court has jurisdiction over wages due abroad for a voyage to terminate in the United Kingdom. The superintendent of a mercantile marine office has power to issue a warrant whenever between a master or owner and any of his crew which both parties in writing agree to submit to him. These summary remedies are all preserved by the act of 1894. The act further provides that, where a question as to wages is raised before a superintendent, if the amount in question does not exceed £5, the superintendent may adjudicate finally, unless he is of opinion that a court of law ought to decide it. The Merchant Seamen Act 1886, by a section not repealed by the act of 1894, and the Masters, Mates and Seamen's Act 1893, provide for the appointment of inspectors to inquire into complaints of undermanning, and the act of 1894 gives a concurrent jurisdiction with other workmen. A county court or court of summary jurisdiction (the latter limited to claims not exceeding £10) may under the act of 1875 determine all disputes between an employer and workman arising out of their relation as such. The jurisdiction of courts of summary jurisdiction is protected by the enactment of the act of 1894, that no proceeding for the recovery of wages under £50 is to be instituted in a superior court unless the employer or workman is bankrupt, or the ship is under arrest or sold by the authority of such court, or the justices refer the case to such court, or neither owner nor master is or resides within 20 m. of the place where the suit is brought. Summary proceedings may be brought in all county courts and before justices without any limit as to amount. In Scotland the sheriff court has concurrent jurisdiction with justices in claims for wages and upon allotment notes. The representatives of a deceased seaman may claim damages for his death in cases within the Fatal Accidents Acts 1846 and 1864. It has been held that the action lies where the deceased is a foreign seaman on a foreign ship (Davidson v. Hill, 1901, 2 K.B. 609).

Where a seaman is discharged before a superintendent in the United Kingdom, his wages must be paid through or in the presence of the superintendent. The case of a master discharged may be allowed if they have been entered by the master during the voyage in a book kept for that purpose, together with a statement of the matters in respect of which they are made. Where a seaman is left at a port of foreign or British registry by the crew, it is not sufficient, under the act of 1894, to state, by the master, that he has received the wages due from the voyage, the account of wages must be delivered to the superintendent, chief officer of customs, consular officer, or merchants, from whom the master has been paid the wages, and those wages must not be retained by the seaman behind. To protect seamen from crimps, advance notes, or documents authorizing or promising the future payment of money on account of a seaman's wages conditionally on his going to sea or remaining in the service of the ship, or engaged to serve on a foreign ship, or losing the ship, or being made before those wages had been earned, were from 1880 to 1889 wholly void. No money paid in respect of any such document could be deducted from a seaman's wages. Since 1890 this restriction has been removed to the extent that a seaman may accept notes or documents which the crew contains a stipulation for such advance, but this does not extend to cases where the seaman is going to sea from any port not lying in the United Kingdom. In Johnson v. King, 1900, 1 Ch. 471, it was held that there is no limitation on the right to make any agreement for advances or to make advances to any amount. As under the former law, the scale of provisions as amended by the act of 1894 is subject to the master, provided they have been furnished, and compensation made for short or bad provisions, and means are provided whereby the crew can raise complaints. In addition, in the case of ships trading or going from any port in the United Kingdom through the Suez Canal or round the Cape of Good Hope or Cape Horn, the provisions and water are put under inspection by the Board of Trade, and if they are deficient, the ship may be detained until the inspectors are satisfied. If the inspector is satisfied that the cook must be provided for foreign-bound ships. If a seaman receives hurt or injury in the service of the ship, the expense of medical attendance and maintenance, together with the cost of bringing him home, if necessary, to be borne by the owner of the ship, and cannot be deducted from wages.

The safety of the crew is aimed at by provisions which are designed to prevent overloading and undermanning, and generally to prevent shipping from being sent to sea in an unseaworthy state. The stringency of these provisions has been much increased. Life-saving appliances, according to a scale and rules prescribed by the Board of Trade, must be carried by every British ship. Except where the ship is under 80 tons register, employed solely in the coasting trade, or is employed solely in fishing, or in a pleasure yacht, the position of each deck above water shall be marked off by a line 6 ft. 6 in. from the side. If such line is marked in salt water, to which it shall be lawful to load the ship, must be marked at such level as may be approved by the Board of Trade. The length of a ship's keel shall not exceed the regulations prescribed by the Board of Trade. It is this load line which is commonly known as the Plimsoll mark. It is an offence to load a ship so as to submerge the load line, and a ship so loaded may be detained as unsalvageable. Dangerous goods, e.g., explosives, must not be shipped or carried without being distinctly marked as such. Timber must not be carried on deck in the winter months. In the carriage of grain cargoes, rules prescribed by the Board of Trade to prevent shifting must be complied with. The officers of the Board of Trade (subject to a court of survey from an order of final detention) have power to detain a ship which is, by reason of the defective condition of her load line, the height of her freeboard, overloading or improper loading, unfit to proceed to sea without serious danger to human life. Provision is made for the investigation of complaints by seamen that a ship is unfit to proceed to sea. The Public Health Act 1904 enables regulations to be made for carrying into effect international conventions as to insanitary vessels and conveyance of infection by vessels. By s. 11 of the Workmen's Compensation Act 1906, a ship may be detained by order of a court of summary jurisdiction, or if a seaman who has an action under the act shows that a foreign owner is liable to, in compensation under the act.

The meaning of British merchant ships has received much consideration, but has hitherto been little affected by statute law. The effect of the act is thus given in the report, issued in 1896, by a Board of Trade committee on the meaning of merchant ships: "Since the final repeal of the Navigation Laws, which required that the master and three-fourths of the crew of every British ship should be British subjects, and reserved the coasting trade entirely to
British ships and British seamen, the whole world has been open as a recruiting ground to British shipowners, who have not been hampered in their selection by any restriction as to colour, language, qualification, age or strength. Except with regard to certificates, which must be held by masters, officers, and engineers in certain cases, and which, moreover, may be obtained by men of any nationality, there is at present practically no bar to the employment of any person of any nationality in any capacity, whether master, engine-room, or deck-hand. The Merchant Shipping Act 1857 gave power to the Board of Trade to detain ships unseaworthily by reason of undermanning, but prescribed no rules for determining when a ship is to be deemed to be undermanned. Apart from that act the law does not interfere with the number of qualifications of the crew. Nearly one-fourth the seamen employed on British ships are foreigners. Another fourth are Lascars. The figures in 1904, as given by Mr. Lloyd-George in introducing the bill of 1906 in the House of Commons, were 176,000 British subjects, 39,000 aliens, 42,000 Lascars. Aliens serving on British ships may be by a regulation of the secretary (20th April 1904) be naturalized without fee. The act of 1906 (s. 12) provided that after the 31st of December 1907 no seaman may be shipped who does not possess a sufficient knowledge of the English language to understand necessary orders, with an exception in favour of Lascars and inhabitants of a British protectorate. Pilotage certificates are not to be granted unless to British masters and mates (s. 73).

Certificates of competency as masters, mates, and engineers are granted by the Board of Trade, free of charge, for those up to grades, viz. master or first mate, or second mate, or only mate of a foreign-going ship, master or mate of a home-trade passenger ship, first or second class engineer. By virtue of Orders in Council under section 102 of the act of 1894, certificates granted in many of the British colonies have the same force as if granted by the Board of Trade. The following are the requirements of the act as to the officers to be carried by ships:—Masters: A properly certificated master must be carried by every foreign-going ship and every home-trade passenger ship, whatever their tonnage. Mates: A mate, with the certificate of the grade required by the ship, or, if no such certificate exists, in addition to the certificated master, be carried by every foreign-going ship of 100 tons or upwards, unless more than one mate is carried, in which case the first and second mates must have valid certificates appropriate to their respective grades. A mate, with a certificate of the grade of first or only mate or master, must, in addition to the certificated master, be carried by every home-trade passenger ship of 100 tons or upwards. Engineers: Every foreign-going steamship of 100 nominal horse power or upwards must have two certificated engineers—the first possessing a first-class engineer’s certificate, and the second possessing a second-class engineer’s certificate, and both of these to be certificated to the ship or by the ship’s company, and a vessel of the same or greater tonnage, or any other foreign-going steamship, and every sea-going home-trade passenger steamship, is required to carry as the first or only engineer an engineer having a second-class certificate, or a certificate of the higher grade, if no such certificate exists. Mates and engineers of vessels of less than 100 tons are not required to carry a certificate unless before the vessel was shipped they were in the service of a mercantile marine office, that no boy under thirteen is to be employed in sea-fishery, that agreements with seamen on a fishing-boat are to contain the same particulars as those with merchant seamen, and that every man going to sea for the first time, and who has not been in the service of the metropolitan police, that reports of the names of the crew are to be sent to a superintendent of a mercantile marine office, and that accounts of wages and certificates of discharge are to be given to seamen. No fisheries in 1906 were to be opened with a duly certificated skipper. Allusion is also made for special reports of cases of death, injury, ill-treatment or punishment of any of the crew, and for inquiry into the cause of such death, &c. Disputes between skippers or owners and seamen are to be determined at request of any of the parties concerned by a superintendent. Fishermen are exempt from Trinity House dues. There are numerous police provisions contained in the act regulating acts of parliament dealing with the breaching of fishing regulations. These provisions act as an indirect protection to honest fishermen in their employment. The rights of British fishermen in foreign or British bottoms and foreign fishing vessels are regulated by treaty generally confirmed in the United Kingdom by act of parliament. A royal fund for widows and orphans of fishermen has been formed, the nucleus of the fund being part of the profits of the Fisheries Exhibition held in London in 1885. Special provisions as to fishermen in Scotland are contained in s. 389 of the act of 1894 and s. 83 of the act of 1906.

India and Colonies.—In India and in most British colonies there are laws affecting merchant seamen. In some cases such legislation is identical with the imperial act, but in most are differences of more or less importance, and the colonial statutes should be consulted.

United States.—The law of the United States is in general accordance with that of England. The law relating to seamen in the navy will be found in the articles for the government of the navy (Revised Statutes, s. 1624). Legislation in the interests of merchant seamen dates from 1797. A list of the crew must be delivered to a collector of customs. The shipping articles are the same as those in use in the United Kingdom. For vessels in the coasting trade they are, with some modifications, excepting as to writing and signing, in the case of foreign-bound ships signed before a shipping commissioner appointed by the circuit court or a collector of customs, or (if entered into shall be in the form of a treaty, and must be acknowledged by his signature in a prescribed form. One-third of a seaman’s wages earned up to that time is due at every port where the ship unloads and delivers the cargo before the voyage is completed. If any vessel is detained in port by the order of the court, or for any other cause for a period of twenty days, the discharge of the cargo. Advance notice can be made only in favour of the seaman himself or his wife or mother. There is a summary remedy for wages before a district court, a justice of the peace, or a commissioner of a district court. A shipping
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This term is used to indicate two distinct, though cognate, things. The affinity of these two and the indissoluble manner in which the term has been applied to each have tended to obscure its real significance. The obscurity has been deepened by the frequency with which the term has been confounded with the old phrase, "Sovereignty of the sea," and the still current expression, "Command of the sea" (vide SEA, COMMAND or). A discussion—etymological, or even archaeological in character—of the term must be undertaken as an introduction to the explanation of its now generally accepted meaning.

It is one of those compound words in which a Teutonic and a Latin (or Romance) element are combined, and which are easily formed and become widely current when the sea is concerned. Of such are "sea-coast," "sea-forces" (the "land- and sea-forces" used to be a common designation of what we now call the "Army and Navy"); "sea-service," "sea-serpent" and "sea-officer" (now superseded by "naval officer"). The term in one form is as old as the 15th century. Edward III., in commemoration of the naval victory of Sluys, coined gold "nobles" which bore on one side his effigy "crowned, standing in a large ship, holding in one hand a sword and in the other a shield."

An anonymous poet, who wrote in the reign of Henry VI., says of this coin:

"For four things our noble shouweth to me, King, ship and sword, and power of the sea."

Even in its present form the term is not of very recent date. Grote (Hist. of Greece, v. 67, published in 1849, but with preface dated 1848) speaks of "the conversion of Athens from a land-power into a sea-power." In a lecture published in 1853, but probably delivered earlier, the late Sir J. R. Seeley says that "commerce was swept out of the Mediterranean by the besom of the Turkish sea-power" (Expansion of England, p. 86). The term also occurs in Browne's "medicinal" and antiseptics must volume xviii. p. 574, in the article "PERSIA," where we are told that Themistocles was "the founder of the Attic sea-power." The sense in which the term is used differs in these extracts. In the first it means what we generally call a "naval power"—that is to say, a state having a considerable navy in contrast to a "military power," a state with a considerable army but only a relatively small navy. In this sense there are many uses of the phrase. In the last two extracts it means all the elements of the naval strength of the state referred to; and this is the meaning that is now generally, and is likely to be exclusively, attached to the term owing to the brilliant way in which it has been elucidated by Captain A. T. Mahan of the United States Navy.

The double use of the term is common in German, though in that language both parts of the compound now in use are Teutonic, one having been out of use during the Teutonic wars of the Netherlands. (The term was in use in the 14th century, but had "eine bedeuende Seemacht," i.e. an important naval power. He also says that the term was first employed by H. Holm, in 1743; that "eine bedeuende Seemacht," had "eine bedeutende Seemacht," meaning a considerable navy. The term, in the first of the two senses, is old in German, as appears from the fact that in 14th century English literature (see e.g. Grote, History of England, vol. xxxv. (Leipzig and Halle, 1743); "Seemachten, Seepotentenzen; Latin, summae potestates mari potentes.") "Seepeutenzen" is probably obsolete now. It is interesting as showing that German no longer uses "macht" to mean power, but "Seepotentzen," which is the English. We may note, as a proof of the indeterminate meaning of the expression until his own epoch-marking works had appeared, that Mahan himself in his earliest book, Influence of Sea-power on History (1860), used it in both senses. He says (p. 25), "The Spanish Netherlands ceased to be a sea-power." He alludes (p. 42) to the development of a nation as a "sea-power," and (p. 43) to the introduction of the "sea-power" into the French Navy. He remarks of the war of the Spanish Succession that "before it England was one of the sea-powers, after it she was the sea-power without any second. In all these passages, as appears from the term's etymology, Mahan means article, what is meant is a naval power, or a state in possession of a strong navy. The other meaning of the term forms the general subject of Mahan's writings. In his earlier works Mahan writes "sea power" as two words; but in a published work after 1884 it is one word (e.g. "Sea Power," 1884). Mahan defends this formation of the term and the sense in which he uses it. We may regard him as the virtual inventor of the term in its modern meaning, after the publication of his book. It is well to note that Mahan was not alone in this respect. Our passage is from a French writer, in that sense—it is beyond all question who has given it general currency. He has made it impossible for any one to treat of sea-power without frequent reference to his writings and conclusions.

There is something more than mere literary interest in the fact that the term in another language was used more than two thousand years ago. Before Mahan no historian—not even one of those who specially devoted themselves to the narration of naval occurrences—had evinced a more correct appreciation of the general principles of naval warfare than Thucydides. He alludes several times to the importance of getting command of the sea. Great Britain would have been saved some disasters and been less often in peril had British writers—taken as guides by the public—possessed the same grasp of the true principles of defence as Thucydides exhibited. One passage in his history is worth quoting. Brief as it is, it shows that on the subject of sea-power he was a predecessor of Mahan. In a speech in favour of prosecuting the war, which he puts in the mouth of Pericles, these words occur: οἱ μὲν γὰρ οἱ ξένοι αἵλθρα ἀντιλαμβάνεται ὁμαχεῖ, ἴδια δὲ ἐστὶ τῇ πολλῇ καὶ ἐν νήσοις καὶ κατ᾽ ἄρσενον μέγα γὰρ τὸ τῆς θαλάσσης ἐργῶν. The last part of this extract, though often translated "command of the sea," or "dominion of the sea," really has the wider meaning of sea-power, the "power of the sea" of the old English poet above quoted. This wider meaning should be attached to certain passages in Herodotus (iii. 122 in two places; v. 85), which have been generally interpreted "commanding the sea," or by the mere titular and honorific "having the dominion of the sea." One editor of Herodotus, Ch. F. Baeher, did, however, see exactly what was meant, for, with reference to the allusion to Polycrates, he says, class: maxima solis. This is perhaps as exact a definition of sea-power as could be given in a sentence. One instance out of many may be cited from the historian ADOLPHUS BERNHARD KOCH. In his History only of the "principal conditions affecting the sea-power of Italy, nations," but he does not attempt to give a concise definition of it. Yet no one who has studied his works will find it difficult to understand what it indicates. Our present task is, within the necessarily restricted limits of an article in an encyclopedia, to put readers in possession of the means of doing this.
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best, indeed—as Mahan has shown us—the only effective way of attaining this object is to treat the matter historically. Whatever date we may agree to assign to the formation of the term itself, the idea—as we have seen—is as old as history. It is not intended to give a condensed history of sea-power, but rather an analysis of the idea and what it contains, illustrating this analysis with examples from history ancient and modern. It is impossible that the idea is not something which originated in the middle of the 17th century, and having seriously affected history in the 18th, ceased to have weight till Captain Mahan appeared to comment on it in the last decade of the 19th. With a few masterly touches Mahan, in his brief allusion to the second Punic war, has illustrated its importance in the struggle between Rome and Carthage. What has to be shown is that the principles which he has laid down in that case, and in cases much more modern, are true and have been true always and everywhere. Until this is perceived there is much history which cannot be understood, and yet it is essential to the welfare of Great Britain as a maritime power that she should understand it thoroughly. Her failure to understand it has more than once brought her, not to the verge of destruction, at any rate within a short distance of serious disaster.

The high antiquity of decisive naval campaigns is among the most interesting features of international conflicts. Notwithstanding the much greater frequency of land wars, the course of history has been profoundly changed more often by contests on the water. That this has not escaped the notice it deserved is true, and Mahan tells us why. "Historians generally," he says, "have been unfamiliar with the conditions of the sea, having as to it neither special interest nor special knowledge; and the profound determining influence of maritime strength on great issues has consequently been overlooked." Moralizing on that which might have been is admittedly a sterile process; but it is sometimes necessary to point, if only by way of illustration, to a possible alternative. As in modern times the fate of India and the fate of North America were determined by sea-power, so also at a very remote epoch sea-power decided whether or not Hellenic colonization was to take root in and Hellenic culture to dominate central and northern Italy as it dominated southern Italy, where traces of it are extant to this day. A moment's consideration will enable us to see how different the history of the world would have been had a Hellenized city grown and prospered on the Seven Hills. Before the Tarquins were driven out of Rome a Phoenaean fleet was encountered (537 B.C.) off Corsica by a combined force of Etruscans and Phoenicians, and was so handled that the Phoenaeans abandoned the island and settled on the coast of Lucania (Mommsen, Hist. Rom., English trans., i. p. 118). The interpreters of their navarick had built up the Phoenician cities and their great off-shoot Carthage, a sea-power which enabled them to gain the practical sovereignty of the sea to the west of Sardinia and Sicily. The control of these waters was the object of prolonged and memorable struggles, for on it—as the result showed—depended the empire of the world. From very remote times the consolidation and expansion, from within outwards, of great continental states have had serious consequences for mankind when they were accompanied by the acquisition of a coast-line and the absorption of a maritime population. We shall find that the process loses none of its importance in recent years. "The ancient empires," says the historian of Greece, Ernst Curtius, "as long as no foreign elements had intruded into them, had an invincible horror of the water."

When the condition, which Curtius notices in parentheses, arose the "horror" disappeared. There is something highly significant in the uniformity of the efforts of Assyr, Egypt, Babylon and Persia to get possession of the maritime resources of Phoenicia. Our own immediate posterity will perhaps have to reckon with the results of similar efforts in our own day. It is this which gives a living interest to even the very ancient history of sea-power, and makes it a duty to consider the Phoenicians as the forerunners of the nations that later reappeared with striking regularity in successive periods. Looked at in this light the great conflicts of former ages are full of useful, indeed necessary, instruction.

In the first and greatest of the contests waged by the nations of the East against Europe—the Persian wars—sea-power was the governing factor. Until Persia had expanded to the shores of the Levant the European Greeks had little to fear from the ambition of the great king. The Peace of Antalcidas, 386 B.C., was a conference between Persians and Greeks. "It confers a formidable ambition could be when supported by an efficient navy. With the aid of the naval forces of the Phoenician cities the Persian invasion of Greece was rendered comparatively easy. It was the naval contingents from Phoenicia which crushed the Ionian revolt. The expedition of Mardonius, and still more that of Datis and Artaphernes, had indicated the danger threatening Greece when the master of a great army was likewise the master of a great navy. Their defeat at Marathon was not likely to, and as a matter of fact did not, discourage the Persians from further attempts at aggression. But this advance of Cambyses into Egypt had been flanked by a fleet, so also was that of Xerxes into Greece. By the good fortune sometimes vouchsafed to a people, which, owing to its obstinate opposition to, or neglect of, a wise policy, scarcely deserves it, there appeared at Athens an influential citizen who understood all that was meant by the term sea-power. Themistocles saw more clearly than any of his contemporaries that, to enable Athens to play a leading part in the Hellenic world, she needed above all things a strong navy. He had already in his eye the battle-field of the future. He felt, and probably expressed the feeling, exactly as—in the war of American Independence—Washington did in the words, "Whatever efforts are made by the land armies, the navy must have the casting vote in the present contest." The decisive event was the naval action of Salamis. To have made certain of success, the Persians should have first obtained a command of the Aegean, as complete for all practical purposes as the French and English had of the sea generally in the war against Russia of 1854–56. The Persian sea-power was not equal to the task. The fleet of the 360 ships at king was numerically stronger than that of the Greeks, but it was inferior to that which was a natural element of the vitality of her foes. Ionia was lost and Greece in the end enslaved, because the quarrels of Greeks with Greeks led to the ruin of their naval states.

The Peloponnesian War was largely a naval war. The confidence of the Athenians in their sea-power had a great deal to do with its outbreak. The immediate occasion of the hostilities, which in time involved so many states, was the opportunity offered by the conflict between Corinth and Corcyra of increasing the sea-power of Athens. Hither felt sure that the naval predominance had been so long confined to the Aegean Sea. The Corcyraean envoy, who pleaded for help at Athens, dwelt upon the advantage to be derived by the
Athenians from alliance with a naval state occupying an important situation "with respect to the western regions towards which the views of the Athenians had for some time been directed" (Thirlwall, Hist. Greece, iii. 96). It was the "weapon of her sea-power," to adopt Mahan's phrase, that enabled Athens to maintain the great conflict in which she was engaged. Repeated invasions of her territory, the ravages of disease among her people and the rising disaffection of her allies had been more than made up for by her predominance on the water. The scale of the subsequent Syracusan expedition showed how vigorous Athens still was down to the interruption of the war by the peace of Nicias. The great expedition just mentioned overtaxed her strength. Its failure brought about the ruin of the state. It was held by contemporaries, and has been held in our own day, that the Athenian defeat at Syracuse was due to the omission of the government at home to keep the force in Sicily properly supplied and reinforced. This explanation of failure is given in all ages, and should always be suspected. The wrong before Nicias was in the character of the men who swayed the popular assemblies and held high commands. A people which remembered the administration of a Pericles, and yet allowed a Cleon or an Alcibiades to direct its naval and military policy, courted defeat. Nicias, notwithstanding the possession of high qualities, lacked the ironism, and firmness, and resolution, which posterior examples have shown not the obstacle consequent on withdrawal from an enterprise on which the popular hopes had been fixed; and therefore he allowed a reverse to be converted into an overwhelming disaster. "The complete ruin of Athens had appeared, both to her enemies and to herself, impending and irreparable. But so astonishing, so rapid and so energetic had been her rally, that (a year after Syracuse) she was found again carrying on a terrible struggle" (Grote, Hist. Greece, v. p. 354). Nevertheless her sea-power had indeed been ruined at Syracuse. Now she could wage war only with impaired resources and on a purely defensive system. Even before Nicias, it was seen that "superiority of nautical skill had passed to the Peloponnesians and their allies" (ibid., p. 503).

The great, occasionally interrupted, and prolonged contest between Rome and Carthage was a sustained effort on the part of one to gain and of the other to keep the control of the western Mediterranean. So completely had that control been exercised by Carthage, that she had anticipated the Spanish commercial policy in America. The Romans were precluded by treaties from trading with Carthaginian possessions on both continents. Rome, as Mommsen tells us, "was from the first a maritime city, and, in the period of its vigour, never was so foolish or so untrue to its ancient traditions as wholly to neglect its war marine and to desire to be a mere continental power." It may be that it was lust of wealth rather than lust of dominion that first promoted a trial of strength with Carthage. The vision of universal empire could hardly as yet have formed itself in the imagination of a single Roman. The area of Phoenician maritime commerce was vast enough both to excite jealousy and to offer vulnerable points to the cupidities of rivals. It is probable that the modern estimate of the sea-power of Carthage is much exaggerated. It was great by comparison, and of course overwhelmingly great when there were none but insignificant competitors to challenge it. Mommsen holds that, in the 4th and 5th centuries after the foundation of Rome, "the two main competitors for the dominion of the Western waters" were Carthage and Syracuse. "Carthage," he says, "had the preponderance, and Syracuse sank more and more into a second-rate naval power. The maritime importance of the Etruscans was wholly gone. . . . Rome itself was not exempt from the same fate; its own waters were likewise commanded by foreign fleets." The Romans were for a long time too much occupied at home to take much interest in Mediterranean matters. The position of the Carthaginians in the western basin of the Mediterranean was very like that of the Portuguese long afterwards in India. The latter kept within reach of the sea; "nor did their rule ever extend a day's march from their ships" (R. S. Whiteway, Rise of the Portuguese Power in India. Westminster, 1889, p. 12). The Carthaginians in Spain," says Mommsen, "made the effort to acquire the interior territory of the warlike native nations; they were content with the possession of the mines and of stations for traffic and for shell and other fisheries." Allowance being made for the numbers of the classes engaged in administration, commerce and supervision, it is nearly certain that Carthage could not furnish the crews required by both a great war- navy and a great mercantile marine. No one is surprised on finding that the land-forces of Carthage were composed largely of alien mercenaries. We have several examples from which we can infer a parallel, if not an identical, condition of her maritime resources. How, then, was the great Carthaginian carrying-trade provided for? The experience of more than one country will enable us to answer this question. The ocean trade of those off-shoots or dependencies of the United Kingdom, viz. the United States, Australasia and India, is largely or chiefly conducted by shipping of the "old country." So that of Carthage was largely conducted by old Phoenicians. These have obtained a "Carthaginian Register," or the contemporary equivalent; but they could not all have been purely Carthaginian or Liby-Phoenician. This must have been the case even more with the war-navy. British India for a considerable time, indeed, was no more efficient in this respect than Carthage; but it was officered entirely and manned almost entirely by men from the old country. Moreover, it was small. The wealth of India would have sufficed to furnish a larger material element; but, as the country could not supply the personnel, it would have been absurd to speak of the sea-power of India apart from that of England. As soon as the Romans chose to make the most of their natural resources the maritime predominance of Carthage was doomed. The artificial basis of the latter's sea-power would not enable it to hold out against serious and persistent assaults. Unless this is perceived, it is impossible to understand the carrying-trade of the Punic Wars. Judged by every visible sign of strength, Carthage, the richer, the more enterprising, ethnically the more predominant among her neighbours, and apparently the more naval, seemed sure to win in the great struggle with Rome which, by the conditions of the case, was to be waged largely on the water. Yet those who had watched the struggles of the Punic city with the Sicilian Greeks, and especially that with Agathodemos, must have seen reason to cherish doubts concerning her naval strength. It was an anticipation of the case of Spain in the age of Philip II. As the great Elizabethan seamen discerned the decline of Spanish efficiency, so men at Rome discerned those of the Carthaginian. Dates in connexion with this are of great significance. A comprehensive measure, with the object of "rescuing their marine from its condition of impotence" was taken by the Romans in the year 267 B.C. Four quasestos classici—in modern naval English we may perhaps call them port-admirals—were nominated, and one was stationed at each of four ports. The objects of the Roman Senate, so Mommsen tells us, were very obvious. They were "to recover their independence by sea, to cut off the maritime communications of Tarentum, to close the Adriatic against fleets coming from Epirus, and to emancipate themselves from Carthaginian supremacy." Four years afterwards the first Punic War began. It was, and had to be, largely a naval contest. The Romans waged it with varying fortune, but in the end triumphed by means of their sea-power. The victory of Catulus over the Carthaginian fleet off the Aegean Islands decided the war and left to the Romans the possession of Sicily and the power of possessing themselves of Sardinia and Corsica. It would be an interesting and perhaps not barren investigation to inquire to what extent the decline of the Carthaginian power, under the dominion of Alexander the Great, had helped to enable the naval efficiency of the Carthaginian defences. One thing was certain. Carthage had
now met with a rival endowed with natural maritime resources greater than her own. That rival also contained citizens who understood the true importance of sea-power. “With a statesmanlike sagacity from which succeeding generations might have drawn a lesson, the leading men of the Roman Commonwealth perceived that all their coast fortifications and coast garrisons would prove inadequate unless the war-marine of the state were again placed on a footing that should command respect” (Mommsen, i. 427). It is a gloomy reflection that the leading men of the United Kingdom could not see this in 1860. A thorough comprehension of the events of the first Punic War enables us to solve what, until Mahan wrote, had been one of the standing enigmas of history, viz. Hannibal’s invasion of Italy by land instead of by sea in the second Punic War. Mahan’s masterly examination of this question has set at rest all doubts as to the reason of Hannibal’s action (Influence of Hist. pp. 13-31). The naval predominance in the western basin of the Mediterranean acquired by Rome had never been lost. Though modern historians, even those belonging to a maritime country, may have failed to perceive it, the Carthaginians knew well enough that the Romans were too strong for them on the sea. Though other forces co-operated to bring about the defeat of Carthage in the second Punic War, the Roman navy, as Mahan demonstrates, was the most important. As a navy, he tells us in words like those already quoted, “acts on an element strange to most writers, the element of the sea.” Hannibal’s strange race apart, without prophets of their own, neither themselves nor their calling understood, its immense determining influence on the history of that era, and consequently upon the history of the world, has been overlooked.”

The attainment of all but universal dominion by Rome was now only a question of time. “The annihilation of the Carthaginian fleet had made the Romans masters of the sea” (Schmitz, Hist. Rome, p. 256). A lodgment had already been gained in Illyricum, and countries farther east were now open to the mind of the Roman people. A glance at the map will show that to effect this the command of the eastern basin of the Mediterranean, like that of the western, must be secured by the Romans. The old historic navies of the Greek and Phoenician states had declined. One considerable naval force there was which, though it could not have prevented, was strong enough to have delayed the Roman progress eastwards. This force belonged to Rhodes, which in the years immediately following the close of the second Punic War reached its highest point as a naval power (C. Torr, Rhodes in Ancient Times, p. 40). Far from trying to obstruct it, the fleet of Rhodes deserted Hannibal, in his exile, saw the necessity of being strong on the sea if the East was to be saved from the grasp of his hereditary foe; but the resources of Antiochus, even with the mighty co-operation of Hannibal, were insufficient. In a later and more often quoted struggle between East and West—that which was decided at Actium—sea-power was again seen to “have the casting vote.” When the whole of the Mediterranean coasts became part of a single state the importance of the navy was naturally diminished; but in the struggles within the declining empire it rose again at times. The contest of the Vandal Generics with Majorian and the African expedition of Belisarius—as also mentioned others—were largely influenced by the naval operations (Gibbon, Decline and Fall, chaps. xxxvi., xli.).

A decisive event, the Mahomedan conquest of northern Africa from Egypt westwards, is unintelligible until it is seen how great a part sea-power played in effecting it. Purely land expeditions, or expeditions but slightly supported from the sea, had ended in failure. The emperor at Constantinople still had at his disposal a fleet capable of keeping open the communications with his African province. It took the Saracens half a century (A.D. 647-698) to win “their way along the coast of Africa as far as the Illar of Hercules” (Hallam, Mid. Ages, chap. vi.); and, as Gibbon tells us, it was not till the Commander of the Faithful had prepared a great expedition, this time by sea as well as by land, that the Saracenic dominion was definitely established. It has been generally assumed that the Arabian conquerors who, within a few years of his death, spread the faith of Mahomet over vast regions, belonged to an essentially non-maritime race; and little or no stress has been laid on the extent to which they required great naval forces to support their conquests. In parts of Arabia, however, maritime enterprise was far from non-existent; and when the Mahomedan empire had extended onwards from Mecca and Medina till it embraced the coasts of various seas, the consequences to the neighbouring states were as serious as the rule above mentioned would lead us to expect that they would be. “With the conquest of Syria and Egypt a long stretch of sea-board had come into the Saracenic power; and the creation and maintenance of a navy for the protection of the maritime ports as well as for meeting the enemy became a matter of under the most serious attention was paid to the manning and equipment of the fleet” (Amir Ali, Syed, Short Hist. Saracens, p. 445). At first the fleet was manned by sailors drawn from the Phoenician towns, where nautical energy was not yet quite extinct; and later the crews were recruited from Syria, Egypt and the coasts of Asia Minor. Ships were built at most of the Syrian and Egyptian ports, and “also at Obolla and Bushire on the Persian Gulf,” whilst the mercantile marine and maritime trade were fostered and encouraged. The sea-power thus created was largely artificial. Ministers— as in similar cases— when the special encouragement was withdrawn. “In the days of Arabian energy,” says Hallam, “Constantinople was twice, in 668 and 716, attacked by great naval armaments.” The same authority believes that the abandonment of such maritime enterprises by the Saracens may be attributed to the removal of the capital from Damascus to Bagdad. The removal indicated a lessened interest in the affairs of the Mediterranean Sea, which was now left by the administration far behind. “The Greeks in their turn determined to dispute the command of the sea,” with the result that in the middle of the 10th century their empire was far more secure from its enemies than under the first successors of Heraclius.” Not only was the fall of the empire, by a rational reliance on sea-power, postponed for centuries, but also much that had been lost was regained. “At the close of the 10th century the emperors of Constantinople possessed the best and greatest part of southern Italy, part of Sicily, the whole of what is now called the Balkan Peninsula, Asia Minor, with some parts of Syria and Armenia (Hallam, chap. vi.; Gibbon, chap. ii.).

Neglect of sea-power by those who can be reached by sea brings its own punishment. Whether neglected or not, if it is an artificial creation it is nearly sure to disappoint those who wield it when it encounters a rival power of natural growth. How was it possible for the Crusaders, in their various expeditions, to achieve even the transient success that occasionally crowned their efforts? How did the Christian kingdom of Jerusalem contrive to exist for more than three-quarters of a century? Why did the Crusades more and more become maritime expeditions? The answer to these questions is to be found in the decline of the Mahomedan naval defences and the rising enterprise of the seafaring people of the West. The Venetian and Genoese transported crusading forces, kept open the communications of the places held by the Christians and hampered the operations of the infidels. Even the great Saladin failed to discern the important alteration of conditions. This is evident when we look at the efforts of the Christians to regain the lost kingdom. Saladin “forgot that the safety of Phocian lay in immunity from naval incursions, and that no victory on land could ensure him against an influx from beyond the sea” (Amir Ali, Syed, pp. 359-360). Not only were the Crusaders helped by the fleets of the maritime republics of Italy, they also received reinforce-ments by sea from western Europe and England, on the “arrival of Malik AHBtir [Richard Cœur de Lion] with twenty ships-loaded of fighting men and munitions of war.”

Participation in the Crusades was not a solitary proof of the
importance of the naval states of Italy. That they had been able to act effectively in the Levant, may have been in some measure due to the weakening of the Mohammedans by the disintegration of the Seljukian power, the movements of the Moguls and the confusion consequent on the rise of the Ottomans. However that may have been, the naval strength of those Italian states was great absolutely as well as relatively. Sismondi, speaking of Venice, Pisa and Genoa, towards the end of the 11th century, says "these three cities had more vessels on the Mediterranean than the whole of Christendom besides" (Ital. Repubb. English ed. p. 29). Dealing with a period two centuries later, he declares it "difficult to comprehend how two simple cities could put to sea such prodigious fleets as those of Pisa and Genoa." The difficulty disappears when we have Mahan's explanation. The maritime republics of Italy—like Athens and Rhodes in ancient, Catalonia in medieval and England and the Netherlands in more modern times—were "peculiarly well fitted, by situation and resources, for the control of the sea by both war and commerce." As far as the western Mediterranean was concerned, Genoa and Pisa had given early proofs of their maritime energy, and fixed themselves in succession to the Saracens, in the Balearic Isles, Sardinia and Corsica. Sea-power was the Themistoclean instrument with which they made a small state into a great one.

A fertile source of dispute between states is the acquisition of territory beyond sea. As others have done before and since, the English and the Spanish made a point of attacking the coast of Sardinia and the Straits of Messina into which the Mediterranean Sea partakes. As early as 1506 the Sardinian coast of Italy was attacked by the Turks, and the Spanish used the coast of the Straits of Messina as a stepping stone for their expeditions. The Turks had established a foothold in the Sardinian coast of Italy as early as 1506, and the Spanish used the coast of the Straits of Messina as a stepping stone for their expeditions.

The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean. The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean. The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean. The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean. The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean. The capture of the town of Messina by the Spanish in 1506 was a serious check to the expansion of the Ottoman Empire in the Mediterranean.

In the meantime the state which had a leading share in winning the victory of Lepanto had been growing up in the West. Before the union of its crown with that of Aragon and Navarre, its maritime power was limited to the confines of the Mediterranean, and it had never before been a great power on the sea. The Spanish monarchy, however, had already begun to take shape, and its maritime power was greatly augmented by the discovery of gold in America. The Spanish monarchy, however, had already begun to take shape, and its maritime power was greatly augmented by the discovery of gold in America. The Spanish monarchy, however, had already begun to take shape, and its maritime power was greatly augmented by the discovery of gold in America. The Spanish monarchy, however, had already begun to take shape, and its maritime power was greatly augmented by the discovery of gold in America. The Spanish monarchy, however, had already begun to take shape, and its maritime power was greatly augmented by the discovery of gold in America.

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their squadron was permanently hired to the kings of Spain." Spanish supremacy at sea was established at the expense of France (G. W. Prothero, in M. Hume's *Spain 1479-1788*, p. 65). The acquisition of a vast domain in the New World had greatly developed the maritime activity of Castile, and Spain was as formidable on the ocean as in the Mediterranean. After Portugal had been annexed the naval forces of that country were added to the Spanish, and the great ports of Lisbon became available as a source of equipment and as an additional base of operations for oceanic campaigns. The fusion of Spain and Portugal, says Seeley, "produced a single State of unlimited maritime dominion. . . . Henceforth the whole New World belonged exclusively to Spain." The story of the tremendous catastrophe—the defeat of the Armada—by which the decline of this dominion was heralded is well known. It is memorable, not only because of the harm it did to Spain, but also because it revealed the rise of another claimant to maritime pre-eminence—the English nation. The effects of the catastrophe were not at once visible. Spain still continued to look like the greatest power in the world; and, though the English seamen were seen to be something better than adventurous pirates—a character suggested by some of their contemporary exploits—few could have comprehended that they were engaged in building up what was to be a sea-power greater than any known to history.

They were carrying forward, not beginning, the building of this. "England," says Sir J. K. Laughton, "had always believed in her naval power, had always claimed the sovereignty of the Narrow Seas; and more than two hundred years before the death of the man who sat on the throne, Edward III. had testified to his sense of its importance by ordering a gold coinage bearing a device showing the armed strength and sovereignty of England based on the sea" (Armada, Introd.). It is impossible to make intelligible the course of the many wars which the English waged with the French in the middle ages unless the true naval position of the former is rightly appreciated. Why were Crécy, Poitiers, Agincourt—not to mention other combats—fought, not on English, but on continental soil? Why, during the so-called "Hundred Years' War," was England in reality the invader and not the invaded? Was of the present generation greater at last aware of the significance of naval defence, and know that, if properly utilized, it is the best security against invasion that a sea-surrounded state can enjoy. It is not, however, commonly remembered that the same condition of security existed and was properly valued in medieval times. The battle of Sluys in 1340 rendered invasion of England as impracticable as did that of La Hogue in 1692, that of Quiberon Bay in 1750 and that of Trafalgar in 1805; and it permitted, as did those battles, the transport of troops to the continent to support Great Britain's allies in wars which, had she not been strong at sea, would have been waged on the soil of her country. Her early continental wars, therefore, are proofs of the long-established efficiency of her naval defences. Notwithstanding the greater attention now paid to naval affairs, it is doubtful if Great Britain even yet recognizes the extent to which her security depends upon a good fleet as fully as her ancestors did seven centuries ago. The narrative of pre-Elizabethan campaigns is interesting merely as a story; and, when told—as, for instance, D. Hannay has told it in the introductory chapters of his *Short History of the Royal Navy*—it will be found instructive and worthy of careful study at the present day. Early of the principal events in England's early naval campaigns may be taken as an illustration of the idea conveyed by the term "sea-power," and of the accuracy with which its meaning was apprehended at the time. To take a very early case, we may cite the defeat of Eustace the Monk (see DOVER: Battle of) by Hubert de Burgh in 1217. Reinforcements and supplies had been collected at Calais for conveyance to the army of Prince Louis of France and the rebel barons who had been defeated at Lincoln. The reinforcements tried to cross the Channel under the escort of a fleet commanded by Eustace. Hubert de Burgh, who had stoutly held Dover for King John, and was faithful to the young Henry III., heard of the enemy's movements. "If these people land," said he, "England is lost; let us therefore boldly meet them." He reasoned in almost the same words as Raleigh about four centuries afterwards, and undoubtedly " had grasped the true principles of the defence of England." He put to sea and defeated his opponent. The fleet on which Prince Louis and the rebellious barons had counted was destroyed; and with its fleet which, so admirably planned, no more fruitful battle has been fought by Englishmen on water?" (Hannay, p. 7.) As introductory to a long series of naval operations undertaken, with a like object it has deserved detailed mention here.

The sixteenth century was marked by a decided advance in both the development and the application of sea-power. Previously its operation had been confined to the Mediterranean or to coast waters outside it. Spanish or Basque seamen—by their proceedings in the English Channel—had proved the practicability of, rather than been engaged in, ocean warfare. The English, who withstood them, have since learned to sea so rough, to seasons so uncertain and to weather so boisterous, that the ocean had few terrors for them. All that was wanting was a sufficient inducement to seek distant fields of action and a development of the naval art that would permit them to be reached. The discovery of the New World supplied the first; and consequently increased length of voyages and of absence from the coast led to the second. The world had been moving onwards in other things as well as in navigation. Intercommunication was becoming more and more frequent. What was done by one people was soon known to others. It is said that the English, with their new knowledge, would have been in the exploration of remote regions, they were wanting in maritime enterprise. The career of the Cabots would of itself suffice to render such a supposition doubtful. The English had two good reasons for postponing voyages to and settlement in far-off lands. They had their hands full nearer home; and they thoroughly, and as it were by instinct, understood the conditions on which permanent expansion must rest. They wanted to make sure of the line of communications first. To effect this a sea-going marine of both war and commerce, and, for further expansion, stations on the way were essential. The English, in the course of time, furnished evidence of the wisdom and thoroughness of their procedure. Taught by the experience of the Spaniards and the Portuguese, when unimpeded by the political circumstances of the time, and provided with suitable equipment, the English displayed their energy in distant seas. It now became simply a question of the efficiency of sea-power. If efficiency was not a quality of the English sea-power, then their efforts were bound to fail; and, more than this, the position of their country, challenging as it did what was believed to be the greatest of maritime states, would have been altogether precarious. The principal expeditions now undertaken were distinguished by a characteristic peculiar to the people, and not to be found in connexion with the exploring or colonizing activity of most other great nations even down to our own time. They were really unofficial speculations in which, if the government took part at all, it was for the sake of the profit expected, and almost, if not exactly, like any private adventurer. The participation of the government, nevertheless, had an aspect which it is worth while to note. It conveyed a hint—and quite consciously—to all whom it might concern that the speculations were "underwritten" by the whole sea-power of England. The forces of more than one state had been used to protect its maritime trade from the assaults of enemies in the Mediterranean or in the Narrow Seas. They had been used to ward off invasion and to keep open communications across not very extensive areas of water. In the sixteenth century they were first relied upon to support distant commerce, whether carried on in a peaceful fashion or under aggressive forms. This, naturally enough, led to collisions. The contention waxed hot, and was virtually decided when the Armada shaped course to the northward after the fight off Gravelines.

The expeditions against the Spanish Indies and, still more, those against Philip II.'s peninsular territory had helped to define
the limitations of sea-power. It became evident, and it was made still more evident in the next century, that for a great country to be strong it must not rely upon a navy alone. It must also have an adequate and properly organized mobile army. Notwithstanding the number of times that this lesson has been repeated, Great Britain has been slow to learn it. It is doubtful if she has learned it even yet. English seamen in all ages seem to have mastered it fully; for they have always had considerable experience. As regards three centuries—that expeditions against foreign territory overseas should be accompanied by a proper number of land-troops. On the other hand, the necessity of organizing the army of a maritime insular state and of training it with the object of rendering effective aid in operations of the kind in question, has rarely been perceived and acted upon by others. The result has been a long series of inglorious or disastrous affairs, like the West Indies voyage of 1595-1596, the Cadiz expedition of 1625 and that to the Île de Ré of 1627. Additions might be made to this list. The failures of the English were explained by alleging differences or quarrels between the naval and the military commanders. This way of explaining them, however, is nothing but the inveterate critical method of the streets by which cause is taken for effect and effect for cause. The differences and quarrels arose, no doubt; but they generally sprang out of the reconciliations consequent on, not producing, the want of success. Another manifestation of the way in which sea-power was first observed in the 17th century. It suggested the adoption of, and furnished the instrument for, carrying out a distinct maritime policy. What was practiced during the 17th century had taken place, therefore, England this phenomenon was now of respectable age. Long voyages and cruises of several ships in company had been frequent during the latter half of the 16th century and the early part of the 17th. Even the grandfathers of the men who sailed with Blake and Penn in 1652 could not have known a time when ships had never crossed the ocean, and squadrons kept together for months had never cruised. However imperfect it may have been, a system of provisioning ships and supplying them with stores, and of preserving discipline, had been developed. The English fleet had not only been improved, but had proven fairly satisfactory. The parliament and the Protector in turn found it necessary to keep a considerable number of ships in commission, and make them cruise and operate in company. It was not till well on in the reign of Queen Victoria that the man-of-war's man was finally differentiated from the merchant seaman; but, two centuries before, some of the distinctive marks of the former had already begun to be noticeable. There were seamen in the time of the Commonwealth who rarely, perhaps some who never, served aloft except in a man-of-war. Some of the interesting naval families which were settled at the mouth and the eastern ports, and which—from father to son—helped to recruit the ranks of bluejackets till a date later than that of the launch of the first ironclad, could carry back their professional genealogy to at least the days of Charles II., when, in all probability, it did not first start. Though landsmen continued even after the Civil War to be given naval appointments, and though a permanent corps, through the ranks of which every one must pass, had not been formally established, a body of real naval officers—men who could handle their ships, supervise the working of the armament and exercise military command—had been formed. A navy, accordingly, was now a weapon of undoubted keenness, capable of very effective use by any one who knew how to wield it. Having tasted the sweets of intercourse with the Indies, whether in the occupation of Portugal or of Spain, both English and Dutch were desirous of getting a larger share of them. English maritime commerce had increased and needed naval protection. If England was to maintain the international position to which, as no one denied, she was entitled, that commerce must be permitted to expand. The minds of men in western Europe, moreover, were set upon obtaining for their country territories in the New World, the amenities of which were now known. From the reign of James I. the Dutch had shown great jealousy of English maritime enterprise. Where it was possible, as in the East Indian Archipelago, they had destroyed it. Their naval resources were great enough to let them hold English shipping at their mercy, unless a grand effort were made to protect it. The Dutch conducted the carrying trade of most of the world, and the monopoly of this they were resolved to keep, while the English were resolved to share in it. The exclusion of the English from every trade-route, except such as ran by their own coast or crossed the Narrow Seas, seemed a by no means impossible contingency. There seemed also to be but one way of preventing it, viz. by war. The supposed unfriendliness of the Dutch, or at least of an important party amongst them, to the regicide government in England helped to force the conflict. The Navigation Act of 1661 was passed and regarded as a covert declaration of hostilities. So the first Dutch war began. It established England's claim to compete for the position of a great maritime commercial power.

The rise of the sea-power of the Dutch, and the magnitude which it attained in a short time, and in the most adverse circumstances, have no parallel in history. The case of Athens was different, because the Athenian power had not so much been unconsciously developed out of a great maritime trade, as based on a military marine deliberately and persistently fostered during many years. Thirlwall believes that it was Solon who "laid the foundations of the Attic navy" (Hist. Greece, ii. p. 55), century before Sallust describes the Athenian navy. The Athenian war-chest convinced his fellow-citizens that their navy ought to be increased. Perhaps the nearest parallel with the power of the Dutch was presented by that of Rhodes, which rested largely on a carrying trade. The Rhodian undertakings, however, were by comparison small and restricted in extent. Motley declares of the Seven United Provinces that they "commanded the ocean" (United Provinces, ii. 132), and that it would be difficult to exaggerate the naval power of the young Commonwealth. Even in the days of Spain's greatness English seamen positively declined to admit that she was stronger than England on the sea; and the story of the Armada justified their view. The first two Dutch wars were, therefore, contests between the two foremost naval states of the world for what was primarily a maritime object. The identity of the cause of the first and of the second war will be discerned by any one who compares what has been said about the circumstances leading to the former, with Monk's remark as to the latter. He said that the English wanted a larger share of the trade enjoyed by the Dutch. It was quite in accordance with the spirit of the age that the Dutch should try to prevent, by force, this want from being satisfied. Anything like free and open competition was repugnant to the general feeling. The highroad to both individual wealth and national prosperity was believed to lie in securing a monopoly. Merchants or manufacturers who called for the abolition of monopolies granted to particular courtiers and favourites had not the smallest intention, on gaining their object, of throwing open to the enterprise of all what had been monopolized. It was to be kept for the exclusive benefit of some privileged or chartered company. It was the same in greater affairs. As Mahan says, 'To secure to one's own people a disproportionate share of the benefit of sea-commerce every effort was made to exclude others, either by the peaceful legislative methods of monopoly or prohibitory regulations, or, when these failed, by direct violence.' The apparent wealth of Spain was believed to be due to the rigorous manner in which foreigners were excluded from trading with the Spanish overseas territories. The skill and enterprise of the Dutch having enabled them to force themselves into this trade, they were determined to keep it to themselves. The Dutch East India Company was a powerful body, and largely dictated the maritime policy of the country. We have thus come to an interesting point in the historical consideration of sea-power. The Elizabethan conflict with Spain had practically settled the question whether or not the
expanding nations were to be allowed to extend their activities to territories in the New World. The first two Dutch Wars were to settle the question whether or not the ocean trade of the world was to be open to any people qualified to engage in it. We can see how largely these were commercial questions, how much depended on the solution found for them, and how plain it was that they must be settled by naval means.

Mahan’s great survey of sea-power opens in 1660, midway between the first and second Dutch Wars. “The sailing-ship era, with its distinctive features,” he tells us, “had fairly begun.” The art of war by sea, in its more important details, had been settled by the first war. From the beginning of the second the general features of ship design, the classification of ships, the armament of ships, and the handling of fleets, were as a rule without essential alteration until the date of Navarino. Even the tactical methods, except where improved on occasions by individual genius, altered little. The great thing was to bring the whole broadside force to bear on an enemy. Whether this was to be impartially distributed throughout the hostile line or concentrated on one part of it depended on the character of particular admirals. It would have been strange if a period so long and so rich in incidents had afforded no materials for forming a judgment on the real significance of sea-power. The text, so to speak, chosen by Mahan is that, notwithstanding the changes wrought in naval material since 1660, which is told in the history of the past instructive illustrations of the general principles of maritime war. These illustrations will prove of value not only in those wider operations which embrace a whole theatre of war,” but also, if rightly applied, “in the tactical use of the ships and weapons” of our own day. By a remarkable coincidence the same doctrine was being preached at the same time and quite independently by Vice-Admiral Philip Colobm in his work on Naval Warfare. As a prelude to the second Dutch War we find a repetition of a process which had been adopted somewhat earlier. That was the permanent conquest of transoceanic territory. Until the 17th century had well begun, naval, or combined naval and military, operations against the distant possessions of an enemy had been practically restricted to raiding or plundering attacks on commercial centres. The Portuguese territory in South America having come under Spanish dominion in consequence of the annexation of Portugal to Spain, the Dutch—as the power of the latter country declined—attempted to reduce part of that territory into permanent possession. This improvement on the practice of Drake and others was soon seen to be a game at which more than one could play. An expedition sailed under Cornelis Houtman in 1595, another under Willem Bontekoe in 1596, and the Spanish islands of the East Indies were seized by the Dutch during the century. In 1664 an English force occupied the Dutch North American settlements on the Hudson. Though the dispossessed rulers were not quite in a position to throw stones at sinners, this was rather a raid than an operation recognized warfare, because it preceded the formal outbreak of hostilities. The conquered territory remained in English hands for more than a century, and thus testified to the efficacy of a sea-power which Europe had scarcely begun to recognize. Neither the second nor the third Dutch War was a decisive turning point in the history of either country, though Mahan, who lived to see the loss of the French fleet at Trafalgar, would have been pleased to have been spared the necessity of writing about it. The service of the year 1665 of the English fleet under the Prince of Orange against the Dutch on the coast of the Baltic is, according to Mahan, the only success which can be claimed for any English fleet in the whole of this period. But it may well be doubted if it did any permanent good. Mahan’s survey answers, in a sense, a formal warning to his fellow-citizens not to adopt it. In France, within the last years of the 19th century, it found, and appears still to find, adherents enough to form a school. The reappearance of belief in demonstrated impossibilities is a recognized incident in human history; but it is usually confined to the emotional or the vulgar. It is serious and filled with menaces of disaster when it is held by men thought fit to administer the affairs of a nation or advise concerning its defence. The third Dutch War may not have settled the question of whether England was a great maritime power; but it seems likely to have helped to place that country above all other maritime states—indeed, it has been noted, in the position, in fact, which Great Britain, the United Kingdom, the British Empire, whichever name may be given it, has retained up to the present. It also manifested in a very striking form the efficacy of sea-power. The United Provinces, though attacked by two of the greatest monarchies in the world, France and England, were not destroyed. Indeed, they preserved much of their political importance in the state system of Europe. The Republic owed this astonishing result partly to the skill of one or two men, but mainly to its sea-power. Mahan, however, has had many respectable defenders. Mahan’s work has been used, it is true, to justify the overthrow of the French empire by the English in the greater war; but it has not been skilfully used in the cause of the United Kingdom. The annexation of New Zealand, for instance, is not to be explained on Mahan’s principles. The war, which was ended by the Peace of Ryswick in 1697, presents two features of exceptional interest: one was the havoc wrought on English commerce by the enemy; the other was Torrington’s conduct at and after the engagement off Beach Head. Mahan discusses the former with his usual lucidity. At no time has war against commerce been conducted on a larger scale and with greater results than during this period. England suffered “infinitely more than in any former war.” Many of her merchants were ruined; and it is affirmed that the English shipping was reduced to the necessity of sailing under the Swedish and Danish flags. The explanation is that Louis XIV. made great efforts to keep up powerful fleets. The English navy was so fully occupied in watching these that no ships could be spared to protect England’s maritime trade. This is only
another way of saying that her commerce had increased so largely that the navy was not strong enough to look after it as well as oppose the enemy's main force. Notwithstanding her losses she was on the winning side in the conflict. Much misery and ruin had been caused, but not enough to affect the issue of the war.

Torrington's proceedings in July 1690 were at the time the subject of much angry discussion. The debate, still meriting our attention, was, however, about the question, whether the clergy of the Church of England, through its head the archbishop of Canterbury, had not been too indulgent to the late bishops and to the clergy of the Protestant establishment. What is happening now will probably be pertinent and needful in the consideration of the question of how the clergy of the Church of England, through its head the archbishop of Canterbury, has not been too indulgent to the late bishops and to the clergy of the Protestant establishment.

The "Fleet in being." The matter has to be noticed here, because it involves the consideration of a question of naval strategy which must be understood by those who wish to know the real meaning of the term sea-power, and who ought to learn that it is not a thing to be idly risked or thrown away at the bidding of the ignorant and the irresponsible. Arthur Herbert, earl of Torrington—the last peerage is a viscountcy held by the Byng family—was in command of the allied English and Dutch fleet in the English Channel. The disparity of force, "he says, "was still in favour of France in 1690, but not so great as the year before." We can measure the ability of the then English government for conducting a great war, when we know that, in its wisdom, it had still further weakened the fleet by dividing it. Vice-Admiral Killigrew had been sent to the Mediterranean with a squadron, and had neglected, and indeed refused when urged, to take the necessary steps to repair this error. The government having omitted, as governments sometimes do, to gain any trustworthy intelligence of the strength or movements of the enemy, Torrington suddenly found himself confronted by a considerably superior French fleet under Tourville, one of the greatest French admirals. Whether he would have done as well had he engaged it instead of the other unoccupied fleet with any hope of success, he would not be able to estimate, for the fleet was at anchor in the Channel, and Torrington had no opportunity of doing battle with it. The French fleet might have manoeuvred to slip past it to the westward and join his force with that under Killigrew, which would make him strong enough to hazard a battle. This proved impracticable. There was then one course left—to retire before the French, but not to keep far from them. This course Torrington did not believe to be the best. He knew that, though not strong enough to engage their whole fleet, he would be quite strong enough to fight and most likely beat it, when a part of it was trying either to deal with our ships to the westward or to cover the disembarkation of an invading army. He, therefore, proposed to keep his "fleet in being" in order to fall on the enemy when the latter would have two affairs at the same time on his hands. Vice-Admiral Colbom rose to a greater height than was usual even with him in his criticism of this campaign. What Torrington did was merely to reproduce on their house parties, and to have been noticed dozens of times on shore, viz., the menace of the flanking enemy. In land warfare this is held to give exceptional opportunities for the display of good generalship, but, to quote Mahan over again, a navy "acts on an element strange to most writers, its members have been from time immemorial a strange race apart, without prophets of their own, neither themselves nor their calling understood." Whilst Torrington has had the support of the seamen, his opponents have been landmen. For the crime of being a good strategist he was brought before a court-martial, but acquitted. His sovereign, who had been given the crowns of three kingdoms to defend our late kings showed his respect for officers, for they did not make "idle and contrary" proposals, and disregarding its solemn finding. The admiral who had saved his country was dismissed from the service. Still, the principle of the "fleet in being" lies at the bottom of all sound strategy.

Admiral Colbom has pointed out a great change of plan in the later naval campaigns of the 17th century. Improvements in naval architecture, in the methods of preserving food, and in the arrangements for keeping the crews healthy, the change in naval operations. The Dutch, as allies of the Spanish, kept a fleet in the Mediterranean for many months. The great de Ruyter was mortally wounded in one of the battles there fought. In the War of the Spanish Succession the Anglo-Dutch fleet found its principal scene of action eastward of Gibraltar. This, as it were, set the fashion for future wars. It became a kind of tacitly accepted rule that the operation of British sea-power was to be felt in the enemy's, rather than in British waters. The hostile coast was regarded strategically as the British frontier, and the sea was looked upon as territory which the enemy must be prevented from invading. Acceptance of this principle led in time to the so-called "Inches des "Brest and Toulon. The name was misleading. As Nelson took care to explain, there was no desire to keep the enemy's fleet in; what was desired was to be near enough to attack it if it came out. The wisdom of the plan is undoubted. The hostile navy could be more easily watched and more easily followed if it put to sea. To carry out this plan a navy stronger in number of ships or in general efficiency than that of the enemy was necessary. With the exception of that of American Independence, which will, therefore, require special notice, England's subsequent great wars were conducted in accordance with the rule.

In the early part of the 18th century there was a remarkable manifestation of sea-power in the Baltic. Peter the Great, having created an efficient army, drove the Swedes from the coast provinces south of the Gulf of Finland. Like the earlier monarchs of which we have spoken, sea-power. Russia, in the Baltic at least, now became a naval state. A large fleet was built, and, indeed, a considerable navy established. It was a purely artificial creation, and showed the merits and defects of its character. At first, and when under the eye of its creator, it was strong; when Peter was no more it
dwandered away, and, when needed again, had to be created afresh. It enabled Peter the Great to conquer the neighbouring portion of Finland, to secure his coast territories and to dominate the Baltic. In this he was assisted by the exhaustion of Sweden consequent on her endeavours to retain, what was no longer possible, the position of a quasi-great power which she had held since the days of Gustavus Adolphus. Sweden had been further weakened, especially as a naval state, by almost incessant wars with Denmark, which prevented all hope of Scandinavian predominance in the Baltic, the control of which sea has in these days passed into the hands of another state possessing a quickly created navy—the modern German empire.

The War of the Spanish Succession left Great Britain a Mediterranean power which she had been, as the result of twice losing Minorca, she still holds. In the War of the Austrian Succession, France was forced to give up her conquests for want of a navy, and England saved her position by her sea-power, though she had failed to use it to the best advantage” (Mahan, Influence on Hist. p. 280). This shows, as we shall find that a later war showed more plainly, that even the government of a thoroughly maritime country is not always sure of conducting its naval affairs wisely. The Seven Years’ War is included, in the display of the efficacy of sea-power.

It was this which put the British in position to seize the Carlisle and which European race was to rule in India, and led to a British occupation of Havana in one hemisphere and of Manila in the other. In the same war Great Britain learnt how, by a feeble use of sea-power, a valuable possession like Minorca may be lost. At the same time, the maritime trade and the general prosperity of the kingdom increased enormously. The result of the conflict made plain to all the paramount importance of having in the principal ports in the government men capable of understanding what war is and how it ought to be conducted.

This lesson, as the sequel demonstrated, had not been learned when Great Britain became involved in a war with the insurgent colonies in North America. Mahan’s comment is striking: “The magnificence of sea-power and its value had perhaps been more clearly shown by the uncontroverted sway and consequent exaltation of one belligerent; but the lesson thus given, if more striking, is less vividly interesting than the spectacle of that sea-power meeting a foe worthy of its steel, and excited to exertion by a strife which endangered not only its most valuable colonies, but even its own shores” (Influence on Hist. p. 338). Great Britain was, in fact, drawing too largely on the prestige acquired during the Seven Years’ War, and was governed by men who did not understand the first principles of naval warfare, and would not listen to those who did. They quite ignored the teaching of the then comparatively recent wars which has been alluded to already—that the enemy’s coast should be looked upon as the frontier. A century and a half earlier the Dutchman Grotsius had written—

“Quae meta Britannis
Litora sunt aliis.”

Though ordinary prudence would have suggested ample preparation, British ministers allowed their country to remain unprepared. Instead of concentrating their efforts on the main objective, they fluttered away force in attempts to relieve two beleaguered garrisons under the pretext of yielding to popular pressure, which is the official term for acting on the advice of irresponsible and uninstructed busi-bodies. “Depuis le début de la crise,” says Captain Chevalier, “les ministres de la Grande-Bretagne s’étaient montrés inférieurs à leur tâche.” An impressive result of this was the repeated appearance of powerful and indeed numerous British hostile fleets in the English Channel. The war—notwithstanding that land operations constituted an important part of it, and in the end settled the issue—was essentially oceanic. Captain Mahan says it was “purely maritime.” It may be true that, whatever the belligerent result, the political result, as regards the status of the insurgent colonies, would have been the same. It is in the highest degree probable, indeed it closely approaches to certainty, that a proper use of the British sea-power would have prevented independence from being conquered, as it were, at the point of the bayonet. There can be no surprise in store for the student acquainted with the vagaries of strategists who are influenced in war by political in preference to military requirements. Still, it is difficult to repress an emotion of astonishment on seeing that a British government intentionally permitted de Grasse’s fleet and the French army in its convoy to cross the Atlantic unmolested, for fear of postponing for a time the revictualling of the garrison beleaguered at Gibraltar. Washington’s opinion as to the importance of the naval factor has been quoted already; and Mahan does not put the case too strongly when he declares that the success of the Americans was due to “sea-power being in the hands of the French and its improper distribution by the British.” The French navy, misdirected as it was, made a good fight of it, never allowed itself to be decisively beaten in a considerable battle, and won at least one great victory. At the point of contact with the enemy, however, it was not in general so conspicuously successful as it was in the Seven Years’ War, or as it was to be in the great conflict with the French republic and empire. The truth is that its opponent, the French navy, was never so thoroughly a sea-going force as it was in the War of American Independence; and never so closely approached the British in sea experience as it did during the American Revolution. It is a fact that Great Britain was very nearly, but fortunately not quite, as familiar with the sea as she was; and she never found it so hard to beat them, or even to avoid being beaten by them. An Englishman would, naturally enough, start at the conclusion confronting him, if he were to speculate as to the result of more than one battle had the great Suffren’s captains and crews been quite up to the level of those commanded by stout old Sir Edward Hughes. Suffren, it should be said, before going to the East Indies, had “thirty-eight years of almost uninterrupted sea-service” (Laughton, Studies in Naval Hist. p. 103). A glance at a corner of the world, with the scenes of the general actions of the war dotted on it, will show how notable oceanic the campaigns were. The hostile fleets met over and over again on the far side of the Atlantic and in distant Indian seas. The French navy had penetrated into the ocean as readily and as far as the British could do. Besides this, it should be remembered that it was not until the 12th of April 1782, when Rodney in one hemisphere and Suffren in the other showed them the way, that British officers were able to escape from the fetters imposed on them by the Fighting In-structions—a fact worth remembering, in days in which it is sometimes proposed, by establishing schools of naval tactics on shore, to revive the pedantry which made a decisive success in battle nearly impossible.

The mighty conflict which raged between Great Britain on one side and France and her allies on the other, with little intermission, for more than twenty years, presents a different aspect from that of the war last mentioned. The victories which the British fleet was to gain were generally to be overwhelming; if not, they were looked upon as almost defeats. Whether the fleet opposed to the British was or was not the more numerous, the result was generally the same—the enemy was beaten. That there was a discoverable reason for this is certain. A great deal has been made of the disorganization in the French navy consequent on the confusion of the Revolution. That there was disorganization is undoubted; that it did impair discipline and, consequently, general efficiency will not be disputed; but that it was consideruble enough to account by itself for the French naval defeats is altogether inadmissible. Revolutionary disorder had invaded the land-forces to a greater degree than it had invaded the sea-forces. The British ship-of-the-line, with the fighting of her officers, had been beyond measure more frequent than was the case with the naval officers. In spite of all this the French armies were on the whole—even in the early days of the Revolution—extraordinarily successful. In 1792 “the most formidable invasion that ever threatened France,” as Alison calls it, was repelled, though the invaders were the highly disciplined and veteran armies of Prussia and Austria. It was nearly two years
later that the French and British fleets came into serious conflict. The first great battle, "The Glorious First of June," though a tactical victory for Great Britain, was a strategic defeat. Villaret Joyeuse manœuvred so as to cover the arrival in France of a fleet of merchant vessels carrying sorely needed supplies of food, and in this he was completely successful. His plan involved the probability, almost the necessity of fighting a general action which he was not at all sure of winning. He was beaten, it is true; but the French made so good a fight of it that their defeat was not nearly so disastrous as the later defeats of the Nile or Trafalgar, and—at the most—not more disastrous than the battle of the Virginia capes, as indeed it was not more than a disorder or disorganization in the French fleet at the date of any one of those affairs. Indeed, if the French navy was really disorganized in 1794, it would have been better for France—judging from the events of 1798 and 1805—if the disorganization had been allowed to continue. In point of organization the British navy was inferior, and in point of discipline not much superior to the French at the earliest date; at the later dates, and especially at the latest, owing to the all-prevailing energy of Napoleon, the British was far behind its rival in organization, in science, and lack of the patriotic spirit of its officers which parted without going to sea. Great Britain had the immense advantage of counting among her officers some very able men. Nelson, of course, stands so high that he holds a place entirely by himself. The other British chiefs, good as they were, were not conspiciously superior to the Hawkes and Rodneys of an earlier day. Howe was a great commander, but he did little more than just appear on the scene in the Revolutionary War. Almost the same may be said of Hood, of whom Nelson wrote, "He is the greatest sea-officer I ever knew" (Laughton, Nelson's Lett. and Desp. p. 71). There must have been something, therefore, beyond the meritorious qualities of the principal British officers which helped the navy so consistently to victory. The many triumphs won could not have been due in every case to the individual superiority of the British admiral or captain to his opponent. There must have been bad as well as good among the hundreds on the lists; and we cannot suppose that Providence had so arranged it that in every action in which a British officer of inferior ability commanded, a still more inferior French commander was opposed to him.

The explanation of the nearly unbroken success is that the British was a thoroughly sea-going navy and, became more and more so every month; while the French, since the close of the American War, had lost to a great extent its sea-going character and, because it had been shut up in its ports, became less and less sea-going as hostilities continued. The war had been for the British, in the words of Theodore Roosevelt, "a continuous course of victory won mainly by seamanship." The British navy, as regards sea experience, especially of the officers, was immensely superior to the French. This enabled the British government to carry into execution sound strategic plans, in accordance with which the coasts of France and its allied countries were regarded as the British frontier to be watched or patrolled by British fleets.

Before the long European war had been brought to a formal ending we received some rude rebuffs from another opponent of unsuspected vigour. In the quarrel with the United States, the so-called "War of 1812," the great sea-power of the British in the end asserted its influence, and the Americans suffered much more severely, even absolutely, than their enemy. At the same time the British might have learned, for the Americans did their best to teach it, that over-confidence in numerical strength and narrow professional self-satisfaction are nearly sure to lead to reverses in war, and not unlikely to end in grave disasters. The British had now to meet the elite of one of the finest communities of seamen ever known. Even in 1776 the Americans had a great maritime commerce, which, as Mahan says, "had come to be the wonder of the statesmen of the mother country." In the six- and thirty-years which had elapsed since then this commerce had further increased. There was no finer nursery of seamen than the then states of the American Union. Roosevelt says that "there was no better seaman in the world" than the American, who "had been bred in his work from infancy." A large proportion of the population "was engaged in sea-going pursuits of a nature strongly tending to develop a resolute and hardy character in the men that followed them" (Naval War of 1812, 3rd ed., pp. 29, 30). Having little or no naval protection, the American seaman had to defend himself in many circumstances, and was compelled to familiarize himself with the use of arms. The men who passed through this practical, and therefore supremely excellent, training school were numerous. Very many of the first trained by the English men-of-war, and sons in French ships. The state navy which they were called on to man was small; and therefore its personnel, though without any regular or avowed selection, was virtually and in the highest sense a picked body. The lesson of the War of 1812 should be learned by Englishmen of the present day, when a long naval peace has generated a confidence in numerical superiority, in the mere possession of heavier matériel, and in the merits of a rigidly uniform system of training, such confidence, as experience has shown, being often the forerunner of misfortune. It is true that in the last great war, the American sea-power came to its own.

Indeed, they certainly have been exaggerated by Americans and even by the British. To take the frigate actions alone, as being those which properly attracted most attention, the captures in action amounted to three on each side, the proportionate loss to the Americans, considering the smallness of their fleet, being immensely greater than to the British. We also see that no British frigate was taken after the first seven months of a war which lasted two and a half years. Attempts have been made to spread a belief that British reverses were due to nothing but the greater size and heavier guns of the enemy's ships. It is now established that the superiority of these details, which the Americans certainly enjoyed, was not great, and not of itself enough to account for their victories. Of course, if superiority in mere matériel, beyond a certain well-understood amount, is possessed by one of two combatants, his antagonist can hardly escape defeat; but it was never alleged that size of ship or calibre of guns—greater within reasonable limits than the British had—necessarily led to the defeat of British ships by the French or Spaniards. In the words of Admiral Jurien de la Gravière: "The ships of the United States constantly fought with the chances in their favour." All this is indisputable. If a still more pre-eminent than ever. The words used half a century before by a writer in the great French Encyclopédie seemed more exact than when first written. "L'Empire des mers," he says, is "le plus avantageux de tous les empires; les Phéniciens le possédaient autrefois et c'est aux Anglais que cette gloire appartient aujourd'hui sur toutes les puissances maritimes" (Encyclopédie, 7th January 1765, art. "Thalassarchie"). Vast outlying territories had been acquired or were more firmly held, and the communications of all the overseas possessions of the United States were secure against all possibility of serious menace for many years to come. Her sea-power was so ubiquitous and all-pervading that, like the atmosphere, Great Britain rarely thought of it and rarely remembered its necessity or its existence. It was not till a late date that the greater part of the nation—for there still are some exceptions—perceived that it was the medium apart from which the British empire could no more live than it could have grown up. Forty years after the fall of Napoleon she found herself again at war with a great power. She had as her ally the owner of the greatest
sea-power

nearly in the world except her own. Her foe, as regards naval forces, came the next in order. Yet so overwhelming was the strength of Great Britain and France on the sea that Russia never attempted to employ her navy against them. Not to mention other expeditions, considerable enough in themselves, military operations on the largest scale were undertaken, carried on for many months, and brought to a successful termination on a scene so remote that it was two thousand miles from the country of one, and three thousand from that of the other partner in the alliance.

"The stream of supplies and reinforcements, which in terms of modern war is called "communications," was kept free from even the threat of molestation, not by visible measures, but by the undisputed efficacy of a real, though imperceptible sea-power. At the close of the Russian War there were, even in influential positions, men who, undismayed by the consequences of mimicking in free England the cast-iron methods of Frederick the Great, began to measure British requirements by standards borrowed from abroad and altogether inapplicable to British conditions. Because other countries wisely abstained from relying on that which they did not possess, or had only imperfectly and with elaborate art created, the mistress of the seas was led to proclaim her disbelief in the very force that had made and kept her domain, and was urged to defend herself with fortifications by advise who, like Charles II. and the duke of York two centuries before, were "not ashamed of it." It was long before the peril into which this brought the empire was perceived; but at last, and in no small degree owing to the teaching of the experienced naval officers that in hand and insisted that a great maritime empire should have adequate means of defending all that made its existence possible.

In forms differing in appearance, but identical in essentials, the efficacy of sea-power was proved again in the American Civil War. If ever there were hostilities in which, manifestly, to the unobservant or short-sighted, naval operations might at first seem destined to count for little they were these. The sequel, however, made it clear that they constituted one of the leading factors of the success of the victorious side. The belligerents, the Northern or Federal states and the Southern or Confederate states, had a common land frontier of great length. The capital of each section was within easy distance of this frontier, and the two were not far apart. In wealth, population and resources the Federals were enormously superior. They alone possessed a navy, though at first it was a small one. The one advantage on the Confederate side was the large proportion of military officers which belonged to it and their rare excellence as soldiers. In physique as well as in moral the army of one side differed little from that of the other, perhaps the Federal army was slightly superior in the first, and the Confederate, as being recruited from a dominant white race, in the second. Outnumbered, less well equipped, and more scantily supplied, the Confederates nevertheless kept up the war, with many brilliant successes on land, for four years. Had they been able to maintain their trade with neutral states they could have carried on the war longer—and—not improbably—have succeeded in the end. The Federal navy, which was largely increased, took away all chance of this. It established effective blockades of the Confederate ports, and severed their communications with the world beyond. The Confederates, however, were able to supply themselves and their blockade runners with the necessary equipment, and at the same time, with a small force of ships were able to maintain an active commerce.
was what, in accordance with the limitations of sea-power, may be expected of a navy. It made the transport of the army across the sea possible, and enabled it to do what of itself the army could not have done, viz. overcome the last resistance of the enemy.

The issue of the Spanish-American War, at least as regards the defeat of Spain, was a foregone conclusion. That Spain, even without a serious insurrection on her hands, was unequal to the task of meeting so powerful an antagonist as the United States must have been evident even to Spaniards. However that may be, an early collapse of the Spanish defence was not anticipated, and however one-sided the war may have been seen to be, it furnished examples illustrating the economies of naval warfare and the advantage of numbers.

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SEARCH, or Visit and Search, a term used in international law and apparently derived in some confused way from the French word *visite*, which means search, combined with the English translation of the word *visite*. An attempt made by some writers to distinguish between visit and search only leads to misunderstanding. Search is the exact English equivalent of *visite*, and in the translation of the Declaration of London (Feb. 26, 1909) the translator has rightly rendered it so (art. 63).

The right of search belongs to belligerents alone. Its object is to verify the nationality of the vessel and if neutral to ascertain whether it carries contraband. The consequence of resistance to search is capture and trial in a Prize Court. "Forcible resistance to the legitimate exercise of the right of stoppage, search and capture," says art. 63 of the Declaration of London, 1909, "involves in all cases the condemnation of the vessel. The cargo is liable to the same treatment as that of an enemy vessel. Goods belonging to the master or owner of the vessel are treated as enemy goods." At the Hague Conference of 1907 the question of the liability to search of mail-ships gave rise to much discussion based on incidents arising out of the South African and Russo-Japanese Wars. It was ultimately decided that postal correspondence of neutrals and even of belligerents, and whether official or private, found on board a neutral or even an enemy ship should be "inviolable," and that though the ship should be detained, this correspondence had to be forwarded to its destination by the captor "with the least possible delay." The question of search and its consequence destined for or proceeding from a blockaded port. As regards the mail-ships themselves, apart from this inviolability of the correspondence, no exemption or privilege is extended beyond the injunction that they should not be searched, except when absolutely necessary, and then only "with as much consideration and expedition as possible," which might just as well be said of all ships stopped or searched on the high seas.

SEA-SERPENT. The belief in enormous serpents, both terrestrial and marine, dates from very early times. Homer (H.N. viii. 14), following Livy (Epit. xviii.), tells us of a land-serpent 120 ft. long, which Regulus and his army besieged with balistae, as though it had been a city, and this story is repeated by several other writers (Florus ii. 2; Val. Max. i. 8; Gallus vi. 3). The most prolific in accounts of the sea-serpent, however, are the early Norse writers, to whom the "Sö-Odn" was a subject both for prose and verse. Olaus Magnus (Hist. gent. sept. xxi. 24) describes it as 200 ft. long and 20 ft. round, and states that it not only ate calves, sheep and swine, but also "disturbs ships, rising up like a mast, and sometimes snaps some of the men from the deck," illustrating his account with a vivid representation of the animal in the very act. Pontoppidan, in his Natural History (Eng. trans., 1755, pp. 195 seq.), says that its existence was generally believed in by the sailors and fishermen of his time, and he recounts the means they adopted to escape it, as well as many details regarding its habits. The more circumstantial records of comparatively modern times may be conveniently grouped according to the causes which presumably gave rise to the phenomena described. (1) A number of porpoises swimming one behind another may, by their characteristic mode of half emerging from and then re-entering the water during respiration, produce the appearance of a single animal showing a succession of snake-like undulations. The figure given by Pontoppidan was very likely suggested by such an appearance, and a sketch of an animal seen off Llandudno by

1 Convention relative to certain restrictions on the exercise of the right of capture in wartime (art. 1).
SEa-SERPENT 561

several observers looks as though it might have had a similar origin, notwithstanding that this hypothesis was rejected by them. (2) A flight of sea-fowl on one occasion recorded by Professor Aldis produced the appearance of a snake swimming at the surface of the water. (3) A large mass of seaweed has on more than one occasion been cautiously approached and even harpooned under the impression that it was such a monster. (4) A pair of basking sharks (Selache maxima) furnishes an explanation of some of the recorded observations, as was first pointed out by Frank Buckland. These fish have a habit of swimming in pairs, one following the other with the dorsal fin and the upper lobe of the tail just appearing above the water, and, as each animal is fully 30 ft. long, the effect of a body of 60 or more ft. long moving through the water is readily produced. To this category belongs the famous serpent cast up on Strossnay, one of the Orkneys, of which its account was read to the Wernerian Society of Edinburgh; some of its vertebrae were preserved in the Royal College of Surgeons of London, and identified as those of Selache maxima by both Home and Owen. There is also evidence to show that specimens of Carcharodon must have existed more than 100 ft. long. (5) Ribbon-fish (Regalecus), from their snake-like form and great length (sometimes as much as 20 ft.), have been suggested as the origin of so-called "sea-serpent," amongst others by Dr. Andrew Wilson; but Dr. Günter, from what is known regarding the habits of these fish, does not regard the theory as tenable. (6) A gigantic squid (Architeuthis) was most likely the foundation of the old Norse accounts, and also of those which in the early part of the 19th century came so frequently from the United States as to gain for the animal the sobriquet of "American sea-serpent." These stories were so circumstantial, so consistent, and vouched for by persons of such eminence, that no doubt was possible (notwithstanding the cavilling of Mitchell) as to the existence of a strange marine monster of very definite character in those regions. The description commonly given of it has been summed up by Cool, somewhat thus:-(i.) general form of a serpent; (ii.) body, when viewed from above, a large flattened, eye generally not mentioned, some distinctly stating that it was not seen; (iv.) neck 12 to 16 in. in diameter; (v.) appendages on the head, neck or back (accounts here variable); (vi.) colour dark, lighter below; (vii.) swims at the surface, head thrown forward and slightly elevated; (viii.) procession steady and uniform, body straight but capable of being bent; (ix.) water spouting from its; (x.) in shape like a "run bogy." The annexed figure (fig. 1) represents one which was seen from H.M.S. "Daedalus," To show the reasonableness of this hypothesis, it may be added that gigantic Cephalopods are not uncommon on the shores of Newfoundland, and are occasionally met with on the coasts of Scandinavia, Denmark and the British Isles, and their extreme size seems to be above 60 ft., and, furthermore, that their mode of progression is by means of a jet of water forcibly expelled from the siphon, which would impart that equable motion to which several observers allude as being evidently not produced by any serpentine bending of the body. A very interesting account of a monster almost certainly originating in one of these squids is that of Hans Egede, the well-known missionary to Greenland; the drawing by Bing, given in his work, is reproduced here (fig. 3), an action which they have been observed in aquaria habitually to perform. Numerous other accounts seem to be explicable by this hypothesis, among them may be mentioned that of a huge "snake" seen by certain of the crew of the "Pauline" in the South Atlantic Ocean, which was said to be coiled twice round a large sperm whale, and then towered up many feet into the air and finally dragged the whale to the bottom. It is now well-known that the sperm whale kills and devours Architeuthis and other large oceanic Cephalopods, and no one who has read Bullen's vivid description, in The Cruise of the Cachalot, of the struggle between a cachalot and a giant squid, can doubt that it was a combat of this kind which was thus erroneously described. The immensely long arms of Architeuthis would not unnaturally be mistaken for a snake by sailors, and instead of being dragged to the bottom the whale doubtless sounded of its own accord as whales usually do (see CUTTLEFISH). (7) A sea-lion, or "Anson's seal" (Murina elephantina), was suggested by Owen as a possible explanation of the serpent seen from H.M.S. "Daedalus"; but as this was afterwards rejected by Captain M'Quahie, who stated that it could not have been any animal of the seal kind, it seems better to refer the appearance to a squid. (8) A plesiosaurus, or some other of the huge marine reptiles usually believed to be extinct, might certainly have produced the

FIG. 1.—Sea-serpent, as seen from H.M.S. "Daedalus." To show the reasonableness of this hypothesis, it may be added that gigantic Cephalopods are not uncommon on the shores of Newfoundland, and are occasionally met with on the coasts of Scandinavia, Denmark and the British Isles, and their extreme size seems to be above 60 ft., and, furthermore, that their mode of progression is by means of a jet of water forcibly expelled from the siphon, which would impart that equable motion to which several observers allude as being evidently not produced by any serpentine bending of the body. A very interesting account of a monster almost certainly originating in one of these squids is that of Hans Egede, the well-known missionary to Greenland; the drawing by Bing, given in his work, is reproduced here (fig. 3), an action which they have been observed in aquaria habitually to perform. Numerous other accounts seem to be explicable by this hypothesis, among them may be mentioned that of a huge "snake" seen by certain of the crew of the "Pauline" in the South Atlantic Ocean, which was said to be coiled twice round a large sperm whale, and then towered up many feet into the air and finally dragged the whale to the bottom. It is now well-known that the sperm whale kills and devours Architeuthis and other large oceanic Cephalopods, and no one who has read Bullen's vivid description, in The Cruise of the Cachalot, of the struggle between a cachalot and a giant squid, can doubt that it was a combat of this kind which was thus erroneously described. The immensely long arms of Architeuthis would not unnaturally be mistaken for a snake by sailors, and instead of being dragged to the bottom the whale doubtless sounded of its own accord as whales usually do (see CUTTLEFISH). (7) A sea-lion, or "Anson's seal" (Murina elephantina), was suggested by Owen as a possible explanation of the serpent seen from H.M.S. "Daedalus"; but as this was afterwards rejected by Captain M'Quahie, who stated that it could not have been any animal of the seal kind, it seems better to refer the appearance to a squid. (8) A plesiosaurus, or some other of the huge marine reptiles usually believed to be extinct, might certainly have produced the

FIG. 2.—Sea-serpent, as observed by Hans Egede.

FIG. 3.—Squid, rearing itself out of the water.

1 Mott, Nature, xxvii. pp. 293, 315, 338; also Land and Water (September 1872).
3 F. Smith, Times (February 1868); Herriman, quoted by Goss, op. cit. postea, p. 338; Pringle, Nature, xviii. p. 510 (1878).
6 Owen, Odontography, p. 50.
8 Study of Fishes, p. 521 (Edinburgh, 1880).
9 See note 2; also Deimholt, quoted in Zoologist, p. 1604 (1847).
10 Bigelow, Amer. Jour. Sci. vol. ii. pp. 147-165 (1820); Barnhurst, ibid. (1823); Zoologist, p. 1714 (1827).
13 M'Quahie, Times (October 1848); Ill. London, Nov. 1848.
14 A. E. Verrill, Trans. Connect. Acad. vol. v. part i. (1880), containing an account of all authenticated specimens of gigantic squids.
phenomena described, granting the possibility of one having survived to the present time. Newman 1 and Gosse 2 have both supported this theory, the former citing as evidence in its favour the report of a creature with the body of an alligator, a long neck and four paddles having been seen by Captain Hope of H.M.S. "Fly" in the Gulf of California. 3) No satisfactory explanation has yet been given of certain descriptions of the sea-serpent. Perhaps the most remarkable of these is Lieutenant Hayne's 4 account of a creature seen from H.M. yacht "Osborne." Two different aspects were recorded—the first being a ridge, 30 ft. in length, of triangular fins, each rising 5 to 6 ft. above the water, while the second view showed a large round head 6 ft. in diameter, with huge flappers, which moved like those of a turtle.

A more recent record of the appearance of a mysterious sea-monster is that of Messrs Meade-Waldo and Nicoll, both fellows of the Zoological Society, in the Proceedings of that Society for 1906, p. 719. These two gentlemen on the 7th of December 1905 were on board the yacht "Valhalls" off the coast of Brazil when at 10:15 A.M. they saw, 100 yards from the ship, a large fin projecting above the water to a height of 18 in. or 2 ft., and 6 ft. in length. Under the water to the rear of the fin was the shadow of a considerable body. When Mr Meade-Waldo directed his field-glasses upon the object he saw a great head and neck rise out of the water in front of the fin. The neck appeared about the thickness of a man's body, and 7 to 8 ft. in length. The head was of the same thickness and had a very turtle-like appearance, eye and mouth being distinctly seen. The object was going very slowly and shortly disappeared from view. In this case as in others the objects seen were not sufficient to identify the nature of the animal. It is difficult to attribute such a head and neck to any known fish, and turtles have no dorsal fin. It would thus appear that while, in every few exceptions, all the so-called "sea-serpents" can be explained by reference to some well-known animal or other natural object, there is still a residuum sufficient to prevent modern zoologists from denying the possibility that some such creature may after all exist.

Distinct in origin from the stories already touched on is the legend of the sea-serpent or bimam among the Arabs (Mae'di-i 266 seq.; Kazwini i. 132 seq.; Damiri i. 186 seq.), which is described in such a way as to leave no doubt that the waterspout is the phenomenon on which the fable rests. The bimam is the Hebrew lamman (E.V. "whale," "dragon"), which in Ps. cxlviii. 7 might in the context be appropriately rendered "waterspout." In addition to the sources already cited, the reader may consult Bland's Magazine, vol. iii. (1815); Lee, Sea Monsters Unsolved (International Fisheries Exhibition Handbook, London, 1883); Cowgell, Zoologist, pp. 1841, 1911 (1847); and Hoyle, Proc. Roy. Phys. Soc. Edin. vol. ix.

SEA-SICKNESS, the symptoms experienced by many persons when subjected to the pitching and rolling motion of a vessel at sea, of which depression, giddiness, nausea and vomiting are the most prominent. They generally show themselves soon after the vessel has begun to roll by the onset of giddiness and discomfort in the head, together with a sense of nausea and sinking at the stomach, which soon develops into intense sickness and vomiting. At first the contents of the stomach only are ejected; but thereafter bilious matter, and occasionally even blood, are brought up by the violence of the retching. The vomiting is liable to exacerbations according to the amount of oscillation of the ship; but seasons of rest, sometimes admitting of sleep, occasionally interpose. With the sickness there is great physical prostration, as shown in the palor of the skin, cold sweats, and feeble pulse, accompanied with mental depression and wretchedness. In almost all instances the attack has a favourable termination, except in the case of persons weakened by other diseases.

The conditions concerned in the production of the malady are apparently the presence of the ship; the sudden rise and fall of its movements; the emptying of the vessel disturbs that feeling of the relation of the body to surrounding objects upon which the sense of security rests. The nervous system being thus subjected to a succession of shocks fails to effect the necessary adjustments for equilibrium. Giddiness and with it nausea and vomiting follow, aided probably by the profound vasomotor disturbance which produces such manifest depression of the circulation. The displacement of the abdominal viscera, situated by the rolling and pitching of the vessel, may possibly operate to some extent, but it can only be as an accessory cause. The same may be said of the influence of the changing impressions made upon the visual organs by the shifting of the scene from the dark, and in the case of blind persons. Other contributory causes may be mentioned, such as the feeling that sickness is certain to come, which may bring on the attack in some persons even before the ship begins to roll, and the sea-nights of long duration, yielding medium, the varied odours met with on board ship, and circumstances of a like nature tend also to precipitate or aggravate an attack.

No means has yet been discovered which can altogether prevent the occurrence of sea-sickness, nor is it likely any will be found, until the pitching movements of the vessel are done away with. Sedatives are among the most potent drugs which can be employed; and doses of bromide of potassium, bromural or chloral, appear to act usefully in the case of many persons. On the other hand, some high authorities have recommended the employment of nerve stimulants such as coffee, cacao, and grog, which, if taken about two hours before sailing, will frequently prevent or mitigate the sickness. When the vessel is in motion, or even before starting, the recumbent position with the head low and the eyes closed should be assured, these being likely to prevent the sudden change in the weather, on deck rather than below—the body, especially the extremities, being well covered. Many persons, however, find comfort and relief from lying down in their berths with a hot blanket to the feet, by which means sleep may be obtained, and with it a temporary abatement of the giddiness and nausea. Should sickness supervene small quantities of some light food, such as thin arrowroot, greed, or soup, ought to be swallowed if possible, to lessen the sense of exhaustion. The vomiting may be mitigated by saline effervescing drinks, ice, chloriform, hydrocyanic acid or opium. Alcohol, although occasionally producing a general abatement of the symptoms, is generally rather to aggravate the sickness. Dr Chapman, in accordance with his view that the cause of the sickness is an undue influx of blood to the spinal cord, introduced a spinal ice-bag; but, like every other plan of treatment, it has only occasional success. Such remedies as nitrite of amyl and cocaine do not seem to yield any better results.

SEASON (O. Fr. sezon, sciezon, mod. saison, Lat. saeza, sowing time, the spring, from serere, to sow; in Lat. Lat. the word is found with its present meaning, the spring being considered as particularly the season of the year), a period of time, in particular, of the four periods into which the year is divided by the changing of the temperature, rainfall, and growth and decay of vegetation due to the annual motion of the sun in declination. Divided strictly according to this motion the year falls into four nearly equal seasons, "spring" (i.e. the springing time, when vegetation rises or shoots), "summer" (O. Eng. summer, cf. Dutch somer, Ger. Sommer, probably connected with Skt. sama, year), "autumn" (Lat. autumnus, autumnus, from awere, to increase, the period of ripening or fruiting) and "winter" (common Teutonic, possibly a nasallized form of root seen in "wet"). (See further Climate, Meteorology.)

SEATON, SIR JOHN COLBORNE, 1st BARON (1778-1863), British field marshal, was born at Lyndhurst, Hants, on the 16th of February 1778 and entered the 2oth (Lancashire Fusiliers) in 1794, winning thereafter every step in his regimental promotion without purchase. He first saw service in the Helmarsh expedition of 1799, and as a captain he took part in Sir Ralph Abercromby's attack on the fort on the 2oth of March 1801. He landed at Egypt, which he commanded, in the spring of 1802, and soon afterwards was brought under the notice of Sir John Moore, who obtained a majority for him and made him his military secretary. In this capacity he served through the Corunna campaign, and Sir John Moore's dying request that he should be given a lieutenant-colonelcy was at once complied with. In the summer of 1808 Lieut.-Colonel Colborne was again in the Peninsula, and before taking command of the 6thth regiment, he witnessed the defeat of the Spaniards at Ocaña. With the 66th he was present at Busaco and shared in the defence of the
lines of Torres Vedras, and next year, after temporarily com-
manding a brigade with distinction at the battle of Albuera,
he was gazetted to command the famous 32d Light Infantry
(Oxfordshire and Bucks L.I.) with which corps he is most closely
identified. He led it and was very severely wounded at Ciudad
Rodrigo (1812), and only rejoined in July 1814. Shortly after-
wards he was placed in temporary charge of a brigade of the
Light Division which he commanded in the Pyrenees engage-
ments. In 1849 he obtained his promotion to Major-General
by ballot of the House of Commons, and on the 14th he was
made colonel, aide-de-camp to the Prince Regent and K.C.B.
In 1815 Colborne and the 52nd at Waterloo played a
brilliant part in the repulse of the Old Guard at the close of the
day. Promoted major-general in 1825, Colborne was soon after-
wards made lieutenant-governor of Guernsey. In 1830 he served
as lieutenant-governor of Upper Canada. In 1838 at the moment
of his vacating the post on promotion to lieutenant-general,
the rebellion broke out, and he was ordered to assume the func-
tions of governor-general and commander-in-chief. He quickly
repressed the revolt, and in 1839, returning home, he was
posted to the peerage as Baron Seaton of Seaton in Devonshire.
From 1843 to 1849 he was high commissioner of the Ionian islands.
In 1854 he was promoted full general, and from 1855 to 1860 he
was commander-in-chief in Ireland. He died at Torquay on
the 17th of April 1863.

See the Life by G. C. Moore Smith (1906).

SEATTLE, the county-seat of King county, Washington,
U.S.A., and the largest city in the state, situated on a neck
of land between Elliott Bay (an eastern arm of Admiralty Bay), Puget
Sound, and the fresh-water Lake Washington; about 865 m.
by water N. of San Francisco, and 841 m. by rail N. of the penin-
insula, and about 28 m. N. of Tacoma. Pop. (1870) 1107;
(1880) 3533; (1890) 42,837; (1900) 80,671; (1910 U.S. census)
237,104. Of the population in 1900, 41,483 were of
foreign parentage and 22,003 were foreign-born. The area of
the city in 1910 was about 83,459 sq. m., of which 29,424 sq. m.
were water surface, 23 sq. m. being salt water. Seattle is
the terminus of the Northern Pacific, the Canadian Pacific (using
the tracks of the Northern Pacific), the Great Northern, the
Chicago, Milwaukee & Puget Sound (1900), the Oregon &
Washington (1901), a joint extension to Puyallup Sound of the
Pacific and Union Pacific), the Chicago, Burlington &
Quincy (using the tracks of the Northern Pacific), and the
Columbia & Puget Sound railways. It is served by inter-urban
electric lines to Tacoma and Everett; is the starting-point for
steamers to Alaska and to Prince Rupert, British Columbia
(Grand Trunk Pacific line), and for lines to Japan, China, Siberia,
Hawaii, the Philippines, Australia, Mexico, South America and
Pacific coast ports of the United States; and is a port of call for
coasting vessels. The city has the excellent salt-water harbour
of Elliott Bay to the W.; and to the E. there is a fresh-water
harbour, Lake Washington, connected with Puget Sound by the
Lake Washington Canal, an artificial improvement of the natural
waterway by Lake Union, a great V-shaped body of water in
the north-central part of the city, and by Salmon Bay, a narrow
channel setting in from Puget Sound on the N.W. Crossing the
S.W. part of the city is Duwamish river, which empties into
Elliott Bay. At Bremerton, Kitsap county, about 15 m. W. by
S. of Seattle, is the Puget Sound Navy Yard, protected by Fort
Ward, with one dry dock (1910) 836 ft. long and 110 ft. wide,
another 627 ft. long, and two docks 650 ft. long.
The surface of the city is hilly, the greatest height being 500 ft.
above sea-level. The higher hills, the better residential parts
of the city, are reached by cable railways or by electric railways
following winding routes. Many of the higher hills, especially
in the business district, have been removed by hydraulic power
and large parts regraded. Lake Washington, to the E., is 22 m.
long, and 1 to 4 m. wide, with an area of 50 sq. m., a shore line
of 80 m. and a maximum depth of 225 ft; its waters are deep
and clear and never freeze. In the north-central part of the city
is Green Lake, about 1 m. long and ½ m. wide. On Puget Sound
and Lake Union and about these two lakes, both with well-
wooded shores and both furnishing excellent boating and
 canoeing, are the principal parks of the city. In 1910 the total
park acreage under the park commissioners was 19,548 acres.
Immediately S. of Green Lake is Woodland Park (179 acres) with
athletic fields and a zoological collection. On the southern
shore of Union Bay (a circular, nearly landlocked arm of Lake
Washington) in the east-central part of the city is Washington
Park (163 acres). Farther S. near Lake Washington are Madrona
Park (9 acres), Frink Park (20 acres), which adjoins Leschi Park
(32 acres), and Beacon Hill Park (12 acres). Near Lake Union
is Volunteer Park (45 acres) on Capitol Hill, containing a public
observatory (460 ft. above sea-level) and a statue of W. H.
Seward by Richard Brooks. Schmitz Park (30 acres) is woodland
on the West Seattle peninsula, overlooking the Sound; and
between Volunteer Park and Washington Park is Interlaken
(46 acres). Kinnear Park (14 acres) is near the entrance to
the harbour. Nearly all these parks command views of the Cascade
and Olympic ranges. The city owns large areas which are
to be improved as parks, including Ravenna Park, which has a
noble native fir and cedar forest and sulphur springs. Private
parks include the White City (on Lake Washington), Golden
Gardens (50 acres) and, in West Seattle (annexed in 1907),
Luna Park, an amusement place with a natorium. North
of the city on Lake Washington are the links of the Seattle
Golf and Country Club. Practically a part of the city's park
system and to be crossed by its boulevards are the campus
of the university of Washington, and the fine grounds (605 acres
given to the Federal government by the city) of Fort Lawton.
On the campus of the university are a statue of Washington by
Lorado Taft and a bust of J. J. Hill by Ben Proctor.

The principal public buildings are the county court house
(on a commanding site), the county almshouse, the municipal
building, a federal building, the Y.M.C.A. building, a Labor
Temple, a Carnegie library (1905), with several branches through-
out the city and about 128,000 volumes in 1910, and the buildings
of the university of Washington. In Georgetown, immediately
S. of the main part of Seattle and nearly hemmed in by parts
of the city, is the county hospital. The city has many churches,
including Chinese, Japanese, Finnish, Scandinavian, German
and Russian. Seattle is the see of a Roman Catholic bishop,
and St James Cathedral is the finest church in the city.
The First Presbyterian Church has a large auditorium.

Of the many educational institutions, the most important is
the university of Washington, Washington Hall (under the
directorship of Professor (Mary) Lady of Llewellyn) and the
Washington School; the University of Washington College;
the Brothers' School; the Seattle College; three business
colleges; the Seattle Art School, in connexion with which the
Art Students' League of Seattle was formed in 1909; and a good
public school system including six high schools in 1910, one of
which has an excellent collection of the fauna and flora of the Pacific
Coast. On Mercer Island in Lake Washington is the parental school
of the municipal public school system. The city has a cosmopolitan press,
including two Japanese dailies.

There are an associated charities organization and a "charities
endorsement committee" (1903), which is under the auspices of
three commercial associations; there are a recovery home
(1896, under the Washington Children's Home Society); the
Seattle Children's Home (1884, under the Ladies' Relief Society
of Seattle); the children's orthopaedic hospital (1913), which
the Seattle Federation of Women's Clubs supports a Girls' Home
and Training School (1900). Under Roman Catholic control are
a Deaconess Home, the Mount Carmel Home (under the Missionary
Sisters of Charity of the Sacred Heart of Jesus), and the House of the Good
Shepherd (under the Sisters of the Good Shepherd). The Ladies'
Hebrew Benevolent Society, the Ladies' Montefiore Aid Society and
the Hebrew Benevolent Association are Jewish charities. Other
charities are the Seattle Society for the Blind, the Salvation
Army, the Union of Good Samaritans, the Salvation Army
Crittenton Home, the Lebanon Rescue Mission, the Japanese
Women's Home, the Seattle Fruit and Flower Mission, and
the Women's Relief Corps for Old Age (Presbyterian). The principal
hospitals are the Pacific (1899), the Seattle General (1894, under the Deaconess
Home Association), the Providence (1877, under the Sisters of
Charity), the Minor, the Wayside Emergency (1900), the Municipal
and the County.

The situation of Seattle makes it important commercially
and industrially. For its manufactories electric power is derived
SEA-URCHIN

from Snoqualmie Falls (N.E. of Seattle) from Puyallup river (S.W.) and from Cedar river.

The largest sea-urchin product in 1905 (excluding Ballard) was $25,406,574 (nearly one-fifth of that of the state), or 65-9% more than in 1900. The increase was particularly marked in the value of flour, $4,933,666, or 253-9% more than in 1900. Other important manufactured products of the state, being the commercial and industrial centre for the customs district of Puget Sound. In 1900 the net tonnage of vessels entering the harbour (local figures) was 2,457,451 tons. The foreign imports in 1908 (Harbor Master's Report) were valued at $16,413,735, the foreign imports at $23,805,727. Its exports and imports make up the greater part of the commerce of the district, which has Port Townsend as its port of entry, and the city is rivalled only by San Francisco among the cities of the Pacific coast in the amount of its water-borne traffic. The chief exports are wheat, flour, timber, hay, potatoes, live stock, fruit, fish (salmon), oats, coal (from the mines E. of Lake Washington), hops, cotton (from the Southern States), dairy products and general merchandise; and the imports include silk, rice, coffee, tea, sugar, spices, indigo and other Oriental products. Practically all the gold from Alaska and the Yukon territory is received here, and about 20% of all the trade through Seattle, the foreign trade is with China, Japan, Siberia, Hawaii, the Philippines, Australia, Mexico, South America and Europe. The Chamber of Commerce, and other organizations, use the following system, with its source at Cedar Lake and Cedar River, 28 m. S.E., and an electric lighting plant (for which power is derived from the falls of the Cedar river), but most of the lighting is supplied by private companies. The city has undertaken the regaining necessitated by the hilly site of Seattle. In 1909 the assessed valuation of the city was $185,317,470 and the city's debt was $8,570,380 (bonded) and $8,933,973 (net debt for local improvements).

The first permanent settlement here was made in 1852 by settlers who a year before had established New York, a village at Alki Point, on the W. side of Elliott Bay and in the present city limits. This group of settlers was provided with patent in honour of a Dwaiten chief of that name, who died in 1866 and who was friendly to the whites. In 1853 a town plat was filed, King county was erected, and Seattle became the county seat. In 1855 Seattle had a population of 300. In January 1856 in an attempt to exterminate the whites the neighbouring Indians unsuccessfully attacked Seattle, which was defended by the U.S. sloop-of-war "Decatur." The first railway reached Seattle in 1884. In 1886-1887, when there were anti-Chinese riots here led by the Knights of Labour, many Chinese were attacked and their houses ransacked. There was therefore a very close vigilance committees. A destructive fire in 1887 and the financial depression of 1893 checked the city's growth, which, however, received a new impetus from the discovery of gold in Alaska and the Yukon territory in 1897, as Seattle became the outfitting place for prospectors and the port to which gold was shipped. The Town of Seattle was annexed in 1905; and the city of South-east Seattle, the town of Ravenna, the town of South Park, the city of Columbus, the city of Ballard, the city of West Seattle, and Dunlap, Rainier Beach and Atlantic City were annexed in 1907. From the 1st of June to the 15th of October 1907 the Alaska-Yukon-Pacific Exposition was held in Seattle on grounds which now form part of the university campus, between Lake Union and Lake Washington; of the twelve central Exposition buildings some were afterwards turned over to the university. The purpose of the Exposition was to exploit Washington, the Yukon and the entire north-west on the Pacific slope.

SEA-URCHIN. These animals belong to the great group of Echinoderms (see Echinodermata) and to its class Echinoidea. Both the scientific and the English names denote their resemblance to the urchin or hedgehog, the resemblance lying in the prickles with which the skin is covered. The skin itself is stiffened by a deposit of calcite (crystalline carbonate of lime) in the form of plates. If the prickles be scraped away, these plates will be seen to form a hard shell or test, in which are two openings, for the mouth and the anus. According to the position of these openings the urchins are described as Regular or Irregular. In the Regular urchins, of which Echinus esculentus, the edible egg-urchin (fig. 1), and Dorocidaris papilla, the piper (fig. 2), are familiar examples, the test is spherical with the mouth at the top and the anus at the upper. In the Irregular urchins, of which Spatangus purpurascens, the purple heart-urchin (fig. 3), is a common type, the test has been drawn out into an oval or heart shape, with the mouth shifted towards the front end and the anus towards the hinder end.

The greater part of the test of a Regular urchin is divided, as a globe by meridians of longitude, into ten areas, each composed of two columns of plates. In five of these areas the plates are pierced by pairs of pores (fig. 2, Ambulacrum), and in life there issues from each pair a tubular process with a sucking disk at its end (fig. 1). Within the test these processes or podia are connected with five tubes arising from a tubular ring round the mouth and running upwards to the apex, where each passes out as a single process through a special plate at the end of the area to which it belongs. This is the ambulacral system. In the process is sometimes surrounded by pigment, as are organs susceptible to light, it has been regarded as an eye and the plate through which it passes called an ocular (fig. 2). From the ring-canal round the mouth a single tube passes straight through the test to an orifice by the apex, where it opens through a sieve-like plate—the madreporite (fig. 2). Thus all this system of tubes is placed in connexion with the outer sea-water, and is filled with it. Within the test the bottom of each podium is swollen into a little bag—amphulla—likewise full of water, and when the muscles with which it is provided pull the sides of the bag together, the water is squeezed into the podium and dilates it, so that it is stretched far out (see Echinodermata, fig. 12 D). The podium can then wave about and attach its sucker to any smooth object within reach. Each of these five areas, with the podia on each side of it extended and waving, looks like a garden avenue—Latin ambulacrum—and the animal is thus described. The five interambulacral areas, the plates composing them ambulacral, and the whole system of water-vessels the ambulacral system. This system forms perhaps the most characteristic feature of all living Echinoderms, but it reaches its highest development in the urchins.

The five areas of the test, with the exception of the central area, are called interambulacral (fig. 2, Interambulacrum); their plates are not pierced by pores but are generally ornamented by large tubercles bearing little prickles (spines or radicles), between and around which are smaller prickles (fig. 2). The madreporite is one of five plates that surround the anal opening and alternate in position with the oculars. Each of these plates is pierced by a pore, communicating with the inside of the test, and opening to the hind end, giving passage to the eggs or milt when they are ripe; hence these plates are called genital plates (fig. 2). The five genital and five ocular areas form the apical system of plates (see Echinodermata, fig. 3, A.B.). From the mouth to the anus the gut follows a coiled course, first going round the cavity of the test in one direction and then turning back on itself, while the two limbs of the loop thus formed are themselves thrown into festoons attached by strands to the wall of the test. The lower coil, next the mouth, is the stomach.
in which food accumulates, while the upper coil is the intestine proper. In *Echinus*, but not in the Cidarids, a narrow tube branches from the gut at the beginning of the first coil, runs alongside the stomach, and re-enters the gut at the end of the coil; this, which is called the siphon, permits a flow of water through the gut however full of food the stomach may be. Round the gutule is a jaw-apparatus, consisting essentially of five hard, pointed teeth, the ten jaw-pieces in which they are held, five struts between the pairs of jaws, and five cambered stays for the attachment of ligaments to keep the whole apparatus in position. The jaws are worked by muscles in such a way as to draw the teeth together or apart, inwards or outwards. This apparatus is often called "Aristotle's lantern," though it is extremely doubtful whether Aristotle (Hist. Anim. iv. 5) was allied to this structure. The whole of it is covered by the membrane lining the body-cavity, and from the space thus enclosed there

**SEA-WOLF**

skin, and often a gland which secretes a poison. The pedicellariae were once supposed to be parasites, but they are really organs of the same nature as the radioles; they are of four different forms, three of which undoubtedly serve for defence, while the shortest ones clean the test from impurities and sand-grains that have entered the radiolae. Sea-urchins other than Cidarids also bear on the test minute sensory organs called sphaeridia, each consisting of a small hard knob, supported by a stalk which may be partly calcified but always contains many nerve-fibres. It is generally supposed that they are sensitive to vibrations in the water, and to any change from the normal position which the animal may assume or be forced into. Such a regular urchin as has here been described passes from the mouth downwards, preferring a hard floor, on which it creeps by its podia and its radioles, constantly scraping the algae and seaweeds from the rock with its teeth and so feeding itself. If it does not bore a hole, or is not protected by long needle-like radioles, it may grasp bits of sea-weed or other objects with its pedicellariae and hide beneath them from the fish that seek it for food.

The irregular urchins (fig. 3) have been modified for another way of life. Some of them live in mud or ooze, through which they creep. The mouth has moved forward, has lost its jaws and often has a lip, projecting so as to scoop up the mud. The prickles have become smaller, often almost silky, and are generally directed backwards so as not to oppose the passage of the body. The podia of the under surface still aid locomotion, but those of the upper surface, which are concentrated in five petal-shaped areas, act mainly as gills. These urchins often assume a heart shape, owing to the greater development and sinking in of the front petal. The sand-dollars and their allies, which live half-buried in sand without moving through it, retain a more or less circular outline, as well as the central portion of the mouth, which has not lost its jaws; the anus, however, has moved to the side, while the podia of the upper surface are concentrated in petals and many of them are fused into branched gills. The sand-dollars proper are very thin and flat, but the shield-urchins (Clypeaster, &c.) have the central region of the upper surface raised in a boss, which reaches above the sand, so that the animal can still breathe through the whole blistered under-surface. In many irregular urchins the petals of the ambulacra are deeply sunk, and serve as a nursery for the young, which are covered by the spines of the parent.

Sea-urchins live only in the sea, from between tide-marks down to all but the greatest depths. The abyssal forms have very thin tests, which are often flexible. Urchins eat all kinds of animal and vegetable food, and are themselves attacked by fish, by starfish, and even by other urchins. The ripe egg-bunches are a favourite article of diet with dwellers round the Mediterranean; in other respects sea-urchins are of small importance to man, being neither useful nor harmful. In older times the larger radioles were recommended to be powdered and taken as a remedy for the stone.

For details of classification, see under *Echinoderma*, in the article *ECHINODERMA*.

**SEA-WOLF**, also *SEA-CAT* and *WOLF-FISH* (*Anarrhichas lupus*), a marine fish, the largest of the family *Blenniidae* or blennies. In spite of its large size, it has retained the bodily form and general external characteristics of the small blennies. Its body is long, subcylindrical in front, compressed in the caudal portion, smooth and slippery, the rudimentary scales being embedded and almost hidden in the skin. An even dorsal fin extends the whole length of the back, and a similar fin from the vent to the caudal fin, as in blennies. The pectorals are large and rounded, the pelvic fins entirely absent. Its dentition distinguishes the sea-wolf from all the other members of the family. Both jaws are armed in front with strong conical teeth, and on the sides with two series of large tubercular molars, a biserial band of similar molars occupying the middle of the palate. By these teeth the sea-wolf is able to crush the hard carapaces or shells of the crustaceans and molluscs on which it feeds; that it uses

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**Fig. 2.—A Regular Sea-urchin, *Dorocidarlis papillata*. The test seen from above, with most of the spines removed. Natural size.**

**Fig. 3.—An Irregular Sea-urchin, *Spatangus irregularis*.**
the teeth as a weapon of defence and deserves the character of ferocity generally attributed to it would appear to be rather questionable. Sea-wolves are inhabitants of the northern seas of both hemispheres, one (A. lupus) being common on the coasts of Scandinavia and North Britain, and two in the seas round Iceland and Greenland. Two others occur in the corresponding latitudes of the North Pacific. They attain to a length exceeding 6 ft., and in the north are esteemed as food, both fresh and preserved. The oil extracted from the liver is said to be in quality equal to the best cod-liver oil.

To the fishermen of the North Sea this fish is generally known as ‘catfish,’ and is among the most valuable of this species has been marketed. As it would be impossible to sell the fish in its natural state on account of its forbidding appearance, it is skinned and beheaded, and the flesh sold under the name of rock-salmon.

**SEAWRECK**, the detached seaweeds thrown up, often in great quantities, by the sea and used for manure, also formerly for making kelp. It consists largely of species of _Fucus_—brown seaweeds with flat branched ribbon-like fronds, characterized in _F. serratus_ by a saw-toothed margin and in _F. vesiculosus_, another common species, by bearing air-bladders. Also of _Zotera marina_, so-called sea-grass, a marine flowering plant with bright green long narrow grass-like leaves.

**SEBASTIAN, ST.**, a Christian martyr whose festival is celebrated on the 20th of January. According to St Ambrose (in Psalm 118, oct. 20) Sebastian was a native of Milan, went to Rome at the height of Diocletian's persecution, and there suffered martyrdom. The _Acta_ of St Sebastian, falsely attributed to the same St Ambrose, are far less sparing of details. They make him a citizen of Narbonne and captain of the first cohort under the emperors Diocletian and Maximian. Having secretly become a Christian, Sebastian was wanted to denounce those of his brethren who in the hour of trial seemed wavering in their profession. This was conspicuously the case with the brothers Marcus and Marcellinus. He made many converts, several of whom suffered martyrdom. Diocletian, having been informed of this conduct, sent for him and earnestly conversed with him, but, finding him inflexible, ordered him to be bound to a stake and shot to death. After the archers had left him for dead, a devout woman, Irene, came by night to take his body away for burial, but, finding him still alive, carried him to her house, where his wounds were dressed. No sooner had he wholly recovered than he hastened to confront the emperor, reproaching him with his impiety; Diocletian ordered him to be instantly carried off and beaten to death with rods. The sentence was forthwith executed, his body being thrown into the cloaca, where, however, it was found by another pious matron, Lucina, whom Sebastian visited in a dream, directing her to bury him _ad Catacumbas justa vestigia apostolorum_. It was on this spot, on the Appian way, that was built the basilica of St Sebastian, which was a popular place of pilgrimage in the middle ages. The translation of his relics to Soissons in 826 made that town a new centre of his cult. St Sebastian is specially invoked against the plague. As a young and beautiful soldier, he is a favourite subject of sacred art, being most generally represented undraped, and severely though not mortally wounded with arrows.

See _Acta Sanctorum_, January, ii. 257-296; _Bibliotheca hagiographica Latina_ (Brussels, 1899), n. 7543-7549; A. Bell, _Lives and Legends of the Evangelists, Apostles and other Early Saints_ (London, 1901), pp. 238-240. (H. Dr.)

**SEBASTIAN, king of Portugal (Port. Sebastião) (1554-1578)**, the posthumous son of Prince John of Portugal and of his wife Joanna, daughter of the emperor Charles, was born in 1554, and became king in 1557, on the death of his grandfather John III. of Portugal. During his minority (1557-1568), his grandmother Queen Catherine and his great uncle the Cardinal Prince Henry acted jointly as regents. Sebastian's education was entrusted to a Jesuit, D. Luiz Conçalves da Camara and to D. Aleixo de Menezes, a veteran who had served under Albuquerque. He grew up resolved to emulate the medieval knights who had reconquered Portugal from the Moors. He was a mystic and a fanatic, whose sole ambition was to lead a crusade against the North-West Afrika. He entrusted the government to the Jesuits; refused either to summon the Cortes or to marry, although the Portuguese crown would otherwise pass to a foreigner, and devoted himself wholly to hunting, martial exercises and the severest forms of asceticism. His first expedition to Morocco, in 1574, was little more than a reconnaissance; in a second expedition Sebastian was killed and his army annihilated at Al Kasr al Kebir (4th of August 1578). Although his body was identified before burial at Al Kasr, reinterred at Catta, and thence (1582) removed by Philip II. of Spain to the Convento do Jero, beginning 1581, many Portuguese refused to credit his death. "Sebastianism" became a religion. Its votaries believed that the _rei encouberto_, or "hidden king," was either absent on a pilgrimage, or, like King Arthur in Avalon, was awaiting the hour of his second advent in some enchanted island. Four pretenders to the throne successively impersonated Sebastian; the first two, known from their places of birth as the "King of Penamacor" and "the King of Ericeira," were of peasant origin; they were captured in 1584 and 1585 respectively. The third, Gabriel Espinosa, was a man of some education. These impostors involved members of the Austrian and Spanish courts and of the Society of Jesus in Portugal. He was executed in 1594. The fourth was a Calabrian named Marco Tullio, who knew no Portuguese; he impersonated the "hidden king" at Venice in 1603 and gained many supporters, but was ultimately captured and executed. The Sebastianists had an important share in the Portuguese insurrection of 1640, and were again prominent during the Miqueille wars (1828-34). At an even later period Sir R. F. Burton stated that he had met with Sebastianists in remote parts of Brazil (Burton, _Camoes_, vol. i.p. 363, London, 1881), and the cult appears to have survived in Brazil, in the 19th century, although it ceased to be a political force after 1834.


**SÉBASTIANI, HORACE FRANÇOIS BASTIEN, COUNT (1772-1851)** French marshal and diplomatist. Of Corsican birth, he was in his early years banished from his native island during the civil disturbances, and in 1780 he entered the French army. In 1793, as a French lieutenant, he took part in the war in his native island, after which he served in the Army of the Alps. He became _chef de brigade_ in 1799. Attached by birth and service to the future Emperor Napoleon, he took part in the _Comp' d'État_ of 18th Brumaire (9th November 1799). He was present at Marengo in 1800. Sébastiani next appears in his first diplomatic post, in Turkey and Egypt (1802). Promoted general of brigade in 1803, he served in 1805 in the first of the great campaigns of the Empire. His conduct at Austerlitz (2nd December), where he was wounded, won him promotion to the rank of general of division. Sébastiani soon returned to Continental service, and was French ambassador to Constantinople in 1811. He was the first to encourage the Porte to declare war on Russia, as a soldier he directed with success the defence of Constantinople against the British squadron of Admiral (Sir) J. T. Duckworth. But the deposition of the Sultan Selim III. put an end to French diplomatic success in this quarter, and Sébastiani was recalled in April 1807 (see _La Politique orientale de Napoléon; Sébastiáni et Gardane_, by E. Driault, Paris, 1903). He was at this time made Count of the Empire. As the commander of a corps he served in the Peninsular War, but his cavalier genius did not shine in the
laborious and painful operations against the careful English and the ubiquitous guerrilleros. In the more congenial grande guerre of Russia and the Germanic war of colour, was then a Smolensk, Borodino and Leipzig he did brilliant service. He accepted the Restoration government in 1814, but rejoined his old leader on his return from Elba. After Waterloo he retired into England for a time, but soon returned, and was placed on half-pay. From 1819 onwards he was a prominent member of the Chamber of Deputies. He held the posts of Minister of Marine, and, later, of Foreign Affairs. In this latter capacity he was the author of the historic saying “Order reigns at Warsav.” In 1832 he was a Minister of State without portfolio, next year, he was ambassador at Naples, and from 1835 to 1840 was lieutenant-general to Great Britain. On his retirement from this post he was made Marshal of France. He was a brilliant social figure in Paris. His last years were clouded by the death of his daughter at the hands of her husband, the due de Praslin. He died at Paris on the 21st of July 1851.

His brother, Jean André Tiburce Sébastien (1786–1871), entered the army in 1806, served in the Peninsula from 1809 to 1811, and in the great campaigns of Russia, Germany, France and Belgium. He took part in the war of Greek independence under General Maison. In 1813, on the retreat of the emperor, he was appointed to command the military division of Paris. But he proved incapable of dealing with the Revolution of 1848, and the remainder of his life was spent in retirement in Corsica.

SEBASTIANO DEL PIOMBO (1485–1547), Italian painter, was born at Venice in 1485. His family name was Luciani. He belongs to the Venetian school, exceptionally modified by the Florentine or Roman. At first a musician, chiefly a solo-player on the lute, he was in great request among the Venetian nobility. He soon showed a turn for painting, and became a pupil of Giovanni Bellini, and afterwards of Giorgione. His first painting of note was done for the church of San Giovanni Crisostomo in Venice, and is so closely modelled on the style of Giorgione that in its author’s time it often passed for the work of that master. It represents Chrysostom reading aloud at a desk, a grand Magdalene in front, and two other female and three male saints. Towards 1512 Sebastiano was invited to Rome by the wealthy Sienese merchant Agostino Chigi, who occupied a villa by the Tiber, since named the Farnesina; he executed some frescoes here, other leading artists being employed at the same time; and the next year the painter and his wife, Isabella, who accompanied him, were appointed to command the military division of Paris. But he proved incapable of dealing with the Revolution of 1848, and the remainder of his life was spent in retirement in Corsica.

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and Pietro Aretino. One likeness of the last-named sitter is in Arazzo and another in the Berlin gallery.

See his general histories of art; and, with regard to his designs, Bernhard Berenson, The Drawings of Florentine Painters (1904).

The decision as to the authorship of various pictures which may or may not be attributable to Sebastiano del Piombo is necessarily a matter of contemporary connoisseurship, and it need only be noted that Mr Berenson is inclined to give increased importance to his master.

(W. M. R.)

SEBEINICO (Serbo-Croatian, Sibenik), an episcopal city, and the centre of an administrative district in Dalmatia, Austria; at the end of a branch railway from Knin (southern end of city and commune, 24 7 51). Sebenico is built on a hill overlooking a river Kerka, which here forms a broad basin, connected by a winding channel with the Adriatic Sea, 3 m. S.W. The city is partly walled, and guarded on the seaward side by the 16th-century castle of St Anne and two dismantled forts. Venetian influence is everywhere manifest; the Lion of St Mark is carved over the main gateway and on many public buildings; and among the narrow and steep lanes of the city there are numerous examples of Venetian Gothic or early Renaissance architecture. Sebenico has been the seat of a Roman Catholic bishop since 1358. The Roman Catholics, who constitute the majority of citizens, possess a lofty and beautifully cruciform cathedral, built entirely of stone and metal. Probably no other church of equal size in Europe is similarly constructed. Even the wagoon vaults over the nave, choir and transepts are of stone unprotected by lead or tiles. The older part of the cathedral, dating from 1430 to 1441, and including the fine north doorway, is Italian Gothic. Giorgio Orsini of Zara, who had studied architecture in Venice and been strongly influenced by the Italian Renaissance, carried on the work of construction undertaken by his predecessor. The Roman Catholics, who in 1441, was finished early in the 16th century; and thus the cathedral belongs to two distinct periods and represents two distinct styles.

Sebenico is lighted by electric light; the power being supplied by the celebrated falls of the Kerka, near Scardona, on the north. Sebenico is a steamship station, with an excellent harbour. Wine, oil, corn and honey are produced in the neighbourhood; many of the inhabitants are fishermen and seamen.

The Latin name of Sibenik is adopted in public inscriptions; but the city cannot be identified with the town of Sibunum, which was probably situated farther south. Sebenico first became prominent as the residence of the Croatian kings. From 1358 to 1412 it was ruled by Hungary; it subsequently formed part of the Venetian dominions. In 1647 it was unsuccessfully besieged by the Turks.

SEBORROEAE, a medical term applied to describe an accumulation on the skin of the normal sebaceous secretion mixed with dirt and forming scales or a distinct incrustation. On the head, where it is commonly seen, it may interfere with the nutrition of the hair and cause partial baldness. A form of this disease occurs in young infants. The main treatment consists in thoroughly cleansing the parts. The crusts may be softened with oil and the affected skin regularly washed with soft soap and rectified spirit. The sebum frequently accumulates in the sebaceous ducts, giving rise to the minute black points often noticed on the face, back and chest in young adults, to which the term comedones is applied. A form of this disorder, of larger size and white appearance, is termed milium. These affections may to a large extent be prevented by strict attention to ablution and brisk friction of the skin, which will also often remove them when they begin to appear. The retained secretion may be squeezed out or evacuated by incision and the skin treated with some simple sulphur application.

SECCI, ANGELO (1818-1878), Italian astronomer, was born on the 9th of June 1818 at Reggio in Lombardy, and entered the Society of Jesus at an early age. In 1839 he was appointed director of the observatory of the Collegio Romano, which was rebuilt in 1853; there he devoted himself with great perseverance for researches in physical astronomy and meteorology till his death at Rome on the 26th of February 1878.

The results of Secchi's observations are contained in a great number of papers and memoirs. From about 1864 he occupied himself almost exclusively with spectrum analysis, both of stars (Catalogo delle stelle di cui si è determinato lo spettro luminoso, Paris, 1867, 8vo; "Sugli spettri prismatici delle stelle fisse," two parts, 1868, in the Atti della Soc. Ital. and of the sun (Le Soleil, Paris, 1870, 8vo; 2nd ed., 1877).

For a list of his publications see Poggendorff, Biographisch-Literarishe; also see Monthly Notices R.A.S., No. 39, and Carlo Bricarelli, "Vita e opere di A. Secchi," Nuovi Lincei Mem. (1888), vol. 4.

SECESSION, a term used in political science to signify the withdrawal of a state from a confederacy or composite state, of which it had previously been a part; and the resumption of all powers formerly delegated by it to the federal government, and of its status as an independent state. To secede is a sovereign right; secession, therefore, is based on the theory that the sovereignity of the individual states forming a confederacy or federal union has not been absorbed into a single new sovereignty. Secession is a right claimed or exercised by weaker states of a union whose rights are threatened by the stronger states, which seldom acknowledge such a principle. War generally follows the secession of a member of a union, and the seceding state, believing itself to be able to stand alone, often is unable to do so. The history of Europe furnishes several examples of secession or attempts to secede; in 1500 the Swiss cantons withdrew from the Empire and formed a confederacy from which, in 1843-1847, the Catholic cantons seceded and formed a new confederacy called the Sonderbund, which was crushed in the war that followed; in 1523 Sweden seceded from the Kalmarian Union formed in 1397 of Denmark, Sweden and Norway; and in 1814 Norway seceded and entered into a union with Sweden, from which, in the same year, it attempted to secede but was forcibly restrained; in 1792, as a sequel to the American revolution, an attempt was made to secede from the Union in 1805 and resumed her independent status; in 1818-1849 Hungary attempted to withdraw from the union with Austria but the attempt was defeated; Prussia and other north German states withdrew in 1866-1868 from the German Confederation and formed a new one; a late instance of successful secession is that of Panama, which seceded in 1903 from the Republic of Colombia. But secession in theory and practice is best exhibited in the history of the United States. Most of the original states, and many of the later ones, at some period when rights were in jeopardy proclaimed that their sovereignty might be exercised in secession. The right to secede was based, the secessionists claimed, upon the fact that each state was sovereign, becoming so by successful revolution against England; there had been no political connexion between the colonies; the treaty of 1783 recognized them "as free, sovereign and independent states"; this sovereignty was recognized in the Articles of Confederation, and not surrendered, they asserted, under the Constitution; the Union of 1776 was really formed by a secession from the Union of 1776-1787. New states claimed all the rights of the old ones, having been admitted to equal standing. Assumptions of the right and necessity of secession were frequent from the beginning; separatist conspiracies were rife in the West until 1812; various leaders in New England made threats of secession in 1799-1796 and 1800-1815—especially in 1803 on account of the purchase of Louisiana, in 1811 on account of the proposed admission of Louisiana as a state, and during the troubles ending in the War of 1812. Voluntary separation was frequently talked of before 1815. Two early commentators on the Constitution, St George Tucker in 1803 and William Rawle in 1825, declared that the sovereign states might secede at will. In 1832-1833 the "Union" party of South Carolina was composed of those who rejected nullification, holding to secession as the only remedy; and from 1830 to 1860 certain radical abolitionists advocated a division of the Union. But as the North grew stronger and the South in comparison grew weaker, as slavery came to be more and more the dominant political issue, and as the South made demands concerning that "peculiar institution" to which the North was unwilling to accede, less was heard of secession in the North and more in the South. Between 1845
and 1660 succession came to be generally accepted by the South as the only means of preserving her institutions from the interference of the North. The first general movement toward secession was in 1850. In 1860-1861, when the federal government passed into the control of the stronger section, the Southern states, individually, seceded and then formed the Confederate states, and in the war that followed they were conquered and forced back into the Union. So, in the United States, secession along with state sovereignty is of the past. From the historical point of view it may be suggested that neither North nor South was correct in theory in 1861: the United States were not a nation; neither were the states sovereign, but the federal policy of 1776-1789, in which no proper sovereignty existed anywhere, two nationalities were slowly evolving and two sovereignties were in the making; the North and the South each fulfilled most of the requirements for a nation and they were mutually unlike and hostile.

See Jefferson Davis, Rise and Fall of the Confederate Government (New York, 1881); A. H. Stephens, Constitutional View of the War between the States (Philadelphia, 1868-1870); J. L. M. Curry, Civil History of the Confederate States (Richmond, 1900); J. W. Du Bois, William L. Yancey (Birmingham, 1892); J. Hodgson, Cradle of the Confederacy (Mobile, 1896); B. J. Sage, Republic of Refuge (New York, 1890); H. F. Seckendorf, A. L. Lowell, Government and Parties in Continental Europe (Boston, 1896); J. W. Burgess, Political Science and Comparative Constitutional Law (New York, 1898); and C. E. Merriam, American Politics and Diplomacy (New York, 1902). See also State Rights, Nullification, and Confederate States.

SECKENDORF, FRIEDRICH HEINRICH, COUNT VON (1673-1763), German soldier, nephew of Veit Ludwing von Seckendorf (q.v.), was born at Königsberg in Franconia. His father was an official of Saxe-Gotha. In 1693 he served in the allied army commanded by William III. of England, and in 1694 became a cornet in a German cavalry regiment, stationed at Boston. In 1696 he was appointed an infantry officer in the service of Venice, and (1697) in that of the margrave of Anspach, who in 1698 transferred the regiment in which Seckendorf was serving to the imperial army. In 1699 he married and returned to Anspach as a court officer, but the outbreak of the War of the Spanish Succession called him into the field again as lieutenant-colonel of an Anspach regiment, which was taken into the Dutch service. He distinguished himself at Oudenarde (1708), and was severely wounded at the siege of Ryssedt. Disappointed of promotion in Holland and Austria, he entered the Polish-Saxon service in 1711, and fought as a volunteer at the siege of Tournai and the battle of Malplaquet. He continued to serve in Flanders to the end of the war, acted in a diplomatic capacity in the peace negotiations, and in 1713 suppressed an insurrection in Poland. In 1715, as a lieutenant-general, he commanded the Saxon contingent at the siege of Stralsund, defended by Charles XII. of Sweden. In 1717 Seckendorf once more entered the service of the emperor, with the rank of lieutenant field marshal, and he was present at the siege of Belgrade by Prince Eugène. In 1718 and 1719 he fought in Italy, and in the latter year he was made a count of the empire. In 1726, at the instance of Prince Eugène, he was made the Austrian representative at the court of William II. He remained at Berlin, with short intervals, up to 1735, and for the greater part of this time exercised a strong influence over Frederick William II. He was deeply involved in the family quarrels which embittered the lives of Frederick William, his queen and the crown prince (Frederick the Great), which culminated in the prince's condemnation to death by court martial, and is presented by Carlyle (Frederick the Great, vol. II) as a cold, passionless intriguer, tacturn, almost stolid, and absolutely unscrupulous in the furtherance of Austrian political aims. In 1728 Seckendorf was appointed general of cavalry of the army of the Holy Roman Empire, and served with such distinction as was to be gained in a war of positions in the Rhine campaigns of the War of the Polish Succession (1734-35). His dissensions with Prince Leopold of Anhalt-Dessau (q.v.)—the "old Dessauer" was Seckendorf's declared enemy at the Prussian court—made the conduct of operations impossible, and, after placing the Austrian and German armies in favourable positions, Seckendorf departed to Hungary to report on the state of the Austrian army there—a task which brought him fresh enemies. In 1737 the emperor Charles VI., however, made Seckendorf commander-in-chief in Hungary, at the same time giving him the right of field marshal. The new commander began well, but failed at the end, and his numerous enemies at Vienna brought about his recall, trial and imprisonment. He remained a prisoner till 1740, and was then reinstated by order of Maria Theresa, but being denied his arrears of pay he laid down all his Austrian and imperial offices and accepted from the emperor Charles VII., elector of Bavaria, the rank of field marshal in the Bavarian-Gutenfeld (1742). His last campaigns were those of 1743 and 1744 in the Austrian Succession War (q.v.), and, after the death of Charles VII. and the election of Maria Theresa's husband to the imperial dignity, he became reconciled with the Austrian court. From 1745 his life was spent more or less in retirement at Meuselwitz, near Altenburg. In 1757 the death of his wife, for whom, harsh and unamiable as he was, he had a deep and abiding affection, broke down his already failing health. He fell into the hands of a Prussian hussar party in December 1758, and was for five months held prisoner by Frederick the Great, who had little love for him either as his former court enemy or as his unsatisfactory ally in the first Silesian war. He died at Meuselwitz on the 23rd of November 1763.

See Wurzbach's Biogr.Lexikon, pt. 33, "Versuch einer Lebensbeschreibung des F. M. Seckendorf" (Leipzig, 1792-1794); Seelander, Graf Seckendorf und der Friede v. Passau (Gotha, 1883); Carlyle, Frederick the Great, vols. I.-v. ; memoir in Allgemeine deutsiche Biographie.

SECKENDORF, VEIT LUDWIG VON (1626-1692), German statesman and scholar, was a member of a German noble family, which took its name from the village of Seckendorf between Nuremberg and Langenzenn. The family was divided into eleven distinct lines, but only three survive, widely distributed throughout Prussia, Wurttemberg, and Bavaria. In 1656 Veit Ludwig von Seckendorf, son of Joachim Ludwig von Seckendorf, was born at Herzogenaurach, near Erlangen, on the 20th of December 1626. In 1639 the reigning duke of Saxe-Coburg-Gotha, Ernest the Pious, made him his protégé. Entering the university of Strassburg in 1642, he devoted himself to history and jurisprudence. The means for his higher education came from Swedish officers, former comrades of his father who had been actively engaged in the Thirty Years' War and who was executed at Salzwedel on the 3rd of February 1642 for his dealings with the Imperialists. After he finished his university course Duke Ernest gave him a commission in the Bavarian general service. In 1662 he laid the foundation of his great collection of historical materials and mastered the principal modern languages. In 1662 he was appointed to important judicial positions and sent on weighty embassies. In 1666 he was made judge in the ducal court at Jena, and took the leading part in the numerous beneficent reforms of the duke. In 1664 he resigned office under Duke Ernest, who had just made him chancellor and with whom he continued on excellent terms, and entered the service of Duke Maurice of Zeitz (Altenburg), with the view of lightening his official duties. After the death of Maurice in 1670 Seckendorf entered the estate of Menselwitz in Altenburg, resigning nearly all his public offices. Although living in retirement, he kept up a correspondence with the principal learned men of the day. He was especially interested in the endeavours of the pietist Philipp Jakob Spener to effect a practical reform of the German church, although he was hardly himself a pietist. In 1692 he

Besides Friedrich Heinrich, count von Seckendorf, separately noticed, other members of the family were Adolf Franz Karl (1742-1818), who was made a count by Frederick William III. of Prussia; Eduard Christoph Ludwig Karl von Seckendorf-Gutenfeld (1813-1875), a Württemberg official; Karl Sigmund (1744-1875), writer; Franz Karl Leopold v. Seckendorf-Aberdour (1775-1809), poet, literary man and soldier; the brothers Christian Adolphe (1767-1833) and Gotthold Adolphe (1775-1832), both literary men; some note, and Arthur v. Seckendorf-Gudten (1845-1880), student of forestry.
SECKER—SECOND SIGHT

was appointed chancellor of the new university of Halle, but he died a few weeks afterwards, on the 18th of December.

Seckendorf's principal works were the following:—Teutscher Fürstenstaat (1656 and 1678), a handbook of German public law; Der Christenstaat (1685), partly an apology for Christianity and partly a history of the church; Bemerkungen zur Geschichte des Lutheranismus (1692), a defense of the Lutheran church against the attacks of the Rationalists; and Die Kirchenzuge des Herrn Jesus Christi (1699), a chronological account of the Christian church. He was also the author of several collections of legal decisions and a number of other works of a similar character. Seckendorf was a man of great learning and ability, and his works have been widely influential in the history of German law and church history.

SECOND SIGHT, a term denoting the opposite of its apparent significance, meaning in reality the seeing, in vision, of events before they occur. "Foresight" expresses the meaning of second sight, which perhaps was originally so called because normal vision was regarded as coming first, while supernormal vision is a secondary thing, confined to certain individuals.

Though we hear most of the "second sight" among the Celts of the Scottish Highlands, it must be noted also that the Celts of Ireland, who were the most advanced of the races of the British Isles, had a similar practice of second sight. The Ossianic stories of the Scottish poets, such as "The Battle of the Nations," tell of warriors who were able to see into the future and to consult with the dead. This practice of second sight is also found in the sagas of the Icelandics, especially in "Riđr's Saga," where the seers are able to see into the future and to consult with the gods. In the Highlands of Scotland and in the Hebrides, the chief symbols beheld are the shroud, and the corpse candle or other spectral illumination. The Rev. Dr Stewart, of Nether Lochaber, informed the present writer that one of his parishioners, a woman, called him to his door, and pointed out to him a rock by the sea, which shone in a kind of phosphorescent brilliance. The doctor attributed the phenomenon to decaying sea-weed, but the woman said, "No, a corpse will be laid there to-morrow." This, in fact, occurred, a dead body being found in a boat for which there was no record, and a woman was carried down to the foot of the rock, where, as Dr Stewart found, there was no decaying vegetable matter.

Second sight flourished among the Lapps and the Red Indians, the Zulus and Mohicans, to the surprise of travellers, who have recorded the puzzling facts. In these cases the visions were usually "induced," not "spontaneous," and should be considered as "clairvoyance" (q.v.). Ranulf Higdon's Polychronicon (14th century) describes Scottish second sight, adding that strangers "setten their feet upon the feet of the men that londe for to see such sights as the men of that londe does." Some of the anecdotes relating the vision is still practised, with success, according to the late Dr Stewart. The present writer once had the opportunity to make an experiment, but to him the vision was not imparted. (For the method see Kirk's Secret Commonwealth of Elves, Fauns and Fairies, 1691, 1815, 1893.) It is, by some, believed that if a person tells what he has seen before the event occurs he will lose the faculty, and recently a second-sighted man, for this reason, did not warn his brother against taking part in a regatta, though he had foreseen the accident by which his brother was drowned. Where a boy on the edge of a pool in the quarry was to be drowned, the vision ever occurred. There are many seers, as Lord Tarbat wrote to Robert Boyle, to whom the faculty is a trouble, "and they would be rid of it at any rate, if they could."

Perhaps the visions most frequently reported are those of funerals, which later occur in accordance with "the sight," of corpses, and of "arrivals" of persons, remote at the moment, who later do arrive, with some distinctive mark of dress or equipment which the seer could not normally expect, but observed in the vision. Good examples in their own experience have been given to the present writer by well-educated persons. Some of the anecdotes are too surprising to be published without the names of the seers. A fair example of second sight is the following from Balachulish. An aged man of the last generation was troubled by visions of armed men in uniform, drilling in a particular field near the sea. The uniform was not "England's cruel red," and he foresaw an invasion. "It must be of Americans," he decided, "for the soldiers do not look like foreigners." The Volunteer movement later came into being, and the men drilled on the ground where the seer had seen them. Another case was that of a man who happened to be sitting with a boy on the edge of a pool in the quarry. Suddenly he caught the boy and leaped aside with him. He had seen a runaway trolley, with men in it, dash down the path; but there were no traces of them below. "The spirits of the living are powerful to-day," said the percipient in Gaelic, and next day the fatal accident occurred at the spot. These are examples of what is, at present, alleged in the matter of second sight.

"The sight" may, or may not, be preceded or accompanied by epileptic symptoms, but this appears now to be unusual. A learned minister lately made a few inquiries on this point in his parish, at the request of a gentleman of his acquaintance. His head had "the sight," in rich measure: "it was always preceded by a sensation of discomfort and anxiety," but was not attended by convulsions. Out of seven or eight seers in the parish, only one was not perfectly healthy and temperate. A well-known seer, now dead, whom the writer consulted, was weak of body, the result of an accident, but seemed candid, and ready to confess that his visions were occasionally failures. He said that "the sight" first came on him in the village street when he was a boy. He saw a dead woman walk down the street and enter the house that had been burned. He gave a few examples of his foresight of events, and one of his failure to discover the corpse of a man drowned in the loch.
The phenomena, as described, may be classed under "clairvoyance," "premonition," and "telepathy" (q.v.), with a residuum of symbolical visions. In these, "corpuscles" and spectral lights play a great part, but, in the region best known to the writer, the "lights" are visible to all, even to English tourists, and are not hallucinatory. The conduct of the lights is brilliantly eccentric, but, as they have not been studied by scientific specialists, their natural causes remain unascertained. It is plain that there is nothing peculiar to the Celts in second sight; but the Gaelic words for it and the prevailing opinion in individual cases of it, the account of it in the literature, and the duty of the main agents. Yet, in cases of premonition, this explanation is difficult. Conceivably an engineer, in 1881, was thinking out a line of railway from Oban to Balachulish, at the moment when four or five witnesses were alarmed by the whizz and thunder of a passing train on what was then the road, but was later (1905) usurped by the railway track. (For this amazing anecdote the writer has the first-hand evidence of a highly educated peripct.)

If the speculation of the engineer was "wired on," telepathically, to the witnesses, then telepathy may account for the premonition, which, in any case, is a good example of collective second sight. The second sight has died out, under the influence of education and newspapers, is an avowment of popular superstition in the south. The examples given, merely a selection from those known to the present writer, prove that the faculty is believed to be as common as in any previous age.

The literature of second sight is not insignificant. The Secret Committees on Monsters, i.e. Fears, was published by Sir Walter Scott in 1815 (a hundred copies), and by Andrew Lang in 1893, is in line with cases given in Trials for Witchcraft (cf. Dalrymple's Darker Superstitions of Scotland, and Wodrow's Analecta). Aubrey has several cases on this subject in his Miscellanies, and the correspondence of Robert Boyle, Henry More, Glanvil and Pepys, shows an early attempt at scientific examination of the alleged faculty. The great treatise on Second Sight by Theophilus Insulans (a Macleod) may be recommended; with Martin's Description of the Western Isles (1703-1716), and the work of the Rev. Mr Fraser, Dean of the Isles (1707, 1820). Fraser was familiar with the contemporary scientific theories of hallucination, and justly remarked that "the sight" was not peculiar to the Highlanders; but that, in the south, people dared not confess their experiences, for fear of ridicule.

SECRET (Lat. secretum, hidden, concealed), that which is concealed from general knowledge. In special senses the word is applied to (a) a prayer in the Roman and other liturgies, said during the mass by the priest in so low a voice that it does not reach the congregation, and (b) a covering or skull-cap made of steel fitting close to the head.

In law, the question of secrecy is an important one. Generally, English law does not require a solicitor or barrister to disclose secrets entrusted to them by a client, and the same probably holds good in the case of medical men. In the case of ministers of religion, it has never been definitely settled how far they can be compelled to disclose in evidence what has been confided in the secrecy of the confessional. But according to the 113th Canon, a priest of the Church of England would commit an ecclesiastical offence in revealing a secret disclosed to him in confession "except it be such as by the laws of this realm his own life may be called into question for concealing the same." As to what are called "trade secrets," it had been decided (Merryweather v. Moore, 1892, 2 Ch. 518) that it is a breach of contract to reveal trade secrets acquired during service.

Official Secrets.—By the Official Secrets Act 1889 it was made a misdemeanor for an official to communicate any information or documents concerning the military or naval affairs of Her Majesty, to any person to whom it ought not to be communicated. If the information be communicated to a foreign state it is a felony. In Great Britain the breach of military secrets is punishable under an imperial law of 1893.

Secret Service.—In practically every civilized country, there is always a department of the government charged with the duty of espionage, either diplomatic or domestic. Its officials work in secret, and certain sums of money are placed at the disposal of the head of the department, and expended as he may think fit, without having to account for their proceedings. The governments of the United States of America and the various departments of the government of France have also their own departmental secret service, for the better guarding against frauds, such as in the United States, the Treasury Department and the Post Office.

The various European codes generally have dealt with breach of secrecy, e.g. § 300 of the German Penal Code imposes a fine up to 1500 marks and imprisonment up to three months on doctors, attorneys and other professional persons who reveal a secret entrusted to them in their professional capacity. For this offence also the French code, art. 378, imposes imprisonment of from one to six months and a fine of from 100 to 500 francs, See Brouardel, Le Secret médical (Paris, 1893); Hallays, Le Secret professionnel (Paris, 1890).

SECRÉTAN, CHARLES (1815-1895), Swiss philosopher, was born on the 10th of January 1815, at Lausanne, where he died on the 21st of January 1895. Educated in his native town and later under Schelling at Munich, he became professor of philosophy at Lausanne (1838 to 1846), and at Neuchâtel (1850 to 1866). In 1866 he returned to his old position at Lausanne. In 1837 he founded, and for a time edited, the Revue suisse. His principal works were La Philosophie de la liberté (1848); La Raison et le Christianisme (1863); La Civilisation et les croyances (1882); Mon Utopie (1892). The object of his writing was to build up a rational, philosophical religion, to reconcile the ultimate bases of Christianity with the principles of metaphysical philosophy.

For a detailed examination of his philosophy, see Pillon, La Philosophie de Charles Sèrètàn.

SECRETARY-BIRD, a very singular African bird, first accurately made known, from an example living in the menagerie of the prince of Orange, in 1769 by A. Vosmaer, in a treatise published simultaneously in Dutch and French, and afterwards included in his collected works issued, under the title of Regnum Animale, in 1804. He was told that at the Cape of Good Hope this bird was known as the "Sagittarius" or Archer, from its striding gait being thought to resemble that of a Bowman advancing to shoot, but that this name had been corrupted into that of "Secretarius." In August 1770 G. Edwards saw an example

(apparently alive, and the survivor of a pair which had been brought to England) in the possession of a Mr Raymond near Ilford in Essex, and, being unacquainted with Vosmaer's work, he figured and described it as "of a new genus" in the Philosophical Transactions for the following year (Ixi. pp. 55, 56, pl. II.). In 1776 P. Sonnerat (Voy. Nouv. Guinée, p. 87, pl. 50) again described and figured, but not at all correctly, the species, saying (but no doubt wrongly) that he found it in 1771 in the Philippine Islands. A better representation was given by D'Aubenton in 1779.

1 Le Vaillant (Sci. Vocaire, ii. p. 273) truly states that Kolben in 1710 (Caput Bono Seri Hodierum, p. 182, French version, ii. p. 198) had mentioned this bird under its local name of "Snake-eater" (Slangeneter, Dutch translation, i. p. 214); but that author, who was a bad naturalist, thought it was a Pelican and also confounded it with the Spoonbill, which is figured to illustrate his account of it.
SECRETARY OF STATE—SECULAR

the Planches voluminees (721); in 1780 Buffon (Oiseaux, vii. p. 330) published some additional information derived from Querhoent, saying also that it was to be seen in some English menageries; and the following year J. Latham (Synopsi, i. p. 20, pl. 2) described and figured it from three examples which he had seen alive in England. Nonne, however, gave the bird its true name, and the first conferment upon it seems to have been that of Falco serpens, inscribed on a plate bearing date 1779, by John Frederick Miller (Ill. Nat. History, xxviii.), which plate appears also in Shaw’s Cimelia Physica (No. 28) and is a misleading caricature. In 1786 Scopoli called it Otis secretarius—thus referring it to the Bustards, and Cuvier in 1798 designated the genus to which it belonged, and of which it still remains the sole representative, Serpensauria. Succeeding systematists have, however, encountered it with many other names, among which the generic terms Gypogon, Rana, Ranaonyx, and Opisthoglossus, and the specific epiteths reticulatius and eristatis, require mention here. The Secretary-bird is of remarkable appearance, standing nearly 4 ft. in height, the great length of its legs giving it a resemblance to a Crane or a Heron; but unlike those birds its tibiae are feathered all the way down. From the back of the head and the nape hangs, loosely and in pairs, a series of black elongated feathers, capable of erection and dilation in periods of excitement. The skin round the eyes is bare and of an orange colour. The head, neck and upper parts of the body and wing-coverts are bluish grey; but the carpal feathers, including the primaries, are black, as are also the upper tarsus and the tip of the lower tibiae—the last being in some examples tipped with white. The tail-quills are grey for the greater part of their length, then barred with black and tipped with white; but the two middle feathers are more than twice as long as those next to them, and drooping downwards present a very unique appearance.

Its chief prey consists of insects and reptiles, and as a foe to snakes it is held in high esteem; although it is undoubtedly also destructive to the destruction of snakes, and successfully attacks the most venomous species, striking them with its knobbled wings and kicking forwards at them with its feet, until they are rendered incapable of offence, when it swallows them. The nest is a huge structure, placed in a bush or tree, and in it two white eggs, spotted with rust-colour, are laid. The young remain in the nest for a long while, and even when four months old are unable to stand upright. They are very frequently brought out tame. The Secretary-bird is found, but not very abundantly and only in some localities, over the greater part of Africa, especially southwards on the west of the Congo and in the interior to Khartum. The systematic position of the genus Serpensauria has long been a matter of discussion, and is still one of much interest, though of late years, however, there have been pretty well agreed in placing it in the order Accipitr. Most of them, however, have shown great want of perception by putting it in the family Falcinae. It cannot doubt its forming a peculiar family, Serpensauridae, differing much in habits from any other. Above all, the tibiae are bare, the entire structure of the foot being somewhat simile to that of the Secretary-bird, and not being, as the last are, in order to support the body while perched. The name, however, has been applied to it by Linnaeus, in his Systema Naturae, 1758, and is in the genus Serpensauria of the family Falcinae. In the Systema Naturae, 1758, the Secretary-bird is described as a motley, and very contrary bird, and that its young are of a very light grey. A. Milne-Edwards having recognized in the Micene of the Allier the fossil bone of a species of this genus, S. robustus (Ost. fols. France, ii. pp. 465-468, pl. 186, figs. 1-6), proves that it is an ancient form, one possibly carrying on a direct and not much modified descent from a generalized form, whence may have sprung not only the Falconidae but perhaps the progenitors of the Ardeidae and Ciconiidae, as well as the puzzling Caprimulgidae (Seriematidae, q.c.—(A. N.).

SECRETARY OF STATE, in England, the designation of certain important members of the administration. The ancient English monarchs were always attended by a learned ecclesiastical, known at first as their clerk, and afterwards as secretary, who conducted the royal correspondence; but it was not until the end of the reign of Queen Elizabeth that these functionaries were called secretaries of state. Upon the direction of public affairs passing from the privy council to the cabinet after 1688 the secretaries of state began to assume those high duties which now render their office one of the most influential of an administration.

Until the reign of Henry VIII. there was generally only one secretary of state, and in 1689 the post was disfranchised by being made by act of Parliament a sinecure. There have since been three secretaries of state, the first secretary being the head of the line of business of the king, having the title of Lord High Steward, Lord High Admiral, Lord High Treasurer, and Secretary of State, and being appointed by the king. The second secretary is the senior member of the board of the king’s council, and is appointed by the sovereign. The third secretary is the secretary of state, and is appointed by the king, having the rank of a peer of the realm. The office of the secretary of state is one of great importance, and is usually held by a man of great ability and capacity, and is a position of great honor and influence.

In the United States the secretaries of state are the executive of the executive, who deals with foreign affairs, and who, in the United States, is a member of the cabinet, and is in charge of the foreign office. The chief function of the secretary of state is to execute any part of the duties of the secretary of state, the division of duties being a mere matter of arrangement. For the existing division of duties, see under separate headings, Colonial Office, Foreign Office, &c.

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The latter use has been influenced by the false etymology which makes the word mean "cut off" (L. secare, to cut). The derivation has been long a matter of dispute. The Latin secta was used in classical Latin first of a way, a trodden or beaten path; it seems to be derived from secare, to cut, cf. the phrase secare stiam, to travel, take one’s way, Gr. ἄρχωμεν ἄδον. From the phrase sectam sequi, to follow in the footsteps of any one, the word came to mean separation, division. Another transferred sense is a manner or mode of life, so hanc sectam rationemque vitae . . . sectat sumus (Cic. Cat. 17, 40). It was also the regular word for a school of philosophy and so translates εἶδος, lit. choice (εἰδόθαι, to know), the school which one follows. The English word sect is a transfer, and is not an equivalent. The Latin word is the derivation of secta adopted by Skeat (Etym. Dict., 1910), which connects the word with sequi, to follow. Whether derivation is accepted a "sect" does not mean a part "cut off" from the church.

SECTION (L. sectio, cutting, secare, to cut), the act of cutting or a part cut off, thus used of any division of a subject, as the paragraph of a book, article, statute, &c., of a division of land, &c., or a separate class of a community or race; the term is more particularly applied to a thin slice of any substance prepared for examination by the microscope (see Microscopy) or to a diagram of any structure showing the internal plan as if exposed by the cutting off of an external surface; thus, in architecture, a section is a drawing of a building cut in half, so as to show the relative height of the floors, the depth of the foundation and its footings, the framing of the roof, if in timber or iron, or the construction of the vault or dome, if in masonry. The term is also applied to the details of the structure, such as the cornice and the various mouldings showing their profile.

SECULAR (L. sacellum, of or belonging to an age or generation, sacellum), a word with two main branches of meaning (1) lasting or occurring for a long indefinite period of time, and (2) non-spiritual, having no concern with religious or spiritual matters. The first sense, which is directly taken from the classical
SECULAR GAMES—SECUNDUS, PUBLIUS POMPONIUS

Latin, is chiefly found in scientific applications, of processes or phenomena which are continued through the ages and are not regularly recurrent or periodical, e.g. the secular cooling of the earth, secular change of the mean annual change of the temperature. The word is thus used widely of that which is lasting or irremediable, and Late Latin consequens was particularly used of that which belongs to this world, hence non-spiritual, lay. It is thus used, first to distinguish the "regular" or monastic clergy from those who were not bound by the rule (regula) of a religious order, the parish priests, the "seculars," who were living in the world, and secondly in the wide sense of anything which is distinct, opposed to or not connected with religion or ecclesiastical things, temporal as opposed to spiritual or ecclesiastical. Thus property transferred or alienated from spiritual to temporal hands is said to be "secularized" by the secularization act in 1792.

According to tradition, the secular games had their origin in certain imperial ritual rites of the gens Valeria, which were performed at the Terentum, a volcanic cleft in the Campus Martius. According to the Roman antiquarians themselves, they were derived from the Etruscans, who, at the end of a mean period of 100 years (as representing the longest human life in a generation), presented to the chthonian deities an expiatory offering on behalf of the coming generation. The first definitely attested celebration of the games took place in 249 B.C., on which occasion a vow was made that they should be repeated every hundredth year (their name being derived from the centenary of the games). The games were held in the month of February, in the first half of the month, and though saeculum (200 years) after the Augustan celebration; 248 (under Philip the Arabian), the 1000th year of the city; 262 (under Gallienus), probably a special ceremony in time of calamity; in 304 (which should have been 314) Maximian intended to hold a celebration, but does not appear to have been done so. From this time nothing more is heard of the secular games, until they were revived in the year 1300 as the Spanish jubilees instituted by Boniface VIII.

At the beginning of the harvest, heralds went round and summoned the people to the festival. The quindecimviri distributed to all free citizens on the Capitol and in the temple of Apollo on the Palatine four saecula, four saecula were given to the poor in the Church and to the poor in the temple of Diana on the Aventine, wheat, barley, and beans were distributed, to serve as an offering of firstfruits. The festival then began, at which offerings were made to various deities. On the first night the emperor sacrificed three rams to the Parcae at an underground altar on the banks of the Tiber, while the people lighted torches and sang a special hymn. On the same day of the next month, a white or black hog and a black pig were sacrificed to Tellus, and dark victims were sacrificed. In the year 399, the first day white bulls and a white cow were offered to Jupiter and Juno on the Capitol, after which scenic games were held in honour of the goddesses. The following day, the emperor took the saeculum hymns to Juno on the Capitol; on the third, white oxen were sacrificed to Apollo and twenty-seven boys and maidens sang the secular hymn "in Greek and Latin.

Valerius Maximus, ii. 4, and Horace (Carmen Saeculare) is the chief ancient authority on the subject; see also Mommsen, Römische Chronologie (1858); C. L. Roth, "Pompeian Secular Games," in the Rheinisches Museum, viii. (1853); and Marquardt, Römische Staatsverwaltung, iii. (1885), p. 368. The inscription commemorating the ludi of 17 B.C. was discovered in 1909 and is printed in Epigrapher epigraphica, vol. vii. The best modern work on the whole subject is in H. Diels, Syllogeis Blätter (1890), p. 109 foll.

SECULARISM, a term applied specially (see Secular) to the system of social ethics associated with the name of G. J. Holyoake (q.v.). As the word implies, secularism is based solely on considerations of practical morality with a view to the physical, social and moral improvement of society. It neither affirms nor denies the theistic premises of religion, and is thus a particular variety of utilitarianism. Holyoake founded a society in London which subsequently under the leadership of Charles Bradlaugh advocated the disestablishment of the Church, the abolition of the Second Chamber and other political and economic reforms.

See Holyoake's Principles of Secularism (1895).

SECUND (Lat. secundus, following), a botanical term used of plants when similar parts are directed to one side only, as flowers on an axis.

SECUNDERABAD, one of the chief British military stations in India, situated in the state of Hyderabad or the Nizam's Dominions, 1830 ft. above sea-level, and 6 m. N.E. of Hyderabad city. Pop. (1901) 85,550. It is now the headquarters of the 3rd division of the southern army. Secunderabad includes Bolaram, the former cantonment of the Hyderabad contingent (now merged in the Indian army), and also Trumilgherry, the artillery cantonment, covering a total area of 22 sq. m. These two places have an additional population of 12,888.

SECUNDUS, JOHANNES, whose real name was JOHANN EvertS (1511-1536), Latin poet, was born at The Hague on the 10th of November 1511. He was descended from an ancient family in the Netherlands; his father, Nicholas Everts, or Everard, seems to have been high in the favour of the emperor Charles V. On what account the son was called Secundus is not known. His father died before he was born, but though he took his degree at Bourges it does not appear that he devoted much time to legal pursuits. Poetry, painting and sculpture engaged his mind at a very early period. In 1533 he went to Spain, and soon afterwards became secretary to the cardinal-archbishop of Toledo, in a department of business which required no other qualification than that of writing Latin with elegance. During this period he composed his most famous work, the Basia, a series of amatory poems, of which the fifth, seventh, and ninth Carmi nas of Catullus seem to have given the hint. In 1535 he accompanied the emperor Charles V, from the siege of Tunis to the subsequent campaign. After quitting the service of the archbishop, Secundus was employed as secretary by the bishop of Utrecht; and so much did he distinguish himself by his compositions that he was called upon to fill the important post of private Latin secretary to the emperor, who was then in Italy. But, having arrived at St Amand, near Tournay, he died of fever on the 8th of October 1536.

SECUNDUS, PUBLIUS POMPONIUS, Roman general and tragic poet, lived during the reigns of Tiberius, Caligula and Claudius. He was on intimate terms with the elder Pliny, who wrote a biography of him (now lost). The chief authority for his life is Tacitus, according to whom he joined the legions in Britain and was a man of marked and brilliant intellect. His friendship with Sejanus and his brother made him politically suspect, and he only escaped death by remaining practically a prisoner in his own brother's house until the accession of Caligula. During his enforced retirement he composed tragedies, which were put on the stage during the reign of Claudius. In A.D. 50 he distinguished himself against the Chatti and obtained the honour of the triumphal Insignia. Quintilian asserts that he was far superior to any writer of tragedies he had known, and Tacitus expresses a high opinion of his literary abilities. Secundus devoted much attention to the niceties of grammar and style, on which he was recognized as an authority. Only a few lines of his work remain, some of which belong to the tragedy Aeneas.

See O. Ribbeck, Geschichte der römischen Dichtung, iii. (1892).
SECURITY

(Securitas, free from care, safe), in general, the condition of being secure. In law, a security is a document evidencing the right to money, goods, or other property, e.g., stocks, shares, bills of exchange, mortgages, &c. A security is termed collateral when it is given merely as a guarantee for the repayment of money; personal, when it gives a right of action against a person for the recovery of money. A convertible security is one which can be readily converted into money, e.g., as contrasted with land or buildings, sometimes termed "dead" security. A person who holds himself responsible for the fulfilment of another's obligations or goes surety for him is called a security.

SEDNAIE, MICHEL JEAN (1719-1797), French dramatist, was born at Paris on the 4th of July 1719. His father, who was an architect, died when Sedaine was quite young, leaving no fortune, and the boy began life as a mason's labourer. He was at last taken as pupil by an architect whose kindness he eventually repaid by the help he was able to give to his benefactor's grandson, the painter David. Meanwhile he had done his best to repair his deficiencies of education, and in 1750 he published a Recueil de pièces fugitives, which included fables, songs and pastoral. His special talent was, however, for light opera. He produced Le Diable à quatre (1756), the music being by several composers; Blaise le Savelier (1759), for the music of Danican Philidor; On ne s'aise jamais de tout (1761) and others with Pierre Alexandre de Monsigny; Aucassin et Nicolete (1780), Richard Cœur de Lion (1784), and Amphitryon (1788) with André Grétry. Sedaine's vaudevilles and operettas attracted the attention of Diderot, and two plays of his were accepted and performed at the Théâtre François. The first and longest, the Philosophe sans le savoir, was acted in 1765; the second, a lively one-act piece, La Gageure impu集体经济 in 1768. These two at once took their place as stock pieces and are still ranked among the best French plays, each of its class. Except these two pieces little or nothing of his has kept the stage or the shelves, but Sedaine may be regarded as the literary ancestor of Scribe and Dumas. He had the practical knowledge of the theatre, which enabled him to carry out the ideas of Diderot and give him claims to be regarded as the real founder of the domestic drama in France. Sedaine, who became a member of the Academy (1786), and secretary for architecture of the fine arts division, died at Paris on the 17th of May 1797. He wrote two historical dramas, Raymond V. comte de Toulouse, et Maillard, ou Paris sauvé. His Œuvres (1826) contain a notice of his life by Ducis.

SEDALIA, a city and the county-seat of Pettis county, Missouri, U.S.A., a little W. of the centre of the state. Pop. (1900) 1,521; (1725 negroes; 972 foreign-born); (1910) 17,822. Sedalia is served by the Missouri Pacific and the Missouri, Kansas & Texas railway systems, and is a transportation centre with good facilities. The city has a high and pleasant site (about 900 ft. above sea-level) on a rolling prairie, and is laid out as an exact square. Among the public buildings much the handsomest are the court house, built of Warrensburg blue sandstone (1884), and the Public Library (1900), given by Andrew Carnegie. Sedalia is the seat of the George R. Smith College (M.E., founded in 1894) for negroes. Liberty Park (60 acres), in the W. part of the city, is owned by the municipality. Broadway, the principal residence street, is 120 ft. wide, and is parked on either side. The State Board of Agriculture has a splendid fairgrounds (now 210 acres) adjoining the city on the S.W. in 1895. Sedalia is noted for its fair, which attracts many visitors. The water supply is derived from a storage lake on Flat Creek, 3 m. from the city, settling basins being used to clarify the water. There are a city hospital and the Maywood, a private hospital; and the Missouri, Kansas & Texas railway maintains here a hospital for all parts of its system. The surrounding country is a magnificent livestock and farming region, and in the immediate vicinity are valuable deposits of coal, limestone, of shale suitable for sewer pipe and of fireclays. The city has important horse and mule yards. The Missouri Pacific, three of whose operating divisions end at Sedalia and thus make the city its central division point, in 1904 established large shops (129 acres) in a suburb E. of the city. These shops and those of the Missouri, Kansas & Texas railway, of which Sedalia is the central division point on the N. end of its system, add greatly to the industrial importance of the city. The total value of the factory product in 1905 was $1,691,727, showing an increase of 31-8% since 1900.

Sedalia was established as a station on the Missouri Pacific railroad in 1857. In 1864 it was chartered as a town and was made the county-seat, succeeding Georgetown (then a flourishing town especially with a large trade in wool) which had the advantage of being on the old plank road taking place in 1865. Sedalia was a Union military post throughout the Civil War; on the 15th of October 1864 a detachment from Sterling Price's raiding column dislodged a small Union force that was occupying the town, but the Confederate occupation lasted only one day. Sedalia was chartered as a city in 1889. In 1896 a constitutional amendment to remove the state capital from Jefferson City to Sedalia was defeated by popular vote.

SEDAN, a town of northern France, capital of an arrondissement, in the department of Ardennes, on the right bank of the Meuse, 12 m. E.S.E. of Mézières by rail. Pop. (1906) town 16,014; commune 19,590. Sedan is built on the right bank of the Meuse round a bend in the river forming a peninsula. On the left bank stands the suburb of Torcy, situated partly within the bend, partly beyond the canal which cuts across the neck of the peninsula. There is a statue of Turenne (born at Sedan in 1611), remains of a castle of the 15th century and a Protestant temple dating from 1593. Sedan is the seat of a sub-prefecture and has a municipal school of weaving. The manufacture of fine black cloth established in the middle of the 17th century by Cardinal Mazarin, held its place as the staple industry of the town till towards the end of the 19th century. A large variety of woolen fabrics are produced, and there are flour mills and factories for industrial machinery, boilers and heavy iron goods, chocolate, &c.

Sedan was in the 14th century a dependency of the abbey of Mouzon, the possession of which was disputed by the bishops of Liége and Reims. United to the crown of France by Charles V., it was ceded by Charles VI. to Guillaume de Braqemont, whose son sold it to his brother-in-law Évrard de la Marck. For two centuries this family continued masters of the place in spite of the bishops of Liége and the dukes of Burgundy and Lorraine; and Henri Robert adopted the title "prince of Sedan." In the 16th century the town was an asylum for many Protestant refugees, who laid the basis of its industrial prosperity, and it became the seat of a Protestant seminary. Robert I. de la Marck (d. 1560), also marshal of France, erected Sedan on his own authority into an independent principality. By the marriage of his granddaughter Charlotte with Henry I. de la Tour d'Auvergne, the duchy of Bouillon and the principality of Sedan passed to the house of Turenne. When the new duke attempted to maintain his independence, Henry IV. captured Sedan in three days; and the second duke Frédéric Maurice de la Tour d'Auvergne, eldest brother of the great marshal, who had several times revolted against Louis XIII., was, after his share in the conspiracy of Cinq-Mars, obliged to surrender his principality. Sedan thus became part of the royal domain. On the 1st of September 1870 the fortress was the centre of the most disastrous conflict of the Franco-German War (see below). The village of Bazilles, 3 m. S.E. of Sedan, contains the great ossuary. The house, rendered famous by Neuville's paintings, "Les Dernières Cartouches," now contains objects found on the battlefield. At Donchery, 3½ m. to the west of Sedan, is the château of Belle-Neuve, where Napoleon III. surrendered his sword and where the terms of capitulation of Sedan were agreed upon.
**Battle of Sedan (September 1st, 1870).—**During the course of the 31st of August (see Franco-German War) the retreating French army (1st, 5th, 7th and 12th corps) under Marshal MacMahon assembled in and around Sedan, watched throughout the day by the German cavalry but not severely pushed by them. Sedan is a small old-fashioned fortress, lying in a depression between two ridges which converge in the plateau of Illy about 2½ m. north-east of the town. The only part which its defences played, or might have played, in the ensuing battle lay in the strategic possibilities contained in the fine and rocky bridge-head of Torcy, covering an elbow bend of the Meuse whence the whole French army might have been hurled into the gap between the German III. and Meuse armies, had there been a Napoleon to conceive and to execute this plan. But MacMahon seems to have been too despondent to contemplate anything further than a battle for the honour of the army, and though communications with Mezières, where Vinoy's corps (13th) was gathering, lay open throughout the day, he neither sent orders to it nor made any arrangements to meet the coming danger.

The troops received food and ammunition, the disorders consequent on the successive days' fighting in retreat were remedied, and the men themselves what they needed most of all, an almost unbroken day's rest. Locally their positions were strong, particularly to the east, where the stream flowing through the Fond du Givonne, though fordable, presented a serious obstacle to the tactical handling of the German infantry. But as a whole it was far too cramped for the numbers crowded into it; it could be completely overlooked from the heights of Frénois, where the king of Prussia's headquarters took their stand, and whence in the afternoon the German artillery fire began to cross over the town itself. At nightfall on the 31st the leading German infantry were approaching. The Army of the Meuse on the right bank of the river, with the II. Bavarians moving towards Bazelles to reinforce it, and the III. Army, consisting of the V. and XI. corps with the Württemberg division, was heading for Donchery to cut off the French from Mezières, and only a weak cavalry screen closed the gap between them.

During the night of the 31st of August the Bavarians threw a pontoon bridge across the Meuse below Rémy-lès, and soon after daybreak, in a fog which lay thickly over the whole country, they began their advance towards Bazelles, held by Vassogne's division of the 12th corps and fairly prepared for defence. The firing called all troops within reach of the sound to arms, and before 5 A.M. the Meuse Army was marching to the battle-field, the Guards on the northern road via Villers-Arany, the Saxons and IVth corps to the south along the river.

Vassogne's division contained a number of Marine battalions, and their stubborn resistance completely disconcerted the Bavarians. Deprived of artillery co-operation owing to the fog, the latter spent themselves in fruitless and disconnected efforts in the gardens and streets of the village, and reinforcements were soon urgently needed. About 6 A.M. the fog lifted, and the German batteries at once took part in the struggle. One of the first shells wounded Marshal MacMahon. The next senior officer, General Ducrot, at once assumed command (7 A.M.). But it happened that General Wimpffen, who had only joined the army from Algiers on the night of the 30th, brought with him a secret commission to assume command in the event of the death or disablement of MacMahon. Of this power he did not at first avail himself, since he was a stranger both to the army and the country, whilst Ducrot possessed the confidence of the one and the knowledge of the other in the highest degree. But when about 9 A.M. he learnt that Ducrot proposed to move the whole army under cover of rearguards to the west towards Mezières, he produced his commission and countermanded the movement, being himself convinced that eastward towards Bazaine at Metz lay the road to salvation. Orders once issued on a battle-field are not easily recalled, and the result of this change of command was dire confusion. The French troops northward of Bazelles, along the Fond du Givonne, were already commencing their withdrawal, when the leading troops of the Saxon XII. corps began to arrive about Daigny, and being only opposed by a weak rearguard, easily carried the ridge south of the Givonne-Sedan road, thus threatening the retreat of Vassogne's division in and about Bazelles, which then fell into the hands of the Bavarians between 10 and 11 A.M. At the same moment the Guard corps had begun to form up between Daigny

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**Sedan**

[Map of Sedan showing battlefield positions and strategic points]
and Givonne, and there being no serious force of the enemy in front of them, the artillery was deploying along the western heights above the valley of Givonne, covered only by weak advanced guards of infantry, when suddenly a great column of French infantry, some 6000 strong, moving west in pursuance of Wimpffen's orders, came over the eastern border of the valley and charged down at full speed towards the guns. Then followed one of the most dramatic spectacles of the entire war. The whole of the corps artillery of the Guard turned upon these devoted men, and tore the column in half, shrouding it in dense clouds of dust and smoke from the bursting shells, above which could be seen the trunks and limbs of men flung upwards by their explosion. The head of the column, perhaps 2000 strong, nevertheless kept on its way, but under the combined fire of the Guard rifle battalion and the flanking fire from other guns its impetus died out and its débris disappeared by degrees under convenient cover. The German Guards were now free to stretch out their right towards the Belgian frontier (where the scouts of the III. Army were already moving) and prepare with all deliberation for the attack on the Bois de la Garenne.

The III. Army had moved off as early as 2.30 A.M., and by 4 A.M. was already crossing the Meuse at Donchery, aided by several pontoon and trestle bridges thrown over during the night. Their right was covered from sight by the peninsula formed by a bend of the river, and the march of the several columns was unopposed till, clearing its northern extremity, they began to deploy to their right between St. Menges and Floing. Here they on their right and west, respecting the position on the ridge, to the south of the Floing-Illy road. Against this position the German artillery now pressed forward, and seeing their exposed position, General Galliet brought forward his brigade of Chasseurs d'Afrique and delivered a most dashing charge. But being unsupported he was compelled to withdraw again behind the cover of the Cazal-Illy ridge. It was now about 11 A.M., and, whether moved by the belated impulse of Ducrot's orders or attracted by the apparent weakness of the Prussians within sight, the French infantry now made a brilliant counter-attack out of their position in their usual manner. But German reinforcements coming suddenly into view, and their Evan having spent itself, they fell back again, holding only to Floing, whence it required nearly two hours more to expel them.

About noon Wimpffen rode up to General Douay and asked him whether he could hold on to his position. The latter, possibly elated by the success of his recent attack, replied in the affirmative, pointing out only the importance of maintaining the Calvaire d'Illly to the north. De Wimpffen promised him support from the 1st corps on the right rear, part of which, hidden in the woods of la Garenne, had as yet been little engaged, and then rode south to Balan, where he found the 12th corps fighting desperately. He then sent back to Douay for reinforcements, and the latter despatched all he could spare. These, marching south, crossed the troops of the 1st corps sent to Douay's assistance. The Prussian shells were already crashing into the woods from all sides, and countless stragglers and riderless horses caused most serious delay. To gain time, Margueritte's division was ordered to charge. Margueritte was killed as he rode forward to reconnoitre, and Galliet took command. "For the next half hour the Prussian official account, "the scene defies description. Galliet and his squadrons covered themselves with glory, but he had not 2000 sabres at his disposal. Under the storm of shell and over the broken ground maneuvering was impossible. But a series of isolated charges were delivered with results which convinced well-nigh every survivor that the day of cavalry, in sufficient numbers and properly handled on the battle-field, was by no means spent." About an hour after the cavalry charges, between 3 and 4 P.M., the Germans at length gathered weight enough to attempt the assault of the French main position, and moved by a common instinct, lines of men almost 2 m. in extent, pressed on, gaining cover from the convex slope of the hill, till at length they were able to storm the stubbornly-defended ridge. Meanwhile, Wimpffen had initiated a fresh counter-stroke from the Fond du Givonne against Balan and Bazelines. Carried out with magnificent courage, it swept the Bavarians out of both villages, and for a moment the road seemed open for escape, but Wimpffen did not know that the 1V. Prussian corps stood waiting behind the gap.

Riding back to the town to seek the emperor and implore him to plait himself at the head of all available reinforcements, he saw a white flag break out from the steeple of the church tower, but almost instantaneously disappear. He did indeed reach the emperor, but, delayed by the appalling confusion, was too late. The flag had gone up again and he knew that further resistance was hopeless. The fighting did not cease at once. The troops he had directed to make the final effort, their eyes fixed on the enemy in front of them, never saw the flag; and until 6 P.M. a series of isolated attempts were made to break the iron circle with which the Germans had surrounded them. The emperor, who during the early hours of the day had fearlessly courted death, at length, over come by extreme physical pain and exhaustion, had ridden back to the town, and about 4 P.M., seeing no hope of success, had sent a parlementaire conveying his personal surrender to the king of Prussia, at the same time ordering the white flag to be hoisted. It was torn down by a Colonel Fauve, but was hoisted again half an hour later, when Prussian troops from Cazal were almost at the western gates of Sedan. It only remained for Wimpffen to make terms for the army, and after a long and gallant effort to avert the inevitable, he at length signed an unconditional surrender, with the sole alleviation (introduced as a truce) that the gallantry shown by his men) that all officers were to retain their swords.

Thus passed into captivity 82,000 men, 558 guns and stores to an immense amount. The price to the victors for this result was in round numbers 9000. The French killed and wounded numbered about 17,000. It is indicative of the demoralization in the French army that this figure is 1000 less than the cost of the victory to the Germans at Wörth, although on that occasion the French troops actually engaged numbered one half those available at Sedan. The duration of the fighting was the same in both cases.

**SEDAN-CHAIR**, a portable chair or covered vehicle, with side windows, and entrance through a hinged doorway at the front, the roof also opening to allow the occupant to stand. It is carried on poles by two "chairmen." Alike in Paris and in London the sedan-chair man was an institution—in the one city he was usually an Auvergnat, in the other an Irishman. The sedan-chair was a fashionable mode of transport in towns up to a century or so ago. It took its name from the town of Sedan, in France, where it was first used, and was introduced into England by Sir S. Dunscombe in 1634. Although a typically 18th-century vehicle it was used in the 17th, and had been known much earlier. Indeed, the ancient seda gestatoria of the popes is really a rudimentary form of sedan-chair. These vehicles were
often beautifully painted, even the greatest French pastoralists not disdaining to embellish their panels. It is still in use at the public baths at Ischl, in Austria, and also in the city of Bath, England, as a mode of transit in connexion with the medical baths. The sedan-chair can be taken into the force among the invalid conveyed without exposure to the outer air to and from the mineral-water bath. The poles are so arranged that the chair may be carried up and down stairs and still preserve its horizontal position.

SEDBERGH, a market town in the Skipton parliamentary division of the West Riding of Yorkshire, England, 28½ m. S.S.E. of Penrith by a branch of the London & North-Western railway. Pop. (1901) 2430. It is pleasantly situated at the junction of several small streams forming the river Lune, in a deep valley surrounded by high-lying moors of the cuvierian, St. A. The church is principally late Norman. The grammar school was founded by Dr Roger Lupton, provost of Eton College, in 1528, but as it was connected with a chantry it was suppressed by Henry VIII., to be refounded in 1551 by Edward VI.; it now takes rank among the important public schools.

SEDGON, RICHARD JOHN (1845-1906), New Zealand statesman, was born at Eccleston, Lancashire, England, in 1845, his father being a schoolmaster at Eccleston Hill school. He was brought up to the engineering trade, and when eighteen went to Australia and entered the railway workshops at Melbourne. He was sent to New Zealand as a surveyor of the public works, and defence and mines; and on Ballance’s death (1853) became premier, a position he retained till his sudden death on the 20th of June 1856. During these years Seddon held a unique place in the public life of New Zealand, and in its relations with the empire. He combined his premiership with various offices—as colonial treasurer, minister for education, postmaster-general, telegraph commissioner, minister of marine, minister for land purchase, and minister for labour—but his strenuous personality, and the confidence inspired by his determination to make New Zealand a first rank empire among the British dominions, was the dominating feature in all his course of action. His large physique, his profound earnestness, his gift of popular oratory, his expansive kindliness and his power of dealing with men, made him supreme among his own people. He became known in a wider sphere after his attending the colonial conference in London in 1897, and thenceforth he was regarded as one of the pillars of British imperialism. During the Boer War, and afterwards in the movement for preferential trade with the colonies, he was an enthusiastic supporter of Mr Chamberlain, though he was characteristically outspoken in his opposition to the unpleasant policies of his minister in South Africa. His rough and ready views were frequently open to criticism, but his vigorous patriotism and intensity of character give him a permanent place among those who have worked for the consolidation of the British dominions.

SEDGAN, THOMAS (1821-1856), English landscape painter, was born in London on the 28th of August 1821. His father was a cabinetmaker, and the son for some time followed the same occupation; but in 1842 he went to Paris to study ornamental art. On his return he executed designs for furniture for his father. In 1849 he made sketching expeditions in Wales and France, and in 1852 began to exhibit in the Royal Academy, sending a figure-piece, Penelope, and afterwards landscapes, deriving their subjects from Britanny. In the end of 1853 he joined Holman Hunt at Cairo. He worked for a year in Egypt and Palestine, executing views which Ruskin pronounced to be the first landscapes uniting perfect artistic skill with topographical accuracy; being directed, with stern self-restraint, to no other purpose than that of giving to persons who cannot travel trustworthy knowledge of the scenes which ought to be most interesting to them,” Seddon’s Eastern subjects were exhibited in Berners Street, London, in 1853, and in Conduit Street in 1856. In October 1856 Seddon again visited Cairo, where he died on the 23rd of November. In 1857 his works were exhibited in the rooms of the Society of Arts, and his important and elaborately finished picture, “Jerusalem and the Valley of Jehoshaphat,” was purchased by subscription and presented to the National Gallery.

A memoir of Seddon, by his brother, was published in 1859.

SEDERUNT, ACT OP, in Scots law, an ordinance for regulating the forms of judicial procedure before the Court of Session, passed by the judges under authority of a power originally conferred by an act of the Scottish parliament, 1540, c. 93. A quorum of nine judges is required to pass an act of Sederunt.

SEDLEY, an urban district of Staffordshire, England, between Dudley and Wolverhampton, in the parliamentary borough of Wolverhampton. Pop. (1901) 15,951. The district abounds in coal, lime and ironstone. Nails, rivets, chains, fire-irons, locks and safes are produced. The parish includes the large manufacturing districts of Upper and Lower Gornal, Congleton, Boreham and Whiston. In 1822 the last factory he grasped the prime ministerial of the London & North-Western railway, 10 m. W.N.W. from Birmingham.

SEGDWICK, ADAM (1785-1873), English geologist, was born on the 22nd of March 1785 at Dent in Yorkshire, the second son of Richard Sedgwick, vicar of the parish. He was educated at the Grammar Schools of Dent and Sedbergh, and at Trinity College, Cambridge, where he graduated B.A. as fifth wrangler in 1808, and two years later was elected a fellow of his college. For several years he was occupied as private tutor and afterwards as assistant mathematical tutor at Trinity College. In 1818 he was admitted to priests’ orders. He had at this time paid no serious attention to geology. As a lad he had collected fossils from the Mountain Limestone near Dent, and in 1813 he had visited the mines near Furness and Coniston. Nevertheless, when the Rev. John Hallstone retired in 1818 from the post of Woodwardian professor of geology, Sedgwick applied for the vacancy, and was so strongly supported by his college as a man of talent that he was elected by a large majority. He now took up the study of geology with intense zeal, traversed large areas in the south of England, and, becoming acquainted with W. D. Conybeare, regarded him as his master in geology. It is said that Conybeare and Sedgwick spent many hours with their microscopes, comparing fossils and discussing stratigraphical geology and the relationships of rocks in the field. In papers read before the Cambridge Philosophical Society, 1820-1821, on the structure of parts of Devonshire and Cornwall, he made observations of exceptional interest and value. Of this society in 1819 he had been one of the founders with J. S. Henslow. Every year for a long period now brought its season of field-work. Sedgwick dealt with the geology of the Isle of Wight, and with the strata of the Yorkshire coast (in papers published in the Annals of Philosophy, 1822, 1826); and his researches on the Yorkshire rocks were published in Murchison’s 1827. He contributed an important essay On the Geological Relations and Internal Structure of the Magnesian Limestone to the Geological Society of London (1828). As early as 1822 he had begun to make a detailed geological map of the older rocks of the Lake District; he continued these researches whereby the main structure of this mountain region was first unravelled, in succeeding years; and the principal results were brought before the Geological Society (1831-1836). Meanwhile he was elected president of the Geological Society in 1839-1830, and in 1831 he commenced field-work in North Wales. His chief attention was now concentrated on the older rocks of England and Wales. Murchison began the task of unravelling the structure of the older rocks on the Welsh borders in the same year. They had intended to start together, but the arrangements fell through, and thus they began their labours independently
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and from opposite sides of the principality. Eventually Sedgwick founded the Cambrian system for the oldest group of fossiliferous strata, and Murchison the Silurian system for the great group immediately below the Old Red Sandstone. Their systems were found to overlap—Sedgwick's Upper Cambrian and Murchison's Lower Silurian being practically equivalent. Hence arose a painful controversy that has only of late years been terminated by the adoption of Professor C. Lapworth's term Ordovician in place of the Upper Cambrian of Sedgwick and the Lower Silurian of Murchison.

Sedgwick was ever actively interested in the work of his university. His famous Discourse on the Study of Geology was delivered at the opening of the twenty-fifth anniversary of the Geological Society of Cambridge in 1833; it reached a fifth edition in 1850. The studies were reviewed under the headings of (1) The laws of nature, (2) Ancient literature and language, and (3) Ethics and metaphysics; and the volume had so grown that it ultimately consisted of 442 pages of preface, or preliminary dissertation on the history of creation, with arguments against the transmutation of species, and an essay on the evidences of Christianity; the discourse occupied 94 pages; and there was an appendix of notes, &c., that filled 295 pages.

Sedgwick was president of the British Association at the first Cambridge meeting, and in 1834 he was appointed a canon of Norwich. In 1836 with Murchison he made a special study of the Culm-measures of Devonshire, which until that time had been grouped with the greywacke, and together they demonstrated that the main mass of the strata belonged to the age of the true Coal Measures. Continuing their researches into the bordering strata they were able to show in 1839, from the determinations of William Lonsdale, that the fossils of the South Devon limestones and those of Ilfracombe and other parts of North Devon were of an intermediate type between those of the Silurian and Carboniferous systems. They therefore introduced the term Devonian for the great group of slates, grits and limestone, now known under that name in West Somerset, Devon and Cornwall. These results were published in the great memoir by Sedgwick and Murchison, "On the Physical Structure of Devonshire" (Trans. Geol. Soc., 1839). Of later published works it will be sufficient to mention A Synopsis of the Classification of the British Palaeozoic Rocks (1839), which contained a systematic description of the fossils by F. McCoy. Also the preface by Sedgwick to A Catalogue of the collection of Cambrian and Silurian Fossils contained in the Geological Museum of the University of Cambridge, by J. W. Salter (1873).

The Wollaston Medal of the Geological Society was awarded to Sedgwick in 1851, and the Copley Medal of the Royal Society in 1863. He continued to lecture until 1872, when ill-health rendered necessary the appointment of a deputy (Professor J. Morris). He died at Cambridge on the 27th of January 1873.

In 1865 the senate of the university received from A. A. van Sittart the sum of £500 "for the purpose of encouraging the study of geology among the resident members of the university, and in honour of the Rev. Adam Sedgwick." Thus was founded the Sedgwick prize to be given every third year for the best essay on some geological subject. The first Sedgwick prize was awarded in 1870. In 1878 it was decided that his memorial should take the form of a new and larger museum. Hitherto the geological collections had been placed in the Woodwardian Museum in Cockerell's Building. Through the energy of Professor T. McK. Hughes (successor to Sedgwick) the new building termed the Sedgwick Museum was completed and opened in 1903.

See the Life and Letters, by John Willis Clark and Thomas McKenny Hughes (1890).

SEDGWICK, JOHN (1813-1864), American general, was born in Cornwall, Connecticut, on the 13th of September 1813, and graduated at West Point in 1837. Amongst his classmates were Joseph Hooker, Braxton Bragg and J. A. Early. He saw active service against the Seminoles in Florida, and took part as an artillery officer in the Mexican War, winning the brevets of captain and major for his conduct at Contreras-Churubusco and Chapultepec. In command first of a brigade and later of a division in the Army of the Potomac, he took part in the Seven Days' and Maryland campaigns. At the battle of Antietam he was twice wounded, but remained on the field. Soon afterwards he was given command of the VI. corps, in which position he took an important part in the battle of Chancellorville, following the famous lines of Fredericksburg and fighting the severe battle of Bank's Ford. The VI. corps bore a share in the battle of Gettysburg, having made a fine forced march to the field. Sedgwick had been offered the chief command of the army upon Hooker's resignation; but he declined, and retained his command of the VI. corps during the Virginia campaign of the autumn of 1863, being on several occasions placed by Meade in charge of a wing of the army. He was also given the command of the whole Army of the Potomac (August 27, 1863). The action of Rappahannock station Sedgwick by a brilliant night attack destroyed two brigades of Early's division (November 7th). When Grant became commanding-general and the Army of the Potomac was reorganized in three corps, the VI. was one of these, and Sedgwick thus led his old corps, now greatly augmented, at the battle of the Wilderness. At the opening of the battle of Spottsylvania Court House, Sedgwick was killed (9th of May 1864) by a shot from a Confederate skirmer. A monument to his memory, cast from the guns taken in action by the VI. corps, was erected at West Point in 1869.

SEDILIA (the plural of Lat. sedile, seat), in ecclesiastical architecture, the term given to the seats on the south side of the chancel near the altar for the use of the officiating priests. They are generally three in number, for the priest, deacon and sub-deacon. The custom of recessing them in the thickness of the wall began about the end of the 12th century; some early examples consist only of stone benches, and there is one instance of a single seat or arm-chair in stone at Lenham in Kent, thought by some to be a confessionals. The niches or recesses in which they are sunk are often richly decorated with canopies and subdivided with moulded shafts, pinnacles and tabernacle work; the seats are sometimes at different levels, the eastern being always the highest, and sometimes an additional niche is provided in which the piscina is placed.

SEDITION (Lat. se or sed, apart, and ire, to go, a going apart, dissension), in law, an attempt to disturb the tranquillity of the state. In Roman law sedition was considered as majestas or treason. In English law it is a very elastic term, including offences ranging from libel to treason (q.v.). It is rarely used except in its adjectival form, e.g. seditious libel, seditious meeting or seditious conspiracy. As to sedition itself, it is generally held by English law' (Hist. Crim. Law, vol. ii. chap. xxiv.); the principal enactments now in force dealing with seditious offences were all passed during the last twenty-five years of the reign of George III. They are the Unlawful Oaths Act 1797, prohibiting the administering or taking of unlawful oaths (see OATH) or the belonging to an unlawful confraternity; the Unlawful Drilling Act 1819-1820 prohibited unlawful drilling and military exercises; and the acts for the suppression of corresponding societies, the Unlawful Societies Act 1799 and the Seditious Meetings Act 1817. No proceedings can be instituted under these last two acts without the authority of the law officers of the crown (Corresponding Societies, &c., Act, 1846). Under the head of statutes aimed at seditious offences may also be classed statutes of Richard II. (1378, 1388) against scandalum magnatum or slander of great men, such as peers, judges or great officers of state, whereby discor ay may arise within the realm, and a statute of Charles II. (1661) against tumultuous petitioning (see Pettition). There has been no prosecution for many years for seditious words as distinguished from seditious libel, but such words have been admitted as evidence in proceedings for seditious conspiracy (q.v.), as in the prosecution of O'Connell in 1844, and of C. S. Parnell and others in 1886 (see Reg. v. Parnell, Cox's Criminal Cases, vol. xiv. 508). By the Prize Act 1877, any prisoner under sentence for sedition or seditious libel is to be treated as a misdemeanant of the first division.

1 The word "sedition" occurs, however, in the Prize Act 1877, s. 40.
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Scotland.—"All acts by which the minds of the people may be incited to defeat the government or control legislation by violent or unconstitutional means are seditions." (Macdonald, Criminal Law, 229.) Sedition is punishable by fine or imprisonment or both (Pittsburgh Daily Post). In 1814 every broadcast speech of the acts of the Scottish parliament dealt with sedition, beginning as early as 1184 with the assize of William the Lion, c. 29. Leasing-making is to be distinguished from sedition, as it attacked only the revenue of the government.

United States.—In the acts of Congress the word "sedition" appears to occur only in the army and navy articles. A soldier joining and acting against his country is considered as sedition. A use of the utmost endeavour to suppress the same, is punishable with death or such other punishment as a court-martial shall direct (U.S. Rev. Stats. § 1342, arts. 22, 23). A sailor uttering seditions being court-martialled, and sentenced to perpetual banishment, having an act of Congress called the Sedition Act was passed, which expired by effluxion of time in 1801. Its constitutionality was violently assailed at the time and has been by all question condemned by public sentiment as "susceptible of being used for purposes of oppression and terrorism." (See Story on the constitution of the United States, §§ 1293-1294.) Several prosecutions under the act will be found in Wharton's State Trials. Sedition is also defined by the state laws mostly in a very liberal spirit. Thus the Louisiana Code, § 304, enacted that "there is no such offence known to our law as defamation of the government or either of its branches, excepting sedition, as it has never been written, nor ever defined, nor of its appellation." By § 111, to constitute the offence of sedition "there must be not only a design to dismember the state, or to subvert or change the form of government, but the attempt must be made by force of arms." It has been held that publications which tend to degrade and vilify the constitution, to promote insurrection and encourage discontent through its members, to asperse its justice and align cumbersome "charges of misgovernment, have been held within the peculiar rigour of the law (1805, Respub. v. Dennis, 4 Yeates (Penn.) 267). The defendant was indicted "as a factitious and seditionists person of a wicked mind and unquiet and turbulent dis- position and conversation, seditionally, maliciously and wilfully intending as much as in him lay to bring into contempt and hatred the independence of the United States, the constitution of this country, and the constitution of the States, and the people, and to produce much and dissatisfaction against the scheme of polity instituted and upon trial in the said United States and in the said common- wealth, to molest, disturb and destroy the peace and public tran- quility of the State, and to condemn the principles of revolution and revile, depreciate and scandalize the characters of the revolutionary patriots and state men, to endanger, subvert and totally destroy the republican constitutions and free government of the United States. To involve (it) . . . in civil war, desolation and anarchy and to procure by art and force a radical change and alteration in the principles and forms of the said constitutions and governments within the free will and concurrence of the people of the United States, and to fulfil, perfect and bring to effect his wicked, seditious and detestable intentions aforesaid he said Joseph Dennis on the 23rd of April 1803 at the city of Philadelphia in the State of Pennsylvania published, did make, compose, write and publish the following libel, to wit, a democracy is scarcely tolerable at any period of national history. Its omens are always sinister and its powers are unpropitious; it was not the form of government from which Rome . . . It was tried in England and rejected with the utmost loathing and abhorrence. It is on its trial here and its issue will be civil war and political anarchy. No people can be safe in the fraud, and no brave man but draws his sword against its force, &c., &c." The defendant was found not guilty.

Confinement of Europe.—The continental codes as a rule are little more definite than English law in their treatment of sedition. In Germany a distinction is drawn between Aufstand, the remaining together of a mob after the authorities have thrice bid it disperse, and Aufdruck or Aufstand, an organized resistance to the authorities; but the French penal code defines the term. An armed body of men is defined Aufstand to be an armed assembly which has the intention of attacking a class of citizens, a nationality or a religious body. The French penal code recognizes a difference between sedition and réunion séduisante. If carried out with sufficient numbers and sufficient force stidetion becomes rebellion. Section 100 exempts from the penalties of sedition those who have merely been present at an unlawful assembly. In 1819 the penalties of this charge have dispersed at the first warning of the military or civil authorities.

SEDLEY, SIR CHARLES (c. 1630-1701). English wit and dramatist, was born about 1630, and was the son of Sir John Sedley of Aylesford in Kent. He was educated at Wadham College, Oxford, but left without taking a degree. Sedley is famous as a patron of literature in the Restoration period, and was the "Lisideus" of Dryden's Essay of Dramatic Poesy. His most famous song, "Phyllis is my only joy," is much more widely known now than the author's name. His first comedy, The Mulberry Garden (1668), hardly sustains Sedley's contemporary reputation for wit in conversation. The best, but most licentious, of his comedies is Bellamire; or The Mistress (1683), an imitation of the Enanus of Terence, in which the heroine is supposed to represent the Duchess of Cleveland, the mistress of Charles II. His two tragedies, Antony and Cleopatra (1667) and The Tyrant King of Crete (1702), an adaptation of Henry Killigrew's Palladius and Eudora, have little merit. He also produced The Grumblour (1702), an adaptation of Le Grondeur of Brueys and Palaprat. An indecent frolic in Bow Street, for which he was heavily fined, made Sedley notorious. He was member of parliament for New Romney in Kent, and took an active part in the government. A speaker of his on the civil list after the Revolution is cited by Macaulay, and throughout his reputation as a man of wit and ability was deserved. His bon mot at the expense of James II is well known. The king had seduced his daughter and created her countess of Dorchester, whereupon Sedley remarked that he hated ingratitude, and, as the king had made his daughter a countess, he would endeavour to make the king's daughter a queen. He died on the 20th of August 1701.

His only child, CATHERINE, countess of Dorchester (c. 1657-1747), the mistress of James II both before and after he came to the throne, and was the queen of France by marriage, was in her elevation which aroused much indignation and compelled Catherine to reside for a time in Ireland. In 1669 she married Sir David Colyer, Bart. (d. 1730), who was created earl of Portmore in 1703, and she was thus the mother of Charles Colyer, 2nd earl of Portmore (1700-1785). She died at Bath on the 26th of October 1717, when her life peerage became extinct. By James II. Lady Dorchester had a daughter Catherine (d. 1743), who married James Annesley, earl of Anglesey (d. 1702), and after his death married John Sheffield, duke of Buckingham. Through Catherine, her daughter by her first husband, she was the ancestress of the Barons Mulgrave.

See The Works of Sir Charles Sedley in Prose and Verse (1778), with a slight notice of the author.

SEDUCTION (from Lat. seducere, to lead astray), a term generally used in the special sense of wrongfully inducing a woman to consent to sexual intercourse. The action for seduction of an unmarried woman in England stands in a somewhat anomalous position. The theory of English law is that the woman herself has suffered no wrong; the wrong has been done to the parents or the parent or parents in loco parentis, who must sue for the damages resulting from the breach of the duty of seduction of the woman. Some evidence of service must be given, but very slight evidence will be sufficient, even making of tea, milking cows, minding children or any small household work. It is no bar if a daughter is out at work during the day time, provided she assists in the household when she comes home in the evening. The relationship of master and servant must, however, exist, and the action must be brought by the person with whom the seduced girl was residing at the time, whether in the capacity of daughter and servant, ward and servant, or servant only. It is so seldom indeed that an action is brought against a seducer when the seduced girl is a servant only, that what Servant Manning wrote many years ago is still painfully true: "The quasi fiction of seditum amitis affords protection to the rich man whose daughter occasionally makes his tea, but leaves without redress the poor man whose child is sent unprotected to earn her bread amongst strangers" (note to Grinnell v. Wells, 1844, 7 M. & G. 1044). This capricious working of the action for seduction is somewhat obviated in Scots law, under which the seduced woman may sue on her own account, but only if deceit has been used, and most often there is a difficulty in showing that the deceit alone was the cause of the injury. Although the action is nominally for loss of service, still exemplary damages are given for the dishonour of the plaintiff's family beyond recompense for the mere loss of service. An action for seduction cannot be brought in the county court except by agreement of the parties. As to seduction of a married woman, the old action for criminal conversation was abolished.
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by the Divorce Act 1857 which substituted for it a claim for damages against the co-respondent in a divorce suit; but if a married woman were living apart from her husband in her father's house, and giving her services to her father in the slightest degree, an action for seduction would lie. Seduction in England is not as a rule a criminal offence. But a conspiracy to seduce is indictable at common law. And the Criminal Law Amendment Act 1885 (which extends to the United Kingdom) makes it felony to seduce a girl under the age of thirteen, and misdeemour to seduce a girl between thirteen and sixteen (§§ 4, 5). The same act also deals severely with the cognate offences of procuration, abduction and unlawful detention with the intent to seduce a woman of any age. The Children Act 1908 gave a further protection to young people, enacting that if any person having the custody, charge or care of a girl under the age of sixteen causes or encourages the seduction of that girl shall be guilty of a misdemeanour, and be liable to imprisonment, with or without hard labour, for a term not exceeding two years.

**United States.—** In the United States state legislation has generally modified the common law. In some states the father brings the action as the representative of the family; while part of it has been invaded; in others the woman herself may bring the action. In many states there is a criminal as well as a civil remedy. The penal codes of New York, New Jersey, Louisiana and other states make it a crime to seduce under promise of marriage an unmarried woman of good reputation. Subsequent intermarriage of the parties is in most cases a bar to criminal proceedings. The state legislation of the United States is remarkable opposition to the rule of the canon law, by which the seduction of a woman by her betrothed was not punishable on account of the inchoate right over her person given by the betrothal.

**SEDULIUS,** **COELTIUS OR CAELIUS** (a paenomen of doubtful authenticity), a Christian poet of the first half of the 5th century, is termed a presbyter by Isidore of Seville and in the Gelasian decree. He must not be confused with Sedulius the Irish-Scott grammarian of the 9th century. His fame rests mainly upon a long poem, *Carmen paschale,* based on the four gospels. In style a bombastic imitator of Virgil, he shows, nevertheless, a certain freedom in the handling of the Biblical story, and the poem soon became a quarry for the minor poets. A hymn by Sedulius in honour of Christ, consisting of twenty-three quatrains of iambic dimeters, has partly passed into the liturgy, the first seven quatrains forming the Christmas hymn *A solis ortus cardine,* and some later the hymn *In multitudinem,* *Hostis Hercules impie.*

*Sedulaet* and *Novi Testamenti collatio* in elegiac couples has come also down, and we have grounds for ascribing to him the Virgilian cento, *De verbi incarnatione.*


**SEDUM,** in botany, a genus of the natural order Crassulaceae, containing about 120 species, natives chiefly of the north temperate and frigid regions, and mostly perennial herbs with succulent leaves of varied form, but never compound. The white or yellow, rarely pink or blue, flowers are usually small and grouped in cymes. They have a calyx of five sepals, as many petals, usually ten stamens and five distinct carpels, which have as many glands at their base and ripen into as many dry seed-pods. Several species are British, including some with tuberous roots and large leaves (*Telephium,* and others of smaller size, chiefly found on rocky places and dry banks; *S. acre* is stonewort, *S. calcareum* is a well known also in gardens, a variety of which, aureum, is in cultivation with golden-yellow tips to the leaves and shoots. Many others are cultivated for the beauty of their foliage or flowers, and many are remarkable for their vitality under adverse circumstances. They succeed on rockwork, old walls or as border plants; some, e.g. *S. Lydium*, a native of Asia Minor, are excellent for carpet bedding. *S. spectabile,* 1 to 1½ ft., with pink flowers in great cymose heads, is a fine plant for the borders, in hanging pots or baskets in cottage windows. *Sedums* are very closely allied to *Semprevivums* (see *Houseleek*).

**SEE** (Lat. *sedes,* a seat), a seat or throne, particularly the throne of a bishop, the *cathedra,* the symbol of his office and dignity, the placing of which in a church makes it a cathedral (q.v.). The term is thus applied to the place where the bishop's cathedral is situated and from which he properly takes his title, and so is to be distinguished from diocese (q.v.), the territorial province over which his jurisdiction extends (see *Bishop*).

**SEEBAACH, MARIE** (1835–1867), German actress, was born at Riga, in Russia, on the 24th of February 1830, being the daughter of an actor, Wilhelm Friedrich Seebach (1798–1863). After appearing first at Nuremberg as Julie in *Kean,* she played soubrette parts at Lubeck, Danzig and Cassel. In 1852 she achieved her first great success at the Thallatheater in Hamburg as Gretchen in Goethe's *Faust,* and she remained there until 1854, when she appeared in Vienna. She then played in Munich, establishing her reputation as a tragic actress with the roles of Jane Eyre and Adrienne Lecouvreur. From 1855 to 1866 she was engaged at the court theatre at Hanover, and there in 1859 she married the tenor Albert Niemann. In 1866 she followed her husband to Berlin, but separated from him after two years. In 1870–1871 she visited the United States, and gave in seventeen cities no less than 160 performances—mostly of *Faust,* and in 1886 she accepted a permanent engagement at the Schauspielhaus in Berlin. She retired from the stage in 1897, and died on the 3rd of August of that year. In 1895 she endowed a home for poor actors and actresses at Weimar, called the Marie Seebach Stiftung.

See *Gensichen,* *Aus Marie Seebachs Leben* (Berlin, 1900).

**SEED** (from the root seen in Lat. *serrare,* to sow), the fertilized ovule of plants. The seeds of the cryptogams or flowerless plants are not true seeds and are properly designated "spores" (see *Fruit*); for the sowing of seed see *Sowing*.

**SEELEY, SIR JOHN ROBERT** (1834–1895), English essayist and historian, was born in London in 1834. His father, K. B. Seeley, was a publisher, and author of several religious books and of *The Life and Times of Edward I,* which was highly esteemed by historians. From his father Seeley doubtless derived his taste for religious and historical subjects. He was educated at the City of London School and at Christ's College, Cambridge, where he was head of the classical tripos and senior chancellor's medallist, was elected fellow and became classical tutor of his college. For a time he was a master at his old school, and in 1863 was appointed professor of Latin at University College, London. His essay *Ecce Homo,* published anonymously in 1866, and afterwards owned by him, was widely read, and called forth
many replies, being held to be an attack on Christianity. Dealing only with Christ's humanity, it dwells on his work as the founder and king of a theocratic state, and points out the effect which this society, his church, has had upon the standard and practical practice of morality among men. Some who condemned the book seem to have forgotten that it was crowning a "Marchen," and that the author does not deny the truth of doctrines which he does not discuss. Its literary merit is unquestionable; it is written with vigour and dignity; its short and pointed sentences are never jerky, and there is a certain stateliness in the admirable order of their sequence. His later essay on *Natural Religion*, which, premising that supernaturalism is not essential to religion, maintains that the negations of science tend to purify rather than destroy Christianity, satisfied neither the Christian nor the scientist, and though well written excited far less interest than his earlier work. In 1869 he was appointed professor of modern history at Cambridge. His influence as a teacher was stimulating; he prepared his lectures carefully and they were largely attended. In historical work he is distinguished as a thinker rather than a scholar. Avoiding research and disliking all attempts at a picturesque representation of the past, he valued history solely in its relation to politics, as the science of the state. He maintained that it should be studied scientifically and for a practical purpose, that its function was the solution of existing political questions. Hence he naturally devoted himself mainly to recent history, and specially to the relations between England and other states. His "Life and Times of Lord Clive" (1869) was by Phillott, himself a voluminous writer, but it was under Stein's instigation, written under German influence, and shows little of the style of his short essays. Its length, its colourlessness, and the space it devotes to subsidiary matters render it unattractive. Far otherwise is it with his *Expansion of England* (1883). Written in his best manner, this essay answers to his theory that history should be used for a practical purpose; it points out how and why Great Britain gained her colonies and India, the character of her empire, and the light in which it should be regarded. As an historical essay the work is a fine composition, and as a defence of the empire it is answerable and inspiring. It appeared at an opportune time, and did much to make Englishmen regard the colonies, not as mere appendages, but as an expansion of the British state as well as of British nationality, and to remind them of the value of Great Britain's empire in the East. Seeley was rewarded for this public service by being made K.C.M.G., on the recommendation of Lord Rosebery. His last book, *The Growth of British Policy*, written as an essay and intended to be an introduction to a full account of the expansion of Great Britain, was published posthumously. Seeley died on the 13th of January 1895. He married in 1869 Miss Mary Agnes Philpot, who survived him.


**Sées**, a town of north-western France, in the department of Orne, on the river Orne 3 m. from its source and 13 m. N.N.E. of Alençon by rail. Pop. (1906) town, 2622; commune, 3982. The town is a bishop's see and has a Gothic cathedral remarkable for the boldness of its architecture. The church dates from the 13th and 14th centuries and occupies the site of three earlier churches. The west front, which is disfigured by the buttresses projecting beyond it, has two stately spires of open work 230 ft. high. The nave was built towards the end of the 13th century. The choir, built soon afterwards, is remarkable for the lightness of its construction. In the choir are four bas-reliefs of great beauty representing scenes in the life of the Virgin; and the altar is adorned with another depicting the removal of the relics of St Gervais and St Protais. The church has constantly been the object of restoration and reconstruction. Other noteworthy buildings are the episcopal palace (1798), with a pretty chapel; the ancient hospital, located in the old St Mary's; St Martin (supposed to be one of the fourteenth or fifteenth century); the former Benedictine monastery (12th century); and the sumptuous modern chapel of the Immaculate Conception, a resort of pilgrims.

The first bishop of Sées (Saium, Sagium) was St Lain, who lived about the 4th century. In the 9th century Sées was a fortified town and fell a prey to the Normans. At that period Sées consisted of two distinct parts, separated by the Orne—the bishop's burgh, and to the south, the new or count's burgh (Deing le Comité). Constantinople, where he stayed six months, thence through Asia Minor to Smyrna, then again through the heart of Asia Minor to Aleppo, where he remained from November 1803 to April 1804, and made himself sufficiently at home with Arabic speech and ways to travel as a native. Now began the part of his travels of which a full journal has been published (April 1805 to March 1809), a series of most instructive journeys in western and eastern Palestine and the wilderness of Sinai, and so on to Cairo and the Fayum. His chief exploit was a tour round the Dead Sea, which he made without a companion and in the disguise of a beggar. From Egypt he went by sea to Jidda and reached Mecca as a pilgrim in October 1809. In Arabia he made extensive journeys, ranging from Medina to Lahak and returning to Mocha, from which place his last letters to Europe were written in November 1810. In September of the following year he left Mocha with the hope of reaching Muscat, and was found dead two days later, having, it is believed, been poisoned by the command of the imam of Sana.

For the parts of Seezen's journeys not covered by the published journal (Riezen, ed. Kruse, 4 vols., Berlin, 1854), the only printed record is a series of letters and papers in Zach's *Monatliche Correspondendes* and Hammer's *Friede*.

**Segantini, Giovanni** (1858-1899), Italian painter, was born at Arco in the Trentino on the 15th of June 1858. His mother, who died in 1863, belonged to an old family of the mountain country. His father, who was a man of the people, went to Milan, whence he set forth with another son to seek his fortune, leaving Giovanni behind. At the age of seven the child ran away; he was found perishing of cold and hunger, and was obliged to earn his bread by keeping the flocks on the hills. He spent his long hours of solitude in drawing. Having reached the age of thirty, he was sent back to Milan; but, unable to endure domestic life, he soon escaped again, and led a wandering life till he met at Arco with his half-brother, who offered him the place of cashier in his provision shop. After more flights and more returns, Segantini remained at Milan to attend classes at the Brera, earning a living meanwhile by giving lessons and painting portraits. His first picture, "The Choir of Sant Antonio," was noticed for its powerful quality. After painting this, however, he shook himself free by degrees of academic teaching; as in his picture "The Ship." He submitted "The Dead Hunter" and was rejected; and then settled in Brianza, near Como. There he gave himself up to the study of mountain life, and became in truth the painter of
the Alps. At this time he painted the "Ave Maria," which took a gold medal at the Amsterdam Exhibition (1883), "Mothers," "After a Storm in the Alps," "A Kiss," and "Moonlight Effect." Deeply impressed by Millet, the artist nevertheless quickly strove to assert his individuality, as may be seen in "The Drinking-place," which gained a gold medal in Paris (1889), "In the Sheep-fold," "By the Spinning-wheel," and "Ploughing in the Engadine," for which he was awarded a gold medal at the Turin Exhibition (1892). Besides those works in which he studied simple effects of light and Alpine scenery, such as "Midday on the Alps" and Winter at Savognin," he also painted sym- bolic and romantic landscapes: "Tunziina," the "Greek Building," and the "Umbral Mother" (in the Walker Art Gallery, Liverpool).

Segantini died at Maloja in October 1899. An exhibition of his works was held in London, and afterwards at Brussels in 1899, and at Milan in 1900.


SEGESTA (Gr. Ἑρυξα), an ancient city of Sicily, 8 m. W.S.W. of the modern Alcamo and about 15 m. E.S.E. of Eryx. It was a city of the Elymi, but, though the Elymi were regarded as barbari, Segesta, in its relations with its neighbours, was almost like a Greek city. Disputes with Selinus over questions of boundary seem to have been frequent from 586 B.C. onwards. In 454 B.C. we hear of dealings—possibly even an alliance—between Athens (the authority being a fragmentary inscription, see E. A. Freeman, History of Sicily, ii. 554), and in 426 B.C. an alliance was concluded by Lacedaemon. One of the ostensible objects of the Athenian expedition to Sicily in 415 was to aid Segesta against Selinus in a dispute, not only as to questions of boundary, but as to rights of marriage. After the Athenian débacle, the Segestans turned to Carthage; but when Hannibal in 409 B.C. firmly established the Carthaginian power in western Sicily, Segesta sank to the position of a dependent ally, and was indeed besieged by Dionysius in 397, being at last relieved by Himilco. In 307 Athagobus marched on the city, massacred 10,000 men, sold the rest of the inhabitants into slavery and changed its name to Dicaeopolis; but it soon recovered its old name and returned to the Carthaginians. Early in the First Punic War, however, the inhabitants, having massacred the Carthaginian garrison and allied themselves with Rome, had to stand a severe siège from the Carthaginians. Segesta was treated with favour by the Romans, retaining its freedom and immunity from tithe; indeed it seems probable that the municipal constitution of Eryx was suppressed and its territory assigned to Segesta. It received Latin rights before Caesar's concession of them to the rest of Sicily.

The site is now absolutely deserted. The town lay on the Monti Varvaro (1345 ft.): considerable remains of its external walls, of houses and of a temple of Demeter are to be seen. The theatre is well preserved: its diameter is 205 ft. It is partly hewn in the rock, the rest (especially the back wall of the stage) being of very roughly hewn, long, thin blocks of hard limestone, approximately rectangular, with smaller pieces filling up the interstices. To the W.N.W., 350 ft. below the theatre, is a temple, 200 ft. long and 86 ft. wide. In the steps; it is a hexastyle peripteros, and has 56 columns, 29 ft. in height, 61 ft. in lower diameter. The building was, however, not completed; the cela was never built, and the columns, not having been fluted, have a heavy appearance. It is, however, so well preserved that a portion of its construction between 430 and 420, so that the interruption of the work must be due to the events of 416 or 409 B.C. The Thermæ Segestanae were situated about 5 m. to the north on the road to Castellammare, but not so near to use.

SEGESVÁR (Ger. Schäßburg), a town of Hungary, in Transylvania, the capital of the county of Nagy-Küküllő, 126 m. S.E. of Kolozsvár by rail. Pop. (1900) 10,837. Amongst the principal buildings are a Gothic church of the 12th century, the town and county hall, a German gymnasium with a good collection of antiquities, and the municipal museum. In front of the county hall is a bronze statue of the Hungarian poet Alexander Petöfi (1823-1849), erected in 1897. Segesvár has a good woollen and linen trade, as well as exports of wine and fruit. Segesvár was founded by Saxon colonists at the end of the 12th century; its Latin name was Castrum Sex. Here, on the 31st of July 1849, the Hungarian army under Bem was defeated by the overwhelming numbers of the Russian General Légers. Petöfi is generally believed to have met his end in this battle.

SEGOVIA, a province of central Spain, formerly part of Old Castile, bounded on the N. and N.E. by the provinces of Burgos and Soria, S.E. by Guadalajara and Madrid, S.W. by Ávila, and N.W. by Valladolid. Pop. (1900) 159,243; area, 2635 sq. m. The greater portion of the country consists of an arable tableland, some 2500 ft. above the sea, monotonous enough in appearance, with the Ebro, Duero, and its tributaries. The most valuable product is some of the finest corn in the Peninsula. Along the whole southeastern boundary the Sierra de Guadarrama rises up suddenly, like a huge barrier, separating Old from New Castile and the basin of the Duero from that of the Tagus. The province is well watered by the streams which rise in the Guadarrama range and flow northwards to the Duero, and by carefully irrigated. The Eresma, Cega, Duraton and Riaza are the principal watercourses. Except the capital, Segovia, there is no town of more than 5000 inhabitants; but Segovia and other small towns are remarkable for the completeness of their monuments and for the richness of their collections of art. At the foot of the Navacerrada pass lies the royal demesne and summer residence of La Granja (a.). After the completion (1883) of the railway from Medina del Campo to the city of Segovia, and its subsequent extensions to Madrid and Aranda de Duero, the towns adjoining these lines showed signs of increased prosperity and animation. There are manufactures on a small scale of coarse pottery, dyes, paper, alcohol, rosin, hats, pins and needles, flour, oil and beer. Such prosperity, however, as Segovia retains is dependent upon its agricultural produce—wheat, rye, barley, peas, hemp, flax, &c.—together with the rearing of sheep, cattle, mules and pigs. There are extensive forests in the sierras, which yield excellent granite, marble and limestone; but the difficulty of transport has prevented any systematic development of these resources.

SEGOVIA, the capital of the Spanish province of Segovia; on the railway from Madrid to Valladolid and Zamora. Pop. (1900) 14,547. Segovia is built upon a narrow ridge of rock which rises in the valley of the Eresma, where this river is joined by its turbulent tributary the Chamores. It is an episcopal see in the archiepiscopalric of Valladolid. Founded originally as a Roman monument of some historical interest and ecclesiastical interest, it was the seat of one of the most ancient religious centres and seats of the Castilian church. The place itself, with its fine monuments of the many vicissitudes of fortune and art which it has passed, foremost among the latter being the ancient alcázar or citadel, the cathedral, the aqueduct of Trajan, and a notable array of churches and other ecclesiastical remains.

The alcázar is perched upon the western tip of the long tongue of rock upon which the city is built. Of the original medieval fortress but little remains save the noble façade—the building has been largely wanted out by the presence of the school then domiciled within its walls, and all but destroyed. The work is Moorish, with an admixture of Renaissance in the decoration. The 16th-century cathedral (1521-1577), the work of Juan Gil de Ontañon and his son Rodrigo, occupies the site of a former church of the 11th century, of which the present cloisters, rebuilt in 1524, formed part. It is a well-proportioned and delicate piece of Late Gothic—the latest of its kind in Spain—and contains some very fine stained glass. The most remarkable of the many other churches are those of La Vera Cruz (Knights Templar, Romanesque of the early 13th century), San Millán and San Juan (both Romanesque of second half of 13th century), El Parral (Gothic of early 16th century), and Corpus Christi, an ancient Jewish sanctuary and an interesting specimen of Moorish work. The towers and external cloistering, or corredores, of several of the later churches—most notable of these is that of El Parral—are open works. The great aqueduct, however, called El Puente del Diablo, usually ranks as the glory of Segovia, and is remarkable alike for its colossal proportions, its history, its picturesqueuess, and the art with which
it is put together. Erected or rebuilt, according to fairly trust-
worthy tradition, in the time of the emperor Trajan (c. A.D. 53–112),
and several times barely escaping destruction, it is now in perfect
working order, bringing the waters of the River Frio down from
the Sierra Fuendra, 10 m. S. The bridge portion striding across the
valley into the city, is 88 yds. long and of a castellated, or sup-
supposedly of a donjon of the sort built of rough-hewn granite blocks, laid
without lime or cement. (For illustration, see AQUEDUCT.) Segovia
lost its ancient prosperity when it was taken and sacked by the French
in 1323. Since then, however, suburbs have sprung up on all
sides, outside the walls. The woollen industry decayed, but its
place was taken by dyeing, iron foundry, and manufacturers of
paper, flour, earthenware, and coarse porcelain. Segovia has
two public libraries, and two remarkable collections of archives.
Public education is provided by an institute, a dozen primary
schools, a school for teachers, and schools of art and handicrafts.
The first art or technical school of Spain is also established here.

SEGRAVE, the name of an English baronial family. Stephen
de Segrave, or Sedgrave (d. 1241), the son of a certain Gilbert
de Segrave of Segrave in Leicestershire, became a knight and was
made constable of the Tower of London in 1203. He obtained
lands and held various positions under Henry III., and in 1232
he succeeded Hubert de Burgh as chief justiciar of England.
As an active coadjuator of Peter des Roches, bishop of Winchester,
Segrave incurred some share of the opprobrium which was lavished
on the royal favourites, and in 1234 he was deprived of his office.
Soon, however, he was again appointed, and was, in fact, influential in
Henry's court, pardoned in 1235, and retained this until his death on
the 9th of November 1241. His son and heir, Gilbert de Segrave
(d. 1254), who was also a judge, died in prison at Pons in France,
whether he had gone to fight for Henry III.

Gilbert was the father of Nicholas de Segrave, 1st Baron
Segrave (c. 1238–1303), who was one of the partisans of Simon
de Montfort; he led the Londoners at the battle of Lewes, and
was a member of Earl Simon's famous parliament of 1265.
He was wounded at the battle of Evesham, and was afterwards
among those who defied the royal authority in the Isle of Ely.
Soon after, he joined the fleet, and was taken to the Holy
Land with his future sovereign, Edward I. In 1283 he was
summoned to parliament as a baron, and he served the king in
various ways. He had six sons, three of whom, John (who
succeeded him), Nicholas and Gilbert (bishop of London from
1313 until his death in December 1316), were men of note.
Nicholas the younger (c. 1260–1322) was summoned to parliament
in 1295, and was present at the battle of Falkirk and at the siege of
Carlaverock Castle. In 1305 he was found worthy of death
for deserting the English army in Scotland and for crossing over
to France in order to fight a duel with Sir John de la Broche; he
was pardoned and summoned to Edward I. in Scotland.
Under Edward II., Nicholas, who was one of Piers
Gaveston's few friends, was made marshal of England, but
lost this office definitely in 1316. Later he associated himself
with Thomas, earl of Lancaster. Through marriage he obtained
the manor of Stowe in Northamptonshire, and he is generally called lord of Stowe.

John de Segrave, 2nd Baron Segrave (c. 1255–1329), was
one of those who supported the earls of Norfolk and of Hereford
in their refusal to serve Edward I. In Gascony in 1297, he
partook in campaigns in Scotland, and peace, and another Nicho-
sesigned the letter which was sent in 1307 by the barons at Lincoln
to Pope Boniface VIII. repudiating the papal claim to the
suzerainty of Scotland. Having been appointed warden of
Scotland, Segrave was defeated at Roslin in February 1303;
after the capture of Stirling he was again left in charge of this
country and was responsible for the capture of Sir William
Wallace, whom he conveyed to London. He was also warden of
Scotland under Edward II., and was taken prisoner at Ban-
nockburn, being quickly released, and dying whilst on active service in Aquitaine. His grandson and heir, another John
(c. 1295–1353), married Margaret, daughter and heiress of
Thomas of Brotton, earl of Norfolk, a son of Edward I.
Their daughter Elizabeth married John de Mowbray, and the
barony of Segrave was united with, and shared the fate of, that
of Mowbray (q.v.).

Other celebrated members of the Segrave family are Sir Hugh
Segrave (d. 1360), treasurer of England from 1328 until death,
and Stephen de Segrave (d. 1333), a noted pluralist, who was
archbishop of Armagh from 1323 until his death on the 27th of October
1333.

SEGURIER, PIERRE (1588–1672), chancellor of France, was
born in Paris on the 28th of May 1588, of a famous legal family
originating in Quercy. His grandfather, Pierre Ségurier (1504–
1580), was président à mortier in the parlement of Paris from 1554
to 1576, and the chancellor's father, Jean Ségurier, a seigneur
d'Autry, was civil lieutenant of Paris at the time of his death
in 1596. Pierre was brought up by his uncle, Antoine Ségurier,
président à mortier in the parlement, and became master of
requests in 1620. From 1621 to 1624 he was intendant of
Guérande, where he became closely allied with the duc d'Epernon.
In 1624 he succeeded to his uncle's charge, in the parlement.
On 14th of August 1642 Ségurier was sent to the parlement
to regulate its proceedings. On the way he was assailed by rioters
on the Pont-Neuf, and sought refuge in the house of Louis
Charles d'Albert, duc de Luynes. In the course of the con-
cessions made to the Fronde in 1659, Ségurier was dismissed from
his office of keeper of the seals. He spent part of his retirement
at Rosny, with his second daughter Charlotte and her husband,
the duke of Sully. He was recalled in April 1651, but six
months later, on the king's attaining his majority, Ségurier was
again disgraced, and the seals were given to President Mathieu
Molé, who held them with a short interval until his death in 1656.
But they were given back to Ségurier. Ségurier lived for some
time in extreme retirement in Paris, devoting himself to the
affairs of the academy. When Paris was occupied by the
princes in 1652, he was for a short time a member of their
council, but he joined the king at Pontoise in August, and became
president of the royal council. After Mazarin's death in 1661
Ségurier retained but a shadow of his former authority. He
showed a great violence in his conduct of the case against Fouquet
(q.v.), voting for the death of the prisoner. In 1666 he was placed
at the head of a commission called to simplify the police organi-
zation, especially that of Paris; and the report of the royal
collection. It contained no less than 4000 MSS. in various languages,
the most important section of them being the Greek MSS. A
catalogue was drawn up in Latin and in French (1685–1686) by the

1 Meine de Coislin became a widow, and in 1644 married clandes-
tinously Guy de Lavai, chevalier de Bois-dauphin, afterwards
marquis of Laval.

He afterwards contracted a second marriage with Henri de
Bourbon, duke of Verneuil, a grandson of Henry IV.
RAYMOND JOSEPH PAUL, comte de Ségur d'Aguessau (1803-1889), third son of Count de Ségur, took his mother's family name in addition to his own. He studied law at Aix and Paris. As procureur général of Amiens he gave in March 1830 a decision on the question of the electoral lists which pleased the liberal party, but late in the year, as substitute in the royal court of Paris, he ordered the suppression of certain liberal journals, and in other civil appointments was accused of re-actionary administration. He gave his adhesion to Prince Louis Napoleon, and became a member of the consultative commission in 1851, and of the senate in 1853. After the fall of the empire he retired into private life.

Louis Alexandre de Segur (1808–1877), son of Eugène de Ségur and Sophie Rostopchine, was a prelate of the papal court, and canon-bishop of Saint-Denis. He was a champion of the ultra-montane party and wrote a number of Catholic works, collected in ten volumes (Paris, 1876–1877). His life was written by his brother Anatole, who edited two collections of his letters in 1882 and 1890.

ANATOLE HENRI PHILIPPE DE SÉGUR (1823-1902), Gaston's brother, became councillor of state in 1872, serving until 1879. His works include the life of his grandfather Count Rostopchine (1845), Les Épistres de la Terreur (1863), Paul Marie Charles Bernard (1875).

His son, PIERRE MARIE MAURICE HENRI, marquis de Ségur (b. 1853), wrote a life (1895) of the marshal of Ségur, which was crowned by the French Academy. His book on Madame Geoffrin, Le Royaume de la rue Saint-Honoré (1897), also received a prize. His principal work is the three volumes devoted to Marshal Luxembourg—La Jeunesse du maréchal de Luxembourg, 1628–1668 (1900); Le Maréchal de Luxembourg et le prince d'Orange, 1668–1708 (1903); Le Tapisseur de Notre-Dame. Dernières années du maréchal de Luxembourg, 1678–1695 (1904); Julie de Lespinasse (1906); and Au cœur de la monarchie Louis XV et Turgot (1906) (Paris, 1910). He was elected to the French Academy in 1907.

There is much general information on the family of Ségur in A. de Ségur’s Le Maréchal de Ségur, 1724–1801 (Paris, 1895), and in L. P. de Ségur’s Recueil de famille (1866).

SÉGUR, LOUIS PHILIPPE, COMTE DE (1753-1830), French diplomatist and historian, son of Philippe Henri, marquis de Ségur, was born in Paris on the 10th of December 1753. He entered the army in 1776, served in the American War of Independence in 1781 as a colonel under Rochambeau, was appointed by the Congress of 1783 as a general in the United States, and was sent as minister plenipotentiary to St Petersburg, where he was received into the intimacy of the empress Catherine II. and wrote some comedies for her theatre. At St Petersburg he concluded (1 January 1787) a commercial treaty which was exceedingly advantageous to France, and returned to Paris in 1789. He took up a sympathetic attitude towards the Revolution at its outset and in 1791 was sent on a mission to Berlin, where he was badly received. After fighting a duel he was forced to leave Berlin, and went into retirement until 1801, when, at Bonaparte's instance, he was nominated by the senate to the Corps Législatif. Subsequently he became a member of the council of state, grand master of the ceremonies, and senator, 1813. In 1814 Ségur voted for the deposition of Napoleon and entered Louis XVIII's Chamber of Peers. Deprived of his offices and functions in 1815 for joining Napoleon during the Hundred Days, he was reinstated in 1816, supported the revolution of 1830, but died shortly afterwards in Paris on the 27th August 1830. By his wife, Antoinette d'Aguessau, he had two sons, of whom Count Philippe Paul is separately noticed. Among his writings may be mentioned those on the American Revolution and the Réflexions sur l'attitude de l'aristocratie française en 1789. His Histoire de St Petersburg (1801-1802); Histoire de France (11 vols., 1824-1834); Histoire des jumeaux (1827); Mémoires (3 vols., 1824); and Centes (1800). His Oeuvres complètes were published in 34 volumes in 1824 et seq.

See du Bregille, " Deux Français aux États-Unis " in Mélanges publiés par la Société des Bibliophiles français (2nd part, 1903); A. Cornu, " La Mission du comte de Ségur dans la crise d'une guerre militaire," in the Mémoires de la Société bourgeoisienne de géographie et d'histoire (vol. 17, 1901).
SÉGUR, PHILIPPE HENRI, MARQUIS DE (1724-1801), marshal of France, son of Henri François, comte de Ségur, and his wife Angelique de Froissy, was appointed to the command of an infantry regiment of eighteen, and served under his father in Italy and Bohemia. He was wounded at Roucoux in Flanders in October 1746, and lost an arm at Lauffeld in 1747. In 1748 he succeeded his father as lieutenant-general of Champagne and Brie; he also received in 1753 the governorship of the county of Foix. During the Seven Years’ War he fought at Hastenbeck (1757), Creteil (1758) and Minden (1759). In 1760 he was taken prisoner at Kloster-campen. The ability which he showed in the government of Franche-Comté in 1775 led in 1780 to his appointment as general in chief of the forces in France. He was created in 1783 a prominent general staff, and made admirable regulations with regard to barracks and military hospitals; and though he was officially responsible for the reactionary decree requiring four quarterings of nobility as a condition for the appointment of officers, the scheme is said not to have originated with him and to have been adopted under pretense. In 1783 he became a marshal of France. He resigned from the ministry of war in 1787. During the Terror he was imprisoned in La Force, and after his release was reduced to considerable straits until in 1800 he received a pension from Napoleon. He died in Paris on the 9th of October following the latter year. See A. de Ségur, Le Maréchal de Ségur, 1724-1801 (Paris, 1895).

SÉGUR, PHILIPPE PAUL, COMTE DE (1780-1873), French general and historian, son of Louis Philippe, comte de Ségur, was born in Paris on the 4th of November 1780. He enlisted in the cavalry in 1800, and forthwith obtained a commission. He served with General Macdonald in the Grisons in 1800–1801, and published an account of the campaign in 1802. By the influence of Colonel Durou (afterwards duc de Froul) he was attached to the personal staff of Napoleon. He served through most of the important campaigns of the first empire, and was frequently employed on diplomatic missions. During the campaign in Poland in 1807 he was taken prisoner by the Russians, but was exchanged at the peace of Tilsit. His brilliant conduct in the cavalry charge at Somo Sierra on the 30th of November 1808 (see Peninsular War) won him the grade of colonel, but his wounds compelled him to return to France. As general of brigade he took part in the Russian campaign of 1812, and in the campaigns of 1813 and 1814 he repeatedly distinguished himself, notably at Hanau (October 1813), and in a brilliant affair at Reims (March 1814). He remained in the army at the Restoration, but, having accepted a command from Napoleon during the Hundred Days, he was retired until 1818, and took no further active part in affairs until the revolution of 1830. During his retirement he wrote his Histoire de Napoléon et de la grande armée pendant l’année 1812 (Paris, 2 vols., 1824), which ran through numerous editions, and was translated into several languages. The unfavourable portrait of Napoleon given in this book provoked representations from General Gourgaud, and eventually a duel, in which Ségur was wounded. On the establishment of the July monarchy he received, in 1831, the grade of lieutenant-general and a peerage. In 1839 he was admitted to the French Academy, and he became grand cross of the Legion of Honour in 1847. After the revolution of 1848 he lived in retirement. He died in Paris on the 25th of February 1873. His works include: Histoire de Russie et de Pierre le Grand (1829); Histoire de Charles VIII. (2 vols., 1834–1842), in continuation of the history of France begun by his father; and the posthumous Histoire et mémoires (8 vols., 1873). See Un Aide-de-camp de Napoléon (1800–1812), mémoires du général comte de Ségur, new edition by his grandson Louis de Ségur (3 vols., 1864–1865), of which an abridged English version was published in 1895.

SEGURA (anc. Tader), a river of south-eastern Spain about 150 m. long. It is formed by the confluence of three head-streams, one of which rises on the northern versant of La Saga (787 ft.), a mountain in Granada, while the other two spring from the Sierra de Segura, in Jaen. From the junction of these three streams below Yeste the river winds in an easterly and south-easterly direction past the towns of Ciez and Archena to Murcia. Thence it trends N.E. and passing Orchuela falls into the Mediterranean 19 m. S.W. of Alicante. Its chief tributaries are the Mundo and Arroyo del Jua on the left, and the Caravaca, Quipar and Sangonera on the right. It is only navigable by small sailing-vessels, even in its estuary, but its waters are extensively utilized for irrigation.

SÉGUSIO (mod. Susa, q.v.), an ancient town in north Liguria, the capital of the Cottii (see COTTI REGNUM). Here the son of King Donnus, Cottius—who held the rank of imperial praefect over the fourteen tribes over which his father had ruled as king, so that the inscription he calls himself “M. Iulius regis Donni (Ilius) Cottius praefectus provinciae Galliae et Galliarum”—saw erected a triumphal arch in honour of Augustus in 9–8 B.C., which is still standing. The style of the sculptures on the frieze is quite barbaric, with archaic elements, and is probably derived from Gaul. His tomb, situated near the city walls, mentioned by Ammianus Marcellinus, has long since disappeared. Claudius restored the royal titles to the family; but, after the death of its last member, Nero made the district into a province, and the town into a municipium. It was strongly fortified and garrisoned, and remains of its walls, including those of a double bastioned rampart, exist. Among the other two towns, one of them mentioning baths erected by Gratian. Constantine captured the town, which offered some resistance to him, on his march against Maximoustis.

See F. Genin, Susa Antica (Saluzzo, 1886); E. Ferrero, L’Arch. d’Auguste à Susa (Turin, 1901); F. Studniczka, Jahrbuch des K. D. archäologischen Instituts, xviii. (1903), 1 sqq. (T. As.)

SEHESTED, HANNIBAL (1609–1666), Danish statesman, born at Arentsborg Castle on Ósel. After completing his education abroad, he returned to Denmark in 1632 and was attached to the court of Christian IV. Two or three years later he was sent to Wismar to negotiate a treaty with the Swedish chancellor, Axel Oxenstjerna, and, if possible, bring about a match between Christian’s son Frederik and Gustavus Adolphus’s daughter Christina. Though failing in both particulars, he retained the favour of the king, who had marked him out as one of his seven sons-in-law, by whose influence he hoped to increase the influence of the crown; and in 1636 he was betrothed to one of the daughters, the countess Christine, then in her tenth year, whom he married in 1642. In May 1640 Sehested became a member of the august Rigsråd. He imagined, with some reason, that the crown found it expedient to use the influence of his talents in its diplomatic service, and openly aspired to be minister of foreign affairs. Despite a successful embassy to Spain in 1640–1641 he did not obtain the coveted post, but was appointed viceroy of Norway (April 1642). He had now the opportunity of displaying an administrative and organizing ability, united with a zeal for reform, as remarkable as unexpected, which raises him high above his contemporaries. He made it his first object thoroughly to develop Norway’s material resources, and reorganize her armaments and fiscal system; and he aimed at giving her a more independent position as regards Denmark. During Christian IV’s second war with Sweden (1643–1645), Sehested, as viceroy of Norway, assisted his father-in-law materially. He invaded Sweden four times; successfully defended Norway from attack; and, though without any particular military talent, won an engagement at Nysaker in 1644. After the war he renewed his reforming efforts, and during the years 1646–1647 strove to withdraw his viceroyalty from the benumbing influence of the central administration at Copenhagen, and succeeded with the help of Christian IV in creating a separate defensive fleet for Norway and giving her partial control of her own finances. He was considerably assisted in his endeavours by the fact that Norway was regarded as the hereditary possession of the kings of Denmark. At the same time Sehested freely used his immense wealth and official position to accumulate for himself property and privileges of all sorts. His successes finally excited the envy and disapprobation of the Danish Rigsraad, especially of his rival Korffs Ulfeldt (q.v.), also one of the king’s sons-in-law. The quarrel became acute when Sehested’s semi-independent administration of the finances
of Norway infringed upon Ulfeldt's functions as lord treasurer of the whole realm; in November 1647 Ulfeldt carried his point, and a decree was issued that henceforth the Norwegian provincial governors should send their rents and taxes direct to Copenhagen. On the accession of Frederick III. (1648), Sehested strove hard to win his favour; but an investigation into his accounts as viceroy, conducted by his enemies, brought to light such wholesale embezzlement and peculation that he was summoned to appear before a herreddog, or assembly of notables, in May 1551, and given an account of his whole administration. Unable to meet the charges brought against him, he compromised matters by resigning his viceroyalty and his seneshalship, and surrendering all his property to Norway to the crown. Throughout his trial Sehested had shown consummate prudence. He surrendered voluntarily thrice as much as he had ever embezzled, and, calculating on the secret fondness of Frederick III. for a man of his monopolarchical tendencies, carefully abstained from the wild and treacherous projects of revenge which were the ruin of Korfits Ulfeldt. From 1651 to 1660 he lived abroad. At the end of 1655 he met the exiled Charles II. of England at Cologne, and lived a part of the following year with him in the Spanish Netherlands. In the summer of 1657 he returned to Denmark, but Frederick III. refused to receive him, and he finally compromised his rights by the treaty of Copenhagen. During the crisis of the war of 1658 he was at the headquarters of Charles X. of Sweden. In seeking the help and protection of the worst enemy of his country, Sehested approached the very verge of treason, but he never quite went beyond it. When, at last, it seemed probable that the war would not result in the annihilation of Denmark, Sehested strained every nerve to secure his own future by working in the interests of his native land while still residing in Sweden. In April 1660 he obtained permission from Frederick III. to come to Copenhagen, and was finally instructed by him as plenipotentiary to negotiate with the Swedes. The treaty of Copenhagen, which saved the honour of Denmark and brought her repose, was very largely Sehested's work. He was one of the willing abettors of Frederick III. at the revolution of 1660, when he re-entered the Danish service as lord treasurer and councillor of state. Both at home and on his frequent foreign missions he displayed all his old ability. As a diplomatist he, in some respects, anticipated the views of Griffenfeldt, supporting the policy of friendship with Sweden and a French alliance. He died suddenly on the 23rd of September 1666 at Paris, where he was conducting important negotiations. His political testament is perhaps the best testimony to his liberal and statesmanlike views.

See Thysa Sehested, Hannibal Sehested (Copenhagen, 1886); Julius Albert Fridericia, Adelsvaeldens sidste Dage (Copenhagen, 1894). (R. N. B.)

SEHORE, a British station in Central India, within the state of Bhopal, with a station on the Bhopal-Ujain section of the Indian Midland railway, 24 m. E. from Bhopal. Pop. (1901) 16,864. It is the headquarters of the political agent for Bhopal, and a British military cantonment. For many years it was also the headquarters of the Bhopal contingent, raised in 1818, which was in 1903 incorporated in the Indian army. It is an important centre of trade.

SEICHE (Fr. siče, fem. of sec, dry), in limnology, an irregular fluctuation of the water-level of lakes, first observed and so named in Switzerland. (See LAKE, and GENEVA.)

SEIDL, ANTON (1850–1898), Hungarian operatic conductor, was born at Budapest on the 7th of May 1850. He entered the Leipzig Conservatorium in October 1870, and remained there until 1872, when he was summoned to Bayreuth as one of Wagner's copyists. There he assisted to make the first copy of "Der Ring des Nibelungen." Thoroughly imbued with the Wagnerian spirit, it was natural that he should take a part in the first Bayreuth Festival in 1876. His chance as a conductor came when, on Wagner's recommendation, he was appointed to the Leipzig Stadt-Theater, where he remained until, in 1882, he went on tour with Angelo Neumann's Nibelungen Ring company. To his conducting the critics attributed much of such artistic success as attended the production of the Trilogy at Her Majesty's Theatre in London in June of that year. In 1883 Seidl went with Neumann to Bremen, but two years later was appointed successor to Leopold Damrosch as conductor of the German Opera in New York, and in the same year he married Früholen Kraus, the distinguished singer. In America Seidl's orchestra became famous. In 1886 he was one of the conductors at Bayreuth, and in 1897 at Covent Garden, London. He died in New York on the 28th of March 1898.

See the memorial volume prepared by H. T. Finck, H. E. Krethbiel and others (New York, 1897).

SEIGNIORAGE, the dues levied by the authority that possesses the right of coinage on the metal that it manufactures into coin. The term "brassage" has been used to describe this due, when confined to the mere cost of the process; the wider term "seigniorage" being employed when the charge is so raised as to become a profit to the imposer. The exercise of the right of seigniorage has been the instrument by which most of the debasements of currency have been carried out. Under feudalism, especially in France, the chief nobles had this prerogative. In the modern state it is reserved for the sovereign authority. Most countries adopt a moderate seigniorage charge. Thus the French crown levies a current tax which produces only the "expense of coinage" shall be charged. At present this due is 6 fr. 70 c. per kilo of gold, 3½ c. fine, or 0.24%. The charge by the same law on silver was 3 fr. per kilo, or 1.66%. The limitation on the coinage of silver in practically all countries has made the seigniorage on that metal very heavy. The policy of England in respect to gold has been peculiar. Since 1666 it has been freed from any charge, though the delay in return amounts to a small due. In consequence of this gratuitous coinage, English gold has been regarded as equivalent to bullion, and exchange fluctuations have been reduced. The policy was severely criticized by Adam Smith, and it does the same amount to a bounty on the coinage of gold. The amount is, however, too insignificant to deserve attention, especially as there are compensating gains. The employment of a seigniorage of about 1% on the "sovereign" was suggested by the proceedings of the Paris Monetary Conference of 1867, in order to bring about an assimilation of English and French money. By reducing the amount of gold in the sovereign to that in the proposed 2½-franc piece an exact par would have been created, and, so it was hoped, the English currency and accounts need have undergone no change. The scheme was, however, rejected by a Royal Commission on the ground that an adjustment of obligations would be required.

The theory of the effects that a seigniorage produces have been discussed at length. The definitive results obtained may be briefly stated as follows:—(1) A seigniorage charge is the same as a debasement, but its evil effect may be avoided by limiting the amount of coin issued. (2) Seigniorage operates as a tax on the metal subject to it, and this tax tends ultimately to fall on the producers, or rather on the rent obtained through the production. A heavy seigniorage on gold would tend to lower the profits derived from the gold mines of the world, and might even compel the abandonment of the least productive ones.

See Money, Monetary Conferences, and Token Money. (C. F. B.)

SEIGNORY, or SEIGNEURY (Fr. seigneur, lord; Lat. senior, elder), in English law, the lordship remaining to a grantor after the grant of an estate in fee-simple. There is no land in England without its lord: "Nulle terre sans seigneur" is the old feudal maxim. Where no other lord can be discovered the crown is lord as lord paramount. The principal incidents of a seignory were an oath of fealty; a "quit" or "chief" rent; a "relief" of one year's quit rent, and the right of escheat. In return for these privileges the lord was liable to forfeit his rights if he neglected to protect and defend the tenant or did anything injurious to the feudal relation. Every seignory now existing must have been created before the Statute of Quia Emptores (1290), which forbade the future creation of estates in fee-simple by subfeudation. The only seignories of any importance at present are the lordships of manors. They are regarded as incorporeal hereditaments,
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and are either appendant or in gross. A seignory appendant passes with the grant of the manor; a seignory in gross—that is, a seignory which has been severed from the demesne lands of the manor to which it was originally appendant—must be specially conveyed by deed of grant.

Freehold land may be enfranchised by a conveyance of the seignory to the freehold tenant, but it does not extinguish the tenement in the seignory. By s. 3 (tit) of the Settlement Act 1882, the tenant for life of a manor is empowered to sell the seignory of any freehold land within the manor, and by s. 21 (v) the purchase of the seignory of any part of land held in fee by a freehold tenant is an authorized application of capital money arising under the act.

SEINE (Lat. Sequana), one of the chief rivers of France, rising on the eastern slope of the plateau of Langres, about 5 m. N.W. of St Seine-l’Abbaye and 15 m. N.W. of Dijon. It keeps the same general direction (north-westwards) throughout its entire course, but has numerous windings: between its source and its mouth in the English Channel the direct distance is only 250 m., but that actually traversed by the river (through the departments of Côte-d’Or, Aube, Marne, Seine-et-Marne, Seine-et-Oise, Seine, Eure and Seine-Inférieure) is 482 m. Though shorter than the Loire and Rhone, and inferior in volume to the Loire, Rhone and Gironde, the Seine derives an exceptional importance from the regularity of its flow. This feature is due to the geological character of its basin, an area of 30,000 sq. m., entirely belonging to France (with the exception of a few communes in Belgium), and formed in three-fourths of its extent of permeable strata, which absorb the atmospheric precipitation to restore it gently to the river by perennial springs. At Paris the average volume of the river per second is 5,000 cuf. ft., after it has received all its tributaries the volume is about 10,000 cuf. ft. At Paris it falls as low as 1550 cuf. ft., and in exceptional droughts the figure of 1200 is reached. During the flood of 1658 the volume between the quays at Paris is believed to have risen to 88,000 cuf. ft. per second. The height of the river above the normal at Paris was probably on that occasion about 2 ft., whereas in the disastrous floods of January 1910 it was over 2 ft. Other notable floods are recorded in 1740, 1799, 1802, 1876 and 1883.

Rising at a height of 1545 ft. above sea-level, at the base of the statue of a nymph erected on the spot by the city of Paris, the Seine is at first such an insignificant streamlet that it is only dry in summer as far as Châtillon (705 ft.) some 31 m. from its source. At Bar its waters feed the Haute-Seine Canal, though navigation thereon only begins at Troyes. It next passes Marcy, and at Marclhelle, the Aube (right), at which point the canal terminates and the river itself is canalized; here it is deflected from its north-north-westward course. It thus continues in a northwest direction, along the shore of the lake of St Rémy (left) at Moret; having passed Melun it is joined at Corbeil by the Essonne (left), and after its junction with the Marne (right), a tributary longer than itself by 31 m. at the confluence, reaches Paris. From this point to the sea its channel has been so deepened that vessels of 9 to 10 ft. draught can reach the capital. The river then winds through a pleasant campaign country past St Cloud, St Denis, Argenteuil, St Germain, Conflans (the town is girt by the right of the Oise, 60 ft. above the sea), Poissy, Marly-le-Roi, Andelys, between which and the sea the river is remarkable for its detours, as also in the vicinity of Paris. At Poissy the tide first begins to be felt, and at Les Andelys it rises as much as 6 ft. at the Pont de l’Arche, Eilefne and Rouen, where the sea navigation commences. The river is dyked below Rouen so as to admit vessels of 20 ft. draught, and large areas have thus been reclaimed for culture. At Conflans it is 20 m. wide, and at the Mare (left) at Moret, rising usually from 8 to 9 ft., and attaining its maximum from Quillebeuf to Caenbec. Below Quillebeuf (where the Risle is rejoined from the left) the estuary begins, set with extensive sandbanks, between which are the towns of Château-Thierry (25 m.) and Châlons. Above Montargis (right) is the starting-point of a canal to enable river boats for Havre to avoid the sea passage. The river enters the English Channel at the sea town of Le Havre.

The Marne brings to the Seine the waters of the Orne, the Ourcq, and the Morin; the Oise those of the Aisne; the Yonne those of the Arroux. The low elevation of the bounding hills has rendered it possible to direct the discharge of its affluents into the adjoining river basins by means of canals. The Oise and Somme are connected to the Picardy or Crozet Canal, which in turn is connected to the Sceidt by means of the St Quentin Canal and the.

Oise, and to the Sambre by that of Oise and Sambre. Between the Aisne and the Meuse is the Ardennes Canal, and the Aisne and the Marne are united by a canal which passes Reims. The Marne has a navigation communication with the Meuse and the Rhone, the Yonne with the Seine (by the Burgundy Canal) and the Sambre by the Canal dividing at Montargis into two branches—those of Orleans and Briare.

SEINE, the department of northern France which has Paris as its chief town, formed in 1790 of almost the entire district of Brie (half of which belonged to Champagne and half to Ille-et-France) and a portion of Gâtinais (from Ile-de-France and Orléanais). Pop. (1906) 361,939. Area, 2280 sq. m. Seine-et-Marne is bounded N. by the department of Oise, N.E. by that of Aisne, E. by Marne and Aube, S.E. by Yonne, S. by Loiret and W. by Seine-et-Oise. The department belongs to the basin of the Seine, and is drained partly by the Oise and partly by the Marne, the latter bearing the Yonne and the Loing from the left, and from the right, the Vouzou, the Yères and the Marne, with its affluents the Ourcq, the Petit Morin and the Grand Morin. With the exception of the Loing, flowing from south to north, all these streams cross the department from east to west, following the general slope of the surface, which is broken up into several plateaus from 300 to 500 ft. in height (highest point, in the north-east, 705 ft., lowest 105), and separated from each other by deep valleys.
the plateaus belong to the Brie, a fertile well-wooded district of a chaley character. In the south lie the dry sandy district of the Fontainebleau sandstone and part of the region known as the Gâtinais. The climate is rather more "continental" than that of Paris—the summers warmer, the winters colder; the annual rainfall does not exceed 16 in. There is a striking difference in temperature between the south and the north of the department, where the famous white grape (chasselas) of Fontainebleau ripens, and the country to the north of the Marne—this river marking pretty exactly the northern limit of the vine. The wheat and oats of Brie are especially esteemed; potatoes, sugar beet, mangold-wurzel and green forage are also important crops, and the dairy-farming is also flourishing. Provins, the town of the great cloisters, sheep and poultry are reared. The forests (covering a fifth of the area) are planted with oak, beech, chestnut, hornbeam, birch, willow, linden, willow, poplar and conifers. Best known and most important is the forest of Fontainebleau. Large areas are devoted to game-preserves. Excellent freestone is quarried in the department, notably at Château-Landon in the valley of the Loing, mill-stones at La Ferté-sous-Jouarre; the Fontainebleau sandstone is used for pavements, and the white sand which is found along with it is used for the manufacture of glass. Along the Marne are numerous gypsum quarries; lime-kilns occur throughout the department; and peat is worked at Villers-Saint-Paul, in the Yonne. Beds of common clay and porcelain clay are used in the manufacture of porcelain at Argenteuil. Other industrial establishments are numerous large flour-mills, notably those of Meaux, the chocolate works of Noisiel, sugar-refineries at Épernay, distilleries (pop. 11,000), paper and mill manufactures bank-notes, &c., both for France and for foreign markets), saw-mills, printing works (Colommiels, &c.) and tanneries. Much of the motive-power used is supplied by the streams. Paris is the chief outlet for the industrial and agricultural produce of the department. Coal and raw material for the manufactures are the chief imports. The Seine, the Yonne, the Marne, and the Grand Morin are navigable, and, with the canals of the Loing and the Ourcq and those of Châtillon, Cornillon and Chelles, which cut off the windings of the Marne, form a total waterway of over 200 m. Seine-et-Marne has 2 arroundisements (Melun, Coulommiers, Fontainebleau, Montargis, Provins, Nemours, and Montereau (g.g.), are the most important towns in the department. Among other interesting places are La Ferté (pop. 3,500), with an abbey-church of the 13th century; Briare-Comte Robert, with a church of the early 13th century: Ferrières, with a house of the 12th century; Argenteuil, by Baron Alphonse Rothschild; Moret-sur-Loing, which preserves fortifications dating from the 15th century including two remarkable gateways; Étampes: Oise-le-Vieux, dating from the 12th century; Jouarre, where there is a church of the 15th century built over a crypt containing worship of the Merovingian period; and Vaux-le-Vicomte, with the famous château built by Fouquet de Villars.

SEINE-ET-OISE, a department of northern France, formed in 1790 of part of the old province of Ile-de-France, and traversed from south-east to north-west by the Seine, which is joined by the Oise. Pop. (1906) 749,753. Area, 218 sq. m. It is bounded by the departments of Seine-et-Marne on the E., Loiret on the S., Eure-et-Loir on the W., Eure on the N.W. and Oise on the N. It encloses the department of Seine. The Oise on the north-west is the only natural boundary on the department. The streams (all belonging wholly to the basin of the Seine) are: on the right the Yères, the Marne, the Oise and the Epte, on the left the Essonne (joined by the Juine, which passes Étampes), the Orge, the Bièvre and the Mauldre. Seine-et-Oise belongs in part of the tableland of Beauce in the south and to that of Brie in the east. In the centre are the high wooded hills which make the charm of Versailles, Marly and St Germain. But it is in the north-west, in the Vexin, that the culminating point (600 ft.) is reached, while the lowest point, where the Seine leaves the department, is little more than 40 ft. above the sea. The mean temperature of the Seine-et-Oise is a flourishing agricultural and horticultural department. Wheat, oats, potatoes and sugar-beet are important crops. Versailles, Rambouillet, Argenteuil are among the numerous market-gardening and horticultural centres, and wine is grown at Argenteuil and in other localities on the right bank of the Seine. Milk-cows and draught-oxen are the chief livestock, and poultry farming is prosperous, the town of Houdean giving its name to a well-known breed of fowls. Forests occupy about 190,000 acres, the largest of which are at Marly-le-Roi (about 32,000 acres). Oak, hornbeam, birch and chestnut are the commonest trees; the paving and mill stones, gyspum, cement, &c., are produced by the department which is very rich in quarries. There are mineral springs at the north-east and Fontainebleau-Hauterive elsewhere; agricultural and engineering, metallurgical or railway works at Évre-Petit-Bourg, Villeneuve-Saint-Georges (pop. 9508) and elsewhere; agricultural establishments are the national porcelain factory at Sevres; government powder-mills of Sevran and Bouchet; paper-mills, the glass manufactories of Essonnes and its vicinage, which are among the most important in the department, and the famous porcelain factories, close to Paris; factories for chemical products, candles, perfumery, shoes and buttons; zinc, works, saw-mills, potteries, and cotton mills. Its imports include coal, raw material for its industries, wine, kaolin and wood. The Seine and Oise are the great rivers of France (except the Southern) traverse the department, but a part of the line of the Seine, and the canals of Ourcq and Chelles provide about 120 m. of waterway. Seine-et-Oise is divided into six arrondissements (Versailles, Corbeil, Étampes, Mantes, Pontoise, Rambouillet) with 37 cantons and 681 communes. It forms the diocese of Versailles and part of the educational circumscription (académie) of Paris and of the administrative unit of the department; Gendarmes and troops are under the command of the military government of Paris. Its court of appeal is also at Paris. The most notable towns in the department are Versailles, the capital, Corbeil, Seyne, Étampes, Mantes, Montereau, Argenteuil, Poissy, St Cloud, St Cyr, St Germain-en-Laye, Meudon, Montmorency, Rueil and Marly-le-Roi (see separate articles). Other interesting places are the Château of Amanour, which has a Renaissance château with fine stained glass, a gateway of the 15th century and a ruined château once the seat of the powerful family of Montfort; Montrichard, which preserves the keep (13th century) and other ruins of a celebrated fortress which commanded the road from Paris to Orleans; Roche-Guyon, seat of the family of that name, which has two châteaux, one a feudal stronghold, the other also medieval but preserved in the 18th century; Vigny, with a Gothic château of the 15th century; Écouen, with a château of the 15th century; Evry-Petit-Bourg, once the property of the Condé family, now a school for daughters of members of the Legion of Honour; Dampierre, which has a château of the 17th century once the property of Charles, Cardinal of Lorraine; Maisons-Laffitte (pop. 8117), with a château of the same period once belonging to the family of Longueil. The château of Malmaison (18th century) is famous as the residence of the Empress Josephine.

Of the churches of the department, which are very numerous almost every town of 500 or more has its church. The most notable may be mentioned of those of our lists, those of Beauvoir (11th and 12th centuries), Beaumont-sur-Oise (13th century), Taverny (12th and 13th centuries), Longserrant (11th century), L'Étang (11th to the 13th centuries). Near Cernay-la-Ville are interesting remains of a Cistercian abbey and each Saint-Vincent-le-Poiré. The château of Champagne, with a church (13th century) with stalls which are among the oldest in France and the tombs of the Lévis-Mirepoix family.

SEINE-INFERIEURE, a department of the north of France, formed in 1790 of four districts (Norman Vexin, Bray, Caux and Roumois) belonging to the province of Normandy. Pop. (1906) 863,879. Area 4428 sq. m. Seine-Inferieure is bounded N.W. and N. by the English Channel for a distance of 80 m., N.E. by Somme, from which it is separated by the Bresle, E. by Oise, S. by Eure and the estuary of the Seine, which separates it from Calvados. It is divided almost equally between the basin of the Seine in the south and the basin of certain coast streams in the north. Seine-Inferieure takes the right hand before it reaches the department the Oise and the Ancre, until the Rhône, Rambouillet, and then the Darnétal, the Cailloy, the Austreberthe, the Bolbec and the Lézarde. The main coast streams are the Bresle (which forms the ports of Eu and Tréport), the Yères, the Barques or Dieppe stream (formed by the junction of the Varennes, the Béthune and the Enault), the Scie, the Saane, the Dardent. The Pays de Caux, the most extensive natural division, is a system of plateaux separated by small valleys, terminating along the Seine in high cliffs and towards the sea in deep chalk cliffs 300 to 450 ft. high, which are continually being eaten away and terminating into beds of shingle. In the south-east is a broad valley of denudation formed by the sea, as it retired, and traversed by valleys covered with excellent
pasture. The highest point (about 800 ft.) is on the eastern border of the department. In the comparatively regular outline of the coast there are a few breaks, as at Le Tréport, Dieppe, St Valery-en-Caux, Fécamp and Havre, the Cap de la Hève, which commands this last port, and Cape Antifer, 12 or 13 m. farther north. Le Tréport, Dieppe, Veules, St Valery, Veulettes, Fécamp, Yport, Étretat and Ste Adresse (to mention only the more important) are fashionable watering-places. Forges-les-Eaux (in the east of the department) has cold chalybeate springs of some repute. The water is not particularly mineral, but hither it has been considerably thinned by the effects of the abundant rainfall. In Paris, but the average temperature of the year is higher. The rainfall at Rouen is 28 in. per annum, increasing towards Dieppe.

In general the department is fertile and well cultivated. Along the Seine fine meadow-land has been reclaimed by dyking; and sandy and loamy soils, under intensive rearing, produce excellent wheat and beeches, and they often attain magnificent dimensions, especially in the forest of Arques and along the railway from Rouen to Dieppe. Pinus sylvestris is the principal component of the forest of Rouvray opposite Rouen. The forest of Eu covers 30 sq. m. in the north-east. Of the arable crops wheat and oats are the principal, rye, flax, colza, sugar beet and potatoes being also of importance. Milk cows are kept, and the milk is partly consumed at home, partly sent to Paris, where it is used for the manufacture of butter and Gournay and Neufchâtel cheese are in repute. The farms of the Seine plateau are each surrounded by an earthen dyke, on which are planted forest trees, generally beech and oak. Within the shaded belt between the dyke and the road, meadows and pastures are grazed by the inhabitants. With the exception of a little peat and a number of quarries, Seine-Inférieure has no mineral source of wealth; but manufacturing and especially the textile industries are important. Rouen is the chief centre of the cotton trade, which comprises spinning and the weaving of rouenneries, insennes (cotton prints), cretonnes and other cotton goods. Dieppe is a regular port, and the Havre, Dieppe and Fécamp. Other establishments of importance are the national tobacco factories at Dieppe and Havre, sugar-refineries, distilleries, glass-works, potteries, paper works, soap-works, chemical works, flour-mills, oilfactories, leather and tanneries, &c. The Seine is the chief river of the department, which is traversed by the fine fleet of the French battleships. Fécamp, which plays a very important part in the New-land fisheries, sends large quantities of cod, herrings, mackerel, &c., into the market; Dieppe supplies Paris with fresh fish; St Valery sends boats as far as Iceland. The principal ports for foreign trade are Havre, Rouen and Dieppe. The chief imports of the department are cotton, wool, cereals, hides, tallow, coffee, tea, sugar, and dyewoods, indigo and other dyes, and coal products, coal, petroleum, &c. The exports include industrial and dairy products. Seine-Inférieure is served principally by the Western railway, but the Northern railway, which was completed in 1853, joins Rouen and St Malo. The Seine is navigable for lighters 85 m. of navigable waterway. The canal of Tancarville from Chillebeuf to Havre is about 15 m. long, that from Eu to Tréport about 2 m. The department is divided into 7 cantons, and contains 2 arrondissements, Havre and Rouen. Neufchâtel-en-Vexin (Voyet) 55 cantons and 750 communes. It forms the diocese of the archbishopric of Rouen and part of the region of the III. army corps and of the académie (educational division) of Caen. Its court of appeal is at Rouen, the capital.

Rouen, Havre and Dieppe and in a lesser degree, Beuzeville, Fécamp, Harfleur, Lillebonne, Voyet, Eu, Le Tréport, Aumale, Étretat, Bolbec, Barentin and Caudebec-en-Caux (see separate articles) are noteworthy towns for commercial, architectural or other reasons.

The following places are also of architectural interest. St Martin-des-Bois and Belves, where there are remains of an important abbey including the ruins of a chapel, a church and a Gothic chapter-house of the latter half of the 12th century; Valmont, which has fine ruins (16th century) of the choir of a Cistercian abbey-church; Varengeville, well known for the manor (14th century) of the Valois, and a church (see separate article) with a Romanesque church and other remains of an ancient abbey; Montivilliers, which has a fine abbey-church of the 12th and 13th centuries; and Amfreville, with Romanesque and Trouvère castles and châteaux of various periods.

SEISEN (from M. Eng. saysen, seysen, in the legal sense of to put in possession of, or to take possession of, hence, to grasp, to seize; the O. Fr. seiser, saisir, is from Low Lat. sacire, generally referred to the same source as Goth. satijan, O. Eng. seytan, to put in place, set), the possession of such an estate in land as was anciently thought worthy to be held by a free man (Williams, On Seisen, p. 2). Seisen is of two kinds, in law and in deed. Seisen in law is where lands descend and the heir has not actually entered upon them; by entry he converts his seisen in law into seisen in deed. Seisen is now confined to possession of the freehold, though at one time it appears to have been used for simple possession without regard to the estate of the possessor. Its importance is considerably less than it was at one time, owing to the old form of conveyance by feoffment with livery of seisen having been superseded by a deed of grant (see Feoffment), and the old rule of descent from the person last seised having been abolished in favour of descent from the purchaser. At one time the right of the wife to dower and of the husband to an estate by curtesy depended upon the doctrine of seisen. The Dowser Act (1833–1834), however, rendered the fact of the seisen of the husband of no importance, and the Married Women's Property Act 1882 practically abolished the old law of curtesy.

Primer seisen was a feudal burden at one time incident to the king's tenants in capite, whether by knight service or in socage. It was the right of the crown to receive of the heir, after the death of a tenant in capite, one year's profits of lands in possession and half a year's profits of lands in reversion. The right was abandoned by the act abolishing feudal tenures (12 Car. II. c. 24, 1706).

In Scots law the corresponding term is "sasine." Like seisen in England, sasine has become of little legal importance owing to modern legislation. By an act of 1845 actual sasine on the lands was made unnecessary. By an act of 1858 the instrument of sasine is the register of the conveyance with a warrant of registration thereon.

SEISIMOMETER (from Gr. σεισμός, earthquake, and μέτρον, a measure). This name was originally given to instruments designed to measure the movement of the ground during earthquakes (q.v.). Observations have shown that, in addition to the comparatively great and sudden displacements which occur in earthquakes, the ground is subject to other movements. Some of these, which may be called "earth-tremors," resemble earthquakes in being imperceptible (owing to the smallness of the motion) until instrumental means are used to detect them. Others, which may be called "earth-tiltings," show themselves by a slow bending and unbending of the surface, so that a post stuck in the ground, vertical to begin with, does not remain vertical, but inclines now to one side and now to another, the plane of the ground in which it stands shifting relatively to the horizon. No sharp distinction can be drawn between these classes of movements. Earthquakes and earth-tremors grade into one another, and in almost every earthquake there is some tilting. The sasine or seismograph is, in fact, a simple device which (when properly used) can be extended (and will here be understood) to cover all instruments which are designed to measure movements of the ground.

Popularly it is supposed that earthquake recorders are instruments so sensitive to slight vibrations that great care is necessary in selecting a site for their installation. Although this position is correct for a certain class of apparatus, as for example that which will record rapid elastic vibrations produced by the movement of a train a mile distant, it is far from being so for the ordinary apparatus employed by the seismologist. What he usually aims at is either to record the more or less rapid movements of the ground upon which we can feel, or the slow but large disturbances which do not appeal to our unaided senses. Generally speaking, the instruments used for these purposes are not disturbed by the vibrations, but are set up at some distance so that something may be found which will respond to a gentle shaking of the ground. Sometimes it is a loosely-fitting shutter or window-frame, a hanging drawer-handle, or a lamp-shade which will rattle; the timbers in a roof may creak, or a group of wine-glasses with their rims in contact may chatter. Any of these sounds may call attention to movements which otherwise would pass unnoticed. Specially arranged contrivances which tell us that the ground has been shaken are called seismoscopes or earthquake indicators. A small column, as for example a lead pencil standing on end, or a row of pins propped up against suitable supports, or other bodies which are easily overturned, may be used as seismoscopes. Experience, however, has

1 Up to the middle of the 15th century "seisen" was applied to chattels equally with freeholds, the word "possessed" being rarely used. In course of time the words acquired their modern meaning. In Ireland the word seiseen is still used for the freehold.
shown that contrivances of this order are wanting in sensitiveness, and often remain standing during movements that are distinctly perceptible. A more satisfactory arrangement is one where the body to be overthrown is placed upon a seismograph which exaggerates the movements of the ground. For example, the platform \( h \) (see fig. 1) may be on the top of a small rod \( r \), fixed at its lower end by a base \( b \) of Paraffin, with a glass \( w \), and carrying a disk or sphere of lead at \( l \). When the stand on which \( w \) is fixed is in a horizontal position, that is, if \( w \) is no longer required. In this case the motion at \( h \) is that of elastic switch- or destructive. Apparatus of this kind may be employed for several purposes beyond the one which is indicated, namely, that of recording an earthquake has taken place.

For example, if the falling body \( a \) is attached by a thread to the pendulum of a seismograph, it may be used to stop it and indicate the approximate time at which the tremor occurred. When the pendulum is set into motion, it gives a dia-graph. The pendulum may be employed for several purposes beyond the one which is indicated, namely, that of recording an earthquake has taken place.

The next class of instruments to be considered are seismometers or earthquake measurers, and seismographs or instruments which are used to record the effects of an earthquake on the ground. Although a seismograph may be designed that will not only respond to fairly rapid elastic vibrations, but will also record very slow and slight undulatory movements of the ground, experience has shown that the instrument which is most sensitive to slow movements is the pendulum, and that of very long period pendulums may be employed for slow movements of the ground.

First we will consider the types of apparatus which are used to record the rapid back-and-forth movements of earthquakes which can be distinctly felt and at times are even destructive. The essential feature in these seismographs is a heavy mass of metal, so suspended that although its supports are moved, some point in the mass remains practically at rest. For example, if the movement is rapid, the bob of a very long and heavy pendulum will practically comply with these conditions. If a straight line from this pendulum rests upon a small point at the top of a vertical plate fixed to the ground, the vibratory motion of the ground will be recorded on the glass plate as a set of superimposed vibrations. To obtain a complete record of movements the plate must be moved, say by clockwork.

Experience, however, has shown that even when the movements of the ground are alarming the actual range of motion is so small that a satisfactory record can be obtained only by some mechanical (or optical) method of multiplication. This was usually accomplished as shown in fig. 2, where \( b \) is the bob of a pendulum, with its style \( s \) passing through a slot in the top of a light lever, which is pivoted at \( a \), and with its outer end resting upon a revolving cylinder covered with silk or paper. As shown in the figure, it is evident that the motion of \( a \) in the line \( s b \) would not be recorded, and to obtain a complete record of horizontal movements it is necessary to have two or more such threads to record the movements of \( b \) to each other. A complete arrangement of this kind is shown in the plan of fig. 2. Here the style \( s \) of the pendulum rests in slots in the short arms of two writing levers placed at \( a \) and \( b \). Motion of the ground in the direction of \( c \) actuates only the lever \( a c \), motion in the direction of \( d \) actuates only \( b e \), whilst motion in intermediate directions actuates both. The length of the short arms of the levers is usually \( \frac{a}{2} \) or \( \frac{c}{2} \) of the long arms.

This type of apparatus has been replaced in Japan by what are usually called duplex pendulums. The change was made because it frequently happened that in consequence of the movement of the ground, the marking of the pendulum was not steady enough to read the record with any measure of accuracy. A duplex pendulum (fig. 3) consists of an ordinary pendulum diagrammatically represented by \( a b \), connected by a universal joint to an ordinary pendulum, which holds a rod pointed at its lower end and loaded at \( e \), would be unstable if it were not connected with \( b \). Now imagine this system so displaced so that \( a \) moves to \( a' \) and \( d \) moves to \( d' \). In the new position \( b \) would tend to follow the direction of its point of support, whilst \( c \) would tend to fall in the opposite direction, and the bob of \( b \) would exercise a restraint upon the motion of the other. If, as in practice, the moment of \( b \) is made slightly greater than that of \( c \), the system will tend to a steady state and is made extremely light. In this way, by coupling together an ordinary pendulum about 3 ft. in length with an inverted pendulum 6 in. long, it is possible to obtain a slow-moving very long pendulum which is too light to follow the back-and-forth movements of its supports.

To describe an instrument of this description (see fig. 4) a point in the steady mass \( b \) is used as the fulcrum for a light-writer. This has a ball joint at \( a \), a universal joint at \( c \) and a writing point at \( p \), resting upon a piece of smoked india paper. Attention was first called to the possibility of rendering ordinary pendulums more truly astatic by Professor Thomas Gray, who suggested methods by which this might be accomplished. The apparatus shown in fig. 5, designed by Professor J. A. Ewing, Records obtained from instruments of this description give information respecting the range and principal direction of motion, and show us that in a given earthquake the ground may move in many directions.

For obtaining an open diagram of an earthquake the best type of apparatus consists of a pair of horizontal pendulums writing its movements upon a moving surface. A simple form of horizontal pendulum as shown in fig. 5, consists of a rod \( o p \), free to swing like a gate round a vertical or nearly vertical axis, \( o d \), and loaded at some point \( b \). In practice the weight \( b \) is pivoted on the rod whilst its outer end, \( b p \), which rests on a steady surface, is made extremely light. When the frame of this arrangement is rapidly displaced through a small horizontal range to \( b p \), its motion the inclination of the axis of vibration \( e f \), forwards. Although by corresponding portions of the diagrams given by instruments of this type, it is possible to determine the range and direction of motion, it is evident that of which they are the resolved parts, their chief value is that they enable us to measure with ease the extent of any vibration, half of which is called its amplitude, and the time taken to make a complete back-and-forth movement, or its period. Now if \( a \) be the amplitude expressed in millimetres, and \( t \) the period expressed in seconds, then the maximum velocity of an earth particle vibrates to and fro equals \( 2\pi a \), while the maximum acceleration equals \( 4\pi^2a/t^2 \). The former quantity determines the distance to which a body, as for example the capping
by means of simple formulae calculate quantities closely agreeing with those obtained from the seismogram. For example, if a body, say a coping-stone, has been thrown horizontally through a distance \( a \), and fallen from a height \( b \), the maximum horizontal velocity with which it was projected equals \( \sqrt{2gb(a/b)} \); or if the height of the centre of gravity of a column like a gravestone above the base on which it rests is \( y \), and \( x \) is the horizontal distance of this centre from the edge over which it has turned, then the acceleration or suddenness of motion which caused its overthrow is measured, as pointed out by C. D. West, with fair accuracy by \( gx/y \).

To measure vertical motion, which with the greater number of earthquakes is not appreciable, a fairly steady mass to which a multiplying light-writing index can be attached is obtained from a weight carried on a lever held by any form of spring in a horizontal position. Such an arrangement, for which seismologists are indebted to Professor T. Grav, is shown in fig. 6, in which \( B \) is the mass used as the steady point. This, when supported as shown, can be arranged to have an extremely slow period of vertical motion, and in this respect be equivalent to a weight attached to a very long spring, an alternative which, however, impracticable. The value of these records, as is the case with other forms of seismographs, is impaired by pronounced tiltings of the ground.

We next turn to types of instruments employed to record earthquakes which have radiated from their origins, where they may have been violent, to such distances that their movements are no longer perceptible. In these instruments the same principles are followed as in the construction of horizontal pendulums, the chief difference being that the so-called steady mass is arranged to have a much longer period than that required when recording perceptible earthquakes. Instruments largely employed for this purpose in Italy are ordinary pendulum seismographs as in fig. 2. One at Catania consists of a weight of 300 kilos suspended by a wire 25 metres in length, the movements of which by means of writing indices are multiplied 12-5 times. With pendulums of shorter length, say 2 metres, it is necessary to have a multiplication 80 to 100 fold by a double system of very light levers, in order to render the extremely slight tilting of their support perceptible. This arrangement, as devised by Professor G. Vicentini of Padua, will yield excellent diagrams of the gentle undulations of earthquakes which have originated at great distances, but for local disturbances, even if the bob of the pendulum acts as a steady point, the highly multiplied displacements are usually too great to be recorded.

In Japan, Germany, Austria, England and Russia horizontal pendulums of the von Rebeer-Paschewitz type are employed, which by means of levelling screws are usually adjusted to have a natural period or double swing of from 15 to 30 seconds. These pendulums are usually very small. The swinging arm or boom is from 4 to 8 in. long horizontally, and carries at its extremity a weight of a few ounces. A simple form, which is sometimes referred to as a conical pendulum, may be constructed with a large sewing needle carrying a galvanometer mirror, suspended by means of a silk or quartz fibre as shown in fig. 7. To avoid the possibility of displacements due to magnetic influences, the needle may be replaced by a brass or glass rod. The adjustment of the instrument is effected by means of screws in the bed-plate, by turning which the axis of \( \omega \) may be brought into a position nearly vertical. As this position is approached the period of swing becomes greater and greater, and sensitivity to slight tilting at right angles to the plane of \( \omega \) is increased. The movements of the apparatus, which when complete should consist of two similar pendulums in planes at right angles to each other, are recorded by means of a beam of light, which, after reflection from the mirror or mirrors, passes through a cylindrical lens and is focussed upon a moving surface of photographic paper. The more distant this is from the pendulum the greater is the magnification of the angular movements of the mirror. With a period of 18 seconds, and the record-receiving paper at a distance of about 15 ft., a deflection of 1 millimetre of the light spot may indicate a tilting of \( 3 \) part of a second of arc, or 1 in. in 326 miles. Although this high degree of sensibility, and even a sensibility still higher, may be required in connexion with investigations respecting changes in the vertical, it is not necessary in ordinary seismographs. A very sensitive modified von Rebeer instrument was employed by O. Hecker in his measurement of the variation in the vertical and of tidal earth tremors.

A type of instrument which has sufficient sensibility to record the various phases of unfelt earthquake motion, and which, at the suggestion of a committee of the British Association, has been adopted at many observatories throughout the world, is shown in fig. 8. With an adjustment to give a 10-second period, a deflection of 1 mm., at the outer end of the boom corresponds to a tilting of the bed-plate of \( \alpha \)-5, or 1 in. in 6-4 m. The record is obtained by the light from a small lamp reflected downwards by a mirror so as to pass through a slit in a small plate attached to the outer end of the boom. The short streak of light thus obtained moves with
test your understanding of the text...
Provisions in Seistan are as a rule sufficient, though sheep and oxen, what people call their wool and bag, are not good enough to be exchanged for the daily bread of the natives at less than a halfpenny the pound. Vegetables are scarce, and rice is chiefly obtained from Ferat. The inundated lands about with water-fowl. Partridges and sand-grouse are occasionally seen. River fish are plentiful enough, but confined to one species, the barbel.

The population is about 205,000, but the country, even with the lazy methods of the present day, furnishes a very large amount of grain and food-supplies in excess of local requirements, and it could, of course, be made to furnish very much more.

Under improved government Seistan could with but little trouble be made a great revenue producer.

The inhabitants of Seistan are mainly composed of Kainais, descendants of the ancient rulers of the land; Sarbandis and Shaharakis, tribes supposed to have consisted originally of immigrants from western Persia; and Baluchis of the Nahrui and Sanjuranii (Tokii) clans. Bellew separates the "Seistanis"; but it is a question whether this term is not in a large measure applied to fixed inhabitants of the country, whatever their descent and nationality. The dense reed-beds (Naizar) skirting the Hamun, often several miles in width and composed of reeds 10 ft. or more high, are a favorite haunt of large numbers of wild ducks and other water-fowl. These people live all the year round at the water's edge, in huts made of reeds, and change their abodes as the waters advance or recede. They have a language of their own, and an uncivilized people, suspicious of strangers, ever ready to decamp if they think a tax-collector is near.

History.—The ancient Dranglani (Zaraya, Darunaka, "lake land") received the name of "land of the Sacae" after this country was permanently occupied by the "Scyths" or Sacae, who overran Iran in 1235 b.c. It was included in the Sassanian empire, and then in the empire of the caliphs. About A.D. 860, when it had undergone many changes of government under lieutenants of the Bagdad caliphs, or bold adventurers acting on their own account, Yakub b. Laith al-Saharan god made it the seat of his power. In 901 it fell under the power of the Samanids, and a century later into that of the Ghaznevidees. An invasion of Jagatais and the irruption of Timur are salient points in the history of Seistan prior to the Safavid conquest (1508). Up to 1722 Seistan remained more or less a Persian dependency. At the time of the Afghan invasion of Mir Mahmud (1722), Malik Mohammmed Kaiani was the resident ruler in Seistan, and by league with the invader or other intrigue he secured for himself that particular principality and a great part of Khorasan also. He was slain by Nadir Kuli Khan, the general of Shah Tahmasp, who afterwards, as Nadir Shah, became possessor of Seistan as part of his Persian dominions. Shortly after the death of Nadir (1751) Seistan passed, together with other provinces, into the hands of Ahmad Shah Abdali, the first sovereign in a united Afghanistan. On the death of Ahmad Shah in 1773 the country became a recognized bone of contention, not so much between Persians and Afghans as between Ferat and Kandahar; but eventually the internal dissensions of Afghanistan gave Persia the desired opportunity; and by a steady course of intrigue and encroachment she managed to gain within her grasp the better lands on the left bank of the lower Helmund and something on the right bank besides. When the British arbitrator appeared on the scene in the beginning of 1872, though compelled to admit the Shah's possession of what has been called "Seistan Proper," he could in fairness insist on the evacuation of Nad Ali, Kala Fath, and all places occupied on the right bank by Persian troops; and furthermore he left to the Afghans both sides of the river above the dam of Kuhak to the dam of Kandahar.

A part of the work of General Sir Frederic J. Goldsmid, K.C.S.I., who conducted the first Seistan demarcation commission in 1872, was left undone and completed only in 1903-1905 by Col Sir Henry McMahon, K.C.I.E.


(F. J. G.; A. H.-S.)
SEJANUS, LUCIUS AELIUS, favourite and minister of the Emperor Tiberius. He was the son of Setus Strabo, prefect of the praetorians, and was adopted into the Aelian gens. After his father's departure from Rome to take up the governorship of Egypt, Sejanus was made prefect in his stead. He gained the confidence of Tiberius, and, supported by the praetorians, whom he concentrated in a camp on the Viminal Hill, became virtually ruler of Rome. But he aimed still higher, and determined to put all the members of the royal house out of his way. Having removed Drusus (the son of Tiberius) by poison, he persuaded the emperor to retire the infant Caligula. Drusus was followed some years later by those of Agrrippina (the wife of Germanicus) and her sons Drusus and Nero. Tiberius at last saw through his designs, and caused Sejanus to be put to death (A.D. 31).


SEKONDI, a port on the Gold Coast in 4° 57' N., 1° 42' W., and 167 m. by rail S. by W. of Kamasi. Pop. (1908) about 5000, of whom some 200 were whites. Sekondi is one of the old trading stations on the Guinea coast, and Fort Orange was built here by the Dutch about 1649, the English later on building another fort near by. In 1694 the Dutch fort was plundered by the Ahanta, who in 1689 burnt the English fort. It was not rebuilt, and it was not until 1872 that the place became definitely British. The town was of comparatively little importance until it was chosen as the sea terminus of the railway serving the gold-mining districts and Ashanti. The railway reached the Tarkwa gold-fields in 1901 and the Obuasi mines in 1902. From that date Sekondi became the chief port of the Gold Coast colony, gold, rubber and timber being the principal exports. In 1906 the total trade of the port was £2,121,420. There is no sheltered harbour, but at the landing place are piers provided with cranes. Landing is effected in lighters, ships anchoring in the roadway a mile from the shore. The public buildings include Fort Orange, a church, court-house, government offices and hospital. The mean temperature is about 79° F.; the rainfall about 40 in. a year. The climate is unhealthy for Europeans, but by the reclamation of the neighbouring lagoons its sanitary condition has been improved. Sekondi is governed by a municipality, created in 1905. It is in telegraphic communication with Europe by submarine cable, and is served by British, German and Belgian lines of steamers.

SELACHIANS, or Elasmobranchii, a subclass of fishes, including the various kinds of Sharks and Rays.

**Structural Features.**—The general shape is somewhat spindle-like in the Sharks, while in the Rays—in correlation with the ground-feeding habits—the body has become greatly depressed. Departures from the normal are seen in the Hammerheads (Sphyraena), where the sides of the head are so convex that the anterior wall of the hydrobranchial clefts and vestigial lamellae on the anterior wall of the spiracle where they form the "pseudobranch." In the Basking Shark *Cetorhinus* the pharyngeal openings of the last pair of gills are of very large size. The intestine is provided with an elaborated representative of the small conical "gill rakers" found in this position in other fishes. These structures form a sieve-like arrangement for preventing the minute creatures (plankton) on which this shark feeds from passing out through the gill clefts.

There appears to be no representative of the lung or swimbladder, and in the body of no specific caecum. The intestine is provided with a spiral valve in its interior which varies in character in different forms (1). A glandular caecum—the rectal caecum—opens into the dorsal side of the rectum. In regard to the coelomic spaces the only peculiarities are the parasitic relations of the pericardial cavity in the adult in communication with the general splanchnococele by an open channel sometimes forked at its posterior end. This communication apparently arises secondarily and is not due to a persistence of the embryonic communication (3). In the case of *Torpedo* and in the ordinary Rays certain portions of the muscular system are converted into electrical organs. In the Skates and Rays the electrical disturbance is relatively small, imperceptible by human beings—but in *Torpedo* it is very considerable. No doubt the electric organs subserve a defensive function.

The kidney of the adult is a mesonephros. The pronephros is represented normal, though vestigial in the embryo. The mesonephros shows a division into a broader posterior portion which alone is renal in function, and a slender anterior portion which subserves as a genital function. The female ureter duct is a typical Müllerian duct having at its anterior end a wide coelomic funnel and lined by glandular epithelium whose secretion forms adventitious coats round the egg during its downward passage. The spermatophores find their way to the cloaca by means of the mesonephric duct, the hinder portion of which is dilated to form a vesicular seminalis. The urino-genital sinus—formed by the fusion of the mesonephric ducts at their hinder ends—projects forward as a pair of pockets (the so-called sperm sacs).

The skeleton of the Selachian shows remarkably archaic features, inasmuch as the internal skeleton is entirely cartilaginous, the bones being merely the calcified shelly derivatives of the primitive cartilage and not showing in any part a tendency to sink or spread forwards for the reinforcement of the cartilaginous skeleton. The vertebral column is of the chordacentrous type, although in some of the more archaic of known fossil forms (Pleuropterygi, Ichthyostega, Icthyodaeus, Ibyodus) the chondrified secondary sheath of the notochord apparently remained in the adult the unsegmented condition. The same holds for the Holocephali and for the hinder part of the vertebral column of the existing Chlamydoselachus. The centra are usually, if not always, strengthened in the adult by the deposition of lime salts in the intercellular matrix: such calcified cartilage must be regarded as the original condition, and the calcified tracts shows differences which are of taxonomic importance.

In the *cyclospondylous* type (fig. 1, A) the calcified tract has the form of a double cone—of the wall of a dice-box—and in the section, as in the other types, the test (coelacanthian) appears as a simple circle (*Paleonichthys, Stenacanthus, Scymnus*). In the *tectospindylous* (fig. 1, B) type, additional calcified tracts are developed outside and concentric with the original sheath (Batrachodeliches, Bathypterygis); while in the *asterospondylous* (fig. 1, C) type the calcified tracts (haemal arches, radiating outwards) are of the type of vertebrae. The plates are haemal arches, the cartilaginous trabeculae. A, primitive centra of the *tectospindylous* type. B, the anterior centra of the *cyclospondylous* type. C, the anterior centra of the *asterospondylous* type.
SELACHIANS

centrally with the fundamental body metamorphism, as shown by the neuro-muscular segments; e.g., there are frequently in the caudal region in sharks (3) two centra to each neuro-muscular segment, while in part of the trunk in Notitiadidae one centrum corresponds to two neuro-muscular segments.

The chondrocranium retains life through its primitive character. The ethmoidal region is prolonged forwards into a rostrum—which may be highly developed, as in the mesopterygium (Pristis), or may be of insignificant dimensions as in most sharks.

The jaw apparatus is also remarkably archaic: the functional jaws being the palatoquadrate cartilage and Meckel’s cartilage respectively. The suspension from the skull is typically edentary, except in Notidionus where it is amphistylic, in the Holocanthus where it is autostylic, and in Heterodontus where it approaches the autostylic condition.

The gill arches of the postmandibular visceral arches consists of a half hoop of cartilage on each side divided into a number of segments: the two half hoops are connected ventrally by a median conoid plate (pharyngobranchial, mesopterygium). Each segment shows a division into a dorsal (hyomandibular) and a ventral (ceratiomyarian) element, and except in the Notitiadidae the dorsal segment is of large size in correlation with its function in the suspension of the jaws. This enlargement of the hyomandibular is particularly marked in the case of the Rays (Raja) where it may become freed from the ventral segmental part of the arch which articulates directly with the skull. The branchial arches usually are segmentated on the basis of more or less other similar rules. In addition there are the ceratohyal and hypohyal arch in the alimentary canal.

All these visceral arches bear on their outer surface a number of elements known as placoid scales, which are greatly developed in the gill septa. Those attached to the hyoid arch (branchiopterygial rays) show by their large size a foreshadowing of the development of the operculum of the higher group of fishes.

The visceral arches of the postbranchial are so reduced that all cartilaginous rods of doubtful significance are found superficial to the jaw cartilage (labial) and to certain of the branchial arches (extrabranchial).

The limb girdles of the Selachians are very simple—a loop of cartilage incomplete dorsally in the case of the pectoral, a transverse bar of cartilage in the case of the pelvic girdle.

The pectoral girdle includes the two halves of the pectoral girdle remained distinct in the adult, and each was segmented into three pieces, showing a remarkable correspondence with the visceral arches lying in front of them. (For the bearing of this on the development of the pectoral appendages of the Teleostei, see E. E. Williams.) In the living sharks (e.g. Acanthias) a relic of this condition is found—the dorsal extremity of the girdle being segmented off from the rest.

The cartilaginous skeleton of the pectoral limb consists of numerous small pieces which typically are connected with the girdle through an intermediary of three basal pieces known as propetrygium, metastereygium and metastereygium. In the Rays, in correlation with the gigantic development of the pectoral fins, the propetrygium and metastereygium become greatly enlarged in an antero-posterior direction—the former becoming attached to the side of the cranium or even meeting and fusing with its fellow in front (Trygon). In the living sharks it does not bear any external expression, but is an inner side of a single backwardly projecting basal piece (metastereygium). In the male this is continued backwards to form the skeleton of the pen and testis.

The limb skeleton shows remarkably interesting features in the ancient extinct sharks Cladoselache and Plesacanthus.

The placoid or bony skeleton is seen in its most archaic form in Selachiens. The placoid plates, of delicate form, may be uniform in size forming the characteristic shagreen of the various sharks, or scattered scales may be greatly enlarged as in the thornbacks, or finally the scales may have completely atrophied in the electric ray (Torpedo).

Local placoid elements or aggregations of placoid elements may become specially enlarged to form defensive or offensive weapons. In these cases the plates are not only longitudinally elongated but also along each side of the rostrum form the “teeth” of the saw, and a similar condition occurs in the sharks of the genus Pristiophorus. In the sting-rays the side armed with a large spined spine taking the place of the dorsal fin and having the lateral line in front of one of which increases in size and becomes functional if the previously functional spine is broken off.

The portion of skin involved to line the buccal cavity carries with it a considerable layer of local connective tissue (labial). Normally these undergo atrophy except near the margin of the cavity where they are greatly enlarged to form the teeth. These vary greatly, as in the Squaleae, in the size, number and shape of their teeth. Segments of the teeth may be sharp, conical, or triangular with serrated edges (e.g. caracalodon and other sharks) or flattened adapted to crushing Moluscan shells (e.g. various rays).

Various other parts of the shark's body are also of interest. Ventral opening into the atrium is a well-developed sinus venous and leading from ventricle into ventral aorta is a well-developed rhythmically contractile conus arteriosus, containing a complex arrangement of fibres and vessels. This conus may be sharply pointed spines, or triangular cutting blades with serrated edges (e.g. carcharodon and other sharks) or flattened adapted to crushing Moluscan shells (e.g. various rays).

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tendril-like structures (Scylium) which serve to anchor it to seaweed.

In a large number of Selachians the adoption of internal fertilization has been followed by the retention of the embryo within the ovipositor (uterus). In some, such as the deep-water Chlamydoselachus, not only are the ovaries larger but the act of oviposition is greatly reduced. The valves may be folded in such a way as to present a single opening, and on the upper surface of this opening there may be a small external scute or point which is a vestige of the ovipositor. In other cases the surface of the ovipositor is as smooth as that of a whale's fin, as in the case of some of the Squaliformes. In recent years some authors have asserted that the ovipositor is a vestige of the outer ear, but this view is not generally accepted.

S Selborne, Roundell Palmer, 1st Earl of (1812–1895), English lawyer and statesman, was born at Mixbury, in the county of Oxford, on the 27th of November 1812. His father was rector of the parish; his grandfather and great-grandfather were merchants in the City of London, where their descendants are still numbered among the merchants; and, according to the most reliable tradition, his mother belonged to the family of Roundell, which had been settled in the county of Yorkshire for four centuries in the West Riding of Yorkshire. He was educated at Rugby and at Winchester, and in 1830 went into residence in the university of Oxford as a scholar of Trinity College. Here he lived in intimacy with many friends, especially P. C. Claughton and Charles Wordsworth. In 1834 he took a first class in Literae Humaniores; he won the Eton scholarship and was elected to a fellowship at Magdalen College; and after a year, spent chiefly in private tuition, partly in Lord Winchilsea's house and partly in the university, he was removed to London (November 1835) and commenced reading for the bar.

He was called to the bar on the 7th of June 1837, the same day on which John Rolt (1804–1871), a man of very different antecedents, but afterwards a worthy rival of Palmer, was also called. Through his family connections in the City of London, clients soon came to Palmer's chambers, and his business at the Chancery bar increased rapidly. Meanwhile his interests were not wholly confined to law; for some time (1834–1843) he wrote for The Times and the British Critic; he made a plunge into patriotic learning, from which he soon recollected; he was much interested in the controversies which distracted the Church on the subject of Tract 90; in the treatment of the Episcopal Church in Canada by the Canadian government and the Colonial Office; in the establishment of the crown, in conjunction with the king of Prussia, of the Jerusalem bispochic; and in the contest for the professorship of poetry at Oxford on Keble's retirement.

In 1847, and again in 1853, Palmer was returned as member of Parliament for Plymouth, as a Peelite, and in the House of Commons he took an active and independent part. He advocated the admission of Jews to parliament; he opposed Lord John Russell's measure to repel the so-called papal aggression; he opposed the admission of Dissenters into the university of Oxford; and he was hostile to the action of the government in the Crimean War. On the question of the reform of the university of Oxford, he sympathized with the reformers, but felt himself prohibited, by the oaths which he had taken, from assuming any active part. In 1855 he supported Gladstone in the efforts to bring about peace with Russia before the capture of Sevastopol; in 1856 he opposed the opening of museums on Sunday; in the following year he supported Cobden in his disapproval of the second Reform Bill, and with him in the debate on the second Reform Bill with China. At the general election on March 27, 1857, Palmer, finding that the independent part he had taken, especially in reference to the Chinese question, had alienated from him many of his constituents in Plymouth, abandoned the prospect of re-election for that borough, and did not seek for election elsewhere. In 1848 he married Lady Laura Waldegrave, daughter of Earl Waldegrave. In 1849 he had become a Q.C.; and in 1853 he took his seat in the Rolls Court, where he soon obtained a leading practice, and was engaged in many of the most important cases in the Court of Chancery. In July 1861 he accepted from Lord Palmerston the office of solicitor-general, a knighthood, and a safe seat for the borough of Richmond in Yorkshire, secured for him through the friendly action of Lord Zetland, and thus began the second spell of Palmer's membership of the House of Commons, which continued till his elevation to the woollack and the peerage. In September 1863 he became attorney-general, and so continued till the government of which he was a member resigned in 1866.

The Civil War in America, and the questions which arose from the relations of Great Britain with both belligerents, rendered Palmer's members of the law officers of the crown more than usually onerous, and Palmer was called upon to take part, as adviser of the ministry, in the courts, and in the House, in the questions which arose in respect of the "Trent" and the "Peterhoff," the cruisers "Alabama" and "Florida" and the "Alexandria," a ship which was seized by the government, and other matters. In 1865 he took a large part in the passing of the act under which all the law courts were gathered together in the Strand. In 1866 he expressed himself favourable to the making of household suffrage the basis of representation, an expression of opinion which probably influenced the Reform Bill of the following year—in that Palmer and Cobden took the same line of conduct, and especially in opposition to the so-called "fancy franchises" originally proposed by its authors. In the same year he took part in supporting the measure for the abolition of compulsory Church rates.

In 1868 occurred an event of great importance in his career. In April of that year Gladstone proposed his resolutions with reference to the Irish Church on which the bill for its disestablishment was subsequently based. This measure was opposed by many of the deepest feelings of Palmer, and he evidenced his disapproval by abstaining from voting on the resolutions. At the election of November 1868 Palmer was again returned for Richmond, and Gladstone offered him the office of lord chancellor or the office of a lord justice with a peerage; both offers were declined by Palmer, and he assumed a position of independent opposition to the measure relative to the Irish Church. On the 22nd of March 1869 he delivered a very powerful speech against the second reading of the bill, and during its later stages exercised a considerable influence in modifying the severity of its provisions. The position of Palmer at this time was a remarkable one. The foremost advocate at the bar, he was known to have great power of popular appeal, neither to promote the success of the proposition, nor to promote a measure of which he disapproved; a very prominent member of the House of Commons, whose action had been more than usually independent of party, he had separated himself from his political friends and maintained a position as the dignified and forcible opponent of disestablishment. Without office and without combination with the Conservative Opposition, he exercised great influence within and without the walls of St Stephen's. What made his position the more remarkable was that he was frequently consulted by the government which he had declined to join, and that on some occasions they invoked the assistance which his great influence in the House enabled him to afford them.

In 1869 he sought to modify rather than to oppose the bill for the abolition of tests in the universities. In 1870 he gave a qualified support to Gladstone's first Irish Land Act, and in the same year he supported Forster's Education Act. In 1872 he undertook the defence of his friend Lord Chancellor Hatherley, when attacked for his appointment of Sir Robert Collier to the judicial committee of the Privy Council, and, by a line of argument much more ingenious than convincing, secured a majority for the government.

The treaty of Washington was the means of casting a great duty upon Palmer. After the conclusion of the Civil War in America very large claims were preferred against Great Britain for alleged breaches of her duty as a neutral power; and after long negotiations, England and the United States agreed to arbitration. Palmer, who had been advising the British government during these negotiations, and who (4th August 1871) had defended the treaty in the House of Commons, was briefly
on behalf of Great Britain. In the end the Geneva tribunal made an award requiring the payment by Great Britain to the United States of a sum of about $5,000,000. To those who, in order to promote the cause of international arbitration, are desirous of acquiring a knowledge of the dangers and difficulties which beset this mode of settling disputes for which Palmer has left no precedent, arbitration may be commenced.

In September 1872 Gladstone again offered him the great seal, which Lord Hatherley had resigned; in the same year he took up his residence in his newly erected house at Blackmoor, in the parish of Selborne, in the county of Hampshire, from which he took his new title as a peer. In the following year (1873) Lord Selborne carried through parliament the Judicature Act. The foundations of this measure were laid so long ago as February 1867, when Palmer had moved for a royal commission on the constitution of the courts, and had taken an active part in the work of that commission, of which the first report was made in 1869. The result of this act of 1873 was to effect a fundamental change in the judicature system. By the operation of the Judicature Act one supreme court with several divisions was constituted; each division could administer the whole law; the conflict of divergent systems of law was largely overcome by declaring that when they were at variance, the principles of equity should prevail over the doctrines of the common law. The details of this great change were embodied in a code of general rules prepared by a committee of judges, over which Lord Selborne presided, and handed over to the care of Lord Selborne, as her chancellor and as the head of this great body, was impressive as an outward and visible sign of the silent revolution, which owed more to Lord Selborne than to any other individual. To the student of the natural history of jurisprudence the fusion of the two systems of law and equity may well recall a similar result brought about in imperial Rome; to the student of British institutions, the supreme court, for once presided over in person by the sovereign, could not but recall the Aula Regia, where the Norman kings sat amid their counsellors before equity had arisen to correct law, and before the separation between the three great common law courts had begun. As the principal incident in the history of the assembly of the one great court on that day. The queen, on the prayer of the attorney-general, ordered that the proceedings of the day should be recorded, an order which caused a momentary embarrassment to the lord chancellor, as the court had no existing registrar, and no existing book in which the record should be made. On the occasion of the opening of the Royal Courts Lord Selborne received an earldom.

The year 1885 was marked in Lord Selborne’s life by the death of his wife, and by his final separation from the party of which Gladstone was head. Gladstone’s work had come to be treated not only by the legislature but by the public with which Lord Selborne, in the latter part of the year indicated his leaning towards the disestablishment of the Church of England, and towards Home Rule for Ireland. Both these leanings were opposed to the deepest convictions of Lord Selborne; and it was an inevitable result that when in January 1886 Gladstone resigned office as premier, Lord Selborne should not be again his chancellor: on the 30th of January in that year they parted for ever; and Lord Selborne felt that his public life, except so far as he might serve his country by voice or pen, was now over. But neither his colleagues nor his judicial kinsfolk missed him; and he found, in opposing the new views of his old colleague, ample scope for both voice and pen; and as a member of the House of Lords he continued almost to the last to take part in hearing and deciding appeals, and sometimes in the ordinary business of the House.

In addressing the electors of Midlothian in September 1885, Gladstone had suggested the severance of the Church of England from the state as a subject on which the foundation of discussion had already been laid, and he averred the existence of “a current almost throughout the civilized world, slowly setting in the direction of disestablishment.” He declared that an utterance from such a man greatly excited the hopes of Nonconformists, who had previously published a manifesto under the title of “The Case for Disestablishment.” This stirring of the question deeply moved Lord Selborne, who was strongly opposed alike to disestablishment and disendowment, and in the following year, 1886, he published a work entitled A Defence of the Church of England against Disestablishment, with an introductory letter addressed to Gladstone. In the introductory letter he criticized Gladstone’s pronouncement on the subject, and especially examined the allegation of a general tendency towards disestablishment in the civilized world at large, and arrived at a negative conclusion.

In the body of the book the learned author treated of the history of the English Church, its endowments and the case of the advocates of disestablishment. The work is throughout characterized by an abundant supply of learning and of information as to the history and the state of the Church of England at that time, and by great dialectical acuteness. It is a powerful defence as well as a valuable summary of the history of the established Church in England. In 1888 Lord Selborne published a second work on the Church question, entitled Ancient Facts and Modern Tendencies. There he reviewed the whole series of acts which by degrees had disestablished the Church of England, and more critically than in his earlier book the developments of early ecclesiastical institutions, both on the continent of Europe and in Anglo-Saxon England, which resulted in the formation of the modern parochial system and its general endowment with tithes. A second edition of this work, embodying the result of its author’s subsequent researches in the Vatican library and elsewhere, was published in the year 1892. A perusal of these books will show with how wide a range of investigation and with what care Lord Selborne prepared himself for the discussion of these ecclesiastical questions. But Lord Selborne did not carry on his opposition to Gladstone’s proposals only in his library or by his pen; in the year 1886-1887 he travelled to many parts of the country, and addressed meetings in defence of the union between the Church and state and against Home Rule; and in September 1893, in his eighty-first year, he addressed a powerful speech to the House of Lords in opposition to the Home Rule Bill.

Lord Selborne’s health had, with the exception of two collapses in 1883 and 1888, which appear to have been due to overwork, continued excellent till February 1895, when he was attacked by some form of influenza. He died on the 5th of May 1895 at his seat in Hampshire, full of years and of honours.

To the subject of university education Lord Selborne at different times in his life gave much time and attention. As a fellow of Magdalen College, he had been desirous of changes which he felt himself bound by his oath from advocating; and he had taken part in the discussions on the abolition of tests in the old universities. He gave much time and attention to his duties as chairman of the second Oxford commission under the act of 1876; in 1878 he filled the office of lord rector of the university of Cambridge, which position he filled with much ability. But Lord Selborne did not carry on a commission on the subject of university education in London. Lord Selborne’s literary labours included the publication in 1862 of a selection of hymns, under the title of The Book of Praise, a work in which he was greatly assisted by Daniel Sedgwick (1814-1879), a bookseller and publisher in the city of London. The work was characterized by the great pains taken to ascertain the true authorship of hymns which were either anonymous or attributed to those who had not composed them, and by a like effort to exclude all variations granted on the authority of copies. In 1867 he founded an association for the improvement of legal education, in the hope of bringing about the establishment or the restoration of a general school of law in London on a scale worthy of the importance of the law and of the resources of the Inns of Court. This enterprise was not successful. The opposing forces were too strong to permit Lord Selborne to succeed.
original language, and to give the hymns “in the genuine uncorrupted text of the authors themselves." In the course of his labours as editor of this volume he was struck by the unity which was presented by Christian hymnody, “binding together by the force of a common attraction, more powerful than all causes of difference, times ancient and modern, nations of various race and language, Churchmen and Nonconformists, Churches reformed and unreformed” (Preface). In the same field of literature Lord Selborne further laboured by the publication of another collection called The Book of Praise Hymnal; a second edition was published to an editorial approval of the English Church Hymnody at a Church Congress; and the article in the Encyclopaedia Britannica on “Hymns” (q.v.), which was republished as a separate volume in 1892.

During the last few years of his life Lord Selborne engaged in the composition, for the benefit of his children, of memorials of his own life and of the lives of many members of his family. These Memorials, Part I., Family and Personal, in 2 vols., which were published in 1896, Memorials, Part II., Personal and Political, also in 2 vols., were edited by his daughter, Lady Sophia Palmer, and published in 1898. In the years 1880-1881 Lord Selborne wrote to his son a series of letters on religious subjects, dealing in an elementary way with natural and revealed religion, the inspiration of the Bible and Biblical criticism. These were published in 1898, under the title of Letters to His Son on Religion, by Roundell, First Earl of Selborne.

In person Lord Selborne was of about the average height: his manner when among strangers was somewhat reserved; his style, both in speaking and writing, became more and more courteous, his judgements in all branches of knowledge were marked by uniform good sense and lucidity, both of arrangement and language; and if he never reached the highest level of oratorical excellence, he never descended to what was commonplace or irrelevant. As a judge, whether in the Supreme Court or in the House of Lords, he displayed high qualities: he was patient, courteous, logical and learned, and his judgments contain many valuable expositions of the principles of law. The fusion of law and literature, the assimilation of the whole judicial system of England, and the association of all the supreme tribunals in one common home were works of no ordinary magnitude or importance, and give a character of unusual importance to his chancellorship. That Lord Selborne was a truly religious man it is impossible to doubt; his whole life was regulated and inspired by a sense of his duty towards God and his fellowmen, and a long life spent amid the temptations of legal and public life left not the faintest stain on his memory. He was a devout member of the Church of England, to which he looked up with unstinted affection and reverence; and he found in its service and formularies an adequate satisfaction for all his religious needs. He attended the High Church school, which was influenced by the teaching of Newman and Pusey and the Oxford teachers of their day; but he by no means slavishly followed those teaching but approached them with an independent mind. Although described as Ritualist, he had less sympathy. His life was prosperous, for from his first prize at the university till his acquisition of an earldom, he went on a course of almost unbroken success. He had the double dignity and comfort of a peer, as well as a high place in his Church, for he was always described as Ritualist, and of having accepted that dignity without loss of consistency; in his life he acquired a high reputation and the sincere admiration of his fellowmen, as well as an abundant fortune and ample titular distinctions. His life was also happy: he had in his work, his god and his children; he was a strong constitution, and retained his bodily and mental powers to the last, and his work was never shaken to the end; and he lived throughout his long life with the consciousness of rectitude.

SELBORNE, WILLIAM WALDEGRAVE PRAGUE, 2ND EARL OF SELBY (1850— ), son of the preceding, was educated at Winchester and University College, Oxford, where he took a first class in history. In 1883, being then Viscount Wolmer, he married Lady Beatrice Cecil, 3rd daughter of the 3rd marquess of Salisbury. His first political function was that of attorney to the chancellor of the exchequer (Mr Childers) from 1882 to 1885, when he was elected Liberal member of parliament for East Hampshire. Like his father, he became a Liberal Unionist when in 1886 Mr Gladstone proposed Home Rule for Ireland, and he retained his seat till 1892, when he was elected for West Edinburgh. From 1895 to 1900 he was under-secretary for the colonies, having Mr Chamberlain as his chief, and during the difficult period before the outbreak of the South African War he came rapidly to the front. In 1900 he entered the cabinet as first lord of the admiralty, and held this office till 1905, when he succeeded Lord Milner as high commissioner for South Africa and governor of the Transvaal and Orange River colonies. He assumed office at Pretoria in May of that year. He had gone out with the intention of guiding the destinies of South Africa during a period when the ex-Boer republics would be in a transitional state between crown colony government and self-government, and letters patent were issued granting the Transvaal representative institutions. But the Liberal party came into office in England in 1905 only to find that, when Lord Milner's constitution had been actually established, and the decision was now taken to give both the Transvaal and Orange River colonies self-government without delay. Lord Selborne gladly accepted the changed situation, and it was due in considerable measure to his moderation, common sense, administrative gifts and appreciation of the Boers' standpoint, that the experiment proved successful. He ceased to be governor of the Orange River Colony on its assumption of self-government in June 1907, but retained his other posts until May 1910, retiring on the eve of the establishment of the Union of South Africa. No one had done more for the achievement of the Union.

SELBORNE, a village in the Petersfield parliamentary division of Hampshire, England, 43 m. S.S.E. of Alton station, on the London & South-Western railway. It is pleasantly situated in a thickly wooded valley, and is celebrated as the birthplace and scene of the work of Gilbert White the naturalist; his house is in the village, and his memorial and grave are in the ancient churchyard.

SELY, WILLIAM COURT GULLY, 1ST VISCOUNT (1835—1900), Speaker of the British House of Commons, was born on the 29th of August 1835, the son of Dr James Manby Gully of Malvern. His grandfather was Daniel Gully, a Jamaican coffee-planter. He was educated at Trinity College, Cambridge, where he was president of the Union. He was called to the bar in 1860, went the northern circuit, and took silk in 1871. In 1880 and 1885 he unsuccessfully contested Whitehaven as a Liberal, but was elected for Carlisle in 1886, and continued to represent that constituency until his elevation to the peerage. In April 1895 he was elected Speaker by a majority of eleven votes over Sir Matthew White Ridley (cr. Viscount Ridley, 1900), the Unionist nominee. In 1905 he resigned and was raised to the peerage with the title of Viscount Selby, the name being that of his wife, Miss Elizabeth Selby (d. 1906), whom he married in 1865. He died on the 6th of November 1909, and was succeeded by his son, James William Herschell Gully (b. 1867).

SELY, a market town in the West Riding of Yorkshire, England, 14 s. 3 m. S. of York on the Great Northern and North-Eastern railways. Pop. of urban district (1901) 7786. It stands in a level plain on the left bank of the river Ouse, by which communication is provided with the Humber. The church of St Mary and St German belonged to a Benedictine abbey founded under a grant from William the Conqueror in 1069 and raised to the dignity of a mitred abbey by Pope Alexander II. The monastic buildings have practically disappeared, but the church was a splendid building of various dates from Norman to Decorated, the choir
and Lady chapel representing the later period. The nave passes from Norman to Early English in the course of its eight bays from east to west and also from the arcade through the triforium to the clerestory. About midnight of the 19th–20th of October 1606, a fire broke out in the Latham chapel adjoining the north choir aisle, in which a new organ had recently been erected, and soon involved the whole building. Specially serious damage was done in the immediate neighbourhood of the chapel, the oak-groined roof and rich fittings of the choir were wholly destroyed, but the finely moulded arches and the magnificent tracery of the east window survived in great part. Much damage was done to the tower, and the nave roof perished, for the fire had reached the east end of the church before the firemen could lay their hoses. The physical damage, however, was not so great as the shock to the congregation of the House of Commons, which was affronted by the loss of a house built by the Commons and occupied by its Members, and in which no less than six members were lost. The shock was felt in the country in general, and was a warning to the nation that the fire might have been caused by treasonable designs. The fire was extinguished about six o'clock in the morning, but the firemen remained at the church until after noon, when the last of the flames were quenched. The church was immediately set on foot, the architect being Mr Oldrid Scott.

Selden is the centre of a rich agricultural district, and its industries include rope and twine making, flax-scutching, boat-building, iron-founding, tanning and brewing. Tradition indicates Selden as the birth-place of Henry I, and thus accounts for the high privileges conferred upon the abbey. The town had a notable share in the operations of the Civil Wars, and the role played at the outset by the Parliamentarians, and captured by the Royalists in 1644, but soon retaken by Sir Thomas Fairfax.

Selden, John (1584–1654), English jurist, legal antiquary and oriental scholar, was born on the 16th of December 1584 at Salvington, in the parish of West Tarring, Sussex. His father, also John Selden, held a small farm. It is said that his accomplishments as a violin-player gained him his wife, whose social position was somewhat superior to his own. She was Margaret, the only child of Thomas Baker of Rustington, a village in the vicinity of West Tarring, and was more or less remotely descended from a knightly family of the same name in Kent. John Selden commenced his education at the free grammar-school at Chichester, whence in 1600 he proceeded to Hart Hall, Oxford. In 1603 he was admitted a member of Clifford’s Inn, London, and in 1604 migrated to the Inner Temple, and in 1612 he was called to the bar. His earliest patron was Sir Robert Cotton, the antiquary, by whom he seems to have been employed in copying and abridging certain of the parliamentary records then preserved in the Tower. For some reason which has not been explained, Selden never went into court as an advocate, save on rare and exceptional occasions. His work, as a conveyancer and consulting counsel is stated to have been large, and, if we may judge from the considerable fortune he accumulated, it must also have been lucrative.

It was, however, as a scholar and writer that Selden won his reputation both amongst his contemporaries and with posterity. His first work, an account of the civil administration of England before the Norman Conquest, is said to have been completed when he was only two- or three-and-twenty years of age. But if this was the Analest Anglo-Britannico, as is generally supposed, he withheld it from the world until 1613. In 1610 appeared his England’s Epimoniom and Janus Anglorum; Facieci Altera, which dealt with the progress of English law down to Henry II.; and The Duelle, or Single Combat, in which he traced the history of trial by battle in England from the Norman Conquest. In 1613 he supplied a series of notes, enriched by an immense number of quotations and references, to the first eighteen cantos of Drayton’s Polychion. In 1614 he published Titles of Honour, which, in spite of some obvious defects and omissions, has remained to the present day the most comprehensive and trustworthy work of its kind that we possess; and in 1616 his notes on Fortescue’s De laudibus legum Angliae and Ralph de Hengham’s Summae magna et para. In 1617 his De diis Syris was issued, and immediately established his fame as an oriental scholar among the learned in all parts of Europe. It is remarkable for its brilliant use of the comparative method, in which it was far ahead of its age, and is still consulted by students of Semitic mythology. In 1618 his History of Tithe, although only published after it had been submitted to the censorship and duly licensed, nevertheless aroused the apprehension of the bishops and provoked the intervention of the king. The author was summoned before the privy council and compelled to retract his opinions, or at any rate what were held to be his opinions. Moreover, his work was suppressed and himself forbidden to reply to any of the controversialists who had come or might come forward to answer it.

This seems to have introduced Selden to the practical side of political affairs. The discontent which a few years later broke out into civil war were already forcing themselves on public attention, and it is pretty certain that, although he was not in parliament, he was the instigator and perhaps the draftsman of the Petition of Right, a document which set out the rights and privileges of the House affirmed by the Commons on the 18th of December 1621. He was as well as several of the members committed to prison, at first in the Tower and subsequently under the charge of Sir Robert Dacie, sheriff of London. During his detention, which only lasted a short time, he occupied himself in preparing an edition of Eadmer’s History from a manuscript lent to him by his host or jailor, which he published two years afterwards. In 1623 he was returned to the House of Commons for the borough of Lancaster, and sat with Coke, Noy and Ym on Sergeant’s Bench. There he remained for eight months, when he was removed from Lyon’s Inn, an office which he declined to undertake. For this the benchers of the Inner Temple, by whom he had been appointed, fined him £20 and disqualified him from being chosen one of their number. But he was relieved from this incapacity after a few years, and became a master of the bench. In the first parliament of Charles I. (1625), it appears from the “returns of members” printed in 1626 that, contrary to the assertion of all his biographers, he had no seat. In Charles’s second parliament (1626) he was elected for Great Bedwin in Wiltshire, and took a prominent part in the impeachment of George Villiers, duke of Buckingham. In the following year, in the “benevolence” case, he was counsel for Sir Edmund Hampden in the court of king’s bench. In 1628 he was returned to the third parliament of Charles for Ludgershall in Wiltshire, and had a large and important share in drawing up and carrying the Petition of Right. In the session of 1629 he was one of the members mainly responsible for the tumultuous passage in the House of Commons of the resolution against the illegal levying of tonnage and poundage, and, along with Eliot, Holles, Long, Valentine, Strode, and the rest, he was sent once more to the Tower. There he remained for eight months, as a member of the Committee of Privy Council, and was a part of the time of the use of books and writing materials. He was then removed, under less rigorous conditions, to the Marshalsea, until not long afterwards owing to the good offices of Archbishop Laud he was liberated. Some years before he had been appointed steward to the earl of Kent, to whose seat, West in Bedfordshire, he now retired. In 1628 at the suggestion of Sir Robert Cotton he had compiled, with the assistance of two learned coadjutors, Patrick Young and Richard James, a catalogue of the Arundel marbles. He employed his leisure at West in writing De successionibus in bona defuncti secundum leges Ebraeorum and De successionibus in postfaciis Ebraeorum, published in 1631. About this period he seems to have inclined towards the court rather than the popular party, and even to have secured the personal favour of the king. To him in 1635 he dedicated his Mare clausum, and under the royal patronage it was put forth as a kind of state paper. It had been written sixteen or seventeen years before; but James I. had prohibited its publication for political reasons; hence it appeared a quarter of a century after Grotius’s Mare liberum, to which it was intended to be a rejoinder, and the pretensions advanced in which on behalf of the Dutch fishermen to poach in the waters off the British coasts it was its purpose to explode. The fact that Selden was not retained in the great case of ship money in 1637 by John Hampden, the cousin of his former client, may be accepted as additional evidence that his zeal in the popular cause was not so warm and unsuspected as it had once been. During the progress of this momentous constitutional conflict, indeed, he seems to have been absorbed in his oriental
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referred to as the "Whitefriars chariot" (Haggard, "Pandia," 1898). Nilson and Grimston, in "The Whitefriars Calendar," 1645, also dilute potassium, mentioning it in their treatment of the subject.

SELENGA-ORKHON, a river of Central Asia, which rises in two principal head-streams, the Selenga and the Orkhon, on the plateau of N.W. Mongolia, not far apart in 10E. It flows generally E.N.E. as far as its confluence near Kiakhta, on the frontier of Mongolia and Siberia, at the eastern extremity of the Sayan Mountains. Beyond Kiakhta the river flows generally N., nearly as far as 52°N., where it turns W. and enters Lake Baikal on the S.W., forming a delta. It is navigable from Kiakhta downwards, a distance of 210 m., its total length being 750 m. From the left it receives the Eghin-gol and the Jida, and from the right the stream of the Largest and the others are the Orkhon and its branches. The average width of the river is about 150 m., and the depth of water varies from 6 to 12 m. The river contains fish, the chief of which is a species of carp known as Carassius gibelio or the Orkhon carp.

Several remarkable inscriptions were discovered here in the 19th century, and were interpreted by Professor V. Thomesen of Copenhagen Inscriptions de l'Orkhon (Helsingborg, 1900).

SELENIUM [symbol Se, atomic weight 79.2 (O=16)], a non-metallic chemical element, discovered in 1817 by J. Berzelius, who named it selenium (Gr. σέλην, the moon) on account of its close analogy with tellurium (Lat. tellus, the earth). It is occasionally found in the native condition, but more frequently in combination with metals in the form of selenides, the most important seleniferous minerals being euchlorite, crookesite, clausenthalite, manannite and zorgite. It is also found as a constituent of various pyrites and galena, and in some specimens of native sulphur. The element is usually obtained from the flue dust or chamber deposits of sulphuric-acid works in which a seleniferous pyrites is burned. In this process, the residues are boiled with a dilute sulphuric acid to which nitric acid and potassium chlorate are added in order to transform the element into selenic acid, H₂SeO₃, which is then reduced to selenious acid, H₂SeO₄, by boiling with hydrochloric acid, and finally to selenium by sulphur dioxide.

L. F. Nilson (Ber., 1874, 7, p. 1719) digests the well-washed chamber mud with a moderately concentrated solution of potassium cyanide, whereby the element goes into solution in the form of potassium selenocyanide, K₂Se(CN)₃, from which it is precipitated by hydrochloric acid. As alternative methods, F. Wöhler (Ann., 1859, 109, p. 375) heats the well-washed chamber residues with potassium nitrate and carbonates in order to obtain an alkaline selenate, which is then boiled with hydrochloric acid, yielding selenious acid, from which the element is obtained as above; whilst H. Rose (Pogg. Ann., 1828, 90, p. 471) obtained it by chlorination of selenite tetrachloride, which is converted into selenic acid, and then to selenious acid by boiling with hydrochloric acid.

The commercial element usually contains a certain amount of sulphur, and some tellurium, and various methods have been devised for its purification.
SELENIUM

for its purification. L. Oppenheim (Journ. prakl. Chem., 1857, 71, 279) fuses the commercial selenium with potassium cyanide in a stream of hydrogen through the tube and seizes up the resulting red powder with water; the precipitated tellurium is filtered off, and the solution then supersaturated with hydrochloric acid, when selenium is gradually deposited. E. Divers, (Chem. News, 1885, 51, p. 199) dissolves the obtained in hot water, the precipitate obtained by filtering off, the solution acidified by hydrochloric acid and reduced with sulphur dioxide.

Several allotroic forms of selenium have been described, but the work of A. P. Saunders (Journ. Phys. Chem., 1900, 4, p. 423) seems to establish that the element exists in three distinct forms, namely liquid selenium (which includes the vitreous, soluble and amorphous forms), crystalline red selenium (which includes, perhaps, two very closely allied forms), and crystalline, grey or metallic selenium. Liquid selenium becomes more and more red when heated, so that at 200° C. to 60° C. it becomes red at about 60° C., and is hard and brittle between 30° and 40°. It shows a conchoidal fracture. The amorphous variety, which only differs from the vitreous form in its state of aggregation, is obtained by reducing solutions of selenious acid with sulphur dioxide. It is slightly soluble in carbon bisulphide. The red crystalline variety is obtained by crystallization of selenium from carbon bisulphide, or by leaving the amorphous form in contact with the same solvent. The grey crystalline form is obtained by heating the other varieties, and is the most stable of the three. Various forms of selenium dissolve in concentrated sulphuric acid, forming a green solution (see also R. Maré, Ber., 1906, 39, p. 697; and W. Oechsler de Coinck, Comptes rendus, 1896, 145, p. 682). A colloidal selenium was obtained by C. Paal and C. Koch (Ber., 1905, 38, p. 526) by reducing selenium acid dissolved in an aqueous solution of sodium sulphate with hydrazine hydrate and hydrochloric acid, the precipitate obtained being then dissolved in sodium carbonate. The specific gravity of selenium is 4.8; the specific heat varies from 0.0716 to 0.1147, depending upon the particular form. Selenium combines directly with hydrogen, but dissolves in the gas, and with fluorine in the cold. It burns with a blue flame when heated in the air or in oxygen, at the same time giving a characteristic smell of rotten horseradish, a reaction which serves for the recognition of the element. It combines directly with nitrogen, phosphorus, antimony and carbon; and with all the metals except gold) to form selenides, of which those of the alkali and alkaline earth metals are soluble in water. Metallic selenium is a conductor of electricity, and its conductivity is increased by light; this property has been utilized in apparatus for transmitting photographs by telegraphy (see TELEGRAPH).

Selenurated Hydrogen, HSe, is obtained by the direct union of its constituent elements in the heat; by the decomposition of various selenides with mineral acids; by the decomposition of aluminium selenide, or phosphorus selenide, with water; by the action of selenium on a concentrated solution of hydriodic acid; and by heating selenium with colophene (H. Moissan), or better with paraffin wax (H. Wuyts and A. Stewart, Bull. Soc. chim. Belg., 1909, 23, p. 231). This selenurated hydrogen is a gas which has a strong characteristic odour, and which is more unpleasant than sulphhydrated hydrogen. Its physiological effects are much more permanent and injurious than sulphhydrated hydrogen, producing temporary paralysis of the olfactory nerves and inflammation of the conjunctiva of the animal eye of which it is a cause more unpleasant than sulphured hydrogen. Its physiological effects are much more permanent and injurious than sulphured hydrogen, producing temporary paralysis of the olfactory nerves and inflammation of the conjunctiva of the eye. It is produced by heating, burns with a blue flame, and behaves as a reducing agent.

Selenium, red, as obtained from the action of chlorine on the action of zinc, is also obtained in the form of its potassium salt by the action of potassium hydrogen sulphite on a selenous acid. It is readily decomposed by acids with liberation of sulphur dioxide and selenium.

Nitrogen selenide, N₂Se, is formed by the decomposition of selenium chloride with ammonia (A. Verneuil, Bull. soc. chim., 1882, 38, p. 548). It crystallizes readily from benzene or acetic acid and evolves the characteristic smell of a selenous compound. When dry ammonia gas is passed into a dilute solution of selenyl chloride in benzene, the precipitate produced is digested with potassium cyanide to remove any selenium (V. Lenher and E. Schindler, Proc. R. Acad., 1909, 46, 623). It is obtained as a red powder which explodes when heated to 130° C. Selenium cyanide, SeCN, is obtained by decomposing silver selenocyanate with cyanogen iodide, or by the action of silver cyanide on a solution of metallic selenium. It explodes with a characteristic smell when dry, and is very soluble in water. A more complex cyanide, Se(CN)₂, is obtained by passing a current of chlorine and air into an aqueous solution of selenium. Selenium is also obtained from the action of selenium on solutions of the metallic selenides, and is very soluble in water. A more complex cyanide, Se(CN)₂, is obtained by passing a current of chlorine and air into an aqueous solution of selenium. Selenium is also obtained from the action of selenium on solutions of the metallic selenides, and is very soluble in water.
SELEUCIA—SELEUCID DYNASTY

possessed an alkaline reaction, and is readily decomposed by acids with liberation of selenium. It forms numerous double salts.

The pioneers of selenium chemistry have been made. The earlier results of J. J. Berzelius from an analysis of the chloride gave values from 79.2 to 79.35. Later determinations by V. L. Pecherskii (Jour. Amer. Chem. Soc., 1892, 20, p. 593), from the analysis of silver selenide and the reduction of the double selenide ammonium bromide, give values from 79.27 to 79.27; and J. Meyer (Ber., 1902, 35, p. 1591) by the electrolysis of silver selenite in the presence of potassium cyanide obtained the value 79.23.

SELEUCIA. The Seleucids were the ancient Greek cities named after Seleucus I. Nicator, founder of the Seleucid dynasty. The following are the most important.

1. Seleucia on the Tigris, at the mouth of the great royal canal (Nahr al-Muluk, mod. Radwaniyah) from the Tigris to the Euphrates, about 50 m. N. of Babylon and 15 m. S. of Bagdad. It was founded by Seleucus Nicator (see SELEUCID DYNASTY), ruler of Babylonia from autumn 312. Seleucus, departing from the precedent of Alexander the Great, who, after his return from India, had settled in Babylon, preferred to build a new capital of a decided Greek character. Seleucus’ new city “was faced with the object of exhausting Babylon.” (Pline, vi. 122; Strabo vi. 738); a legend says that the Chaldaean priests, when they were consulted about the right hour for the initiation of the city, tried to frustrate the design of the king by naming a wrong hour, but that by chance the work was begun in the moment predicted by the stars and the decree of fate accomplished (Appian, Syr. 58). Seleucia was peopled with Macedonians and Greeks; Syrians and Jews were admitted to the citizenship (Joseph., Ant. xviii. 9, 8). It obtained a free constitution. A great many Seleucid Greek cities were founded in Babylonia in the course of Seleucid I. and Antiochus I., while Babylon and the other ancient cities (Sippara, Erech, Ur, Borsippa) decayed into mere villages. Here the Chaldaean priests continued to teach their astrological wisdom (we possess many astrological tablets in cuneiform writing from the time of the Seleucids and the earlier Arsacids); but Seleucia became the centre of the new hellenistic civilization (see HELLENISM). A great many Greek authors were born here (e.g. the Stoic Diogenes of Babylonian, 2nd century), though the inhabitants of Seleucia in Babylon generally are simply called Babylonians by the Greeks. In the time of the Seleucids and the reduction of the double selenide ammonium bromide, gave values from 79.27 to 79.27; and J. Meyer (Ber., 1902, 35, p. 1591) by the electrolysis of silver selenite in the presence of potassium cyanide obtained the value 79.23.

Seleucia was taken by Avidius Cassius in 164, and then the Romans did what the Parthians had not dared to do: they burnt down the great Greek town with 300,000 inhabitants (Dio Cass. lxxi. 2; Zonar, xii. 2; Capitol. Vit. Veri, 8; Eutrop. 8. 10; Ammian. Marc. xxiii. 6. 24; xxiv. 3. 3). The great plague, which laid waste the Roman empire during the next years, is said to have sprung from the ruins of Seleucia. The destruction of Seleucia may be considered as the end of Hellenism in Babylonia. (See also SELEUCID DYNASTY and HELLLENISM.)

2. A city on the north frontier of Syria towards Cilicia about 4 m. N. of the mouth of the Orontes, near the shore at the foot of Mount Pieria (hence called Seleucia Pieria). This town also was founded by Seleucus I. It served as the port of Antioch (Acts xiii. 4), and with Apamea, Laodicea and Antioch formed the Syrian tetrastyle. Considerable remains are still visible: the chief are those of a cutting through the solid rock nearly 1100 yds. long, which Polybius describes as the road from the city to the sea; the triple line of walls; amphitheatre, cemetery, citadel, temples. It was of great importance in the struggle between the Seleucids and the Ptolemies; captured by Ptolemy Euergetes in 246, it was recovered by Antiochus III. the Great in 219. It was recognized as independent by the Romans in 70, but little of its subsequent history is known. It had practically ceased to exist in the 5th century A.D. The district stretching inland was known as Seleucis.

3. Seleucia Trachonitis, sometimes called Tracheia, a city of Cilicia on the Calycadnus (Geuk Su), also founded by Seleucus I. about 350 B.C., near the older Olbia. It had considerable commercial prosperity (Pliny, H. N. xiii. 34). Seleucia Trachonitis became the capital of the Seleucid satrapy (the land of Tarsus). In 1137 it was besieged by Leon, king of Cilician Armenia. On the 10th of June 1190 the emperor Frederick Barbarossa was drowned in trying to cross the Calycadnus. In the 13th century it was captured by the Seljuks. There are many ancient remains, and on the Acropolis the ruins of a castle; many rock-cut tombs with inscriptions have been found. On the site is the modern Seleke, the chief town of the Ichi-li sanjak.

Other towns bearing the name Seleucia were—(4) Seleucia in Mesopotamia, the modern Birejik; (5) in the Persian Margiana, founded as Alexandria by Alexander the Great and rebuilt as Seleucia by Antiochus I. (of Syria); (6) in Pisdia; (7) in Pamphylia; (8) on the Belus in Syria. The city of Tralles (96.) also bore the name for a short period.

SELEUCID DYNASTY, a line of kings who reigned in Nearer Asia from 312 to 65 B.C.

The founder Seleucus (surnamed for later generations Nicator) was a Macedonian, the son of Antiochus, one of Philip's generals. Seleucus, as a young man of about twenty-three, accompanied Alexander into Asia in 333, and won distinction in the Indian campaign of 326. When the Macedonian empire was divided in 'Partition of Babylon') Seleucus was given the office of chilarch (Gr. χιλιαρχός, a thousand), which attached him closely to the person of the regent Perdiccas. Seleucus himself had a hand in the murder of Perdiccas in 321. At the second partition, at Tripolitania (321), Seleucus was given the government of the Babylonian satrapy. In 316, when Antigonus had made himself master of the eastern provinces, Seleucus felt himself threatened and fled to Egypt. In the war which followed between Antigonus and the other Macedonian chiefs, Seleucus actively co-operated with Ptolemy and commanded Egyptian squadrons in the field. The victory won by Ptolemy at Gaza in 312 opened the way for Seleucus to return to the east. His return to Babylon in that year was afterwards officially regarded as the beginning of the Seleucid empire. Master of Babylonia, Seleucus at once proceeded to wrest the neighbouring provinces of Persis, Susiana and Media from the nominees of Antigonus. A raid into Babylonia conducted in 311 by Demetrius, son of Antigonus, did not seriously check Seleucus's progress. Whilst Antigonus was occupied in the west, Seleucus during nine years (311-302) brought under his authority the whole eastern part of Alexander's empire as far as the Jaxartes and Indus. In 305, after the extinction of the old royal line of Macedonia, Seleucus, like the other four principal Macedonian chiefs, assumed the style of king.
SELEUCID DYNASTY

His attempt, however, to restore Macedonian rule beyond the Indus, where the native Chandragupta had established himself, was not successful. Seleucus entered the Punjab, but felt himself obliged in 302 to conclude a peace with Chandragupta, by which he ceded large districts of Afghanistan in return for 500 elephants. The pressing need for Seleucus once more to take the field against Antigonus was at any rate in large measure the cause of his abandonment of India. In 301 he joined Lysimachus in Asia Minor and Antioco of Pergamum in their designs to drive detached Greek hordes out of the region. A new partition of the empire followed, by which Seleucus added to his kingdom Syria, and perhaps some regions of Asia Minor. The possession of Syria gave him an opening to the Mediterranean, and he immediately founded the new city of Antioch upon the Orontes as his chief seat of government. His previous capital had been the city of Seleucia which he had founded upon the Tigris (almost coinciding in site with Bagdad), and this continued to be the capital for the eastern satrapies. About 293 he installed his son Antiochus there as vicerey, the vast extent of the empire seeming to require a double centre. With his father's murder, Antiochus continued to enjoy his father's armaments. The unpopularity of Lysimachus after the murder of Agathocles gave Seleucus an opportunity for removing his last rival. His intervention in the west was solicited by Ptolemy, Cerasusus, who, on the accession to the Egyptian throne of his brother Ptolemy II., had at first taken refuge with Lysimachus and then with Seleucus. War between Seleucus and Lysimachus broke out, and on the field of Coru-pedon in Lydia Lysimachus fell (281). Seleucus now saw the whole empire of Alexander, Egypt alone excepted, in his hands, and moved to take possession of Macedon. Antigonus, however, who had intended to use his combined power content himself for the remainder of his days with the Macedonian kingdom in its old limits. He had, however, hardly crossed into the Chersonese when he was assassinated by Ptolemy Ceraunus near Lysimachia (281).

Antiochus I. Soter (324 or 323–262) was half a Persian, his mother Apame being one of those eastern princesses whom Alexander had given as wives to his generals in 324. On the assassination of his father (281), the task of holding together the empire was a formidable one, and a revolt in Syria broke out almost immediately. With his father's murder, Antiochus was soon compelled to make peace, abandoning apparently Macedonia and Thrace. In Asia Minor he was unable to reduce Bithynia or the Persian dynasties which ruled in Cappadocia. In 278 the Gauls broke into Asia Minor, and a victory which Antiochus won over these hordes is said to have been the origin of his title of Soter (Gr. for "saviour"). At the end of 275 the question of Palestine, which had been open between the houses of Seleucus and Ptolemy since the partition of 301, led to hostilities (the "First Syrian War"). It had been continuously in Ptolemaic occupation, but the house of Seleucus maintained its claim. War did not materially change the outlines of the two kingdoms, though frontier cities like Damascus and the coast districts of Asia Minor might change hands. About 262 Antiochus tried to break the growing power of Pergamum by force of arms, but suffered defeat near Sardis and died soon afterwards (262). His eldest son Seleucus, who had ruled in the east as vicerey from 275 (?) till 268/7, was put to death in that year by his father on the charge of rebellion (Wace, J.H.S., xxv., 1905, p. 101 l.). He was succeeded (261) by his second son Antiochus II. Theos (260–246), whose mother was the Macedonian princess Stratonice, daughter of Demetrius Poliorcetes. The War with Egypt still went on along the coasts of Asia Minor (the "Second Syrian War"). Antiochus also made some attempt to get a footing in Thrace. About 250 peace was concluded between Antiochus and Ptolemy II., Antiochus repudiating his wife Laodice and marrying Ptolemy's daughter Berenice, but by 246 Antiochus had left Berenice and her infant son in Antioch to live again with Laodice in Asia Minor. Laodice poisoned him and proclaimed her son Seleucus II. Callinicus (reigned 246–227) king, whilst her partisans at Antioch made away with Berenice and her son. Berenice's brother, Ptolemy III., who had just succeeded to the Egyptian throne, at once invaded the Seleucid realm and marched victorious to the Tigris or beyond, receiving the submission of the eastern provinces, whilst his fleets swept the coasts of Asia Minor. In the interior of Asia Minor Seleucus maintained himself, and when Ptolemy returned to Egypt he recovered Northern Syria and the nearer provinces of Iran. In Asia Minor his younger brother Antiochus Hierax was put up against him by a party to which Laodice herself adhered. At Ancyra (about 235?) Seleucus sustained a crushing defeat and left the country beyond the Taurus to his brother and the other powers of the peninsula. Of these Pergamum now rose to greatness under Attalus I., and Antiochus Hierax perished as a fugitive in Thrace in 228/7. A year later Seleucus was killed by a fall from his horse. His elder son, Seleucus III. Soter (reigned 227–223), took up the task of reconquering Asia Minor from Attalus, but fell by a conspiracy in his own camp.

Antiochus III. the Great (242–187), Callinicus's younger son, a youth of about eighteen, now succeeded to a disorganized and broken power in Asia Minor. Not only was Asia Minor detached, but the further eastern provinces had broken away, Bactria under the Greek Diadotus (q.v.), and Parthia under the nomad chieftain Arsaces. Soon after Antiochus's accession, Media and Persis revolted under their governors, the brothers Molon and Alexander. The young king was in the hands of the bad minister Hermias, and was induced to make an attack on Palestine instead of going in person to face the rebels. The attack on Palestine was a fiasco, and the generals sent against Molon and Alexander met with disaster. Only in Asia Minor, where the Seleucid cause was represented by the king's cousin, the able Antiochus, was it possible to hold the country back to its earlier limits. In 227 Antiochus at last went east, and the rebellion of Molon and Alexander collapsed. The submission of Lesser Media, which had asserted its independence under Artabazanes, followed. Antiochus rid himself of Hermias by assassination and returned to Syria (220). Meanwhile Achaean himself had revolted and assumed the title of king in Asia Minor. Since, however, his power was not well enough grounded to allow of his attacking Syria, Antiochus considered that he might leave Achaean for the present and renew his attempt of 221. The campaigns of 220 and 219 carried the Seleucid arms almost to the confines of Egypt, but in 217 Ptolemy IV. confronted Antiochus at Raphia and inflicted a defeat upon him which nullified all Antiochus's successes and compelled him to withdraw north of the Lebanon. In 216 Antiochus went north to deal with Achaean, and had by 214 driven him from the field into Sardis. Antiochus contrived to get possession of the person of Achaean (see POLYIUS), but the citadel held out till 213 under Achaean's widow and then surrendered. Having thus recovered the central part of Asia Minor—the dynasties in Pergamum, Bithynia and Cappadocia the Seleucid government was obliged to tolerate—Antiochus returned to recover the outlying provinces of the north and east. Xerxes of Armenia was brought to acknowledge his supremacy in 212. In 209 Antiochus invaded Parthia, occupied the capital Hecatopymylus and pushed forward into Hyrcania. The Parthian king was apparently granted peace on his submission. In 209 Antiochus was in Bactria, where the original rebel had been supplanted by another Greek Euthydemus (see further BACTRIA and articles on the separate rulers). The issue was again favourable to Antiochus. After sustaining a famous siege in his capital Bactra (Baktria), Euthydemus obtained an honourable peace by which the hand of one of Antiochus's daughters was promised to his son Demetrius. Antiochus next, following in the steps of Alexander, crossed into the Kabul valley, received the homage of the Indian king Sophaganesus and returned west by way of Seistan and Kerman (206/5). From Seleucia on the Tigris he led a short expedition down the Persian Gulf against the Gerrheans of the Arabian coast (205/4). Antiochus seemed to have restored the Seleucid empire in the east, and the achievement brought him the title of "the Great King." In 204/3 the infant Ptolemy V. Epiphanes succeeded to the Egyptian throne, and Antiochus concluded a secret pact with Philip of
Macedonia for the partition of the Ptolemaic possessions. Once more Antiochus attacked Palestine, and by 190 he seems to have had possession of it. It was, however, recovered for Ptolemy by the Aetolian Scopas. But the recovery was brief, for in 198 Scopas was defeated by Antiochus at the battle of the Pannion, near the sacred trees of the Roman god which marks the entrance of Ptolemaic rule in Palestine. In 197 Antiochus moved to Asia Minor to secure the coast towns which had acknowledged Ptolemy and the independent Greeks. This was an enterprise which brought him into antagonism with Rome, since Smyrna and Lampsacus appealed to the republic of the west, and the tension became greater after Antiochus had in 196 established a footing in Thrace. The evacuation of Greece by the Romans gave Antiochus his opportunity, and he now had the fugitive Hannibal at his court to urge him on. In 192 Antiochus invaded Greece, having the Aetolians, and other Greek states as his allies. In 191, however, he was routed at Thermopylae by the Romans under Manius Acilius Glabrio, and obliged to withdraw to Asia.

But the Romans followed up their success by attacking Antiochus in Asia Minor, and the decisive victory of L. Cornelius Scipio at Magnesia ad Sipylum (190), following on the defeat of Hannibal at sea off Side, gave Asia Minor into their hands. By the peace of Apamea (188) the Seleucid king abandoned all the country north of the Taurus, which was distributed among the friends of Rome. As a consequence of this blow to the Seleucid power, the outlying provinces of the kingdom were recovered by Antiochus at the expense of their independence. Antiochus persisted in a fresh expedition to the east in Lusitan (187).

The Seleucid kingdom as Antiochus left it to his son, Seleucus IV. Philopator (reigned 187-176), consisted of Syria (now including Cilicia and Palestine), Mesopotamia, Babylonia and Near Iran (Media and Persis). Seleucus IV was compelled by financial necessities, created in part by the heavy war-indemnity exacted by Rome, to pursue an unambitious policy, and was assassinated by his minister Heliodorus. The true heir, Demetrius, son of Seleucus, being now retained in his homeland, turned to his younger brother of Seleucus, Antiochus IV. Epiphanes (i.e. "the Manifest [god]"), parodied Epiphanes, "the mad"). who reigned 176-164.

In 170 Egypt, governed by regents for the boy Ptolemy Philometer, attempted to reconquer Palestine; Antiochus not only defeated this attempt but invaded and occupied Egypt. He failed to take Alexandria, where the people set up the younger brother of Philometer, Ptolemy Euergetes, as king, but he left Philometer as his ally installed at Memphis. When the two brothers combined, Antiochus again invaded Egypt (168), but was compelled to retire by the Popillia rebellion (167-162), after the historic scene in which the Roman drew a circle in the sand about the king and demanded his answer before he stepped out of it. Antiochus exercised his contemporaries by the riddle of his half-brilliant, half-crazy personality. He had resided at Rome as a hostage, and afterwards for his pleasure at Athens, and had brought to his kingdom an admiration for republican institutions and an enthusiasm for Hellenic culture— or, at any rate, for its externals. There is evidence that the forms of Greek political life were more fully adopted under his sway by many of the Syrian cities. He spent lavishly on public building, a屬于 whether the people of the city, serving the additional purpose of relieving his financial necessities. It was a measure of a very different kind when, a year or two later (after 168), Antiochus tried to suppress the practices of Judaism by force, and it was this which provoked the Maccabean rebellion (see Maccabees). In 166 Antiochus left Syria to attempt the reconquest of the further provinces. He seems to have been signally successful. Armenia returned to allegiance, the capital of Media was re-colonized as Epiphanea, and Antiochus was pursuing his plans of the East when he died at Tabae in Persis, after exhibiting some sort of mental derangement (winter 165/4).

He left a son of nine years, Antiochus V. Eupator (reigned 164-162), in whose name the kingdom was administered by a camarilla. Their government was feeble and corrupt. The attempt to check the Jewish rebellion ended in a weak compromise. Their subservience to Rome so enraged the Greek cities of Syria that the Roman envoy Graeus Octavius (consul 165 B.C.) was assassinated in Laudicea (162). At this juncture Demetrius, the son of Seleucus IV., escaped from Rome and was received in Syria as the true king. Antiochus Eupator was put to death. Demetrius I. Soter (reigned 165-150) was a strong and ambitious ruler. He crushed the rebellion of Timarchus in Media and reduced Judea to new subjection. But he was unpopular at Antioch, and fell before a coalition of the three kings of Egypt, Pergamum and Cappadocia. An impostor, who claimed to be a son of Antiochus Epiphanes, Alexander Balas (reigned 150-145), was installed as king by Ptolemy Philometor and given Ptolemy's daughter Cleopatra to wife, but Alexander proved to be dissolve and incapable, and when Demetrius, the son of Seleucus I., was brought back to Syria by Cretan condottieri, Ptolemy triumphed over him and restored his rightful heir. Alexander was defeated by Ptolemy at the battle of the Oenoparas near Antioch and murdered during his flight. Ptolemy himself died of the wound he had received in the battle.

Demetrius II. Nicator (first reign 145-140) was a mere boy, and the misgovernment of his Cretan supporters led to the infant death of Balas. At last, the Romans, during the war with Rome, sent Demetrius I. in 130 against him (145) by Tryphon, a magnate of the kingdom. Demetrius was driven from Antioch and fixed his court in the neighbouring Seleucia. In 143 Tryphon murdered the young Antiochus and assumed the throne as Demetrius II. Nicator. The Romans, who had no sympathy with the eastern provinces from the Parthians, leaving Queen Cleopatra to maintain his cause in Syria. When Demetrius was taken prisoner by the Parthians, his younger brother Antiochus VII. Sidetes (164-129) appeared in Syria, married Cleopatra and crushed Tryphon. Antiochus VII. was the last strong ruler of the dynasty (152-129). He took Jerusalem and once more brought the Jews, who had won their independence under the Hasmonian family, to subjection (see Maccabees). He led a new expedition against the Parthians in 130, but, after signal successes, fell fighting in 129 (see also Persia, History). Demetrius (second reign 129-126), who had been allowed to return to Antioch by the Parthians, was again driven from Antioch by a pretender, Alexander Zabas, who had the support of the king of Egypt. Demetrius was murdered at the instigation of his wife Cleopatra in 126. The remaining history of the dynasty is a series of warring pretenders, many of whom were claimants, while the different factors of the kingdom, the cities and barbarian races, more and more assert their independence. Both Demetrius II. and Antiochus VII. left children, who formed rival branches of the royal house. To the line of Demetrius belong his son Selucus V. (126), assassinated by his mother Cleopatra, Antiochus VIII. Grypus (141-96), who succeeded in 126 the younger brother ofSeleucus V., the sons of Grypus, Seleucus VI. Epiphanes Nicator (reigned 95-95), Antiochus XI. Epiphanes Philadelphus (reigned during 95), Philip I. (reigned 95-83), Demetrius III. Eupator (reigned 95-88), and Antiochus XII. Dionysus (reigned 83-78). The last was, however, the son of Philip I., who appears momentarily on the stage in the last days of confusion. To the line of Antiochus VII. belong his son Antiochus IX. Cyzicenus (reigned 119-95), and Antiochus X. Eupator (reigned 95-83) and the son of Eusebes, Antiochus XIII. Asiatcus (reigned 69-65). In 83 Tigranes, the king of Armenia, invaded Syria, and by 69 his conquest had reached the Euphrates, which blanked the end of his own kingdom from the Romans. When Pompey appeared in Syria in 64, Antiochus XIII. begged to be restored to his ancestral 1

Some of the indications of our documents would make it older, and these are followed by Niese (iii. p. 276, note 5). But in that case Demetrius I. must have already had a wife and children, and been in the west for some time. For it is improbable that such a material factor in the situation would have been left out of account in Polybius's full narrative. After all, it is only a question of probabilities, and the difficulties of the period make it quite admissible that he might be living to be brought up by the Romans, or sent out of the country before him.
SELF—SELIM

knighted or what shrewd was left of it. Pumpey refused and made Syria a Roman province. Antiochus Grypus had given his daughter in marriage to Mithrades (q.v.), a king of Commagene, and the subsequent kings of Commagene (see under Antiochus) claimed in consequence to be the legitimate emperor of Syria, although this fact was not known to the ancients. After its extinction in the male line, and adopted Antiochus as the dynastic name. The kingdom was extinguished by Rome in 72. The son of the last king, Gnaeus Julius Antiochus Epiphanes Philopappus, was murdered in 190.


SELF (O.Eng. seolf, sifu, &c., cf. Dutch zelf, Ger. selbe, selbst), as a pronoun, an element attached to a personal pronoun or preposition, or both. It is the Mhd. Mahabba, and as an adjective a word properly meaning same, identical, also very (see in the expression "self-same"), hence single, plain, not mixed with another colour. It is also a florist’s term for a flower which has uniformity of tint, without markings or other tints. As a noun "self" means one’s own person; for the psychological use of the term see PSYCHOLOGY, and for its ethical aspect EGOSM.

SELIGMAN, EDWIN ROBERT ANDERSON (1861- ), American economist, was born in New York on the 25th of April 1861. He was educated at Columbia University, and, after studying for three years in Germany and France, became prize lecturer at Columbia University in 1885, being made adjunct professor of political economy in 1888. He became McKiver professor of political economy in the same university in 1904. His principal works are Railway Tariffs (1887), The Shifting and Incidence of Taxation (1899; 3rd ed., 1910), Progressive Taxation in Theory and Practice (1894; 2nd ed. 1908), Economic Interpretation of History (1902; 2nd ed. 1907), and Principles of Economics (1907).

SELIM, the name of three sultans of Turkey. Selim I. (1465-1521) succeeded in 1512 his father Bayezid II. whom he dethroned, and whose death, following immediately afterwards, gave rise to suspicions which Selim’s character certainly justified. He signalized his accession by putting to death his brothers and nephews; and gave early proof of resolution by boldly cutting down before their troops two officers who showed signs of insubordination. A bigoted Sunni, he resolved on putting down the Shi’ite heresy, which had gained many adherents in Turkey: the number of these was estimated as high as 40,000. Selim determined on war with Persia, where the heresy was the prevalent religion, and in order that the Shi’ites in Turkey should give no trouble during the war, "measures were taken," as the Turkish historian states, which may be explained as the reader desires, and which proved fully efficacious. The campaign which followed was a triumph for Selim, whose firmness and courage overcame the pusillanimity and insubordination of the Janissaries. Syria and Egypt next fell before him; he became master of the holy cities of Islam; and, most important of all, he induced the last Caliph of the Abbasid dynasty formally to surrender the title of caliph (q.v.), as well as its outward emblems, viz. the holy standard, the sword and the mantle of the prophet. The dignity with which the Ottoman sultans have thereby become invested lends them that prestige throughout the Mussulman world which is of such importance to the present day, and which has thrown into oblivion the condition that the caliph ought to be an Arab of the tribe of Korish. After his return from his Egyptian campaign, he was preparing an expedition against Rhodes when he was overtaken by sickness and died, on the 22nd of September 1521, in the ninth year of his reign, near the very spot where he had attacked his father’s troops, not far from Adrianople. He was about fifty-five years of age. He was bigoted, bloodthirsty and relentless, though one Turkish historian praises his humanity for having forbidden the cutting up alive of condemned persons, or the roasting of them before a slow fire; and at one time he was with difficulty dissuaded from ordering the complete extirpation of all the Christians in Turkey. His ambition was insatiable; he is said to have exclaimed when looking at a map that the whole world did not form a sovereignty vast enough for one monarch. His four months’ victorious campaign against Persia was undertaken and successfully carried through contrary to the wishes of his most trusted minister, several of whom he executed for their opposition to his plans; and he achieved an enterprise which neither Jenghiz Khan nor Timur was able to carry out. It is said that he contemplated the conquest of India and that he was the first to conceive the idea of the Suez Canal.

Selim II. (1524-1574) was a son of Suleiman I. and his favourite Roxelana, and succeeded his father in 1566. He was the first sultan entirely devoid of military virtues and wishing to abandon all power to his ministers, provided he were left free to pursue his orgies and debauches. Fortunately for the country, an able vizier, Sokoll, was in his service. Selim II. ruled seven years, and was assassinated ten years after Selim’s accession succeeded in concluding at Constantinople an honourable treaty with the emperor Maximilian II., whereby the emperor agreed to pay to Turkey an annual “present” of 30,000 ducats (Feb. 17, 1568). Against Russia he was less fortunate, and the first encounter between Turkey and her future northern rival gave preface of disaster to come. A plan had been elaborated at Constantinople for uniting the Volga and Don by a canal, and in the summer of 1569 a large force of Janissaries and cavalry were sent to lay siege to Astrakhan and begin the canal works, while an Ottoman fleet was destroyed by a storm. Early in 1570 the ambassadors of Ivan the Terrible concluded at Constantinople a treaty which restored friendly relations between the sultan and the tsar. Expeditions in the Hejaz and Yemen were more successful, and the conquest of Cyprus in 1571, which provided Selim with his favourite vintage, led to the calamitous naval defeat of Lepanto in the same year, the remnants of which has often been under-estimated, and which at least freed the Mediterranean from the corsairs by whom it was infested. Turkey’s shattered fleets were soon restored, and Sokoll was preparing for a fresh attack on Venice, when the sultan’s death on the 12th of December 1574 cut short his plans. Little can be said of this degenerate son of Suleiman, who during the eight years of his reign never girded on the sword of Osman, and preferred the clashing of wine-goblets to the shock of arms, save that with the dissolute tastes of his father he had not inherited herplicity.

Selim III. (1762-1808) was a son of Sultan Mustafa III. and succeeded his uncle Abd-ul-Hamid I. in 1789. The talents and energy with which he was endowed had endeared him to the people, and great hopes were founded on his accession. He had associated much with foreigners, and was thoroughly persuaded of the necessity of reforming his state. But Austria and Russia gave him no time for anything but defence, and it was not until the peace of Jassy (1792) that a breathing space was allowed him in Europe, while Bonaparte’s invasion of Egypt and Syria soon called for Turkey’s strongest efforts and for the time shattered the old-standing French alliance. He was induced by the repulse to abolish the military tenure of fiefs; he introduced salutary reforms into the administration, especially in the fiscal department, sought by well-considered plans to extend the spread of education, and engaged foreign officers as instructors, by whom a small corps of new troops called nisam-i-jedid were collected and drilled. So well were these troops organized that they were able to hold their own against rebellious Janissaries in the European provinces, where disaffected governors made no scruple of attempting to make use of them against the reforming
sultan. Emboldened by this success, Selim issued an order that in future picked men should be taken annually from the Janissaries to serve in their ranks. Hereupon the Janissaries and other enemies of progress rose at Adrianople, and in view of their number, exceeding 10,000, and the violence of their opposition, it was decided that the reforms must be given up for the present. Servia, Egypt and the principalities were successively the scene of hostilities in which Turkey gained no successes, and in 1607 a British fleet appeared at Constantinople, strange to say to insist on Turkey's yielding to Russia's demands besides dismissing the ambassador of Napoleon L. Selim was, however, thoroughly under the influence of this ambassador, Sebastiani, and the fleet was compelled to retire without effecting its purpose. But the anarchy, manifest or latent, existing throughout the provinces proved too great for Selim to cope with. The Janissaries rose once more in revolt, induced the Sheikhh-ul-Islam to grant a fevta against the reforms, dethroned and imprisoned Selim (1807), and placed his nephew Mustafa on the throne. The pasha of Rustuchuk, Mustafa Bairakdar, a strong partisan of the reforms, now collected a force of 40,000 men and marched on Constantinople with the purpose of reinstating Selim. But he came too late; the ill-fated reforming sultan had been strangled in the seraglio, and Bairakdar's only resource was to wreak his vengeance on Mustafa and to place on the throne Mahomed II., the sole surviving member of the house of Osman.

For authorities see TURKEY: History.

SELINUS (Σελίνους), an ancient city on the S. coast of Sicily, 27 m. S.E. direct from Lilybaeum (the modern Marsala) and 7 m. S.E. of Castel Vetranio, which is 74 m. S.S.W. of Palermo by rail. It was founded, according to Thucydides, in 628 B.C. by colonists from Megara Hyblaea, and from the parent city of Megara (see SICILY: History). The name, which belonged both to the city and to the river on the W. of it, was derived from the wild celery 1 which grows there abundantly, and which appears on some of its coins (see Numismatics, Greek, § "Sicily 2"). We hear of boundary disputes with Segesta as early as 380 B.C. Selinus soon grew in importance, and extended its borders from the Mazurus to the Halycus. Its wealth is shown by the fact that several of its temples belong to the first half of the 6th century B.C. Its government was at first oligarchical, but about 510 B.C. a short-lived despotism was maintained by Peithagoras and, after him, Euryleon (Herod. v. 43, 46). In 480 B.C. Selinus took the Carthaginian side. After this it seems to have enjoyed prosperity: Thucydides (vi. 20) speaks of its wealth and of the treasures in its temples, and the city had a treasury of its own at Olympia.

A dispute between Selinus and Segesta (probably the revival of a similar quarrel about 454, when an Athenian force appears to have taken part 3) was one of the causes of the Athenian expedition of 415 B.C. At its close the former seemed to have the latter at its mercy, but an appeal to Carthage was responded to, and an overwhelming force (the Sicilian cities delaying too much in coming to the rescue) under Hannibal took and destroyed the city in 409 B.C.; the walls were razed to the ground; 6000 inhabitants were killed, 5000 taken prisoners, and only 2600 escaped to Agrigentum (Acracas). 4 In 408 Hermocrates, returning from exile, occupied Selinus and rebuilt the walls; and it is to him that the fine fort on the neck of the acropolis must be attributed. Hence he attacked Motya and Panormus and the rest of Punic Sicily. He fell, however, in 407 in an attempt to enter Syracuse, and, as a result of the treaty of 405 B.C., Selinus became absolutely subject to Carthage, and remained so until its destruction at the close of the first Punic War, when its inhabitants were transferred to Lilybaeum. It was never afterwards rebuilt, and Strabo (vi. p. 272) mentions it as one of the extinct cities of Sicily.

The ancient city occupied a sand-hill running N. and S.; the S. portion, overlooking the sea, which was the acropolis, is surrounded by fine walls of masonry of rectangular blocks of stone, which show traces of the reconstruction of 408 B.C. It is traversed by two main streets, running N. and S. and E. and W., from which others diverged at right angles. There are, however, some traces of earlier buildings at a different orientation. Only the S.E. portion of the acropolis, which contains several temples, has been excavated: in the rest private houses seem to predominate. The delites to whom the temples were dedicated not being certainly known, they are as a rule indicated by letters. In all the large temples the cella is divided into two parts, the smaller and inner of which (the adytum) was intended for the cult image. The opisthodomus is sometimes omitted. All of them lie in a state of ruin, and, from the disposition of the drums of the columns, it is impossible to suppose that their fall was due to any other cause than an earthquake. Temple C is the earliest of those on the acropolis. It had six columns at each end (a double row in the front) and seventeen on each long side. From it came the three arcahic metopes now in the museum at Palermo, which are of great importance in the history of the development of art, showing Greek sculpture in its infancy. Portions of the coloured terra-cotta slabs which decorated the cornice and other architectural members have also been discovered. Next to it on the N., lies temple D, both having been included in one temenos, with other buildings of less importance: to the E. of D is a large altar. B is a small temple of comparatively late date; while A and O lie on the S. side of the main street from E. to W. in another peribolos.

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At the N. end of the acropolis are extensive remains of the fortifications of Hermocrates across the narrow neck connecting it with the rest of the hill. In front of the wall lies a deep trench, into which several passages descend, as at the nearly contemporary fort of Euryclus above Syracuse (p. 43). Outside this again lies a projecting semicircular bastion, which commands the entrance from the exterior of the city on the E., a winding trench approached by a pair of double gateways, which are not vaulted but covered by the gradual projection of the upper courses. Capitals and triglyphs

1 The plant was formerly thought to be wild parsley. It is now generally agreed that it is celery.
from earlier buildings have been used in the construction of these fortifications: from their small size they may be mostly attributed to private houses. A wayfarer, among the less<br>subservient of the Ghuzz, would have perceived at a glance that they were quite alone and unprotected. It is likely that they were outside the town, but stood in a sacred enclosure. All of them have fallen, undoubtedly owing to an earthquake.

A peculiarity of the construction of this temple is that all the intercolumniations were closed by stone screens. In it were found the lower parts of two metopes. Next in date is the huge temple G, which, as an inscription proves, was dedicated to Apollo; though it was never entirely completed (many of the columns still remain unfluted), it was in use. The columns vary somewhat in diameter (more than even the difference caused by fluting would warrant), and the crowning parts are not entirely similar. The plan is a curious one: despite the comparative narrowness of the cella, it had two rows of ten columns in it, in line with the front and back walls. The temple E, however, was identified by the discovery of an inscription to have been dedicated to Hera. It is famous for its fine metopes now in the museum at Palermo, belonging to the beginning of the 5th century B.C.

Selçuk, Selçuk, or Selçûq, the name of several Turkish dynasties issued from one family, which reigned over large parts of Asia in the 11th, 12th and 13th centuries of the Christian era. The history of the Seljuk forms the first part of the history of the Turkish empire. Proceeding from the deserts of Turkestan, the Seljuks reached the Hellespont; but this barrier was crossed and a European power founded by the Ottomans (Osmanli). The Seljuks inherited the traditions and at the same time the power of the Arabian caliphate, of which, when they made their appearance, only the shadow remained in the person of the Abbasiid caliph of Baghdad. It is their merit from a Mahomedan point of view to have re-established the power of orthodox Islam and delivered the Moslem world from the subversive influence of the ultra-Shiite tenets, which constituted a serious danger to the duration of Islam itself. Neither had civilization anything to fear from them, since they represented a strong neutral power, which made the intimate union of Persian and Arab impossible, and which was an essential support of the national Turkish—Italian movements in that language being during the whole period of the Seljuk rule exceedingly rare.

The first Seljuk rulers were Toghrul Beg, Chakir Beg and Ibrahim Niyal, the son of Mikhail, the son of Seljuk, the son of Tukak, or Tuqaq (also styled Timurlyük, "iron bow"). They belonged to the Turkish tribe of the Ghuzz (Oğuz or Oeschn of Const. Porphyry. and the Byzantine writers), which traced its lineage to Oghuz, the famous epic hero not only of this but of all Turkish tribes. There arose, however, at some undefined epoch a more powerful tribe, the Ghuzz, that conquered the Turks, because, as the latter allege, Ghuzz, the son of (or grandson) of Yafeth (Jobeth), the son of Nuh (Noah), had stolen the genuine rain-stone, which Turk, also a son of Yafeth, had inherited from his father. By this party, as appears from this tradition, the Ghuzz were not considered to be genuine Turks, but to be Turkman (that is, according to a popular etymology, resembling Turks). But the native tradition of the Ghuzz was unquestionably right, as they spoke a pure Turkish dialect. The fact, however, remains that there existed a certain animosity between the Ghuzz and their allies, the rest of the Turks, which increased as the former became co-extensive with the latter (in the course of the 4th century of the Flight). The Ghuzz were settled at that time in Transoxiana, especially at Jand, a well-known city on the banks of the Jaxartes, not far from its mouth. Some of them served in the armies of the Ghaznavids Sabuktigin (Bukht-chin) and Mahmud (997–1030); but the Seljuks, a royal family among them, had various relations with the reigning princes of Transoxiana and Khwarizm, which cannot be narrated here. But, friends or foes, the Ghuzz became a serious danger to the adjoining Mahomedan provinces from their predatory habits and continual raids, and the more so as they were very numerous.

It may suffice to mention that, under the leadership of Fige Arslan Israil, they crossed the Oxus and spread over the eastern provinces of Persia, everywhere plundering and destroying. The imprisonment of this chieftain by Masud, the son and successor of Mahtmud, was of no avail: it only furnished his nephews with a ready pretext to cross the Oxus likewise in arms against the Ghaznavids. We pass over their first conflicts and the unsuccessful agreements that were attempted, to mention the decisive battle near Merv (1040), in which Masud was totally defeated and driven back to Ghazni (Ghazna). Persia now lay open to the victors, who proclaimed themselves independent at Merv (which became from that time the official capital of the principal branch of the Seljuk), and acknowledged Toghrul Beg as chief of the whole family. After this victory the three princes Toghrul Beg, Chakir Beg and Ibrahim Niyal separated in different directions and conquered the Mahomedan provinces east of the Tigris; the last named, after conquering Hamadan and the province of Jebel (Irak i Ajam), penetrated as early as 1048, with fresh Ghuzz troops, into Armenia and reached Manzikert, Erzerum and Trebizond. This excited the jealousy of Toghrul Beg, who impressed a number of prisoners of Jebel; but Ibrahim refused, and the progress of the Seljukian arms was for some time checked by internal discord—an ever-recurring event in their history. Ibrahim was, however, compelled to submit.

At this time the power of Qaim, the Abbasiid caliph of Bagdad (see CALIPHATE, section C, § 26), was reduced to a mere shadow, as the Shiite dynasty of the Buγids and afterwards his more formidable Fatimite rivals had left him almost wholly destitute of authority. The real ruler at Bagdad was a Turk named Basasiri, lieutenant of the last Buγid, Malik-ar-Rahim. Nothing could, therefore, be more acceptable to the caliph than the protection of the orthodox Toghrul Beg, whose name was read in the official prayer (khutba) as early as 1050. At the end of the same year (1053) the Seljuk entered the city and after a tumult seized the person of Malik-ar-Rahim. Basasiri had the good fortune to be out of his reach; after acknowledging the right of the Fatimites, he gathered fresh troops and incited Ibrahim Niyal to rebel again, and he succeeded so far that he re-entered Bagdad at the close of 1058. The next year, however, Toghrul Beg got rid of both his antagonists, Ibrahim being taken prisoner of Jebel; but Ibrahim refused, and the progress of the Selejukian arms was for some time checked by internal discord—an ever-recurring event in their history. Ibrahim was, however, compelled to submit.

1 Camp, Sachau, "Zur Geschichte und Chronologie von Khwa-

rizm," in Sitzungsberichte of the Vienna Acad., lxxiv. 304 seq.
bowed string put an end to his life (1073). Malik Shāh regulated also the affairs of Asia Minor and Syria, conceding the latter province as an hereditary fief to his brother Tutush, who established himself at Damascus and killed Atšiz. He, however, like his father Alp Arslān, was indebted for his greatest fame to wise and salutary measures of their vizier, Nizām ul-Mulk. This extraordinary man, associated by tradition with Omar Khayyām (q.v.), the well-known mathematician and free-thinking poet, and with Hassan (ibn) Šahāb, afterwards the founder of the sect of the Assassins (q.v.), was a renowned author and statesman of the first rank, and immortalized his name by the foundation of the hospitals (the left of Aūtāb at Bagdad), observatories, mosques, hospitals and other institutions of public utility. At his instigation the calendar was revised, and a new era, dating from the reign of Malik Shāh and known as the Jelalian, was introduced. Not quite forty days before the death of his master this great man was murdered by the Assassins. He had fallen into disfavour because of his unwillingness to join in the intrigues of the princess Turkan Khātūn, who wished to secure the succession to the throne for her infant son Māḥmūd at the expense of the elder sons of Malik Shāh.

The Constitution and Government of the Seljūk Empire. — It has been already observed that the Seljūks considered themselves the defenders of the orthodox faith and of the Abbāsid caliphate, while they on their side represented the temporal power which received its support from the church. In the first instance there was and it was always the case that the members of the Seljūk house had the same obligations in this respect, but they had not the same rights, as one of them occupied relatively to the others a place almost analogous to that of the greatest monarch of his time. The position was changed between father and son, though the old Turkish idea of the rights of the elder brother often caused rebellions and violent family disputes. After the death of Jelalian Shāh the family was not strong enough to enforce obedience, and consequently the central government broke up into several independent dynasties. Within the limits of these minor dynasties the same rules were observed, and the fiefs belonging to the family were divided among the sons and their descendants. These were the royal fiefs of the Tangarids, of the Khwarizmians, and of the Seljūks themselves, the latter having the right to sell their lands or castles in which they stood to the prince, — as lala, "tutor." The affairs of state were managed by the divān under the presidency of the vizier; but in the empire of Rūm its authority was inferior to that of the persevār, whom we may name "lord chancellor." In Rūm the feudal system was extended to Christian princes, who were acknowledged by the sultan on condition of paying tribute and serving in the armies. The court dignitaries and the governors of provinces were often members of the royal family, the vizier was elected, and expressed the relation in which he stood to the prince, — as bāb, "door." The Seljūks of Persia, like the Seljūks of northern Iraq, were divided into two lines. One of these was formed by the dynasty of Arslān, vizir of Shiraz, which became the hereditary fief of Kāvūr, the son of Chāki Beg. Mention has been made of his war with Malik Shāh and of his ensuing death (1073). Nevertheless his descendants were left in possession of their ancestor's dominions; and till 1170 Kermān, to which belonged also the opposite coast of Omān, enjoyed a well-ordered government, except for a short interruption caused by the deposition of İrān Shāh, who had embraced the tenets of the Ismā'īlītes, and was put to death (1101) in accordance with a fatwa of the ulamas. But after the death of Toğrul Shāh (1170) his three sons disputed with each other for the possession of his dominions; till the country became utterly devastated and fell an easy prey to some bands of Ghuzzs, who, under the leadership of Malik Dinār (1185), marched into Kermān after harassing Sinjar's dominions. Afterwards the shāhs of Khawarizm took this province.

The Seljūkian dynasty of Syria came to an end after three generations, and its later history is interwoven with that of the crusaders. The first prince was Tutush, mentioned above, who perished, after a reign of continuous fighting, in battle against the Seljūk near Baiṣāyra (Basyar) in 1055. Of his two sons, the elder, Rīdūn, established himself at Aleppo (d. 1113); the younger, Duqāq, took possession of Damascus, and died in 1103. The sons of the former, Alp Arslān and Sultan Shāh, reigned a short time nominally, though the real power was exercised by Lūlā till 1117.

After the great victory of Alp Arslān in which the Greek emperor was taken prisoner (1071), Asia Minor lay open to the inroads of the Turks. Hence it was easy for Suleimān, the son of Kutulumish, the son of Arslān Pāgū (Israil), to penetrate as far as the Hellespont, the more so after the captivity of Romanus and his sons, and the destruction of their capital Nicae. In 1069 he himself captured Constantinople and reorganized the empire, which continued to flourish under his successors, the Patschavars. The Seljūks of Kerman, however, under the emir of Soltān Shāh, were unable to prevent the growth of the power of the Seljūks of Turkestan; and the last Seljūk prince of Persia, Māḥmūd, was driven from his capital and his dominions.

1 See Demétreffy, Journ. asiatique (1853), I. 425 seq., II. 217 seq.

2 An outline of the history of this branch of the Seljūks is given in Z.D.M.G. (1885), pp. 362-401.

3 This prince rebelled against Alp Arslān in 1064, and was found dead after a battle.

SELJUKS

as long as the important city of Antioch belonged to the Greeks, so that we may date the real foundation of this Seljuk empire from the taking of that city by the treason of its commander Philarctus in 1084, who afterwards became a vassal of the Seljuks. The conquest involved Suleiman in war with the neighbouring Mahommedan princes, and he met his death soon afterwards (1091), in a battle against the Seldjucks. The Seljuk family discorded the decision of Malik Shāh was necessary to settle the affairs of Asia Minor and Syria; he kept the sons of Suleiman in captivity, and committed the war against the unbelieving Greeks to his generals Bursuq (Ippauros) and Buzān (Ippauros). Barkiyăroq, however, on his accession (1092), allowed Kiliš Arslân, the son of Suleiman, to return to the dominions of his father. Acknowledged by the Turkish amirs of Asia Minor, he took up his residence in Nicaea, and defeated the first bands of crusaders under Walter the Penniless and others (1096); but, on the arrival of Godfrey of Bouillon and his companions, he was prudent enough to leave his capital in order to attack them as they were besieging Nicaea. He suffered, however, two defeats in the vicinity, and Nicaea surrendered on the 23rd of June 1097. As the crusaders marched by way of Doryaleus and Iconium towards Antioch, the Greeks subdued the Turkic amirs residing at Smyrna, Ephesus, Sardis, Philadelphus, Laodicea, Lampe and Polybotus; and Kiliş Arslân, with his Turks, retired to the north-eastern parts of Asia Minor, to act with the Turkish amirs of Sivas (Sebaste), known under the name of Danishmand.

The history of the dynasty of the Danishmand is still very obscure, notwithstanding the efforts of Mordtmann, Schloumberger, Karaşag¬ç, Sallet and others to fix some chronological details, and it is almost impossible to harmonize the different statements of the Armenian, Syriac, Greek and Western chronicles with those of the Persian, Arabic and Turkish. The coins are few in number, very difficult to decipher, and often without date. The founder of the dynasty was probably Malik Tālšī, who is said to have been a schoolmaster (danishmand), probably because he understood Arabic and Persian. His descendants, therefore, took the title of "Ibn Danishmand," often without their own name. They took possession of Sivas, Troad, Nikaia, ḇela, Malatia, possibly after the occupation of Nicaea by Suleiman, though they may have established themselves in one or more of these cities much earlier, perhaps in 1071, after the defeat of Romanus Diogenes. During the first crusade the reigning prince was Kumushtegi (Ahmed Gbāš), who defeated the Franks and took prisoner the prince of Antioch, Bohemund, afterwards ransomed. He died probably in 1106, and was succeeded by his son Mahommed (d. 1143), who reigned Jâş and Iṣkandar. It is very difficult to ascertain that other members of the same dynasty reigned at the same time in the cities already named, and in some others, e.g. Kastamuni.

Afterwards there arose a natural rivalry between the Seljuks and the Danishmand, which ended with the extinction of the latter about 1175. Kiliş Arslân took possession of Mosul in 1107, and declared himself independent of the Seljuks of Irak; but in the same year he was drowned in the Khaboras through the treachery of his own amirs, and the dynasty seemed about to decay, as his sons were involved in the power of his enemies. The Seljuk Mahommed, however, set at liberty his eldest son Malik Shāh, who reigned for some time, until he was treacherously murdered (it is not quite certain by whom), being succeeded by his brother Masûd, who established himself at Konia (Iconium), from that time the residence of the Seljuks of Rüm. During his reign— he died in 1155—the Greek emperors undertook various expeditions in Asia Minor and Armenia; but the Seljuk was cunning enough to profess himself their ally and to direct them against his own enemies. Nevertheless the Seljukian dynasty was perpetuated, and the importance and not insignificance to this son and successor, Kiliş Arslân II., had subdued the Danishmands and appropriated their possessions, though he thereby risked the wrath of the powerful atabeg of Syria, Nureddin, and afterwards that of Saladin. But as the sultan grew old his numerous sons, who held each the command of a city of the empire, embittered his old age by their mutual rivalry, and the eldest, Kutb ed-din, tyrannized over his father in his own capital, exactly at the time that Frederick I. (Barbarossa) entered his dominions on his way to the Holy Sepulchre (1190). Konia itself was taken and the sultan forced to provide guides and provisions for the crusaders. Kiliş Arslân lived two years longer, finally under the protection of his youngest son, Kaikhosro, who held the capital after him (till 1199) until his elder brother, Rukneddin Suleimān, after having vanquished his other brothers, ascended the throne and obliged Kaikhosro to seek refuge at the Greek emperor's court. This valiant prince saved the empire from destruction and conquered Erzerûm, which had been ruled during a considerable time by a separate dynasty, and was now given in fief to his brother, Mughūt ud-din Togrul Shāh. But, marching thence against the Georgians, Suleimān's troops suffered a terrible defeat. After this Suleimān set out to subdue his brother Masûd Shāh, at Angora, who was finally taken prisoner and treacherously murdered. This crime is regarded by Oriental authors as the reason of the premature death of the sultan (in 1197) but it is more probable that he was murdered because he displeased the Mahommedan clergy, who accused him of atheism. His son, Kiliş Arslân III., was soon deposed by Kaikhosro (who returned), assisted by the Greek Maurzomizes, whose daughter he had married in exile. He ascended the throne the same year in which the Latin empire was established in Constantinople, a circumstance highly favourable to the Turks, who were the natural allies of the Greeks (Theodore Lascaris) and the enemies of the crusaders and their allies, the Armenians. Kaikhosro, therefore, took in 1207 from the Italian Alberandini the important harbour of Attila (Adalia); but his conduct in his relations with the Armenians, Kaikobad, was induced to the capture of the important city of Aleppo, which time governed by the descendants of Saladin; but the affair miscarried. Soon afterwards the sultan died (1219) and was succeeded by his brother, All ud-din Kaikobad I., the most powerful and illustrious prince of this branch of the Seljuks, renowned not only for his successful wars but also for his magni¬cent structures at Konia, Alaîa, Sivas and elsewhere, which belong to the best specimens of Saracenic architecture. The town of Alaîa was the creation of this sultan, as previously there existed on that site only the fortress of Candeler, at that epoch the property of an Armenian chief, who was expelled by Kaikobad, and shared the fate of the Armenian and Frankish knights who possessed the fortresses along the coast of the Mediterranean as far as Seleukeia (Seleucia). Kaikobad extended his rule as far as this city, and desisted from further conquest only on condition that the Armenian princes would enter into the same kind of relation to the Seljuks as had been imposed on the Comnenians of Trebizond. But his greatest military fame was won by a war, which however glorious, was to prove fatal to the Seljuk empire in the future: in conjunction with his ally, the Ayyubite prince of Egypt, he defeated the Shâh Jâsh and captured Erîzûm near Erzûnûg (1236). This victory removed the only barrier that checked the progress of the Mongols. During this war Kaikobad put an end to the collateral dynasty of the Seljuks of Erzerûm and annexed its possessions. He also gained the city of Khâlišt with dependencies that in former times had belonged to the Shâh-i-Armen, but shortly before had been taken by Jâsh ud-din; this aggression was the cause of the war just mentioned. The acquisition of Khâlišt led, however, to a new war, as Kaikobad's ally, the Ayyubite prince, envied him this conquest. Sixteen Mahommedan princes, mostly weak, revolted under the leadership of Malik al-Kâmil, prince of Egypt, marched with considerable forces into Asia Minor against him. Happily for Kaikobad, the princes mistrusted the power of the
Egyptian, and it proved a difficult task to penetrate to the mountainous, well-fortified accesses to the interior of Asia Minor, so that the advantage rested with Kaikobad, who took Kharput, and for some time even held Harran, Ar-Roha and Rakka (1252). The latter conquests were, however, soon lost, and Kaikobad himself died in 1254 of poison administered to him by Mongols with the aid of his son-in-law, Ghiyass ed-din Rukneddin, sultan of Erzincan. The unworthy son inherited from his father an empire embracing almost the whole of Asia Minor, with the exception of the countries governed by Vatatzes (Vatases) and the Christian princes of Trebizond and Lesser Armenia, who, however, were bound to pay tribute and to serve in the armies—an empire celebrated by contemporary reports for its wealth. But the Turkish soldiers were of little use in a regular battle, and the sultan relied mainly on his Christian troops, so much so that an insurrection of dervishes which occurred at this period could only be put down by their assistance. It was at this epoch also that there flourished at Konia the founder of the order of the Mevlevis or Mawlawis, Jâld ed-din Rûmi (see RûMî), and that the dervish fraternities spread throughout the whole country and became powerful bodies, often discontended with the liberal principles of the sultans, who granted privileges to the Christian merchants and held frequent intercourse with them. Notwithstanding all this, the strength and reputation of the empire were so great that the Mongols hesitated to invade it, although standing at its frontiers. But, as they crossed the border, Kaikobad marched against them, and suffered a formidable defeat at Kuzadâg (between Erzingân and Sivas), in 1245, which forced him to purchase peace by the promise of a heavy tribute. The independence of the Seljûks was now for ever lost. The Mongols retired for some years; but, Kaikobad II. dying in 1245, the joint government of his three sons gave occasion to fresh intrusions, till one of them died and Hulagu divided the empire between the other two, Izz ed-din (Kaikaua II.) ruling the districts west of the Halys, and Rukneddin (Kilîj Arslan IV.) the eastern provinces (1259). But Izz ed-din, intriguing with the Mameluke sultans of Egypt to expel his brother and gain his independence, was defeated by a Mongol army and obliged to flee to the imperial court. Here he was imprisoned, but afterwards released by the Tatars of the Crimea, who took him with them to Sarai, where he died. Rukneddin was only a nominal ruler, the real power being in the hands of his minister, Mu'inn ed-din Suleimân, who in 1267 procured an order of the Mongol Khan Abaka for his execution. The minister raised his infant son, Ghiyâs ed-din Kaikobad III., to the throne, and governed the country for ten years longer, till he was entangled in a conspiracy of several amirs, who proposed to expel him and place his son on the throne. In the meantime, however, Masûd, the son of Kaikobad's brother Ghiyâs, had been admitted into the service of the Mongol Khan Khatâr, and a combined force, which included some of the best officers of the Seljûk sultans of Erzincan, had been sent for the purpose of putting down revolt in the Crimea. The rebellion of the Seljûk chieftains was easily quelled, and their leader, Jâld ed-din Rûmi, was taken prisoner and brought to Khatâr. In 1269, in the same year in which the chief of the Khatârians was invested with the title of sultan, Kaikobad II. died at the age of sixty-six. His son and successor, Masûd, was only six years old, and thus the sultanate of Erzincan was again reduced to a mere shadow of a kingdom. It was not long, however, before the Seljûk power was completely extinguished in this quarter of Asia Minor. The Ottomans, who at length prevailed, took possession of the whole of Asia Minor, and, as they advanced, the Seljûks were driven farther and farther to the north and west, till 1300, others till 1315. With him ended the dynasty of the Seljûks; but the Turkish empire founded by them continued to exist under the rising dynasty of the Ottomans. (See TURKEY.)

BIBLIOGRAPHY.—The best, though insufficient, account of the Seljûk Selcuk, d'Aubigny de Guise (1730-1787), Scottish sailor, commander of the "Duke," privateer, from whom Gibbon borrowed his dates. Among translations from original sources of which the most trustworthy are yet unprinted, comp. Mirkhoud's Geschichte der Seljûken (ed. Vollers), Giessen, 1787, "Tartarii-Caostăeq, French translation by Defremy in the Journal asiatique, 1848, i. 417 sqq., ii. 259 sqq., 334 sqq.; Seid Loomani et libro Turcicher qui Oghuzname inscriviit excerpta (ed. J. H. W. Robinson, 1754) (the Seljûks of Asia Minor exclusively, but of little value); and a translation respect ed to its period in the works of Von Hammer and d'Oebisso (see Bibliography to Turkey: History), and in Stanley Lane Poole's Moham medanin Harbiyetleri (1861). M. T. H.

SELKIRK (OF SELCRAIG), ALEXANDER (1676-1721), Scottish sailor, the prototype of "Robinson Crusoe," seventh son of John Selcraig, shoemaker and Tanner of Largo, Fifeshire, was born in 1676. In his youth he displayed an unruly disposition, and, having been summoned on the 27th of August 1695 before the kirk-session for his indecent behaviour in church, "did not comport, being gone away to the sea." In May 1703 he joined Dampier in a privateering expedition to the South Seas, going with the "Cinque Ports" galley as sailing master. In September 1704 the "Cinque Ports" put in at Juan Fernandez Island, "an unknown place; here Selkirk had a dispute with his captain, Thomas Stradling, and at his own request he was transferred to a few ordinary necessaries. Before the ship left he begged to be readmitted, but this was refused, and Selkirk remained alone in Juan Fernandez four years and four months, till on the 31st of January 1709 he was found, and on the 12th of February following taken off, by Captain Woods Rogers, commander of the "Duke" privateer (with Dampier as pilot), who made him his mate and afterwards gave him command of one of his prizes, the "Increase." (March 29th.) Selkirk returned to the Thames on the 14th of October 1711; he was back at Largo in 1712, in 1717 we find him again at sea, and in 1722 he died as master's mate of H.M.S. "Weymouth." (December 12th.)

See Woodses Rogers, Cruising Voyage round the World (1712), and Edward Cooke, Voyage in the South Sea and round the World (1712), the earliest descriptions of Selkirk's adventures; also Providence Displayed, or a Surprising Account of one Alexander Selkirk, etc., written by H. Richardson in 1719, and Funnell's Voyage round the World (1707). Steele made Selkirk's acquaintance, and gave a sketch of the adventurer and his story in a letter to Abington for the Gentleman's Magazine, 1713. The first publication of Selkirk's story was in a second edition of Rogers' Voyage, and appeared in 1718. Defoe published Robinson Crusoe. While this is clearly indebted in its main outlines to Selkirk's story, most of its incidents are, of course, entirely independent of thefacts. The original of "Robinson Crusoe" is the island and the whole narrative of the cannibal visits, etc., agree rather with one of the West Indies than with Juan Fernandez.

The best modern biography is the Life and Adventures of Alexander Selkirk by John Howell (1829). In 1868 a tablet was put up Juan Fernandez at a point on the hill road called "Selkirk's Look-out," where it is in the trap rock a magnificent view may be had of the whole island, and of the sea north and south, over which the exile must have often watched for an approaching sail. It bears the following inscription:—"In memory of Alexander Selkirk, mariner, and the first to inhabit this island, in the year 1716, he lived on this island in complete solitude for four years and four months. He was landed from the 'Cinque Port' (sic) galley, 96 tons, 16 guns, 1704 A.D, and was taken off in the 'Duke' privateer, 12th February 1720. He died lieutenant of the 'Weymouth' 1723 A.D., aged forty-seven years. This tablet is erected near Selkirk's look-out by Commodore Powell and officers of H.M.S. 'Topaze,' 1868 A.D."
acquired control of the Hudson's Bay Company. In May 1811 an immense tract was granted to him in the Red River valley, and he at once proceeded to send out settlers; but the hostility of the leader survived; with a band captured from the town at Montreal, eventually ruined the colony (see Red River Settle-
ment), and the influence of his rivals led to the defeat of Selkirk in various legal proceedings. On the 8th of April 1820 he died broken-hearted at Pau. One of the most generous and dis-
interested men in the history of colonization, he fell a victim to the predatory selfishness of his rivals.
Copies of his papers, most of which are unpublished, are in the Canadian Archives Department at Ottawa.

SELKIRK, a royal and political burgh and the county town of Selkirkshire, Pop. (1901) 6392. It lies on Ettrick Water, about 3 m. above its confluence with the Tweed, 63 m.
S. of Galashiels by the British Railway Company's branch line, of which it is the terminus. It is picturesquely situated on a hill on the right bank of the river, close to which are the mills and factories. The public buildings include the county buildings, public hall, library and the town hall (with a spire 110 ft. high). There are statues of Sir Walter Scott in his sheriff's robes, and Mungo Park, the African explorer, who was educated at the grammar school. Woollen manufacturers (tweeds, tartans, plaid), are the principal industries and there is also an important agricultural centre. With Galashiels and Hawick it belongs to the Hawick or Border group of parlia-
mentary burghs. Immediately south of the town are the beautiful grounds of the Haining.
As its early name (Scheleschyrche) indicates, Selkirk originally consisted of a number of shielis (huts), in the forest beside which a church had been planted by the Culdees of Old Melrose. David I., while prince of Cumbria, founded in 1115 the abbey, which was removed fifteen years afterwards to Kelso, and also erected a castle. Captured by Edward I., by whom it was en-
larged and changed into a burgh. In the English Civil War it was retaken by Wallace in 1297, and remained in the hands of the Scots till the battle of Halidon Hill (1333), when it was delivered to the English. It was probably destroyed in 1417 when Sir Robert Umfraville, governor of Berwick, set fire to the town, and nothing remains of it save some green mounds and the name Peel Hill. It is significant of the havoc wrought during the Border warfare that there is not in Selkirk, in spite of its antiquity, any building two hundred years old. Of the eighty burghs who marched to Flodden (1513) under William Brydone, the town clerk, only the charter of the old church and the charter which the English crown gave him when he was knighted by James V. This charter is locally supposed to be the one borne by the Weavers' Corporation in the annual ceremony of Riding the Common, but the claim cannot be verified.
The charter granted by David I. and other muniments having perished, James V. renewed the charter in 1533, with the right to enclose 1000 acres of the common and leave to elect a provost. After the battle of Philiphaghaugh (1465), David Leslie, the Covenanters' general, had some prisoners confined in the tolbooth of Selkirk and afterwards massacred in the market-
place. From an early period the souters (shoemakers) were a flourishing craft, and in the rebellions of 1715 and 1746 were required to furnish the Jacobites with several thousand pairs of shoes. Though shoemaking is extinct, "the souters of Selkirk" is still a nickname for the inhabitants. Tradition of the ancient craft yet survives also in connexion with the enrolment of bur-
gesses, when the burgess elect has to go through the ceremony of "licking the birse" (i.e. bristles). When the loving-cup reaches the candidate he dips in the wine a brush of bristles like that used by shoemakers and passes it through his lips.

SELKIRK MOUNTAINS, a range in the S.E. of British Columbia, Canada, extending N. for about 200 m. from the American frontier with a breadth of about 80 m. and bounded E., W. and N. by the Columbia River system. Though often spoken of as part of the Rocky Mountain system, they are really distinct, and belong to an older geological epoch, consisting mainly of crystalline or highly metamorphosed rocks, granites, gneiss, schists; their outline is too round and less serrated than that of the Rockies.

On the S.E. is the Purcell range, with the main chain of the Rockies still farther E., and on the W. the Gold range, prolonged northwards as the Castle Mountains. They do not rise much above 1900 ft. a southerly peak being Sir Donald (named after Lord Strathcona), 10,645 ft.; Macdonald (named after Sir John Macdonald), 9440 ft.; and Mount Tupper (after Sir Charles Tupper), 9030 ft. The scenery is wild and magnificent; below the snow-line, especially on the western side, the slopes are densely wooded, and enormous glaciers fill the upper valleys; of these the most celebrated is that of the Illecillewaet, near Glacier House, on the Canadian Pacific railway. The Selkirs are crossed by the railway at Rogers Pass, discovered in 1883.
The engineering difficulties overcome are greater than at any other point of the line, the ascent being 200 ft. long in the valleys of the larger streams. The highest hills are found in the extreme west and south-west. On the confines of Peebleshire the chief heights are Dun Rig (2433 ft.), Black Law (2828), Broad Law (2723) and Lochcraig Head (2622); and on the Dumfriesshire borders, Bodesbeck Law (2175), Capel Fell (2225), Wind Fell (2180) and Ettrick Pen (2260). In the north, close to the Midlothan boundary, is Windlestraw Law (2161). The principal waters are the Ettrick (32 m.) and its left-hand affluent the Yarrow (14 m.), but for a few miles the Tweed traverses the north of the county. Gala Water (21 m.), though it joins the Tweed to the north, belongs to Roxburghshire, as it rises in the Moorfoot Hills and for most of its course flows in that shire. St Mary's Loch and its adjunct, the Loch of the Lornes, in the uplands, are the chief lakes, and of numerous small lakes in the south-east the two lochs of Shaw, Clearburn, Akermoor and Essendine may be mentioned. The vales of the Tweed and Yarrow and Ettrickdale are the principal valleys.

Geology.—This county is entirely occupied by Silurian and Ord-
ovician rocks which are very much folded and crumpled; the axes of folding are more or less north-east and south-west. The Ordovician rocks, represented by the Glenklin and Hartfell shales, appear in the crests of the anticlinal folds; in the western part of the county (between the Tweed and the Blackwater) they are of thin outcrop, but on the eastern slopes they reach a thickness of 3000 ft. The Ordovician shales form the Birkhall graptolitic shales followed by the Queensberry grits, a series of greywackes, grits, flags and shales, which pass upwards into the Hawick rocks, shales with white-
weathering greywackes, and the-super-
lying greywackes in the Ordovician are used as building stones. Igneous rocks are represented by the Tertiary basalt dikes of Bower-
hope Law and dikes of quartz-felsite near Windlestraw Law and Cadron Water; dikes of minette occur near Todrig. A great deal of boulder-clay covers the older rocks; the ice-borne material travelled from west to east, and many of the hills show steep and bare slopes towards the west, but have gentle slopes covered with glacial deposits on the eastern side.

Climate and Agriculture.—The rainfall for the year, based on ob-
servations at Bowhill, between the confluence of the Yarrow and Ettrick, at a height of 537 ft. above the sea, averages 33-65 in. The mean temperature for the year, calculated at Galashiels (416 ft. above the sea), is 46.3° F., for January 36.2° F., and for July 58.2° F. The climate is thus cold and wet on the whole, and as the soil is mostly thin, over a soil subsoil of clayey till, agriculture is carried on at a dis-
advantage. About one-sixth of the surface is under cultivation, oats being almost the only grain crop and turnsips the chief green crop. Live stock is important, livestock in fact comprising all the animal production of the county, both as food and wool. There are comparatively few small holdings, farms between 100 and 300 acres being the most usual. More than one-third of the county of 60,000 holdings belong to the Church, and the farmland in the land between the Ettrick and the Tweed was formerly covered with forest to such an extent that the sheriffdom was described as Ettrick
Sella 613

Forest. The chief trees were oak, birch and hazel; and the wood being locked with the finest breed of red deer in the kingdom became the hunting-ground of the Stuarts. James V., however, to increase his revenues, let the domain for grazing, and it was soon converted into pasture. For a while, the result that now only about 10,000 acres in the shire are under wood.

Manufactures and Communications.—Woolen manufactures (tweed, tartans, plaids, yarn and hosiery) are the predominant industry in Galashiels and Selkirk, and dyeing, engineering, iron-founding and bootmaking are also carried on at Galashiels, and there are large vineries at Clovenfords.

The only railway communication is in the north, where there is a branch line from Galashiels to Selkirk, besides part of the track of the Waverley route from Edinburgh to the south and the line from Galashiels to Peebles. There are coaches from Selkirk to St Mary's Loch and periodically to Moffat.

Population and Administration.—In 1891 the population numbered 27,712, and in 1901 it was 23,336, or 88 to the sq. m., a decrease of 15.78%, much the largest on the decline in Scotland. Fifteen persons spoke Gaelic and English, none Gaelic only. The chief towns are Galashiels (pop. 13,615) and Selkirk (6,292). Selkirkshire combines with Peeblesshire to return a member to Parliament, and the county town and royal burgh of Selkirk and the municipal burgh of Galashiels united with Hawick (in Roxburghshire) to constitute the Border or Hawick group of parliamentary burghs. The shires of Selkirk, Roxburgh and Berwick form a sheriffdom, and a resident sheriff-substitute sits at Selkirk and Galashiels. There is a combination poorhouse at Galashiels. The county is under the sheriff-substitute and Galashiels, while some of the other schools in the shire earn grants for higher education. Part of the "residue" grant is spent in supporting short courses of instruction in dairying, and Selkirk town council subsidizes popular science classes in the burgh school.

History and Antiquities.—There are no Roman remains in Selkirkshire, the natives probably being held in check from the station at Newstead near the Eildons. The Standing Stone near Yarrow church bearing a Latin inscription is ascribed to the 5th or 6th century and is only a quasi-Roman relic. The called British camps have been found on the upper and middle waters of the Ettrick and Yarrow, and of the few situated in the lower valleys of these streams the most important is the large work on Rink Hill in the parish of Galashiels, the district containing various interesting prehistoric remains. At Torwoodlee, 2 m. north-west of Galashiels, are the ruins of the only example of a broch (round tower) in the Borders counties. The diameter of the structure measures 75 ft., and that of the enclosed court 40 ft., giving a thickness for the wall of 17 ft. The broch stands in an enclosure of mounds and a ditch, the whole being protected by an outer entrenchment at a considerable distance from which only a fragment survives. Locally the works are called Torwoodlee Rings, or Eye Castle. The barrier known as the Catrall, or Picts' Work, starts near Torwoodlee, whence it runs southwards to Rink Hill. There it sweeps round to the south-west as far as Yarrow church, from which it again takes a due south direction to the valley of the Rankle, where it passes into Roxburghshire. Some Arthurian romance touches the site at points, for the field of the battle of Coit Celidon (the Word of Celidon) was probably in Ettrick Forest, and that of Guinlon in the valley of the Coquet near Haltwhistle. For six centuries the retreat of the Romans is that of the whole of south-eastern Scotland. The country formed part, first, of the British kingdom of Strathclyde, then of the Saxon kingdom of Northumbria, and finally, about 1020, was annexed to Scotland. The first sheriff of whom there is record was Andrew de Syntom, appointed by William the Lion (d. 1214). After Edward I. had overrun Scotland substantial burgesses of Selkirk were among those who took the oath of allegiance to him at Berwick in 1326, but next year William Wallace sought the covert of the forest to organize resistance. After the war of Haithbury in the country between the Yarrow and Tweed he constructed an earthwork, still called Wallace's Trench, 1,000 ft. long and deep enough to conceal a moss horse and his rider, and paved in part with flat whinstones laid on edge. At the higher end on the top of a hill it terminated in a large square enclosure. Here he lay till his plans were completed and at last departed, his forces including a body of Selkirk archers, for a raid into the north of England. After the death of Robert Bruce (1329) the foresters were constantly fighting, and the country suffered more heavily at Flodden (1513) than any other district. The lawlessness of the Borderers was at length put down by James V. with a strong hand. He parcelled out the forest in districts, and to each appointed a keeper to enforce order and protect property. In 1529 the ringleaders, including William Cockburn of Henderland, Adam Scott of Tushielaw and the notorious Johnnie Armstrong, were arrested and promptly executed. This severity gradually had the desired effect, though after the union of the crowns in 1603 the freebooters and mosstroopers again threatened to be troublesome, until James VI.'s lieutenants ruthlessly stamped out disaffection. The Covenanters held many conventicles in the uplands, and their general, David Leslie, routed the marquis of Montrose at Philiphaugh in 1645.

The manufacture of woollen goods was introduced into Selkirk and Galashiels and attained great success, thus adding largely to the prosperity of the neighbourhood. In another direction the beauty and romance of Yarrow and Ettrick have produced a stimulus to modern literature.

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SELLA, Quintino (1827–1884), Italian statesman and financier, was born at Mosso, near Biella, on the 7th of July 1827. After studying engineering at Turin, he was sent in 1843 to study mineralogy at the Parisian school of mines. In Paris he witnessed the revolution of 1848, and only returned to Turin in 1852, when he taught applied geometry at the technical institute. In 1853 he became professor of mathematics at the university, and in 1860 professor of mineralogy in the school of applied engineering. In 1860 he was elected deputy for Cossato. A year later he was selected to be secretary-general of public instruction, and in 1862 received from Rattazzi the portfolio of finance. The Rattazzi cabinet fell before Sella could efficaciously provide for the deficit of £17,500,000 with which he was confronted; but in 1864 he returned to the ministry of finance in the La Marmora cabinet, and dealt energetically with the deficit of £8,000,000 then existing. Persuading the king to forgo £120,000 of his civil list, and his colleagues in the cabinet to relinquish part of their ministerial stipends, he effected savings amounting to £3,400,000, proposed new taxes to the extent of £6,000,000—a sizeable sum to be paid on one year's instalment of the land tax in advance. A vote of the chamber compelled him to resign before his preparations for financial restoration were complete; but in 1869 he returned to the ministry of finance in a cabinet formed by himself, but of which he made over the premiership to Giovanni Lanza. By means of the grist tax (which he had proposed in 1865, but which the Menabrea cabinet had passed in 1868), and by other fiscal expedients necessitated by the almost desperate condition of the national exchequer, he succeeded, before his fall from power on the 30th of May 1875, in reducing the national expenditure of 1875 by £6,000,000, and in laying the foundations of fierce attacks and persistent misrepresentation. In 1870 his great political influence turned the scale against interference in favour of France against Prussia, and in favour of an immediate occupation of Rome. From 1873 until his premature death on the 14th of March 1884, he acted as leader of the Right, and was more than once prevented by an ephemeral coalition of personal opponents from returning to power as head of a Moderate Conservative cabinet. After the failure of an attempt to form a cabinet in May 1882 he practically retired from public life, devoting himself to his studies and his linen factory.

His Discorsi parlamentari were published (5 vols., 1887–1890) by order of the Chamber of Deputies. An account of his life and scientific labours was given by F. Bossa in the Proceedings of the Accademia dei Lincei (1884–1885).
SELLAR—SELVE

SELLAR, WILLIAM YOUNG (1825-1890), Scottish classical scholar, was born at Morvich, Sutherlandshire, on the 22nd of February 1825. Educated at the Edinburgh Academy and afterwards at Glasgow University, he entered Balliol College, Oxford, as a scholar. Graduating with a first-class in classics, he was elected fellow of Oriell, and, after holding assistant professorships at Durham, Glasgow and St Andrews, was appointed professor of Greek at St Andrews (1857). In 1863 he was elected professor of humanity in Edinburgh University, and occupied that chair down to his death on the 12th of October 1890. Sellar was one of the most brilliant of modern classical scholars, and was remarkably successful in his endeavours to reproduce the spirit rather than the letter of Roman literature. The Roman Poets of the Republic (3rd ed., 1889) and The Roman Poets of the Augustan Age (Virgil, 3rd ed., 1897), and Horace and the Elegiac Poets (2nd ed., by W. P. Ker, 1899), with memoir by Andrew Lang, are standard authorities. Sellar contributed to the 9th edition of the Encyc. Brit. a series of brilliant articles on the Roman poets, the substance of which has been retained in the present edition.

SELMAL, a city and the county-seat of Dallas county, Alabama, U.S.A., altitude 126 ft., on the right bank of the Alabama river, a little S. of the centre of the state, and known as the Central City. Pop. (1900) 9,713, of whom 4,220 were negroes; (1910 U.S. census) 16,650. W. is served by the Louisville & Nashville, the Southern and the Western of Alabama railways. It has a Carnegie library, two parks and two Y.M.C.A. buildings. In the city are the Selma Military Institute (1907), and the Alabama Baptist Colored University (opened in 1878), which is one of the largest schools in the South owned and controlled by negroes, and has industrial, domestic, normal, collegiate and (especially) theological courses. The Society of United Charities supports the Selma Hospital (1889) for negroes and the Selma Infirmary (1890). The city has a large trade, principally in cotton (the chief crop of the surrounding country) and lumber from the great pineries. There are cotton compresses, cotton warehouses, &c.; in 1905 the value of the factory products was $1,138,817. The water supply is obtained from artesian wells. The site was originally called Moore's Bluff, from one Thomas Moore, who owned a steamboat landing here about 1815. A town was established about 1817, and in 1820 was incorporated under its present name (from the Ossianic legend). Selma was first chartered as a city in 1852. During the Civil War it was the seat of Confederate arsenals, shipyards and military factories. On the 2nd of April 1865 it was captured by Union forces under General W. T. Sherman, and much of the city was destroyed by fire. Near Selma lived William Rufus King (1786-1853), a Democratic representative in Congress from North Carolina in 1811-1816, a member of the United States Senate from Alabama in 1819-1844 and 1846-1853, minister to France in 1844-1846, and vice-president of the United States from the 4th of March 1853 until his death on the 18th of April; and Selma was the home of John Tyler Morgan (1824-1907), a brigadier-general in the Confederate army in 1863-1865 and a prominent Democratic member of the United States Senate from 1879 to 1897; and of Edmund Wind in Pettus (1832-1907), also a brigadier-general in the Confederate Army and, in 1897-1907, a Democratic member of the United States Senate.

Selmeczbanya, officially called SELMECZ-ÉS BÉLÁBÁNY (Ger. Schenkmitz), the capital of the county of Hont, Hungary, 132 m. N. of Budapest by rail. Pop. (1900) 16,370, about two-thirds Slovaks. It is an old mining town, situated at an altitude of 1,045 ft. in a deep ravine in the Hungarian Ore Mountains, and is built in terraces. Selmeczbanya is encircled by high mountains, notably the isolated peak of the Calvarenbarg (2,385 ft.) on the S.W., on which are situated a castle and a church, and the Paradiesberg (2,400 ft.) on the N.W. It possesses a famous academy of mining and forestry, founded by Maria Theresa in 1760, to which are attached a remarkable collection of minerals, and a chemical laboratory. Among other buildings are a picturesque old castle dating from the 13th century, now in ruins with the exception of a few rooms used as a prison; the new castle, used as a fire watch-tower; and the town hall. The mines, chiefly the property of the state and of the corporation, yield silver, gold, lead, copper and tungsten. During the advances also flourishing potteries, where well-known tobacco pipes are manufactured. About 7 m. to the S.W. of the town lie the baths of Vihnye, with springs of iron, lime and carbonic acid, and about the same distance to the W. are the baths of Szkleno with springs of sulphur and lime.

Selmeczbanya is an old town whose mines existed in the 8th century. In the 12th century, together with the whole mining region of northern Hungary, it was colonized by German settlers, who later embraced the Reformation. Owing to the mining conditions the German element was driven out during the 18th century, and its place taken by the actual Slovak population.

SELOUS, FREDERICK COURTNEY (1851-1905), British explorer and hunter, was born in London on the 31st of December 1851, and was educated at Rugby and in Germany. His love for natural history led to the resolve to study the ways of wild animals in their native haunts. Going to South Africa when he was nineteen he travelled from the Cape to Matabeleland, reached early in 1872, and was granted permission by Lobengula to shoot game anywhere in his dominions. From that date until 1890, with a few brief interludes in South Africa and in Uganda, he wandered and explored over the then little-known regions north of the Transvaal and south of the Congo basin, shooting elephants, and collecting specimens of all kinds for museums and private collections. His travels added largely to the knowledge of the country now known as Rhodesia. He made valuable ethnological investigations, and throughout his wanderings—often among people who had never previously seen a white man—he maintained cordial relations with the Kaffir chiefs and tribes, winning their confidence and esteem, notably so in the case of Lobengula. In 1890 Selous entered the service of the British South Africa Company, acting as guide to the pioneer expedition to Mashonaland. Over 400 m. of road were constructed through a country of forest, mountain and swamp, and in two and a half months Selous took the column safely to its destination. He then went east to Manica, concluding arrangements there which brought the country under British control. Coming to England in December 1892 he was awarded the Founder's medal of the Royal Geographical Society "in recognition of his extensive explorations and surveys," of which he gave a summary in "Twenty Years in Zambesia" (Geo. Journ., vol. I., 1893). He returned to Africa to take part in the second Matabele campaign, and was again sent to Bulawayo. While back in England he married, but in March 1896 was again settled with his wife on an estate in Matabeleland when the native rebellion broke out. He took a prominent part in the fighting which followed, and published an account of the campaign entitled Sunshine and Storm in Rhodesia (1896). On the restoration of peace Selous settled in England. He continued, however, to make shooting and hunting expeditions—visiting Asia Minor, Newfoundland, the Canadian Rockies and other parts of the world. In none of his expeditions was his object the making of a "big bag," but as a hunter-naturalist and slayer of game he ranks with the most famous of the world's sportsmen.

Besides the works mentioned he published A Hunter's Wanderings in Africa (1881, 5th ed., 1907), Travel and Adventure in South-East Africa (1893), Sport and Travel, East and West (1900), Recent Hunting Trips in British North America (1907), African Nature Notes and Reminiscences (1908), a valuable addition to the knowledge of African fauna, and made numerous contributions to The Geographical Journal, the Field and other journals.

SELVE, ODET DE (c. 1504-1563), French diplomatist, was the son of Jean de Selve, first president at the parlements of Rouen and Bordeaux, vice-chancellor of Milan, and ambassador to the king of France. In 1540 Odet was appointed councillor at the parlement of Paris and in 1542 at the grand council. In 1546, after the signature of the treaty of Ardes, he was sent on an embassy to England, in 1550 to Venice, and afterwards to Rome, where he obtained the election of Pope Paul IV. in 1555.
SELWYN, ALFRED RICHARD CECIL (1824–1902), British geologist, son of the Rev. Townshend Selwyn, Canon of Gloucester, was born at Kilmington in Somerset on the 28th of July 1824. Educated in Switzerland, he there became interested in geology, and in 1845 he joined the staff of the Geological Survey of Great Britain. He was actively engaged in the survey of North Wales and bordering portions of Shropshire, and a series of splendid geological maps resulted from his joint work with A. C. Ramsay and J. B. Jukes. In 1858 he was appointed director of the Geological Survey of Victoria, Australia, where he gave special attention to the gold-bearing rocks, until in 1869 the Colonial Legislature brought the Survey to an abrupt termination. At this date Sir W. E. Logan had just retired from the office of director of the Geological Survey of Canada, and Selwyn was appointed his successor. In this new sphere of activity he continued his geological work with marked success, devoting particular attention to the Pre-Cambrian rocks of Quebec. He retired in 1894. Meanwhile in 1874 he had been elected F.R.S., in 1876 he was awarded the Murchison Medal of the Geological Society of London, and he was created C.M.G. in 1886 for his distinguished service as assistant to the Canadian Commissioners at the exhibitions in Philadelphia (1876), Paris (1878) and London (1886). He retired to Vancouver in British Columbia, where he died on the 19th of October 1902.

See memoir with portrait in Geol. Mag. (Feb. 1899).

SELWYN, GEORGE AUGUSTUS (1799–1879), English wit, son of Colonel John Selwyn (d. 1751) of Matson, Gloucestershire, was born on the 11th of August 1799. Educated at Eton and Oxford, he became member of parliament for the family borough of Ludgershall in 1747, and from 1754, three years after he inherited Matson, to 1780 he represented Gloucester. In parliament he took no part in debate, but he managed to obtain two or three lucrative sinecures; in society he was very popular and won a great reputation as a wit. He is said to have been very fond of seeing corpses, criminals and executions, and Horace Walpole says he loved "nothing upon earth so well as a criminal, except the execution of him." He died in London on the 25th of January 1791. Like the eccentric duke of Queensberry Selwyn claimed to be the father of Maria Fagniani, who became the wife of Francis Charles Seymour, 3rd marquess of Hertford.

See J. H. Jesse, George Selwyn and his Contemporaries (1843–1844; new ed., 1882); and S. P. Kerr, George Selwyn and the Wits (1900).

SELWYN, GEORGE AUGUSTUS (1800–1879), English bishop, second son of William Selwyn (1775–1855), a distinguished legal writer, was born at Hampstead, London, on the 5th of April 1800. He was educated at Eton and at St John's College, Cambridge, where in 1829 he rowed in the university boat-race. He took his degree (second in the classical tripos) in 1831. He returned to Eton as private tutor, was ordained deacon in 1833, and devoted himself with characteristic energy to work in the parish of Windsor. In 1841 it was proposed that he should go out as first bishop to New Zealand, but then beginning to be colonized. Despite the advice of his friends he accepted the offer. He studied navigation and the Maori language on the voyage, and gave himself up to a life of continual strain and hardship. He spent days and sometimes nights in the saddle, swam broad rivers and provided himself with a sailing vessel. Unfortunately, just when he had gained the confidence of the natives, his ascendancy was rudely shaken by the first Maori war. Selwyn endeavoured to mediate, but incurred the hostility of both parties. He went to the battlefield to minister to the sick and wounded in both camps; but the Maoris were persuaded that he had gone out to fight against them, and years afterwards one of them pointed out a scar on his leg to an Anglican bishop which he declared had been inflicted by Selwyn's own hands. It was long before he regained the confidence he had forfeited by his strict adherence to duty. In 1854 he returned to England for a short furlough; but he spent much of it in pleading the needs of his diocese. He returned to New Zealand with a band of able associates, including J. C. Patteson, and began to divide his large diocese into sees of more manageable proportions.

The colonists came to respect his uprightness, and the Maoris learned to regard him as their father. In 1868, while he was in England to attend the first pan-Anglican synod, the bishopric of Lichfield became vacant, and after some hesitation he accepted it. In his new sphere of work he displayed the same unselfish activity as before, and in the "Black Country" portion of his diocese he won the hearts of the working classes. He called his clergy and laity together for consultation in the diocesan conference, an innovation the value of which he had proved by his colonial experience. On his death, on the 11th of April 1878, the work for which he was celebrated by a remarkable memorial, Selwyn College, Cambridge, being erected by public subscription and incorporated in 1882. See Lives by H. W. Tucker (2 vols., 1879) and G. H. Curteis (1889). His son, John Richardson Selwyn (1844–1908), bishop of Melanesia, was born in New Zealand on the 20th of May 1844. He was educated at Eton and at Trinity College, Cambridge, and was ordained deacon in 1869. At first he laboured with energy and tact as vicar of Wolverhampton in his father's diocese of Lichfield; but the martyrdom of John Colderidge Patteson, bishop of Melanesia, led him to volunteer for service in the Australasian Archipelago. After three years' service, during which the bishopric remained vacant, he was nominated as Patteson's successor (1877). For twelve years he threw himself with intense energy into his arduous work, but his health broke down and he returned to England in 1890. There he found an appropriate sphere in the mastership of Selwyn College, where he remained until his death on the 12th of February 1898.

SEMANG, an aboriginal people of the Malay peninsula, found in the states of Perak, Kedah, Kelantan, Trengganu and the northern districts of Pahang. They are a fairly pure branch of the woolly-haired Negrito race, which includes the natives of the Andaman islands, the Aetas of the Philippines and the dwarfs of Central Africa. The men average about 4 ft. 9 or 10 in., while the women are 3½ in. shorter. Their colour is a very dark brown or black. The shape of the head is round, or intermediate between round and long. The forehead is low and rounded, and projects over the root of the nose, which is short, depressed and pyramid-shaped. The eyes are wide open and the irises being of a very rich, deep brown. Lips vary from moderate to full, the mouth is rather large, the chin feebly developed, and the jaws are often slightly projecting. The hair is very dark-brown black, never blue-black as among Chinese and Malays. It grows in short, spiral tufts, curling closely all over the head. The arm-stretch is almost always greater than their height. The feet are usually short and spayed, with a remarkable inward curve of the great toe, and are very prehensile. The Semangs live in caves or leaf-shelters formed between branches. A waistcloth for the men, made of tree bark hammered out with a wooden mallet from the bark of the terap, a species of wild bread-fruit tree, and a short petticoat of the same for the women, is the only dress worn; many go naked. Tattooing, or rather scarifying, is practised, by drawing the finely serrated edge of a sugar-cane leaf across the skin and rubbing in charcoal powder. They have bamboo musical instruments, a kind of Jews' harp and a nose flute. On festive occasions there is song and dance, both sexes decorating themselves with leaves. The Semangs bury their dead simply, food and drink being placed in the grave.

SEMAPHORE, a town of Adelaide county, South Australia, 50 m. by rail from the city of Adelaide. It is one of the chief water-places of the state, with a pier 1800 ft. long. Pop. about 8000.

SEMAPHORE (Gr. σήμα, sign, and φόρα, carrying, from φέρω, to bear), the name of an apparatus or mechanical device by which information or messages can be signalled to a distance. It consists of movable arms or blades of wood, worked by levers and affixed to a high post or pole. The most familiar semaphore is that used in railway signalling on the block system, where the blade if horizontal signifies danger, if dropped safety. Used with a code, the semaphore is still used in the navy for signalling.
from ship to ship. Until the invention of the electric telegraph, the semaphore was used for transmitting messages over long distances.

SEMELE, in Greek mythology, daughter of Cadmus and Harmonia, and mother of Dionysus by Zeus. It is said that Hera, having assumed the form of Semelē's nurse, persuaded her to ask Zeus to show himself to her in all his glory. The god, who had sworn to refuse Semelē nothing, unwillingly consented. He appeared seated in his chariot surrounded by thunder and lightning; Semelē was consumed by the flames and gave birth prematurely to a child, which was removed from her by a miraculous growth of ivy which sprang up round the palace of Cadmus. Dionysus afterwards descended to the nether world, and brought up his mother, hitherto known as Thyôné (the raging one), to Olympus. Zeus and Semelē probably represent the fertilizing rain of spring, and the earth, afterwards scorched by the summer heat. Another tradition represents Actaeon as the lover of Semelē, and his death as due to the jealousy of Artemis. A statue and grave were to be seen in Thebes.

SEMIPELÁLTINSK, a province of the Russian dominions in Central Asia; administratively it forms a part of the general-governorship of the Steppes, although its northern portions really belong to the Irtysch plains of West Siberia. It is bounded on the N. by Tobol'sk and Tomsk, on the S.E. by China, on the S. by Semiryekhensk, and on the W. by Akmolinsk. As regards configuration, it differs widely in its northern and southern parts. The snow-clad ranges (9000 to 10,000 ft.) of the Altai and Narym enter it in the S.E., stretching S. to Lake Zaian. Another complex of mountains, Kalbin, rising 5000 and 6000 ft. above sea-level, extends S.W. towards the west. A broad valley intervenes, through which the Irtysch finds its way from the Zaian terrace to the lowlands of Siberia. Many extensions of these mountains and subordinate ranges stretch towards the north. The still lower but wild Chinghis-tau mountains diversify the south-western part of Semipalatinsk, sending out their rocky spurs into the steppe region. In the south, the Tarbagatal ("Marmota") range (9000 to 10,000 ft.) separates Semipalatinsk from Semiryekhensk and Dzungaria. Wide steppes fill up the spaces between the mountains: e.g. the Zaian steppe (1200 to 1400 m. above sea-level) is well-watered. After the long steppe of the Kipchak territory, the Irtysch, which issues from Lake Zaian, flows north and north-west and drains Semipalatinsk for more than 760 m. between Bukharta and Ust-Kamgangorsko it cuts its way through the Altai by a wild gorge, with dangerous rapids, through which, however, boats are floated. Lake Zaian, 80 m. long and 10 to 20 m. wide, has depth sufficient for steamboat navigation; steamers traverse also for some 100 m. the lower course of the Black Irtysch, which flows from Kulja to Lake Zaian. The Kurchum, the Narym and the Bukharta are the chief right-hand tributaries of the Irtysch, while the Char-urban, Chagan and many smaller streams join it from the left; none are navigable; neither are the Kokpekty and Bugaz, which enter Lake Zaian on the west. Lake Balkash, which borders Semipalatinsk on the south-west, formerly received several tributaries from the Chinghis-tau. Many smaller lakes (some of them merely temporary) occur on the Irtysch plain, and yield salt.

The climate is severe. The average yearly temperature reaches 40° F. in the north and 75° in the south. Inwinter the cold frosts of -44° F. are not uncommon, while the thermometer rises to 122° in the shade in the summer. The yearly amount of rain and snow is trifling, although snow-storms are very common; strong winds prevail. Forests are plentiful in the hilly districts and on the Irtysch plain, the flora being Siberian in the north and more Central Asiatic towards lakes Balkash and Zaian.

The area of the province is 183,145 sq. m., and in 1906 its population was estimated at 767,500. Only about 6% of the population is settled, the remainder, chiefly Kirghiz, being nomads. The province is divided into five districts, the chief towns of which are Semipalatinsk, Ust-Kamgangorsko, Kerbižsko, and Semiryekhensk. The Russians are chiefly agriculturists, and have wealthy settlements on the right bank of the Irtysch, as well as a few patches in the south, at the foot of the mountains. The Kirghiz are in the majority, and include the following tribes: the Irtysch Kirghiz, which is carried on in inlets Zaian and Balkash, as also in the Black Irtysch, of considerable importance. Gold is mined, also silver, copper, salt and coal. There are two ironworks, but the only other industrial establishments are a distillery at Zaian and a paper mill and a brewery. A considerable amount of trade is carried on within the province, in which twenty fairs are held every year.

SEMIPELÁLTINSK, a town of Asiatic Russia, capital of the province of the same name, on the right bank of the Irtysch, and on the highway from Dzungaria to Omak, 683 m. by river S.E. of the latter. Pop. (1881) 17,820, (1897) 26,535. It carries on a
considerable trade, especially with the Kirghiz, and has a flour-mill, distillery and tanneries. Steamers ply on the Irtysch down to Omsk and up to Lake Zaisan.

**SEMRIMAS** (*c.* 800 B.C.), a famous Assyrian princess, round whose personality a mass of legend has accumulated. It was not until 1909 that the research that she is primarily a forger of Berlin restored her to her rightful place in Babylonian-Assyrian history. The legends derived by Diodorus Siculus, Justin and others from Ctesias of Cnidus were completely disproved, and Semiramis had come to be treated as a purely legendary figure. The legends ran as follows: Semiramis was the daughter of the fish-goddess Atargatis (q.v.) of Asscalon in Syria, and was miraculously preserved by doves, who fed her until she was found and brought up by Simmas, the royal shepherd. Afterwards she married Onnes, one of the generals of Ninus, who was so struck by her bravery at the capture of Bactra that he married her, after Onnes had committed suicide. Ninus died, and Semiramis, succeeding to his power, traversed all parts of the empire, erecting great cities (especially Babylon) and stupendous monuments, or opening roads through savage mountains. She was unsuccessful only in an attack on India. At length, after a reign of forty-two years, she delivered up the kingdom to her son Ninias, and disappeared, or, according to what seems to be the original form of the story, was turned into a dove and was thenceforth worshipped as a deity. The name of Semiramis came to be applied to various monuments in Western Asia, the origin of which was forgotten or unknown (see Strabo xvi. 1. 2). Ultimately every stupendous work of antiquity by the Babylonians or in Iran seems to have been ascribed to her — even the Behistun inscriptions of Darius (Diod. Sic. ii. 3). Of this we already have evidence in Herodotus, who ascribes to her the banks that confined the Euphrates (i. 184) and knows her name as borne by a gate of Babylon (iii. 153). Various places in Media bore the name of Semiramis, but slightly changed, even in the middle ages, and the old name of Van was Shamiramerg, Armenian tradition regarding her as its founder. These facts are partly to be explained by observing that, according to the legends, in her birth as well as in her disappearance from earth, Semiramis appears as a goddess, the daughter of the fish-goddess Atargatis, and herself connected with the doves of Ishtar or Astarte. The same association of the fish and dove is found at Hierapolis (Bambycce, Mabbog), the great temple at which, according to one legend, was founded by Semiramis (Lucian, *De dea Syria*, 14), where her statue was shown with a golden dove on her head (33, 39). The irresistible charms of Semiramis, her sexual excesses (which, however, belong only to the legends: there is no historical groundwork), and other features of the legend, all belong to forgotten or unknown (see Strabo xvi. 1. 2). Semiramis is also fittingly conceived as the great queen of Assyria.

Professor Lehmann-Haupt, by putting together the results of archaeological discoveries, has arrived at the following conclusions. Semiramis is the Greek form of Semiramath. She was probably a Babylonian (for it was she who imposed the Babylonian cult of Nebo or Nabu upon the Assyrian religion). A column discovered in 1909 describes her as "a woman of the palace of Samsi-Adad, King of the World, King of Assyria, . . . King of the Four Quarters of the World." Ninus was her son. The dedication of this column shows that Semiramis occupied a position of unique influence, lasting probably for more than one reign. She waged war against the Indo-Germanic Medes and the Chaldeans. The legends probably have a Median origin. A popular etymology, which connected the name with the Assyrian *summati*, "dove," seems to have first started the identification of the historical Semiramis with the goddess Ishtar and her doves.


**SEMIYECHENSK**, a province of Russian Turkestan, including the steppes south of Lake Balkash and parts of the Tien-shan Mountains around Lake Issyk-kul. It has an area of 147,300 sq. m., and is bounded by the province of Semipalatinsk on the N., by China (Dzungaria, Kulja, Aksu and KASHGAR) on the E. and S., and by the Russian provinces of Ferghana, Syr-darya, and Akmolinsk on the W. It owes its name (Jily-su, Semirechye, i.e. "Seven Rivers") to the rivers which flow from the south-east to Lake Balkash. The Dzungarian Ala-tau Mountains, which separate Semiryechen from Kulja, extend west towards the river YII, with an average height of 6000 ft. above the sea, several isolated snow-clad peaks reaching 11,000 to 14,000 ft. In the south Semiryechensk embraces the intricates systems of the Ala-tau and the Tian-shan. Two ranges of the former, the Trans-Ili Ala-tau and the Kungehi Ala-tau, stretch along the north shore of Lake Issyk-kul, both ranging from 10,000 to 15,000 ft. and both partially snow-clad. South of the lake two ranges of the Tian-shan, separated by the valley of the Naryn, stretch in the same direction, lifting up their icy peaks to 16,000 and 20,000 ft., while Semiryechen borders on the slopes of the Alexander chain, 9000 to 10,000 ft. high, with peaks rising 3000 to 4000 ft. higher, extend into the province of Syr-darya. Another mountain-complex of much lower elevation runs north-westwards from the Trans-Ili Ala-tau towards the southern extremity of Lake Balkash. In the north, where the province borders Semipalatinsk, it includes the western parts of the Tarbagatay range, the summits of which (10,000 ft.) do not reach the limit of perpetual snow. The remainder of the province consists of a fertile steppe in the north-east (Sergipol), and vast uninhabitable sand-steppes on the eastern borders of Lake Balkash. In the south, however, at the foot of the mountains and at the entrance to the valleys, there are rich areas of fertile land, which are being rapidly colonized by Russian immigrants, who have also penetrated into the Tian-shan, to the east of Lake Issyk-kul.

The climate is thoroughly continental. In the Balkash steppes the winter is very cold; the lake freezes every year, and the thermometer falls to 13° F. In the Ala-tau steppes the winds blow away the snow. The passage from winter to spring is very abrupt, and the grass, which is rapidly covered with water and very green, is soon scorched by the sun. The average temperatures are: at Yverjy (2405 ft. high), for the year 46-4° F., for January 17°; for July 74°; at Przevalsk (5450 ft.), for the year 76-5°, for January 23°, for July 63°; still higher in the mountains, at Naryn (6900 ft.) the average temperatures are only for the year 43-7°, for January 1-4°, for July 63-4°. The yearly rainfall at these three places is 21-0, 16-0, and 11-8 in. respectively.

The most important river is the YII, which enters the province from Kulja and drains it for 250 m. before it enters Lake Balkash. The Chu rises in the Tian-shan Mountains and flows north-westwards into Semiryechen; the Karatau, which flows along a longitudinal valley of the Tian-shan, and enters Ferghana to join the Syr-darya. Lake Balkash, or Dzhigiz, Lake Ala-kul (which was connected with Lake Balkash), and Lake Issyk-kul (which was connected with the lake of Dzhigiz at some hundred feet higher, and is connected by a chain of smaller lakes with Issyk-kul), Lake Issyk-kul and the alpine lakes of Son-kul and Chatyr-kul are the principal sheets of water.

The chief division was in 1888, th. Kirghiz form 76% of the population, Taranchis 57 %, Russians 14 % and Dzungars most of the remainder. The province is divided into six districts, the chief towns of which are Yverjy (the capital), Jarkent, Kupal, Fiskpiirk, Przevalsk and Sergipol. The chief occupation of the Russians, the Taranchis and the Dzungars, and partly also of the Kirghiz, is agriculture. The most important crops are wheat, barley, oats, millet, rice and potatoes. A variety of oil-bearing plants and green fodder, as also cotton, hemp, flax and poppies, are grown. Livestock breeding is very extensively carried on by the Kirghiz, namely, horses, cattle, sheep, camels, goats and pigs. Hay, hemp and fruit gardens are well developed; the chief cultivates two model gardens. Bee-keeping is widely spread. The factories consist of flour-mills, distilleries, tanneries and tobacco works; but a great many domestic trades, including carpet-dyeing and felt-goods manufacture, iron and gold are carried on, among both the settled inhabitants and the nomad Kirghiz. There is a trade with China, valued at less than half a million sterling annually.

Previous to 1895 this province formed part of the general government of the Steppes.

**SEMIRIC LANGUAGES,** the general designation of a group of Asiatic and African languages, some living and some dead, namely Assyrian, Hebrew, Phoenician, Aramaic, Arabic, Ethiopic, Mahri-Socotri. The name, which was introduced by Schöler, is derived from the fact that most nations which speak or spoke these languages are descended, according to Genesis, to...
SEMitic LANGuages

from Shem, son of Noah. The classification of nations in Genesis x. is founded neither upon linguistic nor upon ethnographical principles: it is determined rather by geographical and political considerations. For this reason Elam and Lud are also included among the children of Shem; but neither the Elamites (in Susiana) nor the Lydians appear to have spoken a language connected with Hebrew. On the other hand, the Phoenicians (Canaanites), whose dialect closely resembled that of Israel, are not counted as children of Shem. Moreover, the compiler of the list in Genesis x. had no clear conceptions about the peoples of south Arabia and Ethiopia. Nevertheless it would be undesirable to give up the universally received terms "Semitic" and "Arabic." The connexion of the Semitic languages with one another is somewhat close, in any case closer than that of the Indo-European languages. The modern Semitic tongues differ from one another scarcely more than do the various Teutonic dialects. Hence even in the 17th century such learned Orientalists as Hottinger, Bochast, Castell and Ludolf had a tolerably clear notion of the relationship between the different Semitic languages with which they were acquainted; indeed the same may be said of some Jewish scholars who lived many centuries earlier, as, for instance, Jehuda ben Koreish. It is not difficult to point out a series of characteristic marks common to these languages,—the predominance of triconsonantal roots, or of roots formed after the analogy of such, similarity in the formation of nominal and verbal stems, a great resemblance in the forms of the personal pronouns and in their use for the purpose of verbal inflection, the two principal tenses, the importance attached to the change of vowels in the interior of words, and lastly, considerable agreement with regard to order and the construction of sentences. Yet even so ancient a Semitic language as the Assyrian appears to lack some of these features, and in certain modern dialects, such as New Syriac, Mahri and more particularly Amharic, many of the characteristics of older Semitic speech have disappeared. And the retention of these features in the interior of the modern dialects. Still we can trace the connexion between the modern and the ancient dialects, and show, at least approximately, how the former were developed out of the latter. Where a development of this kind can be proved to have taken place, there a relationship must exist, however much the individual features may have been effaced. The question here is not of logical categories but of organic groups.

All these languages are descendants of a primitive Semitic language which has long been extinct. Of course this should not be taken literally as implying an absolute unity. If, in the stringency of the words, no two men ever speak the same language, it must apply with still greater force to any considerable mass of men not living in the closest conjunction; and as such we must conceive the ancient Semites, so soon as they had severed themselves from other races. As long as the primitive Semitic people occupied no great extent of territory, many linguistic differences existent in their midst might still be recon- ciled. Other differences, however, might even then have formed the germ of the subsequent dialectical distinction. Thus, if the gradual, or sudden, separation of individual sections of the people has taken place, and that on a large scale, their dialects must necessarily have developed decided lines of cleavage and become finally distinct languages. With all this, it is still possible that, even in that pre-historic era, peaceful or warlike intercourse may have exercised an influence tending to assimilate these languages once again. Within the limitations which we have intimated rather than discussed, the expression "proto-Semitic language" is thoroughly justifiable. Many of its most important features may be reconstructed with at least tolerable certainty, but we must beware of attempting too much in this respect. When the various cognate languages of a group diverge in essential points, it is by no means always possible to determine which of them has retained the more primitive form. The history of the development of these tongues during the period anterior to the documents which we possess is often extremely obscure in its details. Even when several Semitic languages agree in important points of grammar we cannot be sure that in these particulars we have what is primitive, since in many cases analogous changes may have taken place independently. To one who should assert the complete reconstruction of the primitive Semitic language to be possible, we might put the question, Would the man who is best acquainted with all the Romance languages be in a position to reconstruct their common mother, Latin, if the knowledge of it were lost? And yet there are but few Semitic languages which we can know as accurately as the Romance languages are known. As far as the vocabulary of the primitive Semitic language is less important than that a considerable number of words which have in various Semitic languages the form proper to each were a part of primitive Semitic speech. Nevertheless even then we are apt to be misled by independent but analogous formations and by words borrowed at a very remote period. Each Semitic language or group of languages has, however, many words which we cannot point out in the others. Of such words a great number no doubt belonged to primitive Semitic speech, and either disappeared in some of these languages or else remained in use, but not so as to be recognizable by us. In the case of certain proto-Semitic words, we can even assign how they gradually recede from the foreground. So for instance, in Hebrew, Aramaic and Arabic, the common designation of the lion, laith, has disappeared, almost before our eyes, in order to make room for other expressions. Yet many isolated words and roots may in very early times have been borrowed by the Hebrew, the Aramaic, the Ethiopic, etc., perhaps from wholly different languages, of which no trace is left. To what extent the separate languages created new roots is an extremely obscure problem.

The question which of the known Semitic dialects most resembles the primitive Semitic language is less important than one might at first suppose, since the question is one not of absolute but only of relative priority. After scholars had given up the notion (which, however, was not the fruit of scientific research) that all Semitic languages, and indeed all the languages in the world, were descendants of Hebrew or of Aramaic, it was long the fashion to maintain that Arabic bore a close resemblance to the primitive Semitic language. But, just as it is now recognized with ever-increasing clearness that Sanskrit is far from having retained in such a degree as was even lately supposed the characteristics of primitive Indo-European speech, so in the case of the Semitic tongues we cannot assign to Arabic only a relative antiquity. It is true that in Arabic very many features are preserved more faithfully than in the cognate languages,—for instance, nearly all the original abundance of consonants, the short vowels in open syllables, particularly in the interior of words, and many grammatical distinctions which in the other languages are more or less obscured. On the other hand, Arabic has coined, simply from analogy, a great number of forms which, owing to their extreme simplicity, seem at the first glance to be primitive, but which nevertheless are only modifications of the primitive words. We can even observe how they gradually exhibit modifications of a different kind. In spite of its great wealth, Arabic is characterized by a certain monotonity, which can scarcely have existed from the beginning. Both Hebrew and even Aramaic are in many respects more ancient than Arabic. This would not doubt be far more apparent if we knew Hebrew more completely and according to the original pronunciation of its vowels, and if we could discover how Aramaic was pronounced about the 13th century before our era. It must always be borne in mind that we are far more fully and accurately


2 The more alike two languages are the more difficult it usually is to detect, as borrowed elements, those words which have passed from one language into the other.
acquainted with Arabic than with the other Semitic languages of antiquity. The opinion sometimes maintained by certain over-zealous Assyriologists, that Assyrian is the "Sanskrit of the Semitic world," has not met with the approval even of the Assyriologists themselves, and is unworthy of a serious refutation.

A comparative grammar of the Semitic languages must of course be based upon Arabic, but must in every matter of detail take into consideration all the cognate languages, as far as they are known to us. In the reconstruction of the primitive Semitic tongue Hebrew might perhaps afford more assistance than Ethiopic; but Aramaic, Assyrian, and even the less known and half-understood Egyptian may furnish valuable materials.

The method by which these younger languages, especially the dialects of to-day, have received their present form, may be traced with tolerable comprehensiveness. Thus we gain valuable analogies for determining the genetic process in the older tongues. At the same time, a conscientious investigation forces upon us the conviction that there are many and important phenomena which we are powerless to explain; and this applies, in part, to cases where, at first, the solution appears perfectly simple. So, although we have seen that the main features of the correspondences of the Semitic languages were established—years before Bopp—scientifically demonstrated the connexion of the Indo-European tongues—still in our domain it is a task of extreme difficulty to create a comparative grammar which shall be minutely exact and yield permanent results. Only the most accomplished philologist could attempt the task, and it is very doubtful whether the time is yet ripe for such an attempt. Much careful and minute investigation is still indispensable. One great obstacle lies in the fact, that, in most Semitic languages, the sounds are very inadequately transmitted. It would probably be easier to give a comparative presentment of Semitic syntax than of Semitic phonetics and the theory of Semitic forms.

It is not a formidable undertaking to describe in general terms the character of the Semitic mind, as has been done, for example, by Lassen (Indische Altertumskunde, i, 414 sq.) and by Renan in the introduction to his Histoire des langues sémitiques. But still there is a danger of assuming that the most important characteristics of particular Semitic peoples, especially of the Israelites and of the Arabs, are common to all Semites, and of ascribing to the influence of the Israelites alone whatever is owing to the particular external conditions of life, and which, under similar circumstances, are also developed among non-Semitic races. And, though it is said, not without reason, that the Semites possess but little talent for political and military organization on a large scale, yet we have in the Phoenicians, especially the Carthaginians, in Hamilcar and in Hannibal, a proof that under altered conditions the Semites are not incapable of distinguishing themselves in these domains. It is a poor evasion to deny that the Phoenicians are genuine Semites, since even our scanty sources of information suffice to show that in the matter of religion, which among Semites is of such supreme importance, they bore a close resemblance to the ancient Hebrews and Aramaeans.

In general descriptions of this kind it is easy to go too far. But to give in general terms a correct idea of the Semitic languages is a task of very much greater difficulty. Renan's brilliant and most interesting sketch is in many respects open to serious criticism. He cites, for example, as characteristic of the Semitic tongues, that they still retain the practice of expressing psychological processes by means of distinct imagery. In saying this he is taking scarcely any language but Hebrew into account. But the Semitic speech is peculiar of itself to the matter of religion, which among Semites is of such supreme importance, they bore a close resemblance to the ancient Hebrews and Aramaeans.

1 By this we do not wish to call in question the merits of the following works: William Wright, Lectures on the Comparative Grammar of the Semitic Languages (Cambridge, 1890, a posthumous work); O. E. Umbreit, Vergeistigte Grammatik der semitischen Sprachen (pt. 1, Göteborg, 1897); Heinr. Zimmer, Vergl. Gramm. d. semiti. Sprachen (Berlin, 1898); C. Brockemühl, Semitische Sprachvergleichung (Leipzig, 1906) and Grundriss der vergl. Gramm. d. semiti. Sprachn. (Berlin, 1908).


stage of intellectual development that had been reached by the Israelites, is in part peculiar to the poetic style, and is to be found in like manner among wholly different races. That the Semitic languages are far from possessing the fixity which Renan attributes to them we shall see below. But, however this may be, certain grammatical peculiarities of the Semitic languages—above all, the predominance of triliteral roots—are so marked that it is scarcely possible to doubt whether any language with which we are tolerably well acquainted is or is not Semitic. Only when a Semitic language has been strongly influenced not only in vocabulary but also in grammar by some non-Semitic forces, as in the case with Amharic, can such a doubt be for a moment entertained.

Many attempts have been made, sometimes in a very superficial fashion and sometimes by the use of scientific methods, to establish a relationship between the Semitic languages and the Indo-European. It was very natural to suppose that the tongues of the two races which, with the single exceptions of the Egyptians and the Chinese, have formed and moulded human civilization, who have been near neighbours from the earliest times, and who, moreover, have been in possession of the same elements, could be nothing else than two descendants from a single parent speech. But all these endeavours have wholly failed. It is indeed probable that the languages, not only of the Semites and of the Indo-Europeans, but also those of other races, are derived from the same stock, but the separation must have taken place at so remote a period that the changes which these languages underwent in prehistoric times have completely effaced what features they possessed in common; if such features have sometimes been preserved, they are no longer recognizable. It must be remembered that it is only in exceptionally favourable circumstances that cognate languages are so preserved during long periods as to render it possible for scientific analysis to render their relationship with one another.

On the other hand, the Semitic languages bear so striking a resemblance in some respects to certain languages of northern Africa that we are forced to assume the existence of a tolerably close relationship between the two groups. We allude to the family of languages known in modern times as the "Hamitic," and composed of the Egyptian, Berber, Beja (Bishārī, &c.), and a number of tongues spoken in Abyssinia and the neighbouring countries (Axum, G. ber, Agkali, &c.). It is remarkable that some of the most indispensible words in the Semitic vocabulary (as, for instance, "water," "mouth" and certain numerals) are found in Hamitic also, and that these words happen to be such as cannot well be derived from trilateral Semitic roots, and are more or less independent of the ordinary grammatical rules. We notice, too, important resemblances in grammar—for example, the formation of the feminine by means of a t prefixed or affixed, that of the causative by means of s, similarity in the suffixes and prefixes of the verbal tenses, and, generally, similarity in the personal pronouns, &c. It must be admitted that there is also much disagreement—language, the widest divergence in the mass of the vocabulary; and this applies to the Semitic languages as compared not only with those Hamitic languages that are gradually becoming known to us at the present day, but with the Egyptian, of which we possess documents dating from the fourth and perhaps fifth millennium before the Christian era. The question is here involved in great difficulties. Some isolated resemblances may, improbable as it appears, have been produced by the borrowing of words. Uncivilized races, as has been proved with certainty, sometimes borrow from others. But the Indo-European root is sought, or perhaps even invented, whereas the Semitic root is shédiṣ, so that the resemblance is a purely accidental one, produced by phonetic change.
HAMITES.

Hamites, more especially as these points of agreement are also found in the language of the Berbers, who are scattered over an enormous territory, and whose speech must have acquired its character long before they came into contact with the Semites. We are even now but imperfectly acquainted with the Hamitic languages; and the relation in which Egyptian stands to Berber on the one hand and to the south Hamitic languages on the other requires further elucidation. The attempt to write a comparative grammar of the Semitic and Hamitic languages would be, to say the least, very premature.

In general, the Semitic languages and the Hamitic appear to indicate that the primitive state of the Semites is to be sought in Africa; for it can scarcely be supposed that the Hamites, amongst whom there are gradual transitions from negroid to Negroid type to Negroes, are the children of any other land than "the dark continent." There seems, moreover, to be a considerable physical resemblance between the Hamites and Semites, especially in the case of the southern Arabs; we need mention only the startling development of the calf of the leg, and the sporadic appearance amongst Semites of woolly hair and prominent jaws. But both Semites and Hamites have been mingled with a variety of foreign races, which process must have diminished their mutual similarity. All this, however, is offered not as a definite theory, but as a modest hypothesis.

One has the strong temptation to maintain that the Semites came originally from certain districts in Armenia. This supposition was founded on the book of Genesis, according to which several of the Semitic nations proceeded from the region which is now, the district of Arraphzitis, now called Albak, on the borders of Armenia and Kurdistan. It was also thought that this region was inhabited by the primitive race from which both the Semites and the Indo-Europeans are descended. We know about the connexion of the Semites with Asia Minor, its influence on Semitic, and the traces that are left in the language, but this is a matter of some doubt; in any case, the separation does not date from a period so recent that the Semites can be supposed to have possessed any historical tradition concerning it. There cannot be a greater mistake than to imagine that nations cannot have been able to preserve during long ages their recollection of the country whence their supposed ancestors are said to have emigrated. The national memories among uncivilized races must be wholly abandoned. The period in which the Hebrews, the Arabs and the other Semitic nations together formed a single people is so distant that none of them can possibly have retained any tradition of it. The opinion that the Hebrews and the tribes most closely related to them were descended of Arphaxad is apparently due to the legend that Noah's ark landed near this district. The notion has therefore a purely mythical origin. Moreover, in Genesis itself, the Semites have a different account of the matter, derived from another source, which represents all nations, and, therefore, the Semites among them, as having a common origin. It is, however, a fact, which a man of science now believes in the northern origin of the Semites.

Some prominent scholars consider the birthplace of the Semitic race to have been in Arabia. There is much that appears to support this view. The most probable theory of the proves that Semitic tribes from the deserts of Arabia settled on the cultivable lands which border them and adopted a purely agricultural mode of life. Various traces in the language of the Semites indicate that the Hebrews and the Arabs are more closely related than Arabia was originally inhabited. Arabia was in the very desert that is the true home of nomadic peoples. The Arabs are also supposed to display the Semitic character in its purest form, and their language is, on the whole, nearer the original Semitic than are the languages of the cognate races. To this last circumstance we should, however, attach little importance. It is by no means always the case that a language is most faithfully preserved in the country where it originated. The Romance dialects spoken in the south of Sardinia is far more primitive than that spoken at Rome; and of all living Teutonic languages the most unaltered is that of the Friuli. Besides, it cannot be denied that the Arabs display the Semitic character in its purest form; it would be more correct to say, that the influence of a country indescribably monotonous and of a life ever changing yet ever the same, the inhabitants of the Arabian deserts have developed most exclusively certain of the principal traits of the Semitic race. All these considerations are indeterminate; but we willingly admit that the theory which regards Arabia as the primitive seat of all Semites is by no means untenable.

Finally, one of the most eminent of contemporary Orientalists, Ignazio Guidi, has attempted to prove that the home of the Semites is on the lower Euphrates. He contends that the geographical, botanical and zoological conceptions which are expressed in the Semitic languages, the vowel sounds, preserved from the time of the dispersion, correspond to the name of no country but the above-mentioned. As great are the ingenuity and the caution which he displays, it is difficult to accept his conclusions, and many will maintain that the Semites are the common heritage of the northern and the southern Semites, but which can scarcely have been formed in the region of the Euphrates. Moreover, the vocabulary of most Semitic languages is but very imperfectly known. The names of several persons might be mentioned which are part of the common heritage of the northern and the southern Semites, but which are, however, names of a different race. The names of the words in the course of time. It is therefore very unsafe to draw conclusions from the fact that the various Semitic tongues have one common designation for many important geographical formations, such as "mountain." The ordinary words for "man," "old man," "boy," "tent," "black," "to beat," &c., are quite different in the various Semitic languages, and yet all these are ideas for which the primitive Semites must have had names.

It is not very easy to settle what is the precise connexion between the various Semitic languages, considered individually. In this brief sketch I have attempted to give a correct overview of the chief inclusions by isolated peculiarities in vocabulary or grammar. Each of the older Semitic languages occasionally agrees in grammatical points with some other to which in most respects it bears no very close resemblance, while dialects much more nearly related to it are found to exhibit different formations. Each Semitic tongue also possesses features peculiar to itself. For instance, the Hebrew-Phoenician group and the Arabic have a prefixed definite article (the etymological identity of which is, however, not very clear); the dialect nearest to Arabic, the Sabæan, expresses the article by means of a suffixed å; whereas the Assyrian in the north and the Ethiopic in the south have no article at all. Of the termination å for the definite article there is no certain trace in either Arabic or Hebrew; the Sabæan, the Ethiopic, and the Aramaic employ it to give emphasis to demonstrative pronouns; and the very same usage has been detected in a single Phoenician inscription. In this case, therefore, Hebrew and Arabic have, independently of one another, lost something which they once had in common. The Semitic languages have been described as "synthetic" by means of a prefixed å; the Aramaic, which in general more closely resembles Hebrew than does the Arabic group, expresses it by means of a suffixed å; whereas the Assyrian in the north and the Ethiopic in the south have no article at all. Of the termination å for the definite article there is no certain trace in either Arabic or Hebrew; the Sabæan, the Ethiopic, and the Aramaic employ it to give emphasis to demonstrative pronouns; and the very same usage has been detected in a single Phoenician inscription. In this case, therefore, Hebrew and Arabic have, independently of one another, lost something which they once had in common. The Semitic languages have been described as "synthetic" by means of a prefixed å; the Aramaic, which in general more closely resembles Hebrew than does the Arabic group, expresses it by means of a suffixed å; whereas the Assyrian in the north and the Ethiopic in the south have no article at all. Of the termination å for the definite article there is no certain trace in either Arabic or Hebrew; the Sabæan, the Ethiopic, and the Aramaic employ it to give emphasis to demonstrative pronouns; and the very same usage has been detected in a single Phoenician inscription. In this case, therefore, Hebrew and Arabic have, independently of one another, lost something which they once had in common. The Semitic languages have been described as "synthetic" by means of a prefixed å; the Aramaic, which in general more closely resembles Hebrew than does the Arabic group, expresses it by means of a suffixed å; whereas the Assyrian in the north and the Ethiopic in the south have no article at all.
Ethiopians and the Hebrews have the same word for many objects which the other Semites call by other names—for instance, "stone," "tree," "enemy," "enter," "go out"; and the same may be said of Hebrew as compared with Sabaean. But to build theories upon such facts would be unsafe, since the words cited are either found, though with some change of meaning, in at least one of the cognate languages, or actually occur, perhaps quite exceptionally and in archaic writings, with the same signification. The sedentary habits of the Ethiopians and the Sabaeans may possibly have rendered it easier for them to retain in their vocabulary certain words which were used by the civilized Semites of the north, but which became obsolete amongst the Arabian nomads. To the same cause we may attribute the fact that in religion the Sabaeans seem to resemble the northern Semites more closely than do the tribes of central Arabia; but these considerations prove nothing in favour of a nearer linguistic affinity.

One thing at least is certain, that Arabic (with Sabaean, Mahri and Socotri) and Ethiopic stand in a comparatively close relationship to one another, as every group by themselves, as contrasted with the other Semitic languages, Hebraico-Phoenician, Aramaic and Assyrian.

Only in these southern dialects do we find, and that under forms substantially identical, the important innovation known as the "broken plurals," consisting in the employment of certain forms, denoting abstracts, for the expression of plurals. They agree, moreover, in employing a peculiar development of the verbal root, formed by inserting an á between the first and second radicals (qátála, tódála), in using the vowel a before the third radical, and in the anticipatory dropping of w.

The third group, the Central Semitic, is represented by several languages, viz.:

1. The Assyro-Babylonian or Hebraico-Phoenician.
2. The Central Aramaic.
3. The Southern Aramaic.
4. The Phoenician.
5. The Hebrew.

The Central Aramaic and Hebrew are by far the most important of these languages. The Assyrians and Babylonians, who had a purely Babylonian tongue, were able to use Hebrew for literary purposes (even when their ordinary speech was Assyrian), and this is the chief reason why Hebrew has survived the destruction of the Kingdom of Judah.

Arabic differs in many respects from all the cognate languages.

The ancient perfect has wholly disappeared, or left but few traces, and the gutturals, with the exception of the hard kh, were never pronounced. In the ordinary speech of the Levant, the gutturals are entirely replaced by the phonetic symbol g, and hence it is said that Arabic is not a Semitic language, but a "vocalic" language. In the case of many other Semitic languages, the gutturals are represented by the phonetic symbol g, and hence it is said that Arabic is not a Semitic language, but a "vocalic" language.
Testament a few of the neighbouring peoples are represented as being descended from Eber, the eponym of the Hebrews, that is, are regarded as nearly related to the latter, it was natural to suppose that this connection was the stronger, since the Urartu, which was the case of the Moabites, has been fully confirmed by the discovery of the Mesha inscription (date, soon after 900 b.c.). The language of this inscription scarcely differs from that of the Old Testament; the only difference is the change of the sibilant to sh (with f after the first radical), which appears also in Arabic and Assyrian. We may remark in passing that the style of this inscription is not a part of the Hebrew language proper, they maintain with certainty that a similar historical literature existed amongst the Moabites. But it must be remembered that ancient Semitic inscriptions exhibit, in a sense, nothing but the skeleton of the language, and that its pronunciation cannot be ascertained in many cases, or at least not exactly, only in certain cases; still less do they indicate other phonetic modifications, such as the doubling of consonants, &c. It is therefore very curious that the language of Moab seemed to differ considerably from that of the Judeans.

The Mesha inscription is the only non-Israelite source from which any knowledge of ancient Hebrew can be obtained. Still several Hebrew errours occur even in the Telled-Amarna letters, discovered in Egypt, and written in the Babylonian language by princes of Palestine during the second millennium b.c. They clearly show that the "Hebrew" language existed in Palestine even before the migration of the Israelites into Canaan. Some fragments in the Old Testament belong to the last centuries of the second millennium before our era—particularly the song of Deborah (Josh. v. 1-31). But opposite to the latter, the text of the Hebrew language, stripped of all exotica and errors, bears no sign of change, except is a few points of punctuation, in the time of the Canaanites were still containing with them for the possession of the country. The first rise of an historical literature and the first chants of the national poets belong to the days of the monarchy. Various portions of the Old Testament belong to the time of the earlier kings; but it was under the later kings that a great portion of the Hebrew literature came into shape. To this age also belong the Gezer and the Sluisshe inscriptions and a number of treaties, increasing number of seals and gems bearing the names of Israelites.

The Hebrew language is thus known to us from a very ancient period. But we are far from being acquainted with the true condition of this language before the time of the Psalms. For, much as we owe to the labours of the earlier Jewish schools, which had infinite care fixed the pronunciation of the sacred text by ancient authorities, we cannot say that they were the best they could only represent the pronunciation of the language in its latest stage, not of that of early ages. Besides, their object was not to exhibit Hebrew simply as it was, but to show how it should be read in the solemn chant of the synagogue. Accordingly, the pronunciation of the earlier period may have differed considerably from that represented by the punctuation. Such differences are now and then indicated by the customary spelling of the ancient texts, and sometimes the orthography is directly at variance with the punctuation.

In a few rare cases we may derive help from the somewhat older tradition contained in the representation of Hebrew words. In the case of the Gnostics, the followers of Clement of Alexandria, who had a considerable influence in the life of the early Christian Church (see Clement of Alexandria), it is possible to see how the pronunciation of classical Hebrew differed from that of the later i or e. We have examined this point somewhat in detail, in order to contradict the false but ever-recurring notion that the ordinary text of the Bible represents without any essential modification the Hebrew language of the ancient world. Hebrew and Aramaic words are represented by the same Hebrew text, and express (in a very instructive and careful manner, it is true) only its ancient development, and that for the purpose of solemn public recitation. A clear trace of dialectal differences within Israel is found in Judges xii. 6, which shows that the ancient Ephraimites pronounced samek instead of shin.

The destruction of the Judæan kingdom dealt a heavy blow to their language. But it is going too far to suppose that of the Jews which was altogether banished from ordinary life at the time of the exile, and that Aramaic came into use among all the Jews. In the East even small communities, especially those who had become converted to Judaism and clung to their mother-tongue, though they may be surrounded by a population of alien speech; and such was probably the case with the Jews in Babylonia. See Hebrew Language. Even so late as the time of Ezra, Hebrew was in all probability the ordinary language of the new community. In Neh; xii. 24 we find a complaint that the children of Jews by wives from Ashdod and other places spoke half in Hebrew and half in the language of the people among whom they lived. But the situation of the Jews in Babylonia, where the language of the country was Babylonian, is a different case. In this case, the language of the Targums, and of the papercuts, and of the late Talmud, reveals that the language of Babylon was spoken by the Jews of Babylonia, and that of the Targums and Talmud.

The very first word of the Bible contains an Aleph (spiritus lenis), which is required by etymology and was once audible, but which the pronunciation represented by the point-system ignores.

can suppose that Nehemiah would have been particularly zealous that the children of Jews should speak an Aramaic dialect with correctness. He no doubt refers to Hebrew as it was then spoken—a stage of development of which Nehemiah's own work gives a very fair idea.

After the time of Alexander large bodies of the Jewish population were settled in Alexandria and other western cities, and were very much influenced by the Greek language. In the first century B.C., the language of Syria and the neighbouring countries, Aramaic, which had already become the language of the old Jewish colonists in Egypt, the country of the Israelites, and the influence of which may be perceived even in some pre-exilic writings, began to spread more and more among the Jews of Palestine. Hebrew gradually ceased to be the language of the people and became limited to religious and official purposes. The language which is called Aramaic includes the Aramaic language as used in Emesa, and the Perso-Aramaic (Ezra and Nehemiah form the conclusion) borrows large portions from Persian, and in most cases without translating them into Hebrew. No reason can be assigned for the use of Aramaic in Jewish works intended primarily for Jerusalem, unless it was already the dominant speech, whilst, on the other hand, it was very natural for a pious Jew to write in the ancient "holy" language even after it had ceased to be spoken. Esther, Ecclesiastes, and a few Psalms, which belong to the 3rd and 2nd centuries before our era, are indeed written in Hebrew, but are so strongly tintured by the Aramaic influence as to prove that the writers usually spoke Aramaic. It is certain, of course, that the language which we are accustomed to call Aramaic is not the language of the Jews of the Dispersion, but is the language of Babylonian Jews, and is not likely to be far wrong in saying that in the Maccaean age when the Hebrew language was in a manner prolonged. The lectures and discussions of the learned were carried on in that tongue. We have very extensive specimens of this modern Hebrew in the Mishnah and other works, and such modern Hebrew was spoken in the home of the average Jew.

"classic" Sanskrit, which has been spoken and written by the Brahmins during the last twenty centuries, differs considerably from the language which was once in use among the people, so this "language of the learned" diverges to a great extent from the "holy language"; and this distinction is one of which the rabbis were perfectly conscious. The "language of the learned" borrows a great part of its vocabulary from Aramaic, and this exercise a strong influence upon the grammatical forms. The grammar is perceptibly modified by the peculiar style of these writings, which, for the most part, treat of legal and ritual questions in a strangely constructed and artificial language, peculiar in many respects to classical Hebrew and Aramaic, and in many instances based upon foreign words and artificial as this language is, it contains a considerable number of purely Hebrew elements which by chance do not differ from the Hebrew of the written language. In the same way, the form of the words, which is a mere matter of convenience, in the case of a word occurring in the Mishnah but not found in the Old Testament, that it is borrowed from Aramaic, there are several words of this class which, by their radical consonants, prove to be of Hebrew origin; if we can call that a proof. The phenomena of this language are to be regarded as a genuine development of Hebrew, though they are unknown to earlier Hebrew speech.

From the beginning of the middle ages down to our own times the Jews have produced an enormous mass of writings in Hebrew, some of them very ancient, and for all purposes it is possible to speak of the language as a perfect language, as it is a language, in which the grammatical forms are purely Hebrew, as it is a language, in which the language is perfectly pronounced, and in which the language is perfectly pronounced, and in which the language is perfectly pronounced by the people who are its authors. The period of the exiles was Babylonian.

**Period of exiles in Babylonia.**

The first word of the Bible contains an Aleph (spiritus lenis), which is required by etymology and was once audible, but which the pronunciation represented by the point-system ignores.

2 For example, we may conclude with tolerable certainty, from the presence and absence of the vowel-letter y and w, that in older times the accented e and o were not pronounced long, and that, on the other hand, the diphthongs ew and ai were used for the later 6 and 8.

3 The very first word of the Bible contains an Aleph (spiritus lenis), which is required by etymology and was once audible, but which the pronunciation represented by the point-system ignores.

4 It is a characteristic feature that "my father" and "my mother" are here expressed by purely Aramaic forms. Even the learned did not wish to call their "papas" and "mammas" by any other names than those to which they had been accustomed in infancy.
The ancient Hebrew language, especially in the matter of syntax, has an essentially primitive character. Paradox of sentences is accordingly found far more often in other literary Semitic languages with which we are well acquainted. The favourite method is to link sentences together by means of a simple "and." There is a great paucity of contrastive conjunctions of the kind "but." A slight attempt to define the tenses more sharply appears once at least in the joining of kasîn (suit), with a perfect, to express complete accomplishment (or state of perfecting), which is the use of te'or convervative with the imperfect—so common in Hebrew and in the inscription of Mesha—is wanting in Phoenician. The vocabulary of the language is very like that of Hebrew, but the difference in the inflexions (or grammatical forms) is very considerable. The use of the tenses somewhat more sharply appears once at least in the joining of kasîn (suit), with a perfect, to express complete accomplishment (or state of perfecting), which is the use of te'or convervative with the imperfect—so common in Hebrew and in the inscription of Mesha—is wanting in Phoenician. The vocabulary of the language is very like that of Hebrew, but the difference in the inflexions (or grammatical forms) is very considerable. The use of the tenses somewhat more sharply appears once at least in the joining of kasîn (suit), with a perfect, to express complete accomplishment (or state of perfecting), which is the use of te'or convervative with the imperfect—so common in Hebrew and in the inscription of Mesha—is wanting in Phoenician. The vocabulary of the language is very like that of Hebrew, but the difference in the inflexions (or grammatical forms) is very considerable. The use of the tenses somewhat more sharply appears once at least in the joining of kasîn (suit), with a perfect, to express complete accomplishment (or state of perfecting), which is the use of te'or convervative with the imperfect—so common in Hebrew and in the inscription of Mesha—is wanting in Phoenician. The vocabulary of the language is very like that of Hebrew, but the difference in the inflexions (or grammatical forms) is very considerable. The use of the tenses somewhat more sharply appears once at least in the joining of kasîn (suit), with a perfect, to express complete accomplishment (or state of perfecting), which is the use of te'or convervative with the imperfect—so common in Hebrew and in the inscription of Mesha—is wanting in Phoenician.
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in the period of our inscriptions: it would seem, therefore, that we must assume a dialectical cleavage, perhaps originated by the interchange of the provinces west of the Euphrates, and the persistence of the so-called "consecutum" in the inscriptions of the king of Hamath hitherto only known from Hebrew. Traces of the divergent phonetic treatment are also found in Aramaic, which was the official language of the provinces west of the Euphrates; and this explains the fact that coins which were struck by governors and kings of Persia, both within and outside the Persian provinces, were variously treated in inscriptions. But we need not doubt that, in Egypt, Aramaic was also spoken by many who had migrated from Syria; and this must be assumed to be the case in the Greek East in the Hellenistic period, for the country, where the native writing was so formidable to the learner, the Aramaic language and script may well have appeared peculiarly serviceable. Thus this dispute of the scholars is a matter perhaps of mere formalities. But the fact is now established that these Jews who had come to Egypt before the Persian period were military colonists, and were often referred to in documents as "Arameans." According to Deut. xxvii. 15, this was illustrated by the fact that they spoke "Aramean" and their language is known as Hebrew, which was at that time obtained numbers of warriors from foreign countries, instead of employing their own unwarlike subjects. The Syrian kings also sent soldiers to Egypt, from whom the Jews learned Aramaic. The language is also known as "Arabic" by the people of the East, and is known as "Arabic" by the Jews in the West. It is not known whether the Persians or the Egyptians spoke a "language" or whether the "language" was spoken by the Persians or the Egyptians. The short dominance of the Chaldeans very probably strengthened this language. Nonetheless, a few references to a "language" can be found in the Bible, and it is known as "Aramitic" (ibid.), namely, in order to communicate with the Assyrians. The general correctness of the Chaldeans very probably made it likely that the Persian people were of this persuasion. The "language" of the Bible is a mercantile colony, which settled in this ancient seat of commerce, and in consequence of which Aramaic may have remained for some time the literary language of the neighbouring Arabs. The Aramaic portions of the Old Testament show us the form of the language which was in use among the Jews of Palestine. Isolated passages in Ezra perhaps belong to the Persian period, but they have certainly been remodelled by a later writer. Yet in Biblical Aramaic, Aramaic. The Aramaic pieces contained in the Bible have the great advantage of being furnished with vowels and other orthographical signs. A few inscriptions of this kind, which are supposed to be inscribed on the first leaves of the books, and are sometimes at variance with the text itself. But, since Aramaic was still a living language when the punctuation points into existence, and since the lapse of time was not so very great, the tradition is continued in the cases where an antiquity is determined. Its general correctness is further attested by the innumerable points of resemblance between this language and Syriac, with which we are accurately acquainted. The Aramaic of the Bible still exhibits various antique features, found in the Egyptian papyri too, which afterwards disappeared,—for example, the formation of the passive by means of internal vowel-change, and the causative with the so-called "so-called". Many of these points are far from characteristic of Hebrew. Biblical Aramaic agrees in essential points with the language used in the numerous inscriptions of Palmyra (beginning about the 5th century B.C. and extending to the end of the 3rd century), which stand in front of monuments, caucuses, and strong stone monuments. Biblical Aramaic distinguishes itself from the language used in the numerous inscriptions of Palmyra (beginning about the 5th century B.C. and extending to the end of the 3rd century), which stand in front of monuments, caucuses, and strong stone monuments.

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Still, at most, these can scarcely be more than conscious archaisms,—a view which is particularly corroborated by the fact, that, in certain Aramaic documents of the Persian period (A.D. 5th), the women are inserted into the text in the grammatical case of the feminine and not with the article (-āh). The latter orthodoxy doubtless represents the actual pronunciation of the writer. It is to be observed, however, that this led its ground with especial tenacity as a form of the relative pronoun and the name of the Persian province. But we must not lose sight of the preponderance of the 5th century, or of the 6th century. Upon the whole, the consonants and vowels of the 5th century, or of the 6th century, are found in these cases the work of skilled Greek artists, bear Aramaic inscriptions, whilst those of other coins are Greek. This, of course, does not prove that Aramaic was ever spoken in Asia Minor and as far north as Siphne and the Hellespont. In Egypt some Aramaic inscriptions have been found of the Persian period, one bearing the date of the fourth year of Xerxes (482 B.C.). We possessed, even before this, a few official documents and other written pieces in Aramaic, inscribed upon papyrus, and dating from this period, but unfortunately in a very dilapidated condition. Lastly, however, we have had a whole series of similar documents of the 2nd century B.C., in a very different condition, bearing inscriptions on stones in colonists in the far south of Egypt. In that country, where the language was so formidable to the learner, the Aramaic language and script may well have appeared peculiarly serviceable. Thus this dispute of the scholars is a matter perhaps of mere formalities. But the fact is now established that these Jews who had come to Egypt before the Persian period were military colonists, and were often referred to in documents as "Arameans." According to Deut. xxvii. 15, this was illustrated by the fact that they spoke "Aramean" and their language is known as Hebrew, which was at that time obtained numbers of warriors from foreign countries, instead of employing their own unwarlike subjects. The Syrian kings also sent soldiers to Egypt, from whom the Jews learned Aramaic. The language is also known as "Arabic" by the people of the East, and is known as "Arabic" by the Jews in the West. It is not known whether the Persians or the Egyptians spoke a "language" or whether the "language" was spoken by the Persians or the Egyptians. The short dominance of the Chaldeans very probably strengthened this language. Nonetheless, a few references to a "language" can be found in the Bible, and it is known as "Aramitic" (ibid.), namely, in order to communicate with the Assyrians. The general correctness of the Chaldeans very probably made it likely that the Persian people were of this persuasion. The "language" of the Bible is a mercantile colony, which settled in this ancient seat of commerce, and in consequence of which Aramaic may have remained for some time the literary language of the neighbouring Arabs. The Aramaic portions of the Old Testament show us the form of the language which was in use among the Jews of Palestine. Isolated passages in Ezra perhaps belong to the Persian period, but they have certainly been remodelled by a later writer. Yet in Biblical Aramaic, Aramaic.

5 Even to the Cosmas Indicopleustes (first half of the 6th century) the Sinaic inscriptions, the latest of which were then no more than 200–300 years old, were described as memorials of the Israelite exodus under Moses. And similar views have been propelled to a short while ago.
Finally, the Samaritans, among the inhabitants of Palestine, translated their only sacred book, the Pentateuch, into their own language. The Samarian dialect, though retaining some of the characteristics of the Hebrew name, was more in the nature of a Greek loan language which lies at its base was very much the same as that of the neighbouring Jews. Perhaps, indeed, the Samaritans may have carried the northern Semitic with them as far as the region of Galilee. Their absurd attempt to embellish the language of the translation by arbitrarily introducing forms borrowed from the Hebrew original, has given rise to a number of misprints, which, however, are without value as the compositions of Samaritans in Hebrew; the writers who spoke Arabic, endeavoured to write in languages with which they were but half acquainted.

The Aramaic dialects, including that of the oldest inscriptions, have this feature among others in common, that they form the third person singular masculine and the third person plural masculine, and female; the imperfect by preceding  על, do the other Semitic languages. And in these dialects the termination א (the so-called "status emphatical") still retained the meaning of a definite article down to a tolerable late period.

Thus, as the 2nd century, the Moslems greatly circumscribed the domain of Aramaic and a few centuries later it was almost completely supplanted in the west by Arabic. For the Christians of the eastern provinces it was, therefore, the most usual way of expression. Only the Syriac dialect was no longer of importance, and they adopted as their ecclesiastical language the dialect of the other Aramaic-speaking Christians, the Syriac (or Edessene). The only localities where a Western Aramaic dialect still survives are a few villages in Anti-Libanus.

The popular Aramaic dialect of Babylonia from the 4th to the 6th century of our era is exhibited in the Babylonian Talmud, in which the Jews mingled the Aramaic with the constant mingling of Aramaic and Hebrew passages. To a somewhat later period, and probably not to exactly the same district of Babylonia, belongs a strange sort of half Christian and half heathen, who from a linguistic point of view possess the peculiar advantage of having remained almost entirely free from the influence of any other dialect. It is the so-called Aramaic, of Jews as well as of Christians. The orthography of the Mandaean comes nearer than that of the Talmud to the real pronunciation, and in it the softening of the guturals is most clearly seen. In other respects their identity of language and the Mandaean is that of Hebrew and Aramaic.

The Babylonian and Mandaean dialects.

Aramaic, which had already been used for some time as a literary language, and had been reduced to rule through the influence of the schools (as is proved by the paucity of the grammar and orthography) even more than the Babylonian and Mandaean dialects, has become the national language of the Jews. The Aramaic language, as the language of the church, of literature, and of cultivated intercourse, is in full vigour.

The ancient name of the inhabitants, "Aramaeans," just like that of "Greeks," had acquired in the minds of Jews and Christians the unpleasant significance of "heathens," it was generally avoided, and in its place the Greek terms "Syrians" and "Soruce" were used. But "Syriac" was also the name given by the Jews and Christians of Palestine to their own language, and both Greeks and Persians designated the Aramaeans of Babylonia as Syriacs.

It is therefore correct to use the word "Syriac" as meaning the language of Edessa alone; but, since it was the most important of these dialects, it has the best claim to this generally received application. It has, however, a more very definitely fixed; and in it the above-mentioned forms of the imperfect take an א. As in the Babylonian dialects, the termination א has become so completely a part of the substantive to which it is added, that the imperfect always shows the 1st person plural, whereby the clearness of the language is perceptibly impaired. The influence exercised by Greek is very apparent in Syriac. From the 3rd to the 7th century an extensive literature was produced in this language, not only at Edessa, but throughout the entire Seleucid empire. It was in Syriac that the Nestorian Reformers, led by the Syrian kings, laid the foundations of their language. The Semitic languages under the Persian kings it virtually occupied a more prominent position as an organ of culture than the Persian language itself. The conquests of the Arabs totally changed this state of things.
When several distinct dialects so agree, the phenomenon in question must be of great antiquity. There are nevertheless traces which prove that the language once possessed more vowels, and the Aramaeans, for instance, with whom David fought may have possessed many in their language. One peculiarity of Aramaic is that it lends itself far more readily to the linking together of sentences than Hebrew and Arabic. It possesses many conjunctions and adverbs to express slight modifications of meaning. It is also very frequent in the use of particles. Words that have this quality, which renders it suitable for a clear and limpid prose style, is not the result of Greek influence may be seen by the Mandaeans, of whom no works have been found written in their language, which naturally strikes us but we need beware of carrying it too far. Even the Aramaeans were not wholly destitute of poetical talent. Although the religious poetry of the Syrians has but little charm for us, yet real poetry occurs in the early fragments of onoetitic hymns. Moreover, as the dialects popular songs have been discovered which, though very simple, are fresh and full of feeling. It is therefore by no means improbable that in ancient times Aramaic dialect, if not being contrary to the theological tendency of Syrian civilization, were doomed to total oblivion.

Arabic.
The southern group of Semitic languages consists of Arabic, Ethiopic and Mahri-Socotri. Arabic, again, is subdivided into the dialects of the larger portion of Arabia and those of the southern coast of Persia. As early as the 5th century A.D. we were but lately justified in supposing, some of the northern Arabs reduced their language to writing. For a considerable time afterwards, at least, the northern Hijaz inscriptions in a hitherto unknown character, derived from the Sabæan (see below), which appear to have been written before our era. Since it is probable that TLMJ, the prominent letters of the inscriptions, is the same as that in which the city of the kingdom, we are directed to the Hellenistic period, and other circumstances confirm this conjecture. These inscriptions have been called "Thamudic," because they were found in the country of those of that name, though it is by no means a suitable one, because during the period when the power of the Thamud was at its height, and when the buildings mentioned in the Koran are supposed to have been erected, the language of this country was Nabataean (see above). A number of inscriptions, from both the northern and the southern Hijaz, have been discovered since the Sabæan, since the tribe of Liyyân is sometimes mentioned in them. Unfortunately the inscriptions hitherto discovered furnish but little material to the student of languages. But there can be no doubt that they are written in an Arabic dialect. The treatment of the dentals, among other things, is a sufficient proof of it. In some districts of the northern Hijaz and the neighbouring portion of Najd, other brief inscriptions, for the most part cursorily scratched upon rocks, have been discovered. These have been—very justly, perhaps—called "Proto-Arabic," and many of them have been proposed for them also. Their writing is a somewhat later form of the Liyyân, and the dialect, as well, seems to be very similar. Some of these inscriptions are very short, which generally contain only proper names, together with the incertitude of the meaning of many, does not allow an accurate insight into their language.

To the first centuries of the Christian era belong the thousands of Arabic inscriptions, found in the wild, rocky districts south-east of Damascus, which are commonly termed Safaitic, after Safa, a locality in their neighbourhood. For the most part, these are also short and cursorial pieces scratched upon rocks, have been discovered. These have been—very fairly, perhaps—called "Proto-Arabic," and have been proposed for them also. Their writing is a somewhat later form of the Safaic, and the dialect, as well, seems to be very similar. Some of these inscriptions are very short, which generally contain only proper names, together with the incertitude of the meaning of many, does not allow an accurate insight into their language.
SEMitic LANGUAGES

also professed Christianity. Moreover, poets from the interior were gladly welcomed at the court of the Ghassanian princes, who were Christian vassals of the emperor residing near Damascus; in this district, where the most of the tribes cultivated poetry, it would be impossible to be added that most of the tribes which cultivated poetry appear to have been near neighbours at an epoch not very far removed from that in question, and afterwords have been scattered in large bands to different parts of the country. The third case is that of the two tribes who were not Christians paid respect to the sanctuary of Mecca. It is a total mistake, but one frequently made by Europeans, to designate the Arabian language as "Koraishte" is as absurd as it would be to speak of English as the dialect of London or of Oxford. This unfortunate designation has been made the basis of a theory very often repeated in itself, which claims that classical Arabic is nothing but the dialect of Mecca, which the Koran first brought into fashion. So far from this being the case, it is certain that the speech of the bani in the Hijaz did not differ in every point from the language of the poets, and, as it happens, the Koran itself contains some remarkable deviations from the rules of the classical language. This would be still more evident if the punctuation, which was introduced at a somewhat later time, did not obscure many details. The traditions which represent the Korasish as speaking the purest of all Arab dialects are partly the work of the imagination and partly compliments paid to the rulers descended from the Korahish, but are doubtless correct as far as the three Arab tribes themselves in earlier days. In the Koran Mahomet imitated the poets, though, generally speaking, with little success; the poets, on the other hand, were modelled upon the Koran. The links which joined these two great ages of poetry, the Korahish and the Korasish, were thus exercised but very little influence upon the poetry of the following century and upon that of later times, whereas this poetry closely and slavishly copied the productions of the old heathen period. The fact that both are preserved in a much more authentic form than the works of the heathen poets proves that our idea of the language of its pattern, the ancient poetry, is on the whole a general language.

The Koran and Islam raised Arabic to the position of one of the principal languages of the world. Under the leadership of the Korahish the Bedouins subjected half the world to their wisdom and placed in their hands an additional character of a sacred language. But soon it became evident that not only all the Arabs spoke a language precisely identical with the classical Arabic of the poets. The north-western Arabs played a particularly important part during the period of the Omayyads. The ordinary speech of Mecca and Medina was, as we have seen, no longer quite so primitive as that of the desert. To this may be added that the military expeditions of the Koraish and those Arabs who spoke the classical language into contact with tribes from out-of-the-way districts, such as 'Oman, Bahrain (Bahrein), and particularly the north of Yemen. The fact that the Korahish existed in possession of a simple and richly colored language was also little calculated to preserve the unity of the language. Finally, the violent internal and external communications which were produced by the great events of that time, and stirred the Arab tribes to a fever of eloquence, which we know from tradition that even in the 1st century of the Flight the distinction between correct and incorrect speech was in places quite perceptible. About the 6th century the system of Arabic grammatical was constructed, and never underwent any essential modification in later times. The theory as to how one should express oneself was now definitely fixed. The majority of those Arabs who lived beyond the limits of Arabia already diverged far from this standard; and in particular the final vowels which serve to indicate cases and moods were no longer pronounced. This change, by which Arabic lost one of its principal advantages, was no doubt the work of the Arabs. This division of sentences in Arabic resulted in quite acceptable forms without grammatical terminations. But in the language of certain Bedouin tribes remnants of those terminations have been preserved down to our time.

As we are able to make ourselves intimately acquainted with the system, and still more with the language of the Arabians. Although they are not always performed their task in a critical manner, we are under the impression of a rather more disposed to admire the richness of the ancient Arabic vocabulary when we remember how simple are the conditions of life amongst the Arabs, how painfully remote the regions of their ideas must be. Within this range, however, the slightest modification is expressed by a particular word. It must be confessed that the Arabic lexicon has been formed in the habit of using such rhetorical phrases as an individual poet has used to describe an object: for example, if one poet calls the lion the "tearier" and another calls him the "mangler," each of these terms is explained by the lexicographers as equivalent to "lion." One branch of literature in particular, namely, lampoons and satirical poems, displays an especially remarkable consistency and even more a uniformity which is more difficult to discriminate. It is extraordinary that with the same form of expression the same ideas are expressed in all the Semitic tongues. But in spite of these qualifications it must be admitted that the vocabulary is surprisingly rich, and the Arabic dictionary will contain more than one-third of the words which the lexicographer represents as synonymous in all the Semitic tongues. This method, if pursued with the necessary caution, is a perfectly legitimate one.

Poems seldom enable us to form a clear idea of the language of original Arabs and Arabic poetry. Its language is not formed by the very beginning by a certain tendency to artificiality and mannerism. Still less does the Koran exhibit the language in its spiritual and intellectual state. This language is represented in the ancient normative traditions (Ibadith). And the genuine accounts of the deeds of the Prophet and of his companions, and especially the stories concerning the battles and adventures of the Bedouins in the heathen period and in the earlier days of Islam, are excellent models of a prose style, although in some cases their redaction dates from a later time.

Classical Arabic is rich not only in words but also in grammatical forms. The wanton development of the broken plurals, and sometimes of the verbal nouns, must be regarded as an excess of wealth. The sparing use of the ancient terminations which mark the distinction of the cases is compensated for by a system of pronouns, collectives, abstract nouns, and feminines in general. In its manner of employing the verbal tenses genuine Arabic still exhibits traces of that poetical freedom which exists in our modern language. Arabic is not a verb that has been subjected to rules of declension and conjugation; in connecting sentences Arabic can go much farther than Hebrew, but the simple parataxis is by far the most usual construction. Arabic has, however, this great advantage, that it scarcely ever leaves us in doubt as to where the apodosis begins or the consequent ends. The attempts to define the tenses more clearly by the addition of adverbs and auxiliary verbs lead to no very positive result (as is always the case). Arabic is a logical language, and the meaning of its words and sentences is expressed in a systematic manner.

This language of the Bedouins had now, as we have seen, become that of religion, courts and polished society. In the streets of the town language already diverged considerably from this, but the upper classes took pains to speak "Arabic." The problems and the bonas spiritus never ventured to employ any but the classical language and the "Artificists," with pedantic seriousness, convicted the most celebrated among the later poets (for instance, Motanabbi) of occasional deviations from the standard of correct speech. At the same time, however, classical language was employed in the language of the Bedouins. The present day still holds this position. There are, of course, many gradations between the pedantry of purists and the use of what is simply a vulgar dialect. Sensi'le writers employ a kind of modern, a kind of vulgar that is clear to the people; it is made up of words by modern names, but which, nevertheless, avoids coarse vulgarisms, aiming primarily at making itself intelligible to all educated men. They employ the "language of the scholars" or "language of the educated society." Arabic of educated society.

Arabic of educated society.

The Arabic of educated society.
Speaking as they did a thousand years back. A person who in Arabia or elsewhere should trust to his knowledge of classical Arabic only would resemble those travellers from the north who endeavour to get the better of their difficulties by consulting a road-book that is not written in the language of the country they visit.

SEMITIC literature. The written language has, it is true, greatly retarded the development of the dialects. Every good Moslem repeats at least a few short sûras several times a day in his prayer, and this exercise has been the seed from which has sprung the written language. Now the majority of Arabian Moslems understand something at least of the passages they recite or hear; so that the Koran was born to the Arabic and the Arabic language to the Koran. A similar process has taken place among the Christians, as much as has been exercised by no other book in the world.

The idioms of the church, of learning and of diplomacy was brought—partially at least—nearer to the average man, with the result that many of its rustic pronunciations withered. This was the error of the imperfect, they pronounce the 1st person plural with the ending u (as the 2nd and 3rd), and give to the 1st person singular the prefix n (as the 3rd). This was the case in classical Arabic.

This Arab dialect, the only one spoken exclusively by Christians, is of peculiar interest to the philologist, owing to the fact that for some 900 years it has been completely withdrawn from the action of literary Arabic. On the other hand, it has been exposed to the influence of Italian. Nevertheless, it has developed in a very similar manner to the dialects of the neighboring African coast; still it has many features which are peculiar to it. The dialects of Syria, inner and southern Arabia, and other oriental countries, we also know more than was the case a short while ago; but the gaps in our knowledge are still too great to allow us to classify Arabic dialects in a general way. From the nature of the language it is somewhat strongly distinguished from that of the non-Arabic tribes; but we should hardly be justified in believing that the Beduin dialects form a contrasting unity as against the other idioms.

There can be no doubt that the development of these dialects is in part the result of older dialectical variations which were already in existence in the time of the Prophet. The histories of dialects which differ completely from one another often pursue an analogous course. In general, the Arabic dialects still resemble one another more than we might expect when we take into consideration the very considerable geographical obstacles that stand in the way of communication. But we must not suppose that people, for instance, from Mosul, Morocco, Sâne's, and the interior of Arabia would have been able to understand one another in an age when we would have been a total error to regard the difference between the Arabic dialects and the ancient language as trifling one, or to represent the development of Arabic dialects as some sort of an ingrowing of the Romance languages. No living Arabic dialect diverges from classical Arabic so much as French or Rouman from Latin; but, on the other hand, no Arabic dialect resembles the classical language so closely as the Lugodic dialect, which is still spoken in Sardinia, resembles its parent speech, and yet the lapse of time is very much greater in the case of the latter. Side by side with the poetry of the old literary language there arose, in quite early days, and, so to speak, out of it, a Romance dialect with a Romance language. So, even in the 12th century, dialectic poetry was flourishing in Spain; and down to the present day, in the most diverse quarters, particularly in Sicily, the Arabic dialect is composed in the various dialects. But this poetry, probably, with the sole exception of Maltese, stands in some connexion or other with the antique, and is subject, more or less, to the influence of the classical language. Maltese also has succeeded in preserving the elements of literature. Mârchen, and other tales, written by the uneducated, merely show a dialectic colouring, frequently combined with a cacophonous use of the grammatical forms of classical Arabic, not unaccompanied by a remarkable facility in putting them together. This facility is particularly evident in works by Jews and Christians. Purely vulgar texts, of any magnitude, would be hard to discover. The dialect of Moslem speech has succeeded in preserving the language distinct from the classical tongue; and in this a fair amount of material has already been printed in Latin characters.

In recent years, however, earnest attempts have been made to classify Arabic dialects in order to throw light on the probable nature of these attempts, which will not be crowned with permanent success is a question to be resolved by time. In any case, the ancient written language, though with all kinds of modifications, will long continue to exist. The very fact that it does not express the vocalization with exactitude is an advantage; for thus the Arabs, from the Persian Gulf to the Atlantic, can use the same word, although they may pronounce it with different vowels.

Sabaean.

Long before Mahomet, a peculiar and highly developed form of civilization had flourished in the table-land to the south-west of Arabia. The more we become acquainted with the history of the Arabian and the Sabaean dialects, the more we are led to the conviction that the better we are able to decipher its inscriptions, which are being discovered in ever-increasing numbers, the easier it is for us to account for the haze of mythical stories about the Sabaean. If the Sabaean inscriptions resemble the Sabaean inscriptions (which till lately were more often called by the less correct name of "Himyaritic") begin long before our era and continue till the 6th century A.D. The fact that the Sabaean "character" is entirely different from that by which speech from one another renders decipherment easier, which, however, has not yet been performed in a very satisfactory manner, owing in part to the fact that the vast majority of the documents in question consist of religious votive tablets with peculiar sacredotal expressions, or of architectural notices abounding in technical terms. These inscriptions fall into two classes, distinguished partly by grammatical peculiarities and partly by peculiarities of phraseology. One dialect, which forms the causative with ha, like Hebrew and others, and employs, like nearly all the Semitic languages, the termination w (as the 3rd person singular), is the Sabaean properly so called. It resembles the Arabic, but is different from the other dialects (corresponding to the Shaphel of the Aramaeans and others), and for the suffix uses z (like the Assyrian sz), is the Minican. To this latter branch belongs the dialect of the Zealot, which has been discovered in the Hijaz, near Hejire, where the Minaeans must have had a commercial settlement. On the other hand, the very old inscriptions, emanating from a colony at Jetha in Abyssinia, are Sabean. The difference between the two classes, discernible in the absence of the consonant m, is no doubt ultimately based upon a real divergence of dialect. But the singular manner in which districts containing Sabaean inscriptions have been separated, is determined by the manner of writing the consonant k. This manor, is determined by the manner of writing the consonant k. This may be traced from districts rather more to the east exhibit certain linguistic peculiarities, which, however, may perhaps be explained by the supposition that the writers did not, as a rule, speak this dialect, and therefore were by imperfectly acquainted with it.

A great hindrance to the completion of our knowledge of the Sabaean language lies in the paucity of vowel-letters in the inscriptions. The unvarying style of the inscriptions excludes further a great number of the commonest grammatical forms. Not a single occurrence of the first or second person has yet been detected, with the possible exception of a few cases of the latter. It is most difficult to point to in part to a mere histrionic practice of clinging to ancient modes of expression. Indeed it is very probably due to conscious literary conservatism that the language of the inscriptions remains almost wholly unaltered. However, the number of cases where the dialect differs from that of other inscriptions, found in the north of the Hijaz, near Hejire, where the Minaeans must have had a commercial settlement. On the other hand, the very old inscriptions, emanating from a colony at Jetha in Abyssinia, are Sabean. The difference between the two classes, discernible in the absence of the consonant m, is no doubt ultimately based upon a real divergence of dialect. But the singular manner in which districts containing Sabaean inscriptions have been separated, is determined by the manner of writing the consonant k. This manor, is determined by the manner of writing the consonant k. This may be traced from districts rather more to the east exhibit certain linguistic peculiarities, which, however, may perhaps be explained by the supposition that the writers did not, as a rule, speak this dialect, and therefore were by imperfectly acquainted with it.

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the inscriptions as a whole. Being zealous local patriots, they discovered in those inscriptions which they imagined themselves to be capable of deciphering many fabulous stories respecting the glory of the ancient Yemenites.

Mahrī and Socotrī.

Farther to the east, in the sea-coast districts of Shihur and Mahra, up to the borders of the barren desert of the interior, and also in the island of Socotra, dialects very unlike Arabic are still spoken. To all appearances, at least, Mahri, which Shihurians pronounce, is a distinct dialect, and Socotri are probably scions of dialects which were related to Sabaeans and Minacans; but they have developed on altogether independent lines, and are far less closely akin than they are likely to render. On great aslant we have discerned in Mahri the characteristic features of the earlier stage of the Mahri vocabulary is formed by words which have been borrowed from the Arabic at different periods. Many of them have subsequently undergone drastic phonetic alterations, so that it is impossible to say which is the original form. Besides, it has been well protected by its insular position, the borrowed Arabic words are rarer, but even here they are not lacking. These languages, however, especially Socotri, have preserved a few more of their original features than any others. We may well doubt whether they are Semitic at all. [continue]

Ephistio.

In Abyssinia, and in the neighbouring countries we find languages which bear a certain resemblance to Arabic. The Geez, or Geor, and Ethiopian proper. The language of the ancient kingdom of Axum, was reduced to writing for the first time under the Empire of Aksum, and has been preserved. But even the established, bears, in addition to the Greek inscription, one section in the Abyssinian chronicles and a Coptic character, i.e., in a systematic transformation of the Sabaeans. Here the Geez is still unvocalized; and some few inscriptions, besides vowel signs, have been discovered. But two original inscriptions of the same kingdom of Axum—so it appears to be after the earliest researches already have the full vocalization which obtains in the Ethiopian Bible and the remaining literature: the language, too, is identically the same. The indication of the vowels gives Ethiopic an advantage over Semitic, in that, even if it was introduced is unknown. Not long after the time of the inscription the Geez was translated into Geor from the Greek, in part by Jews; for Jews and Christian Ethiopians seem to have been formerly competing with one another, and also the Geor, and in Abyssinia; nor were the former unsuccessful in making proselytes. The missionaries who gave the Bible to the Abyssinians must, at least in some cases, have spoken Aramaic as the language of instruction. As the result of this abandonment of the Coptic and Ethiopic Bible certain religious conceptions are expressed by Aramaic words. During the following centuries various works were produced by the Abyssinians in this language; and though we are able to judge of a more or less theological character, almost invariably translations from the Greek. We cannot say with certainty when Geor ceased to be the language of the people, but it may be supposed that it was suppressed probably about a thousand years ago. From the time when the Abyssinian kingdom was reconstituted, towards the end of the 13th century, by the so-called Solomonian dynasty (which was of southern origin), the language of the court and of the government was Amharic language, and the end of the Christian Church, and the Greek and Coptic literature even showed a certain activity in numerous translations from those Arabic and Coptic works which were in use amongst the Christians of Egypt; besides these, original writings were produced by Christian priests, namely, lives of saints, hymns, &c. This literary condition lasted till modern times. The language, which had long become extinct, was by means invariably written in a pure form: we may often observe the adaptation of Arabic modes of expression. Even in manuscripts of more ancient works we find many linguistic corruptions, which have crept in partly through mere carelessness and ignorance, partly through the influence of the Arabic dialects, which are still sometimes left in doubt, as we possess no manuscripts belonging to the older period.

Geez. In more nearly related to Sabaeans than to Arabic, though scarcely to such a degree as we might expect. The historical intercourse between the Sabaeans and the people of Axum does not, however, prove that those who spoke Geez were in no way influenced by the Sabaians. But there is a probability that Axum is descended from an extinct cognate dialect of south Arabia, or may have arisen from a mingling of several such dialects. And this colonization in Africa probably began much earlier than the dawn of Arabic civilization. In certain respects Axum represents a more modern stage of development than Arabic; we may cite as instances the loss of some inflexional terminations and of the ancient passive. It appears, however, that Axum is entirely unvocalized, and therefore we have no means of determining to what extent Axum was influenced by the Hume languages, we may ascribe the very hard sound now given to certain letters, q, j, s, and d, in the reading of Gez. The last two are at present pronounced something like u and us (the German s). A peculiar advantage possessed by Gez and by all Ethiopic languages is the sharp distinction between the imperfect and the subjunctive: in the former a vowel is inserted after the first radical, a formation which also exists in Mahri and Socotri, and, though in another signification—in Assyrian as well. Geez has no definite article, but is very rich in particles. In the case in which it joins sentences together and in its freedom as to the order of words it resembles the Baalsamite, but in its vocative it is identical with the Semitic literature, which is for the most part very asyrian, supplies us with comparatively few expressiveness that do not occur in the Bible, whereas the more modern Semitic language shows the influence of other Semitic tongues, particularly Amharic. With regard to the vocabulary, Geez has much in common with the other Semitic tongues, but at the same time possesses many words peculiar to itself; of these a few are almost identical with the Arabic and Abyssinian. Following the grammar shows, at most, some slight and dubious traces of Hamitic influence. Gezz seems to have been originally the language of a tribe almost exempt from non-Semitic blood. But we must assume that under the influence of many Semitic dialects, and with the help of the apostles, and other converts, the language was gradually intermingled with the Aramens. This opinion seems to be confirmed by anthropological facts.

Tigré and Tigritia.

Not only in what is properly the territory of Axum (namely, Tigré, north-eastern Abyssinia), but also in the countries bordering up to the north, including the islands of Dahlak, dialects are still spoken which are but modern forms of the linguistic type clearly exhibited in Geez, viz. that spoken in Tigrit proper and that of the neighbouring countries. In reality, the name of Tigré belongs to both, and therefore we may distinguish them from one another as Northern and Southern Tigré. But it is the custom to call the northern dialect Tigrit simply, whilst that spoken in Tigrit itself bears the name of Tigrit; but the latter is somewhat closer resemblance to Geez than does Tigritia, although this latter is spoken in the very home of Geez. For Tigritia has during several centuries been very strongly influenced by Axum, and in some cases Axum has so far exceeded in eloquence or majesty, to which spoken mostly by nobles. But Tigré, on the other hand, seems to have been greatly influenced by Hamitic dialects. In late years careful observations on both languages have been made by scholars to Leco, and we already have a number of printed texts, comprising partly original works, partly translations of Biblical books and so forth. But in this domain our knowledge still stands in great need of being perfected.

Amharic.

Although Tigré and Tigritia are not free from foreign influences, yet at all events, they are purely Semitic. This is not fundamentally the case with Amharic, a language in which the domain extends from the left bank of the Takaaz towards regions far to the south. Although by no means the language of the people, but imperfectly known, it is always spoken by those foreign tongues which surround it and with which it is intermixed. We refer here especially to the Agaw dialects. Although Amharic has been driven back into the very regions where it has been but the language of the Abyssinians, it has compensated itself to some extent for this loss, as the Ero and Wollo Gallas, who penetrated into eastern Abyssinia, have adopted it as their language. With the exception, of course, of Arabic, no Semitic tongue has undergone such a number of modern changes as Amharic. The very fact that the Agaw languages are being gradually, and, as it were, before our own eyes, absorbed by Amharic makes it appear probable that this language must be spoken chiefly in the most arid parts of the Horn of Africa, which is supported by the fact confirmed by a study of the language...
SEMLER, JOHANN SALOMO (1725-1791), German church historian and biblical critic, was born at Saalfeld in Thuringia, on the 18th of December 1725, the son of a clergyman in poor circumstances. He grew up amidst pietistic surroundings, which powerfully influenced him his life through, he never became a Pietist. In his seventeenth year he entered the university of Halle, where he became the disciple, afterwards the assistant, and at last the literary executor of the orthodox, rationalistic professor S. J. Baumgarten (1706-1757). In 1749 he accepted the position of editor, with the title of professor, of the Coburg official Gazette. But in 1751 he was invited to Aldtorf as professor of philology and history, and in 1752 he became a professor of theology in Halle. After the death of Baumgarten (1757) Semler became the head of the theological faculty of his university, and the fierce opposition which his writings and lectures provoked only helped to increase his fame and influence. His popularity continued and increased for more than twenty years, until 1779. In that year he cast forward with a reply (Beantwortung der Fragmente eines Ungenannten) to the Wabenbüttel Fragments (see REIMARUS) and to K. F. Bahrdt's confession of faith, a step which was interpreted by the extreme rationalists as a revocation of his own rationalistic position. Even the Prussian government, which favoured Bahrdt, made Semler painfully feel its displeasure at this new but really not inconsistent aspect of his position. But, though Semler was really not inconsistent with himself in attacking Bahrdt, he did not have to look for a rival. His influence had been lost before that year to decline, and towards the end of his life he felt the necessity of emphasizing the apologetic and conservative value of true historical inquiry. His defence of the notorious edict of July 9, 1788, issued by the Prussian minister for ecclesiastical affairs, Johann Christoph von Wölfflin (1732-1800), the object of which was to enforce Lutheran orthodoxy, might with greater justice be cited as a sign of the decline of his powers and of an unfaithfulness to his principles. He died at Halle on the 14th of March 1791, worn out by his labours, and disappointed at the issue of his work.

The importance of Semler, sometimes called "the father of German rationalism," in the history of theology and the human mind is that of a critic of biblical and ecclesiastical documents and of the historical and philosophical thinker or theologian, though he insisted, with an energy bordering on fanaticism, on certain distinctions of great importance which properly worked out and applied, e.g., the distinction between religion and theology, that between private personal beliefs and public historical creeds, and that between the local and temporal and the permanent elements of historical religion. His great work was that of the critic. He was the first to reject with sufficient proof the equal value of the Old and the New Testament, the uniform authority of all parts of the Bible, the divine authority of the traditional canon of Scripture, the inspiration and supposed correctness of the text of the Old and New Testaments, and the relationship of Scripture to Scripture. Though to some extent anticipated by the Englishman Thomas Morgan, Semler was the first to take due note of and use for critical purposes the opposition between the Judaic and anti-Judaic polemics that characterized the early movements for reform. He gave an original interpretation of the development of the Catholic Church, covering the origin of the Gospels, the Epistles, the Acts of the Apostles, and the Apocalypse. He revived previous doubts as to the direct Pauline origin of the Epistle to the Hebrews, called in question Paracelsus's attribution of the Apocalypse to the second epistle to the end of the 2nd century. He wished to remove the Apocalypse altogether from the canon. In textual criticism Semel pursued further the principle of classifying MSS. in families, adopted by R. Simon and J. A. Bengel. In church history Semler did the work of a pioneer in many periods and in several departments. Friedrich Tholuck pronounces him the "father of the critical school," and vol. 1, p. 30: "the first step in the history from the true critical standpoint." At the same time, it is admitted by all that he was nowhere more than a pioneer.

Tholuck gives 171 as the number of Semler's works, of which only two, the 4th edition of 1768, and the 2nd edition of 1775, are now read for its own sake. Amongst the chief are: Commentatio de demoniaccioces (Halle, 1760, 4th ed. 1779), Umschätzende Untersuchung der dämonischen Leute (1775), Die verschiedenen, auch der modernen Sprache, die historische Kultur der hochkulturen (3 vols., Halle, 1767-1769), das berühmte freiere Untersuchung des Kanon (Halle, 1771-1775), Apparatus ad libereum N. T. interpretationem (1767; ed. v. T. J213), Institutio dogmatica, Introductio in die z Heyden, die christlichen, die theologischen, die gesellschaftlichen, und die moralischen in die Christen (1786), and his autobiography, Semler's Lebensbeschreibung, von ihm selbst abgefasst (Halle, 1781-1782).

For an account of his life and labors, see W. Gess, Gesch. der prot. Dogmatik (Berlin, 1854-1867); Isaac Dornier, Gesch. der prot. Theol. (Munich, 1867); the art. in Herzog's Realencyklopädie; Adolf Hilgenfeld, Einleitung in das Neue Testament (Leipzig, 1875); F. C. Baur, Ephemeris der Kirchengeschichte (1852), and Allericht Ritshulisch, Gesch. des Pietismus (Bonn, 1880-1884).
SEMMLER, IGNATZ PHILIPP (1818–1865), Hungarian physician, was born at Buda on the 1st of July 1818, and was educated at the universities of Pest and Vienna. At first he intended to study law, but soon abandoned it for medicine; and such was his promise that, even as an undergraduate, he attracted the attention of men like Joseph Skoda and Carl Rokitansky. He graduated M.D. at Vienna in 1844, and was then appointed assistant professor in the maternity department, under Johann Klein. In Klein’s time the deaths in this department from what was then known as “puerperal fever” became portentous, the ratio being rarely under 5 on 3 and sometimes exceeding 7-45%. Between October 1841 and May 1843, of 5153 parturient women 829 died; giving the terrible death-rate of 16%, not counting those of patients transferred to other wards. It was observed that this rate of mortality prevailed in the students’ clinic; in the midwives’ clinic it ruled much lower. Semmelweis found no satisfactory explanations of this mortality in such causes as overcrowding, fear, mysterious atmospheric influences, or evill looking over the wards; yet that the cause lay in some local conditions he felt certain. The patients would die in rows, others escaping; and women delivered before arrival, or prematurely, would escape. At last, he tells us, the death of a colleague from a dissection wound “unveiled to my mind an identity” with the fatal puerperal cases; and the beginning of a scientific pathology of septicaemia was made. The students often came to the lying-in wards from the dissecting-room, their hands cleansed with soap and water only. In May 1847 Semmelweis prescribed auberges with chlorinated lime water; in that month the mortality dropped to 12-24%; before the end of the year it had fallen to 5-04, and in the second year to 1-27; thus even surpassing the results in the midwives’ clinic. Skoda and other eminent physicians were convinced by these results (Zeitschrift d. k. k. Gesellschaft der Ärzte in Wien, J. vii. B. p. 107). Klein, however, apparently blinded by jealousy and vanity, supported by other reactionary teachers, and aided by the disasters which then befell the Hungarian nation, drove Semmelweis from Vienna in 1849. Fortunately, in the following year Semmelweis was appointed obstetric physician at Pest in the maternity department, then as terribly afflicted as Klein’s clinic had been; and during his six years’ tenure of office he succeeded, by antiseptic methods, in reducing the mortality to 0-85%. Semmelweis was slow and reluctant as an author, or no doubt his opinions would have obtained an earlier vogue; moreover, he was not only tender-hearted, but also irascible, impatient and tactless. Thus it cannot be said that the stupidity or malignity of his opponents was wholly to blame for the tragic issue of the conflict which brought this man of genius within the gates of an asylum on the 20th of July 1865. Strange to say, he brought with him into this retreat a dissection wound of the right hand, and on the 17th of the following August he died, a victim of the very disease for the relief of which he had already sacrificed health and fortune.

His chief publication was Die Ätiologie der Begriff und die Prophylaxe des Kindbettfiebers (Vienna, 1847). There are biographies by Klein (1882), and the editors of Semmelweis’ works (1887). Dukas (1882), Grosse (Vienna, 1889) and Schüler von Waldersem (Vienna, 1905). For the relations in the order of discovery of Semmelweis to Lister see Lister (T. C. A.).

SEMMERING PASS, the lowest of all the great passes across the Alps; the route from the Danube to the Adriatic, a part of the Danube route, was by the Semmering pass. Between 1848 and 1854 a railway line (the first in any sense to cross the Alps) was constructed, but passes 282 ft. below the summit of the pass (1222 ft.) by a tunnel about 1 m. long. The line runs from Wiener Neustadt (306 m. from Vienna) past Bruck to Graz (139 m. from Vienna), the capital of Styria, whence it is 227 m. by rail to Trieste.

SEMOIS (also spelled Semoy and Semoe), a river of less than 120 m. in length rising near Arlon in Belgium, and flowing into the Meuse near Montmeré in France. It is Belgian for about 100 m. and French for 30 m., and in the Picos de Europa in Spain it is drained into the Duero. At a station near Arlon it is 11-7 m. broad. Its valley remains a narrow gully till it reaches the border of Belgium.

SEMONVILLE, CHARLES LOUIS HUGUET, MARQUIS DE (1759–1839), French diplomat, was born in Paris on the 9th of March 1759, the son of one of the royal secretaries. Minister and envoy extraordinary of France at Genoa in 1790–1791, he was instructed by Dumas to go to Turin to detach Victor Amadeo III. of Sardinia from the Austrian alliance, but was not permitted to cross the Sardinian frontier. In 1793 he had started with H. B. Maret (afterwards duce de Bassano) for Italy where they had missions to Florence and Naples respectively, when the two envoys were kidnapped by Austrian orders in the Valtelline. They remained in a Tirolean prison until December 1795, when there was an exchange of prisoners on the release of Madame Royale, daughter of Louis XVI., from the Temple. In 1799 and 1800, for the reason that he had been sent to the Hague to negotiate the treaties and to summon the Council, he had been made a count of the Empire in 1808, and marquis in 1810. He died in Paris on the 11th of August 1839.

SEMO SANCUS, an Italian divinity worshipped by the Sabines, Umbrians and Romans, also called Dius Fidius and (perhaps wrongly) identified with the Italian Hercules. His dual nature, as a god of light and good faith, is indicated by the names Dius Fidius. Sancus is obviously from sanctus, meaning one who hallows the acts in which he takes part. Semo has been variously explained as: (1) one who presides over seed-time and harvest (serere, cf. the female Semonia); (2) a being apart from and superior to man (se-homo); (3) a demi-god (semis). The priests called bidentales, whose existence is attested by inscriptions, were specially connected with his worship, since lightning which fell from heaven during the day was looked upon as sent by Dius Fidius, and a special class of birds (sangualtes) was under his protection. As the god of oaths, he protected the sanctity of the marriage tie, the rights of hospitality, international treaties and alliances. In his sanctuary on the Quirinal, the foundation
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of which was celebrated on the 5th of June, there were shown the distaff and spindle of Tanaquil, the wife of Tarquinius Priscus, and in the eyes of Roman matrons the embodiment of all wisely virtues. Dionysius of Halicarnassus (iv. 58) states that the treaty concluded between Tarquinius Superbus and the town of Gabii was deposited in the same temple of Sancus, whose name he translates by Zeis πιστος. He could only be invoked under the open sky, as partaking of the nature of a god of light and day; hence a round opening was made in the roof of his temple through which prayers might ascend to heaven. If he was invoked in a private house, those who called upon his name stood beneath the opening in the roof called compluvium. The bronze orbs mentioned by Livy (vii. 20. 8) as having been set up in his temple are also supposed to have some connexion with this, although they may be merely symbols of the eternal power of Rome. There was a second chapel of Semo Sancus on the island in the Tiber with an altar, the inscription on which led Christian writers (Justina Martyr, Tertullian, Eusebius) to confuse him with Simon Magus, and to infer that the latter was worshipped at Rome as a god. The cult of this god possessed a very great importance at Rome; authorities differ as to whether it was of Sabine origin or not. The plural Semones was used of a class of supernatural beings, a kind of tutelary deities of the state.

See Preller, Römische Mythologie; article “Dius Fidius,” by Wissowa, in Roscher’s Lexikon der Mythologie, and his Religion und Kunst im Röm. Reich (1882).—The name Semones is mentioned by Dionysius of Halicarnassus; W. W. Fowler, The Roman Festivals (1890); E. Jannet, Étude sur Semo Sancus Fidius (Paris, 1885), according to whom it was a Sabine fire god.

SEMPACH, a small town in the Swiss canton of Lucerne, built on the eastern shore of the lake of the same name, and about 1½ m. by road north of the Semapach railway station (9 m. N.W. of Lucerne) on the main line between Lucerne and Olten. In 1900 it had 2,592 inhabitants, German-speaking and Romans, and it possessed some traces of its medieval appearance, especially the main gateway, between a watch tower, and reached by a bridge over the old moat. About half an hour distant to the north-east, on the hillside, is the site of the famous battle of Sempach (9th July 1386), in which the Swiss defeated the Austrians, whose leader, Duke Leopold, lost his life. The legendary deed of Arnold of Winkelried (q.v.) is associated with his victory. The spot is now marked by an ancient and picturesque Battle Chapel (restored in 1856) and by a modern monument to Winkelried. Some miles north of Sempach is the quaint village of Münster or Beromünster (973 inhabitants in 1900), with a collegiate church founded in the 10th century and dating, in parts, from the 11th and 12th centuries (fine 17th-century choir stalls and altar frontals), the chapter of secular canons now consisting of invalided priests of the canton of Lucerne: it was in Beromünster that the first dated book was printed (1470) in Switzerland, by care of the canons, while thence came Gering, who introduced printing into France.

See Th. von Liebenau, Die Schlacht bei Sempach (Lucerne, 1886). (W. A. B. C.)

SEMPER, GOTTFRIED (1803-1879), German architect and writer on art, was born at Altona on the 29th of November 1803. His father intended him for the law, but his impulses towards an artistic career were irresistible. His early mastery of classical literature led him to the study of classic monuments in classic lands, while his equally conspicuous talent for mathematics gave him the laws of form and proportion in architectural design. At the university in (r.c.), where he fell under the influence of K. O. Müller. His architectural education was carried out successively in Hamburg, where later, upon his return from Greece, he built the Donner Museum, in Berlin, in Dresden, in Paris under Gau and in Munich under Gärtnert; afterwards he visited Italy and Greece. While in Greece he made observations which showed that in ancient architecture the use of polychrome was frequent. In the diffusion of this discovery he was much aided by Jacques Ignace Hittorff. In 1834 he was appointed professor of architecture in Dresden, and during fifteen years received many important commissions from the Saxon court. He built the opera-house in Renaissance style, the new museum and picture gallery, and a Byzantine synagogue. In 1848 his turbulent spirit led him to side with the revolution against his royal patron; he furnished the rebels with military plans, and was eventually driven into exile. Semper came to London at the time of the Great Exhibition of 1851, and Prince Albert found him an able ally in carrying out his plans. He was appointed teacher of the principles of decoration; his lectures in manuscript are preserved in the art library, South Kensington. He was also employed by the Prince Consort to prepare a design for the Kensington Museum; and he designed the Brighton funeral car. In 1853 Semper left London for Zurich on his appointment as professor of architecture, and with a commission to build in that town the polytechnic school and the hospital. He also built the observatory and the railway station in that city. Here, too, he made plans for a large theatre in Rio Janeiro. In 1870 he was called to Vienna to assist in the great architectural projects since carried out around the Ring. A year later, after an exile of over twenty years, he received a summons to Dresden, on the rebuilding of the first opera-house, which had been destroyed by fire in 1869; his second design was a modification of the first. The closing years of his life were passed in comparative tranquillity between Venice and Rome, and in the latter city he died on the 15th of May 1879. In 1892 a bronze statue of Semper, by Johannes Schelling, was unveiled on the Brühlische Terrasse in Dresden.

Semper's style was a growth from the classic orders through the Italian and French Renaissance, and the rococo forms which he found rooted in Germany, and, reverting to the best historic examples, fashioned a purer Renaissance. He stands as a leader in the practice of polychrome, since widely diffused, and by his writings and example did much to reinstate the ancient union between architecture, sculpture and painting. Among his numerous literary works are Über Polychromie u. ihren Ursprung (1851), Die Anwendung der Farben in der Architektur u. Plastik bei den Alien, Der Stil in den technischen u. tektonischen Künsten (1860-1863). His Notes of Lectures on Practical Art in Metals and Hard Materials: his Technology, History and Style, were left in MS.

SEMPILL, the name of a Scottish family long seated in Renfrewshire. An early member, Sir Thomas Sempill (d. 1488), was killed whilst fighting for James III. at the battle of Sauchieburn, and his son John (d. 1513), who was made a lord of parliament about 1480, fell at Flodden. John's grandson, Robert, 3rd Lord Sempill (c. 1505-1572), assisted the Scottish regent, Mary of Lorraine, in her struggle with the lords of the congregation, and was afterwards one of the partisans of Mary, queen of Scots; about 1566, however, he deserted the queen, against whom he fought at Carberry Hill and at Langside. His grandson, Robert (d. 1611), became the 4th Lord Sempill, and another grandson was Sir James Sempill of Beltrees (q.e.).

The title of Lord Sempill descended to Francis, the 8th lord (d. 1684), who was succeeded by his sister Anne (d. 1659), the wife of Francis Abercomby (d. 1703), who was created a peer for life as Lord Glassford. Their sons, Francis, John and Hugh, who took the surname of Sempill, succeeded in turn to the title. Hugh, 12th Lord Sempill (d. 1746), fought in Spain and in Flanders, and held a command in the English army at Culloden; in 1747 he was made colonel of the Black Watch. His title descended to Selkirk Sempill, the 15th lord (1758-1835), who was succeeded by his sister, Maria Janet (1790-1884). She was succeeded by a cousin, William Forbes (1836-1905), a descendant of the 13th lord, who took the name of Forbes-Sempill; in 1905 his son, Hugh, Hereditary Great High Constable of the Findhorn and Avoch, succeeded.

A certain Robert Sempill, who served James Edward, the Old Pretender, in France, and is described as a captain in Dillon's famous Irish regiment, was created Lord Sempill by this prince after 1723. This circumstance has given rise to a certain amount of confusion between the different holders of the title.

SEMPILL (or SEMPILL), SIR JAMES, ROBERT and FRANCIS, three Scottish ballad-writers, known as the Sempills of Beltrees from their place in Renfrewshire.

SIR JAMES SEMPILL (1666-1696) was the son of John Sempill of Beltrees, and Mary Livingstone, one of the "four Marys," companions of Mary, queen of Scots. He was brought up with James VI. under George Buchanan, and later assisted the king
in the preparation of his Basilikon Doron. Ambassador to England 1590-1600, he was made a knight bachelor, and in 1601 was sent to France. He died at Paisley in 1626. His wife was Egidia or Egllis Elphinstone of Blythwood. He wrote some theological works in prose, but is chiefly remembered for the poem "The Packman's Pater Noster," a vigorous attack upon the Church of Rome. An edition was published at Edinb
ger 1669 entitled "A Pick-tooth for the Pope, or the Packman's Pater Noster." No details of his education are known, S. was newly augmented and enlarged by his son R. S." (reprinted by Paterson). Seven poems, chiefly of an amorous character, are printed in T. G. Stevenson’s edition of The Sempill Ballates.

ROBERT SEMPILL [the younger] (1675-1665?), son of the above, was educated at the university of Glasgow, having matriculated in March 1614. During the Civil War he fought for the Stuarts, and seems to have suffered heavy pecuniary losses under the Commonwealth. He died between 1660 and 1669. He married Mary, daughter of Sir Thomas Lyon of Auldbar. His reputation is based on the ballad "The Life and Death of Habbie Simpson Piper of Killbarchan," written c. 1640. It is an interesting picture of the times; and it gave fresh vogue to the popular six
lined stanza which was much used later by Ramsay, Ferguson and Burns (see particularly, Burns’s "Poor Mailie’s Elegy"). Two broadside copies were printed before 1700, and it appeared in James Watson’s Collection of Poems (1706-1710). Sempill is supposed to be the author also of an epitaph on "Sawney Briggs, nephew to Habbie Simpson," written in the same stanza. He wrote a continuation of his father’s "Packman’s Pater Noster." FRANCIS SEMPILL (1616-1682) was a son of Robert Sempill the younger. No details of his education are known. His fidelity to the Stuarts involved him in money difficulties, to meet which he alienated portions of his estates to his son. Before 1677 he was appointed sheriff-deputy of Renfrewshire. He died at Paisley in March 1682. Sempill wrote many occasional pieces, and his name as a wit was widespread. Among his most important works is the "Banishment of Poverty," which contains some biographical details. "The Blytheosome Wedding," a long attributed to Francis Sempill, has been more recently asserted to be the work of Sir William Scott of Thirlestane. Sempill’s claim to the authorship of the celebrated song "She raised and let me in," and of the ballad "Maggie Lauder," has been discussed at considerable length. It seems probable that he had some share in both.

See the works mentioned below in the article on the elder Robert Sempill, and The Poems of the Sempills of Buteles, ed. J. E. Paterson (Edinburgh, 1845); A Literary History of Scotland, by J. H. Masson (1903); and Notes and Queries, 9th series (xi, 1903, pp. 436-437).

SEMPILL, ROBERT [the elder] (c. 1530-1595), Scottish ballad-writer, was in all probability a cadet of illegitimate birth of the noble house of Sempill or Semple. Very little is known of his life. He appears to have spent some time in Paris. He was probably a soldier, and must have held some office at the Scottish court, as his name appears in the lord treasurer’s books in February 1572-1573, and in 1572-1573, and in 1572 his writings show him to have had an intimate knowledge of court affairs. He was a bitter opponent of Queen Mary and of the Catholic Church. Sempill was present at the siege of Leith (1559-1556), was in Paris in 1572, but was driven away by the massacre of St Bartholomew. He died probably present at the siege of Edinburgh Castle (1573), serving with the army of James Douglas, earl of Morton. He died in 1595. His chief works are: "The Siege maid vpoun Margret Fleming callit the Flemynk bark "; "The defence of Crissle Sandelandis "; "The Clath Merchant or Ballat of Jonet Reid, ane Violet and Ane Quhyt," all three in the Bannatyne MS. They are characterized by extreme coarseness, and are probably among his earlier works. His chief political poems are "The Regents Tragedie," a broadside of 1570; "The Siege of the Castle of Edinburgh" (1573), interesting from an historical point of view; "Aine Complaint vpon fortoun ". (1581); and "The Legend of the Bishop of St Andros Lyfe callit Mr Patrik Adamsone" (1583).


SEMUROU-EN-AUVEUX, a town of eastern France, capital of an arrondissement in the department of Côte-d’Or, 45 m. W.N.W. of Dijon on the Paris-Lyon railway. Pop. (1906) 3278. Semur occupies one of the finest sites in France, on the extremity of a plateau dominating the river Armançon, which surrounds the town on three sides. The river forms this extremity into a peninsula which is occupied by the old town, once surrounded by ramparts, the remains of which are still to be seen. An isthmus, on which stands the castle, unites the older to the newer quarter, with the church, the cathedral of the 15th century and the church of Notre-Dame. This building, which belongs mainly to the 13th century, is one of the purest examples of Gothic architecture in Burgundy, though the narrowness of the nave, to some degree, spoils its proportions. The portal with its three arched opennings projects from the façade, which is flanked by two square towers surmounted by balustrades. Of the artistic features of the interior one of the most noteworthy is the sculptured keystone of the vaulting of the apse, representing the crowning of the Virgin. The castle (13th and 14th centuries) consists of a rectangular keep flanked by four towers. Portions of it are still in use. Among the town’s points of historical interest is one belonging to the time of Louis XIV, of which the last proprietor was Florent Château, husband of the friend of Voltaire. It is now used as a hospital. Semur possesses a sub-prefecture, a tribunal of first instance and a communal college. It is an important market centre for the Auvos and Morvan, and has trade in horses, grain, sheep, fruit and vegetables. Cement, leather, oil, and chemical manures are among its industrial products.

SÉNAC DE MEILHAN, GABRIEL (1726-1803), French writer, son of Jean Sénac, physician to Louis XV., was born in Paris in 1726. He entered the civil service in 1762; two years later he bought the office of master of requests, and in 1766 further advanced his position by a rich marriage. He was successively intendant of La Rochelle, of Aix and of Valenciennes. In 1776 he became intendant-general for war, but was soon compelled to resign. He had hoped to be made minister of finance, and was disappointed by the nomination of Necker, of whom he became a bitter opponent. He was intimate with thécomtesse de Tessé, sister of the Duc de Choiseul, and in 1781 met Madame de Crény, then sixty-seven years of age, and began a long friendship with her. His first book was the fictitious Mémoires d’Anne de Gouagne, princesse palatine (1786), thought by many people at the time to be genuine. In the next year followed the Considérations sur les richesses et le luxe, combating the opinions of Necker; and in 1788 the more valuable Considérations sur l’esprit et les mœurs, a book which abounds in sententious, but often excessively frank, sayings. Sénac witnessed the beginnings of the Revolution in Paris, but emigrated in 1790, making his way first to London, and then, in 1791, to Aix-la-Chapelle, where he met Pierre Alexandre de Tilly, who asserts in his Mémoirs that Sénac attributed the misfortunes of Louis XVI. to the refusal of his own services. In 1793, while his recollections of the Revolution were still fresh, he wrote a novel, L’Enlairé (Hamburg, 4 vols., 1797), which shows perspicacity and good judgment in its treatment of events. It was reprinted in 1904 in an abridged form by Casimir Stryjinski and Franz Funck-Brentano. At the invitation of Catherine II. Sénac went in 1792 to Russia, where he hoped to become imperial historiographer, but his manners displeased Catherine, who contented herself with dismissing him with a pension. From Russia he went to Hamburg.
and thence to Vienna, where he found a friend in the prince de Ligne. He died on the 16th of August 1803. Séancé also wrote a moderate exposition of the causes that led to the revolution, entitled Du gouvernement, des masques et des conditions en France avant la Révolution, avec les caractères des principaux personnages du règne de Louis XVI; the last part was reprinted (1813) by the duc de Levis with a notice of the author as Portraits et caractères. Séancé collected his own Œuvres philosophiques et littéraires (2 vols.) at Amsterdam, and was the subject of a number of pamphlets, and the best of his Séancé was prefixed to his edition (1905) of the Considérations sur l’esprit et les maux.

SEANCOUQ, ÉTIENNE PIVERT DE (1770–1846), French author, was born in Paris in November 1770. His father desired him to enter the seminary of Saint-Sulpice preparatory to becoming a priest, but Senancour, to avoid a profession for which he had no vocation, went on a visit to Switzerland in 1786. At Fribourg he married in 1790 a young Frenchwoman, Madeleine Daguet, but the marriage was not a happy one. His wife refused to accompany him to the Alpine solitude he desired, and they settled in Fribourg. His absence from France at the outbreak of the Revolution was interpreted as hostility to the new government, and his name was included in the list of emigrants. He visited France from time to time by stealth, but he only succeeded in saving the remnants of a considerable fortune. In 1799 he published in Paris Les amours de deux etiennes, a novel, and Theophile, a novel saturated with impassioned descriptive passages which mark him out as a precursor of the romantic movement. His parents and his wife died before the close of the century, and Senancour was in Paris in 1801 when he began Obermann, which was finished in Switzerland two years later, and printed (Paris, 2 vols.) in 1804. This singular book, which has never lost its popularity with a limited class of readers, was followed in the next year by a treatise De l’amour, in which he attacked the accepted social conventions. Obermann, which is to a great extent inspired by Rousseau and Voltaire, and is supported by highly philosophical and historical arguments, is a work of a higher class of fiction than had hitherto been attempted in France. The life of Obermann and his adventures are entertaining, and the book is well written, but it is not in literature that Senancour’s fame is to be found. In the year 1800 he became an officer in the artillery, and in 1802 he was promoted to the rank of colonel in the army. He was killed at the siege of Cadiz on the 26th of October 1810.

SEARMONT, HENRI HUREAU DE (1808–1862), French mineralogist and physician, was born at Broué, Éure et Loire, on the 6th of September 1808. He became engineer-in-chief of mines, and professor of mineralogy and director of studies at the École des Mines at Paris. He was distinguished for his researches on polarization and on the artificial formation of minerals. He represents of the most important maps of the geology of Seine et Marne and Seine et Oise for the Geological Survey of France (1844). He died in Paris on the 30th of June 1862.

SENATE (Lat. senatus, from root sen-, as in senex, old; the root is the Sanskrit sana, cfr. Gr. ἀνήρ; the same element appears in sēnār, seigneur, seneschal) literally the assembly of old men, originally the heads of the chief families, and hence, in general, the upper council in a governmental system. The Latin word corresponds with the Greek gerousia (q.v.), the name of the similar body at Sparta; it must not be used of the Cleisthenic council (see). The Athenian assembly, and hence the assem-
time, and the evidence of Zonaras to the contrary is universally discredited. The appointment of senators depended entirely upon the king. They were not appointed for life, but at the pleasure of the king who summoned them. It is possible that a king might change his advisers during his reign, and a new king could certainly abstain from summoning some of those convened by his predecessors. The powers of the senate at this time were very indefinite. Tradition ascribes to it the control of the interregnum and a power of sanctioning acts of state (patrum auctoritas), in which it was difficult to give any significance for this early period. It seems also to have possessed a customary right of controlling foreign policy, for the ancient formula of the Fetiales refers to the sanction of the patres (Liv. i. 32). From the senate also must have been chosen the delegates appointed by the king either to be his executive representative when he was absent in the field (profectus urbi), or to assist him in jurisdiction (Itári perduellionis, quaestores parricidii).

The abolition of monarchy, and the substitution of two annually elected consuls did not at first bring any important change in the position of the senate. It was not a controlling body of the consuls, meeting only at their pleasure, and owing its appointment to them, and remained a power distinctly secondary to the magistrates, as it had been formerly to the king. The magistrates at this time were chosen entirely from the patrician houses, and the senate long remained a stronghold of patrician prejudice. Tradition ascribes to the first consuls some change in the class from which senators were drawn, but various accounts of the change are given (Livy ii. 1; Festus, p. 234; Dionys. v. 13; cf. Tac. Ann. xi. 25). Whatever the exact nature of the change, we may be certain that patricians were not yet in a position to exercise any important part of the executive power at this time. Such a change is utterly improbable at the crisis of a patrician coup d'état, such as the expulsion of the Tarquins certainly was, and there is no evidence for the existence of a plebeian senator before the year 401 B.C. The statement that some modification in the original principle of selection was made in this year is invariably introduced as an explanation of the title patres conscripti, which is held to imply a distinction of rank within the senate, as derived from the formula of summons "qui patres, qui conscripti (esis)." But either this formula is not as early as 500 B.C. or the term conscripti does not refer only to plebeians. In one respect the substitution of consuls for kings tended to the subordination of the chief magistrates to the senate. The consuls held office only for one year, while the senate was a permanent body; in experience and prestige its individual members were often superior to the consuls of the year. It was therefore improbable that the magistrate would venture to disregard the advice of his consilium, especially as he himself would pass into the senate at the close of his year of office, according to a recognized custom which was gradually modifying the theoretical freedom of choice that the consuls possessed with regard to their consilium. It was probably in their capacity of ex-magistrates that plebeians first entered the senate; for the first plebeian senator mentioned by Livy, P. Licinius Calvus, was also the first plebeian consular tribune. This is hardly likely to be mere coincidence. Of the two standing powers which the senate inherited from the monarchy, the interregnum and the patrum auctoritas, the first had become even rarer of exercise than before; for if either consul existed to nominate a successor, interregnum could not be resorted to. The patrum auctoritas, on the other hand, developed into a definite right claimed by the senate to give or withhold its consent to any legislative or elective act of the consuls, which could not be valid without such consent. The control, too, which it had long exercised over foreign policy must have increased the importance of the senate in a period of constant warfare with the nations of Italy. But in the early republic the senate remained primarily an advising body, and had as yet assumed no definite executive powers.

In the last two centuries of the republic we find that a great change has taken place in the position of the senate. It is now a self-existent, automatically constituted body, independent of the magistrates, a recognized factor in the constitution and the wielder of extensive powers. Its self-existence could only be secured by a transference of the selection of the senate from the magistrate to some other authority, and was actually effected by enacting the selection to the recently instituted college of censors. The censorship was instituted in 443 B.C., and some time before the year 311 it was placed in charge of the lectio senatus. Conditions of selection had also been imposed by 311, which made the constitution of the senate practically automatic. Ex-curule magistrates were now admitted as a matter of course, together with any other persons who had done conspicuous public service in the lower grades of the magistracy or the higher ranks of the army; and for some time before Sulla's dictatorship little power of choice can really have rested with the censors. The powers of the Senate had not extended far beyond its two ancient prerogatives of appointing an interrex, and ratifying decisions of the comitia. The first of these powers, as has been shown above, had fallen into practical disuse, and the second had for some reason become a mere form by the last century of the republic. It is improbable that the change was entirely the result of the lex Publilia of 387 B.C., which decreed that the senate should exercise its auctorialitas before the voting instead of after, though this law may have formed part of a process very imperfectly known to us by which senatorial control of legislation in this form was gradually nullified. But the senate had acquired a far more effective control over the popular vote through the observance of certain unwritten rules regulating the relation between senate and magistrates. It was generally understood that the magistrate should not question the people on any important matter without the senate's consent, nor refuse to do so at its request; that one magistrate should not employ his veto to quash the act of another except at the senate's bidding, nor refuse to do so when directed. Such was the situation which had developed out of the tendency noticed above for the magistrate to be advised by his council in all important matters. Again, the earlier control of foreign policy developed into a definite claim put forward by the senate and recognized by the constitution to conduct all negotiations with a foreign power and frame an alliance which should merely be offered to the people for ratification. For the organization of a new Roman province even this formal ratification was dispensed with, and a commission of senators alone aided the victorious general in the organization of his conquests. The senate also held an important power in its right to distribute spheres of rule among the various magistrates. It seems also to have had entire control over the external relations of the free cities which were scattered throughout the provinces, but formed no administrative parts of those provinces, holding their rights by charter for which they depended upon the senate. The control of finance was also entirely in the senate's hands. Three circumstances had combined to bring about this result. The censors, who were only occasional officials, were entrusted with the leasing of the public revenues; the senate not only directed the arrangements made by them, and received appeals against oppressive contracts, but also controlled any financial assignments that had to be made during the vacancy in the censorship. Again, the details of public expenditure had been in very early times entrusted to the quaestors, who, when the magistracies were multiplied, occupied an entirely subordinate position; this strengthened the position of the senate as the natural director of a young and inexperienced magistrate. Thirdly, the general control exercised by the senate...
over provincial affairs implied its direction of the income derived from the provinces, which in the later republic formed the chief property of the state. It had also claimed a right, unchallenged till the time of Tiberius Gracchus, of granting occupation and decreeing alienation of public lands, or of accepting or rejecting gifts and bequests to the state. Every branch of state finance was therefore in its hands. In matters of criminal jurisdiction the senate claimed the right to set free by its decree in case of emergency the full powers of coercitio contained in the imperium of a magistrate, but limited normally in capital cases by successive laws of appeal. The exercise of this right amounted to a declaration of martial law, and had the effect of giving to the courts the same powers of summary jurisdiction which had resided in the dictatorship. It was only resorted to in cases of special urgency, such as the epidemic of poisoning in 333 B.C. (Livy viii. 18), the prevalence of Bacchanalian licence in the city in 186 B.C. (id. xxxix. 18) and the formidable preponderance of the revolutionist tribune Tiberius Gracchus in 133 B.C. The action of the senate on this last occasion evoked a vigorous protest from the people, on the ground that the senate was not acting on behalf of the state against its enemies, but in the interest of one party in the state against the other, and Cicero subsequently forbade any such exercise of capital jurisdiction on the part of a magistrate, whether authorized by the senate or not. The senate continued, however, to make use of this decree, and the question of its right to do so was one of the chief points at issue in the final struggle between the senatorial and democratic parties. The best known instance of this decretum ultimum in the last century of the republic is that of 63 B.C., when Cicero took summary action against the Catiliniasts, and justified his action on the plea that this decree had authorized him to do so. The senate also exercised a police control in Rome in sudden emergencies. It dissolved by a decree passed in 64 B.C. a number of trade guilds which had become the centres of political disturbance, and framed decrees from time to time dealing with bribery and corruption. The chief feature of the democratic revolution at Rome which occupied the century following the tribunate of T. Gracchus was an uncompromising opposition to the tenure of these extensive powers by the senate. Sulla's enactments in 81 B.C., which aimed at restoring its ascendancy, show how clearly how much power it had already lost; and his attempts to reinstate it were short-lived (see ROME: HISTORY II. "The Republic"). The Gracchi and Caesar alike found themselves obliged to override senatorial prerogatives in the interests of progressive legislation, and though the senate, owing to its strong hold over the magistracy, succeeded repeatedly in dealing death to its opponents, it never regained the popular confidence; and the practical extinction of the old senate in 49 B.C. was hardly lamented.

Caesar's revision of the senatorial list and his increase of the senate to 600 was a return to the old practice by which kings and the early magistrates had chosen their own body of councillors. And though after this revision Sulla's arrangement for the automatic replenishing of the senate was restored, yet the growing influence exercised by Caesar and his successors over elections secured their control over the personnel of the senate. Still, the senate was regarded in the early principate as the great representative of republican institutions, and Augustus took elaborate pains to divide his authority with the senate. In legislation, indeed, the senate was supreme under the principate. The legislative powers of the comitia became very gradually extinguished; but long before the disappeared senatus consultum had come to take the place of legis in ordinary matters, and with this prerogative of the senate the princes never directly interfered. Jurisdiction remained largely in the hands of the republican courts, but such cases as did not come under their cognizance were divided between princes and senate. The senate, moreover, was left at the head of the ordinary administration of Rome and Italy, together with those provinces which, not requiring any military force nor presenting special administrative difficulties, were left to the care of the Roman people. It also retained control of the public treasury (see AERARIUM), while Caesar administered his own treasury (aescus). It gradually became the electing body for the annual magistrates; and, as entrance to it was still won chiefly through the magistracy, co-optation became practically the principle of admission. But the power the senate theoretically possessed of creating and deposing a princeps was, formally at least, the chief of its prerogatives at this time, though considerably limited in practice. It had, on the other hand, lost all its control of foreign administration, which had once been the bulwark of its power; and though occasionally consulted by the princeps, it was entirely subordinate to him in this department. It was clearly to the advantage of the princeps to have some such institution as the senate to give to their rule an appearance of constitutionalism. But even in this capacity the senate did not long survive the overthrow of republican government. Though occasionally reused into activity during the 2nd and 3rd centuries, it ceased after the period of the Julian emperors to have any real control of affairs. Vespasian had admitted Italians and provincials into the senate, with a view, no doubt, to increasing its value as a representative council of the empire; but this widening was counterbalanced by the institution of an hereditary senatorial order by Augustus, which gave recognition to the provincial exclusiveness which had grown up in the later republican period, while reserving to himself the right of recruiting the order.

B. Procedure.—Senatorial procedure remained comparatively unchanged throughout the republic and the first three centuries of the empire. The right of summoning the senate belonged originally to the consuls, and later to the consuls, praetors, and tribunes of the people. The Censors, the Curule Aediles, the quaestors and the praetors might, in case of urgent necessity, summon the meeting, the right belonged to them in the above order of precedence. The magistrate who summoned the senate also presided and brought business before it. He first made statements of the case on important public affairs, and might then at his discretion ask the opinion of the house on points arising out of them, or invite other senators to speak without himself putting the question. It was afterwards defined by the emperor that he was expected to follow a regular order of precedence in asking for votes or speeches, and the magistrates of the year were precluded from expressing their opinion. When the chief senators had expressed their opinion on the motion of the president, or made proposals of their own, in the former case the house divided on the motion, in the latter the president put to the house in succession the various proposals made. The only important modification of this procedure introduced by the princeps was the extension of all the presiding magistrate's rights to the princes, who, however, enjoyed also the right of giving his opinion as a private senator.

The senate had as its president, at first distinguished from those of ex-curule magistrates. But by degrees the broad stripe (latus clausus) on the tunic and the red shoe (calcem muliex) became distinctive of the senator (hence laticlavus, a senator). The title of curule aedile for the highest of the lower magistrates and the collegia of senators adopted the latus clausus as early as the reign of Augustus, and probably at an earlier time. Certain disqualifications were attached to senators in republican times, chief of which was their exclusion from trade. Their number increased under the princeps. Failure to observe those disqualifications, or any public disgrace or gross misconduct, was punished by removal from the senate by the censors, until that office fell into abeyance after the time of Sulla. The censorial right of removing unworthy members from the senate was revived by Augustus, and was exercised by subsequent emperors at a yearly revision of the list, which supplemented the formal lustration senatus periodically held by the princes in his capacity of censor.

It has been questioned whether the two traditional prerogatives of the senate, the interregnum and the patrum auctoritas, belonged in historical times to the emperor or to its patrician members only, or, as some have maintained, to the whole body of patricians. For conflicting views on this subject, see P. Willems, De Senatus consult., ii. i. p. 1; T. Mommsen, Statthalterei, iii. 1917 et seq.; and Röm. Forschungen, i. 218-249; C. C. L. Lange, De patrum aucl. comm. (Leipzig, 1856-1877); O. Chason, Kritische Untersuchungen über den röm. Staat (Rostock, 1871), p. 41 et seq. In regard to the use of the term plebeian, view the discussion on this point; where the equivalent of the term senatorial magistrates as the equivalent of curule aedile was used, we are aware that the expressions were more than a century reserved for patricians.

General Bibliography.—T. Mommsen, Staatsrecht, iii. 2 (3rd edition, Leipzig, 1887); P. Willems, De Senatus der republica romana (3rd edition, Leiden, 1891); L. L. L. Trefousse, La cohésion du vivant et des morts, 1878, p. 148 ("vom Senat und dem Patrician, "Cassel, 1839); A. H. J. Greenidge, Roman Public Life, p. 261 et seq. (1901); G. W. Botelho, Roman Assemblies (1909); also art. Rome, History. (A. M. CL.)
Senebier—Seneca

Senebier, Jean (1742–1809), Swiss pastor and voluminous writer on vegetable physiology, was born at Geneva on the 6th of May 1742. He is remembered on account of his contributions to our knowledge of the influence of light on vegetation. Though Marcello Malpighi and Stephen Hales had shown that a great part of the substance of plants must be obtained from the atmosphere, no progress was made until Charles Bonnet observed on leaves plunged in aerated water bubbles of gas, which Joseph Priestley recognised to be called by him oxygen and found to be the disapperance of carbonic acid; but it was Senebier who clearly showed that this activity was confined to the green parts, and to these only in sunlight, and first gave a connected view of the whole process of vegetable nutrition in strictly chemical terms.

He died at Geneva on the 22nd of July 1809.

Seth, the name of two famous men (father and son), natives of Corduba (Córdoba) in Spain, who attained eminence in Rome under the Early Empire.

Lucius Annaeus Seneca (c. 54 B.C.—A.D. 65), statesman and orator, was the second son of the rhetorician. His teachers were Attalus, a Stoic, and Sotion, a pupil of the Sextii. In his youth he was a vegetarian and a water-drinker, but his father checked his indulgence in asceticism. He devoted himself to the rhetorical and philosophical studies and early won a reputation at the bar. Gaius criticised his style as mere mosaic (opus quadratum) or "sand without lime," yet being in reality jealous of his successes he would have put him to death had he not been assured that he was too consumptive to live long (Suet. Calig., 63; Dio Cassius lix. 19, 7). Under Claudius his political career (he had been quaestor) received a sudden check, for the influence of Messallina having effected the ruin of Julia, the sister of Gaius, Seneca, who was compromised by her downfall, was banished to Corsica, a.d. 41. There eight weary years of waiting were passed, and the last study of his later life was occupied in an attempt to procure his return by such gross flattery of Claudius as is found in the work Ad Polybium de consolatione or the panegyric on Messallina which he afterwards suppressed. At length the tide turned; the next empress, Agrippina, had him recalled, appointed praetor, and entrusted with the education of her son Nero, then (48) eleven years old. Seneca became in fact Agrippina's confidential adviser; and his pupil's accession increased his power. He was consul in 57, and during the first bright years of the new reign, the quinquennium Nerovs, he shared the administration of affairs with Burrus, the praetorian prefect. The government was in his hands, and he was the most influential of the emperors. The influence over Nero, while it lasted, was salutary, though sometimes maintained by doubtful means (see Nero). We must, however, regard the general tendency of Seneca's measures; to judge him as a Stoic philosopher by the counsels of perfection laid down in his writings would be much the same thing as to apply the standard of New Testament morality to the career of a Wolsey or Mazarin. He is the type of the man of letters who rises into favour by talent and suppleness (comitas honesta), and is entitled as such to the rare credit of a beneficent rule. He attended to the times, and in his later works, as the death of Burrus in 62 gave a shock to his position. In vain did he petition for permission to retire. Even when he had sought privacy on the plea of ill-health he could not aver his doom; on a charge of being concerned in Piso's conspiracy he was forced to commit suicide. His manly end might be held in some measure to redeem the weakness of his life but for the testimony it bears to his constant study of effect and ostentatious self-complicity. His second wife, Pompeia Paulina, of noble family, attempted to die with him. His enormous wealth was estimated at 300 millions of sestercii. He had 500 ivory tables to grace his dressing room, and the splendour of his house formed the object of the admiration of his ethics, reckoned Seneca among the Christians; this assumption in its turn led to the forgery of a correspondence between St Paul and Seneca which was known to Jerome (cf. Augustine, Ep. 153: "Seneca . . . cujus etiam ad Paulum apostolum leguntur epistolae"). This has given rise to an interesting historical problem, most thoroughly discussed in many works on the Church in the Roman Empire.

Seneca is at once the most eminent among the Latin writers of the Silver Age and in a special sense the representative at least, because he was the originator of a false style. The affected and sentimental manner which gradually grew up in the first century A.D. became ingrained in him, and appears equally in everything which he wrote, whether poetry or prose, as the most finished product of ingenuity, concentrated upon declaratory exercises, substance being sacrificed to form and thought to point. Every variety of rhetorical conceit in turn contributes to the dazzling effect, now
SENEFELDER, ALOIS (1771–1834), German inventor of lithography, was born at Munich on the 6th of November 1771, his father Peter being an actor at the Theatre Royal. Owing to the death of his father he was unable to continue his legal studies at the university of Ingolstadt, and instead was required to work as a draughtsman and engraver. He commenced business for himself as a performer and author, but without success. In order to accelerate the publication of one of his works, he frequently spent whole days in the printing office, and found the process of printing so simple that he conceived the idea of purchasing a small printing press, thus enabling himself to print and publish his own compositions. Unable to pay for the engraving of his compositions, he attempted to engrave them himself. He made numerous experiments with little success; tools and skill were alike wanting. Copper-plates were expensive, and the want of a sufficient number entailed the tedious process of grinding and polishing afresh those he had used. About this period his attention was accidentally directed to a fine piece of Kellheim stone which he had purchased for the purpose of grinding his ink. His first idea was to use it merely for practice in his exercises in writing backwards, the ease with which the stone could be ground and polished afresh being the chief inducement. While he was engaged one day in polishing a stone slab on which to continue his exercises, his mother entered the room and desired him to write

1 The convention, under the leadership of Lucretia Mott and Elizabeth Cady Stanton, adopted a "Declaration of Sentiments" modelled after the American Declaration of Independence, and resolved "that it is the duty of the women of this country to secure to themselves their sacred right to the elective franchise," and that the same amount of virtue, delicacy and refinement of behavior that is required of women in society should be required of men, and the same transgressions should be visited with equal severity on both man and woman."

SENECA, a tribe of North American Indians of Iroquoian stock. They call themselves Tshokonondowane, "people of the mountain." The French called them Tsnoniontsonon. Their former range was in western New York state between Seneca lake and the Genesee river. They were one of the Six Nations League of the Iroquois, and eventually became the most important tribe of the league. They were foremost in all the wars of the Six Nations, and were the official guardians of the western frontier of the league. The Iroquois defeated the Senecas twice, in 1673 and 1701, and the tribes they occupied the county west of Lake Erie and south along the Alleghany to Pennsylvania. They fought on the English side in the War of Independence. About 2700 are now on reservations in New York State, while a few are in Oklahoma and on Grand River reservation, Ontario.


SENECA FALLS, a village of Seneca county, New York, U.S.A., in the township of Seneca Falls, on Seneca Outlet, or the death of his father Lake Seneca and Lake Cayuga, 42 m. S.W. of Syracuse, Pop. (1900) 6519, of whom 801 were foreign-born; (1905) 6733; (1910) 6588; of the township, including the village (1910) 7407. The village is served by the New York Central & Hudson River, the Lehigh Valley and electric suburban railways, and by the Seneca & Cayuga Canal. In the village are the Mynderse (public) Library and the Johnson Home for Old Ladies (1868). Cayuga Lake Park, a pleasure resort, is 3 m. distant and is reached by electric railway. The village is the shipping point for a farming and dairying region. The river furnishes power for sawmills, flouring-mills, and other factories, among the manufactures are pumps and hydraulic machinery, wagons and farm implements. Seneca Falls was settled about 1790, and was first incorporated as a village in 1831, its charter as revised in 1902 being similar in some respects to that of a city. In Seneca Falls on the 19th and 20th of July 1848 was held a Woman's Rights Convention, the first in the United States.

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The doubt as to his authorship of the tragedian is due to a blunder of Sidonius Apollinaris (ix. 229–231); against it must be set Quintilian's testimony ("ut Medea apud Senecam," i. 2. 8). The judgment of Tacitus (Ann. vii. 4, 13, 42 sq., xiv. 52–56, xv. 60 sq.) is more favourable than that of Dio, who may possibly derive his account from the slanders of some personal enemy like Suetonius. At least eighteen prose works have been lost, among them De superstitione and De nonnullis causis of the epoch of De matrimonio, which, to judge by the extant fragments, must have been interesting reading. Since Gallius (xii. 2. 3) cites a book xxi. of the Life of Nero, some of these have been lost.

The best text of the three works that are known in Teubner's series (1852), was re-edited in 1872–1874 and 1898. More recently Gertz has revised the text of Libri de beneficis et de clementia (Berlin, 1878); he bases it on the Old Latin text (Quellen der lateinischen Historiographie [1878], xvi. 16, 18; Vahlen, Jena, 1879), and Gertz the Dialogi (Copenhagen, 1886).

There is no complete exegetical commentary, either in English or German. Little has been done systematically since the notes of Liberius and Vincentius were printed in the Monum. scriptorum latinorum, publ. by A. Dörign, Senec. disceps. moralis cum Antoniniana comparatione (Leipzig, 1857); E. F. Gelpke, De Senec. vita et moribus (Bern, 1848); Holzher, Der Philosoph Seneca (Rastadt, 1858). See also Sir S. Dill, Roman Society from Nero to Marcus Aurelius (4th ed., Paris, 1878), has criticized them in detail. Of some 300 monographs enumerated in

Engelman may be mentioned, in addition to the above, G. Boissier, in the Festschrift von Carl Horn (Berlin, 1840); A. Döring, Senec. disceps. moralis cum Antoniniana comparatione (Leipzig, 1857); E. F. Gelpke, De Senec. vita et moribus (Bern, 1848); Holzher, Der Philosoph Seneca (Rastadt, 1858). See also Sir S. Dill, Roman Society from Nero to Marcus Aurelius (4th ed., Paris, 1878), has criticized them in detail.

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her a bill for the washer-woman, who was waiting for the linen. Neither paper nor ink being at hand, the bill was written on the stone he had just polished. The ink used was composed of wax, soap and lamp-black. Some time afterwards, when about to wipe the writing from the stone, the idea all at once struck him to try the effect of biting the tallow soap, and indeed, in a breathing moment, he found he could cover its surface with a mixture of one part of aqua fastis and ten parts of water. The result of the experiment was that at the end of five minutes he found the writing elevated about the tenth part of a line (1/3 in.). He then proceeded to apply the printing ink to the stone, using at first a common printer’s ball, but soon found that a thin piece of board covered with fine cloth answered better, communicating the ink more equally. He was able to take satisfactory impressions, and, the method of printing being new, he hoped to obtain a patent for it, or even some assistance from the government. For years Senefelder continued his experiments, until the art not only became simplified, but reached a high degree of excellence in his hands. In later years the king of Bavaria settled a handsome pension on Senefelder. He died at Munich in 1834, having lived to see his invention brought to comparative perfection.

SENEGAL, the dried root of the Polygala Senega, is official in the British and United States pharmacopoeias. Senega contains an active principle, saponin. Senega is used chiefly as a stimulating expectorant in chronic bronchitis. It is occasionally used in hilly wastes, and is contra-indicated in diseased conditions of the heart. It has a tendency to upset the digestion, and is therefore only used in combination with other drugs in what are termed expectorant mixtures.

SENEGAL, a river of West Africa, entering the Atlantic about 16° N., some 10 m. below St Louis, after a course of fully 1000 m. It is formed by the junction of the Bafing or Black river and the Bakhoy or White river, and its chief affluent is the Falémé. North of the Senegal the Sahara reaches the coast, and for over 50 m. the waters enter the sea. The Bafing rises in the Futa Jallon highlands about 2400 ft. above sea-level, in 16° 28’ N., 10° 6’ W., its source being within 125 m. of Konakry on the Gulf of Guinea. It is joined in about 11° 10’ N. and 11° 45’ W. by the Tene, which rises in 13° W. and 10° 37’ N. and flows north-east. A little south of 12° N. the Bafing is a large stream 250 yds. wide, and is here separated from the sources of the Falémé by a line of 2000 ft. high, which send to the latter river four important streams rising in about 12° N. The Bafing follows a northward course for about 350 m., during which it descends by the fall of Conacry a level of 360 ft. above sea-level. The headstreams of the Bafing rise between 11° 30’ and 12° N. and 9° 20’ and 6° 50’ W. on the N.E. versant of the hills which here form a narrow divide between the basin of the Senegal and that of the upper Niger. The Bakhoy, in its upper course much interrupted by rapids, flows N.E., but about 12° 15’ N. turns north-westward. Its principal affluent, the Baule (Red river), and its headstreams rise farther east on the northern slopes of the hills which above Bamako shut off the river. The eastern headwaters of the Senegal thus drain a large area adjacent to the upper Niger. The Baule flows north and in a south-westerly direction to the Macina or Roman, a river of 1000 miles, in about 13° 30’ N. and 16° W. joins the Bafing. After receiving the Baule, the Bakhoy, now a river of fine proportions, flows W. by N. through rocky country in a narrow valley. In 11° 55’ W. and 13° 48’ N. it unites with the Bafing. At the confluence the Bafing is 800 ft. wide, the Bafing at this point having a width of 360 ft.

After the junction of the Black and White rivers the stream is known as the Senegal. The confluence is called Bafulabé, i.e. “meeting of the waters.” Below Bafulabé the river flows N.W. through a valley bordered on either side by hills which throw out rocky spurs, over which it has sometimes a length of 100 ft. It is a wide river, and its bed is covered with coarse gravel. A little below Neufchâtel it is joined by the Falémé, considered a considerable river which rises in hilly country in about 11° 50’ N. and 11° 30’ W. The first rise in the lower Senegal is due to the rains in the source region of the Falémé, while the second rise, and the water passes to the sea in the Bafing owing to its shorter course. A short distance below the Felu Falls is the town of Kayes on the left bank of the river. Between these two points the river runs through a succession of rapids, of which several, such as at Kayes, are difficult. Kayes is the limit of navigability from the sea. From that town a railway connects with the navigable waters of the upper Niger at Bamako (see Guinea). Below Baked the river passes through flatter country and presents a series of great reaches. It sends off numbers of divergent channels (called marigots) forming several islands, the largest being that of Grand Moundou, which is 16° 30’ N., in about 15° 10’ W. Thereafter it runs S.W. and finally due S. In the last 10 m. of its course it runs parallel to the sea, from junction of the Falémé to the mouth of the river. Of the head of this 10 m. is St Louis, the capital of the colony of Senegal. At this point the right branch of the river is only 500 ft. from the open Atlantic. A marigot, called the Ndialier or Maringuins, leaves the river 40 m. above St Louis, pierces the dunes at St Louis and reaches the sea, 50 m. N. of the mouth of the river. The Senegal indeed has what is styled an interior delta, but, with the exception of the marigot named, all the divergent branches rejoin the main stream before the sea is reached.

The comparative shallowness of its streams, the steepness of its upper course and the rapid evaporation which takes place after the precipitation is greatest, would cause the Senegal an insignificant stream for more than half the year; but natural dams cross the channel at intervals and the water accumulates behind them in deep reaches, which thus act as reservoirs. In the rainy season the barriers are removed, the successive dams are broken and the water of the lower Senegal are changed into immense marshes. Lake Cayor on the right side of the lower Senegal and Lake Panifique (Guier) on the left constitute reserve basins, receiving the surplus waters of the rivers, which on flooding spread them over the country. In the upper part of the river the reservoirs are partially protected by curtains of verdure from the effects of the evaporation which makes itself so severely felt on the treeless seaboard. Owing to these natural “locks,” the Senegal never discharges less than 1700 or 1800 cubic ft. per second. The lower Senegal forms the boundary between the Sahara and the western Sudan; the line of its inundations is an ethnographic and the boundary between the nomadic Berber and the settled Negro.

From July to October the level of the Senegal shows a series of fluctuations, with, however, a general increase till the end of August. From the beginning of September to the maximum occurs, boats drawing from 1 ft. to 2 ft. 6 in. can ascend to Kayes from the beginning of June to the middle of November; steamers drawing 4 ft. 3 in. from July to October inclusive; and ocean steamers, lightened so as to draw 11-13 ft., during August and September. From Mafu to the sea, a distance of 215 m., the Senegal is navigable all the year round by vessels drawing not more than 10 ft.

The existence of the Senegal appears to have been known to the ancients. It is usually regarded as the Chretes or Chremetes of Hanno, and the Nachyris and Bambotus of the Romans, and one of the rivers of Tympan, with many of the rivers of Ptolemy’s map. Idrisi and other medieval Arabic geographers undoubtedly refer to it. The seamen of Dieppe are said to have discovered the river about 1360, and even to have built a fort which became the nucleus of the town of St Louis, but this claim is unproved (see Guinea). The mouth of the Senegal, then called Senaga, was entered in 1445 by the Portuguese navigator Dinas Diaz (who thought it a western arm of the Nile), and in 1455 Cadamosto ascended the river for some distance. Leo Africanus rightly describes its lower course as being by its winding channel the broadest and most navigable from the source to the mouth of the river. It is long, and of the explorations of the upper river began, Janneau, Sieur de Rochfort, in that year ascending the river some 200 m. above St Louis.

In 1607 André Bréé reached the island of Moril, while in 1608 he penetrated past the Felu Falls. At that period geographers regarded the Senegal as the termination of the Niger, a theory held until Mungo Park’s demonstration of the eastward course of that stream. Park himself added much to the knowledge of the upper basin of the Senegal. It was not until 1818 that the source (i.e. of the Bafing) was located, by Gaspard Mollion.

SENEGAL, a country of West Africa belonging to France. As a geographical expression it is the land watered by the Senegal river; politically it has a much wider significance. The French possessions in this region are divided into (1) the colony of Senegal, and dependent native states; (2) the colony of Upper Senegal and Niger, with a dependent Military Territory; (3) the Territory of Mauretania. The first colony includes the most westerly coast region of Africa; a large part of the second colony is the great bend of the Niger river and the Military Territory is east of that river. The Territory of Mauretania is part of the western Sahara, stretching indefinitely north from the Senegal river. It includes the oasis of Adrar Temur (see ADRAR) and the coast regions between Cape Blanco and the Senegal river. In the present article the two colonies are dealt with in separate sections (I. and II. below), the story of French conquest and colonization taking this vast region forming section III.

I. SENEGAL.

Senegal is bounded N. by the Territory of Mauretania, W. by the Atlantic, S. by Portuguese Guinea and French Guinea, and E. by the Faleme, which separates it from Upper Senegal and Niger. Wedged into Senegal and surrounded by it save seawards is the British colony of the Gambia. Senegal colony proper consists of the towns of Dakar, St Louis, Goree and Rufisque, a narrow strip of territory on either side of the Dakar-St Louis railway, and a few detached spots, and has an area of 438 sq. m. with a population (census of 1904) of 107,826. The rest of the country consists of native states under French protection, and includes, since 1909, the northern bank of the river Senegal below Bakel. In this larger sense, which is employed in this article, Senegal covers about 74,000 sq. m., with an estimated population of 1,800,000. Among the protected states is Bondou (q.v.) lying immediately west of the lower Faleme.

Physical Features.—The coast follows a S.S.W. direction from the mouth of the Senegal to Cape Verde, the most western point of the African continent. Cape Verde is separated from the mainland by the Falémé river, navigable for vessels of moderate draught. From Cape Verde to the Portuguese frontier there is a narrow strip of land, the Ghiria, lying between the sea and the Faleme river. The only gulf on the coast is that which lies to the south of Cape Verde and contains the island of Goree (q.v.). The coast in the northern part is low, arid, desolate and dune-skirted, its monotonous relieved only here and there by cliffs and plateaus. Further south it becomes marshy, and clothed with luxuriant vegetation. A little to the north of the Gambia the coast-line is much broken by the archipelago of islands formed by the Salam estuarine; and the Gulf of St Louis, the basin of the Gambia river, is cut off from the sea by a series of islands, a group of which are called the St Louis islands.

Between the Senegal and the Gambia and as far east as about 13° E., the country behind the seacoast is a slightly elevated plain which is a semi-arid and fertile region with altitudes of over 4,000 ft. The mountains sink abruptly towards the Niger valley, southwards they join the Futa Jallon highlands. On the north they extend to the left bank of the Senegal and their eastern boundary represents the right bank of the river. From Dakar to the Faleme the Senegal (q.v.), its tributary the Faleme, and the upper course of the Gambia (q.v.) are the chief rivers which drain the country. The Salum, already mentioned, is a river-like estuary which penetrates fully 100 m. and is split into many channels. It is navigable from the sea for 60 m. The Casamance flows between the Gambia to the north and the Cacheo to the south, and has a drainage area of some 6,000 m. Rising in the Futa Jallon, the river has a course of about 212 m., and at Sadiou, 105 m. from the sea, is 1½ broad. Forty miles lower down it is joined by a northern tributary, the Songoogu, and thence to the ocean forms, with its numerous lateral channels, the finest estuary on the Senegal. The Senegal is navigable for vessels of 150 ft. draught up the river, which forms an excellent passage through the Gambia estuary.

The Casamance is navigable for vessels of 30 ft. draught up the river, which forms an excellent passage through the Gambia estuary.

Geology.—The low region of the seaboard has a very uniform character. It consists of sandstones or clay rocks and loose beds of reddish soil, containing marine shells. At certain points, such as Cape Verde and Cape Casamance (or Rougui), the red sandstones crop out, giving to the latter its name. Clay slates also occur, and at intervals these sedimentary strata are interrupted by basaltic amygdaloid and volcanic rocks. For instance, the island of Goree is basaltic. The basaltic rocks are very much formed into peat, and the surface consists more generally of granite, porphyry, syenite or trachyte. In those districts mica-schists and iron ores occur. Iron and gold are found in the mining regions, and the alluvial deposits. Many of the valleys are covered with fertile soil; but the rest of the country is rather arid and sterile.

Climate.—There are two seasons, the dry and the rainy or winter, the latter contemporaneous with the European summer. In the rainy season the wind blows from the sea, in the dry season the har-
SENEGAL

was formerly noted for the export of gum arabic, and on the shores of the bay formed by Cape Blanco is Port Etienne, a fishing station provided with jetties and guarded by a military post. These fast-named ports, however (Dakar, Goree and Rufisque), but are most conveniently mentioned here.) On the river Senegal are the towns of Richard-toll (Richard's garden), Dagana and Bakel, all three founded by the French government in 1821. Carabane, Zighinchir and Saidali, are other fishing stations on the river. Dakar, Goree and Rufisque are communes, with a franchise exercised by natives and Europeans alike. The total white population of the four towns is about 75,000.

Agriculture and Trade.—Senegal's chief commercial product is the ground-nut, which, since 1888, has yielded about 30,000 tons a year. Millet, the staple food of the native population, maize and rice occupy about 1,000,000 acres. The Senegal, in the Moors northern region; the kola nut is cultivated and rubber is collected in the district of Casamance, which projects between Portuguese Guinea and British Gambia. There are large areas of fertile plain on both sides of the river. Of the crops grown in the Senegal basin, those of most importance are the bananas, yams, cassaves, and horses. Gold, iron, quicksilver and copper are found. The natives carry on weaving, pottery, brickmaking, and manufacture of textiles. Cotton goods (chiefly from England) form the most important articles of import, and after them come kola nuts (mainly from Sierra Leone), rice, wines and spirits, tobacco, implements, sugar, coal and fancy goods; the exports are mostly ground-nuts; rubber (much of which comes from the Niger regions), gum and gold coming next in value. The imports and exports of Senegal are not shown separately, the figures for Upper Senegal and Niger being included. The average annual value for the five years ending 1905 was 4,200,000 francs. Dakar, which is the terminus of the line from Bafulabe to Senegal by which the majority of all goods is imported, is the chief port. Over 50% of the shipping is French, Great Britain coming second.

II. Upper Senegal and Niger

This colony is bounded N. by the Saharan territories dependent on Algeria, W. by Senegal and the Territory of Mauretania, S. by the French colonies of Guinea and the Ivory Coast, the Northern Territories of the Gold Coast (British), Togoland (German) and Dahomey (French). The Military Territory dependent on the colony extends E. of the Niger to the Lake Chad territory of French Congo, being bounded S. by Nigeria (British). The colony and its dependent territory thus form the link connecting all the possessions of France in north, west and central Africa. Their area is estimated at 210,000 sq. m., with a population of some 5,000,000. Those tribes living north and east of the Niger are mainly of Berber (Taurae) stock; the inhabitants of the Niger bend are chiefly Negroids, such as the Mandingo, with Fula in certain districts.

The colony, as a whole, consists of a great plateau of granite and sandstone, rarely more than 1,000 ft. high, and in its N.W. part, the Kaarta, all but desert. Hydrographically the western portion belongs to the basin of the Senegal, the central to that of the Niger. At Mopti, 200 m. S.W. of Timbuktu, the Niger receives the Malekal Baliale, which rises in about 0°N, and with its tributaries drains a very large area. In its lower course its diversions are, as the name indicates, independent of the Niger, form in the flood season an immense lake. This region—apparently the Waganda country of Idrisi—is sometimes called Bambira, the name of the chief race inhabiting it. The lakes or widenings of the Niger itself occupy vast areas; Lake Debo, the Lake of Horo, the Lake of Dauna, Lake Faguibini are all to the south or west of Timbuktu, and are permanent. The greater part of the colony lies within the bend of the Niger but westward it includes both banks of the Senegal as far as the fault of the Falame confluence. It also extends north of the Niger so as to include the fertile land on the borders of the Sahara. On the S.W. and S. the country is somewhat mountainous and the general trend of the land and the course of the rivers is south to north. East of the Niger the conditions are mostly Saharan, but there is a belt of fairly fertile country, bordering northern Nigeria and extending to Lake Chad. This region includes the state of Zinder (q.v.) and the oases of Air or Asben and Bilma (q.v.). The country west of the Niger contains patches of forest, but it consists mainly of open land well adapted to agriculture and stock-raising. The fauna includes the lion, elephant, hippopotamus, wild boar, panther and various kinds of antelope. The climate is tropical, but, apart from the districts inundated by the Niger floods, dry and not unhealthy. The well-defined States and emirates included in the colony Bambuk lies between the Senegal and the Falame and Bafing. It is traversed from N.W. to S.E. by the steep and well-like range of the Tamba-Urn Mountains. The soil in a large part of the country is of remarkable fertility; rice, maize, millet, melons, manioc, grapes, bananas and other fruits grow abundantly; the forests are rich in a variety of valuable trees; and extensive stretches are covered with abundant pastureage of the long guinea-grass. The inhabitants, a branch of the Mandingo race, own large herds of cattle and sheep. The reports which reached Europe during the 17th and 18th centuries of a country in Upper Senegal rich in gold to be true, this district, where both alluvial and quartz deposits have been found, though the stories of “hills of gold” remain unverified. In all the protected states the native rulers retain a considerable degree of authority and native law is administered.

Towns.—The principal towns in the colony are, in Upper Senegal, Kayes, Bafulabé and Kita; in the Niger regions Sikaso, the centre of the salt trade; Segou, Sanassandig, Bambara, Jenné (q.v.) and Timbuktu (q.v.). Niore is the capital of the Kaarta country; between it and Timbuktu are Gumbo and Sokoto; Gao (q.v.), Zinder or Sinde (not to be confounded with the Zinder mentioned above), Sansanne Fass, Niamey and Say are towns on the Niger below Timbuktu, Say (q.v.) being an entrepôt for the trade of the east Nigerian regions. In the Niger region there are the important cities of Wagadugu, the capital of Mossa, a port and a pagan state of the 11th century. Satadugu is on the upper course of the Falame. Sati and Leo are towns just north of the British Gold Coast hinterland. Of these towns Kayes is situated on the Senegal at the point of which that river ceases to be navigable from the sea—a distance of 400 m. from St Louis. Bamako, chosen in 1904 as the capital of the colony, is on the upper Niger at the head of its navigable waters and is railway communication with Kayes. Segou, where Mungo Park first reached the Niger, is regarded as the capital of Bambara rather than the town of Bambara, which is on a backwater of the Niger some 100 m. S. of Timbuktu. Before the French occupation the possessors of the ruler of the emirs of Aman and Ahammad had but two posts, the headquarters of the emirs Omar and Ahmadu (see below, History). Sansandig stands on the north bank of the Niger below Segu. It was taken by Mungo Park in 1796, and Lige, P. Mage and Dr Quintin, French officers, witnessed the stand it made in 1866 against a siege by Ahmadu, sultan of Segu, from whom it had revolted. Before its conquest by the Tusareg in the first half of the 19th century, Sansandig was a port and entrepôt, standing at the upper end of the stretch of the Niger navigable for large vessels all the year round. After its occupation by France in 1900 its commercial importance gradually returned. It possesses good anchorage and landing places.

Communications.—There is regular communication by rail and river between Dakar, the principal port of Senegal, and Timbuktu, the capital of the Niger occupying the river. A railway linking the Senegal and Niger rivers starts at Kayes on the Spanish line of E. through Bafulabé and Kita, whence it goes E. to Bamako on the Niger, and follows the left bank of that river to Kulikoro, the terminus of the line which point the Niger is navigable, and from there year round for a distance of 900 m., while from Bamako the Niger is navigable up stream to Kurussa, a distance of 225 m., for the greater part of the year. The Senegal-Niger railway is 347 m. long and has a well-tarred road superimposed upon it for the management and periods of regressive policy in Paris. The total cost was upwards of £3,500,000. Construction of the line was authorized 1880; the line opened 1892, but £700,000 had been spent, but 10 m. of rails had been laid. The 3rd m. was completed at a cost of £7,252 per mile for actual construction. Notwithstanding this heavy expense the line was condemned as hopelessly defective. In 1910 an agreed Bafulabé-Kulikoro line must be considered to have virtually resumed until 1898. The entire line was opened for traffic in 1915. Steamers ply on the Niger between Kabaara, the port of Timbuktu, and Kulikoro and Bamako. Good roads connect Mossi

1For a monograph on Bamako see Quest. dipl. et col. (1907), pp. 561-576.
Captain (afterwards Admiral) Bouët-Willamez had previously explored the Senegal river as far as Médine and was anxious to increase French influence, but his stay in Bengal (1842–1844) was too brief to permit him to accomplish much.

The appointment of General Faidherbe as governor in 1854 proved the turning-point in the history of Senegal. In the meantime the Niger had been explored, Timbuktu visited by Europeans and the riches of the region were attracting attention. General Faidherbe sought to bring these newly opened-up lands under French sway, and dreamed of a French empire stretching across Africa from west to east. As far as concerned West Africa he did much to make that dream a reality. On taking up his post he beat north to the Sahara, and over the sands of the desert being a general industry. Gold is found in the basin of the Falémé and of the Tankissé. Rubber is abundant in the southern part of the Niger bend, the latex being extracted by the natives in large quantities. The people are great agriculturists, their chief crops being millet, maize, rice, cotton and indigo. Tobacco is cultivated by the river folk along the banks inundated by the floods. Wheat is grown in the neighbourhood of Timbuktu, the seed having been, in all probability, brought from Morocco at the time of the Moorish invasion (see TIMBUKTU). The oil of the karite or shea-butter tree, common in the southern and western regions, is largely used. Cattle, sheep and goats also of a good breed, are numerous and largely used as transport animals; wool-bearing sheep—distinct from the smooth-haired sheep of the coast regions—are bred in many districts, the natives using the wool largely for the manufacture of felt. The production of rubber is fairly numerous in the upper portion of the Niger bend and on the left bank of the Niger east of Timbuktu, and their feathers form a valuable article of trade. Most of the trade of this vast region is with France and through Senegal.

The story of the French conquests throughout West Africa is inseparably connected with the history of Senegal. Traditions state that the first French settlements were established elsewhere on the coast, but the line of penetration into the interior of the continent was, until the last few years of the 19th century, invariably by way of the river Senegal. Hence there is a peculiar interest in the record of the early settlements on this coast. The Portuguese had some establishments on the banks of the Senegal in the 15th century; they penetrated to Bambuk in search of gold, and were for some time masters of that country, but the inhabitants rose and drove them out. Remains of their buildings are still to be seen. The first French settlement was probably made in 1656 (see Cape Verde). In 1664, two trading stations were assigned to Colbert’s West India Company, and 1758, when the colony was seized by the British, Senegal had passed under the administration of seven different companies, none of which attained any great success, though from 1697 to 1724 affairs were conducted by a really able governor, André Brue, who did not, however, spend the whole of his time in Africa; from 1703 to 1714 he directed the affairs of Senegal from Paris. Brue made many exploring expeditions and was on one occasion (1701) captured by the natives, who extorted a heavy ransom. Under his direction the aurious regions of Bambuk, long since abandoned by the Portuguese, were revisited (1716) and the first map of Senegal drawn (1724). In the meantime (1677) the French had captured from the Dutch Rufsique, Portudal, Joal and Goree and they were confirmed in possession of these places by the treaty of Nijmegen (1678). In 1717 the French acquired Portendic, a roadstead half way between capes Verde and Blanco, and in 1724 Arguin, an island off the coast of the Sahara, which still belongs to the colony. Goree and the district of Cape Verde were captured by the British under Commodore Keppel in 1758, but were surrendered to the French in 1763, and another treaty of peace in 1783 the whole of the Senegal was also restored. The British again captured the colony in the wars of the First Empire (Goree 1800, St Louis 1809) and, though the treaty of Paris authorized a complete restitution, the French authorities did not enter into possession till 1817. At that time the authority of France did not extend beyond the island of Goree and the town of St Louis, whilst up to 1834 little was effected by the thirty-seven governors who followed each other in rapid succession. Of these governors

1 Lieut. E. Mage (1837–1869) of the French navy, an officer of brilliant promise, first visited Senegal in 1856 when, under Faidherbe’s direction, he went on a mission to the Duallah Moors. The ‘Concorde’, which he commanded, was wrecked off Brest in December 1859 and Mage was drowned.

2 It was in this year (1857) that the governor of Senegal took possession of a small uninhabited group of islands, named the Alcatras, lying off the coast of French Guinea. This act had a tragic sequel. By agreement with the governor, a chieftain of the neighbouring mainland sent four of his warriors to the islands to guard the ‘Concorde’ which was, however, taken possession of by the French, and, like the islands themselves, completely forgotten by the authorities, and, the Alcatras producing nothing but sand, the four men starved to death, after exhausting the supplies with which they had been originally provided.
had by 1880 made himself master of a large area in the upper Niger basin. In 1887, and again in 1889, he was induced to recognize a French protectorate, but peace did not long prevail either. Nicolaou, on a spot where the Niger turns west, was afterwards renamed in 1890; Ahmadu lost Segu; Niore the capital of Kaarta was occupied (1891); Jenné was taken in 1893. Samory proved a veritable thorn in the flesh to his opponents. Wild and elusive, he made and broke promises, tried negotiation, shifted his “empire” to the states of Kong, and after numberless encounters was finally defeated on the Cavalla to the north of Liberia, and taken prisoner in September 1898. He was deported to the Gabun, where he died in 1900.

The consumption of the country in 1893, the effective area of French control was increased by M. Coppolani, secretary-general of French West Africa, who in February 1903 induced the emirs of certain Trazzia and Brakna Moors inhabiting a fertile region on the northern bank of the lower Senegal to place their country under the direct supervision of French officials. In the following year these regions were formally constituted the Territory of Mauretania, being placed under the direct control of the governor-general of French West Africa represented on the spot by a civil commissioner. In 1905 M. Coppolani, this commissioner, was murdered by a band of fanatics at an oasis in the Tagant plains (October 1905–1906), a force under Colonel Gouraud, after considerable fighting—the natives receiving help from Morocco—made effective French influence in Adrar Temur.

For the history of the native states in this vast region, see Timbuktu, Jenne, MANDINGO, GUINEA, &c. Consult also the article NIGER.

The general oversight of both colonies is in the hands of the governor-general of French West Africa. Senegal proper has been the subject of special legislation, its government being modelled on that of a department in France.

The governor-general, who controls the military as well as the civil administration, is assisted by a secretary-general and by a privy council (conseil privé) consisting of high officials and a minority of unofficial nominated members, but he is not bound to follow its advice. This council corresponds to the prefectural council of a department. There is also a council-general (conseil général) with powers analogous to those of the similar councils in France. The Senegal council, however, does not share the right, possessed by the councils of other French colonies, of voting the budget, which is fixed by the governor-general of French West Africa. The inhabitants of “communes with full powers” (i.e. St Louis, Dakar, Goree and Rufisque) alone have the right of electing the council-general. The same constituencies—in which no distinction of colour or race is made—elect (law of April 1879) to the French chambers one deputy, who is also a member of the superior council of the colonies, a consultative body sitting in Paris. The communes named have the same municipal rights as in France. There have been, in addition, since 1891, “mixed” and native communes with restricted powers of local government. The judicial system applied to Europeans resembles that of France, and the judicature is independent of the executive. Native laws and customs not repugnant to justice are respected. Education is given in village, commercial and technical schools, all maintained by the state. Arabic is taught in all Mahommadian districts.

The colony of Upper Senegal and Niger has a more rudimentary constitution. Its administrative council contains three “notables,” unofficial members nominated by the lieutenant-governor.

Administrative divisions.

At first the whole of the conquered or protected territories were either administered from Senegal, or placed under military rule. Subsequently the upper Senegal country and the states included in the bend of the Niger were formed into a separate administrative division and were given the title of "French Sudan." As the result of further reorganization (October 18, 1899) the colonies of French Guinea, Ivory Coast and Dahomey were given their geographical hinterlands, and in October 1902 the central portion was created a protectorate under the style of the Territories of Senegambia and of the Niger. A further change was made in 1904 (decree of the 18th of October) when this central portion was changed into "The Colony of Upper Senegal and Niger." The new colony was placed under a lieutenant-governor.

Within the framework of the country in 1903, the effective area of French control was increased by M. Coppolani, secretary-general of French West Africa, who, in February 1903 induced the emirs of certain Trazzia and Brakna Moors inhabiting a fertile region on the northern bank of the lower Senegal to place their country under the direct supervision of French officials. In the following year these regions were formally constituted the Territory of Mauretania, being placed under the direct control of the governor-general of French West Africa represented on the spot by a civil commissioner. In 1905 M. Coppolani, this commissioner, was murdered by a band of fanatics at an oasis in the Tagant plains (October 1905–1906), a force under Colonel Gouraud, after considerable fighting—the natives receiving help from Morocco—made effective French influence in Adrar Temur.

For the history of the native states in this vast region, see Timbuktu, Jenne, MANDINGO, GUINEA, &c. Consult also the article NIGER.

The general oversight of both colonies is in the hands of the governor-general of French West Africa. Senegal proper has been the subject of special legislation, its government being modelled on that of a department in France.

The governor-general, who controls the military as well as the civil administration, is assisted by a secretary-general and by a privy council (conseil privé) consisting of high officials and a minority of unofficial nominated members, but he is not bound to follow its advice. This council corresponds to the prefectural council of a department. There is also a council-general (conseil général) with powers analogous to those of the similar councils in France. The Senegal council, however, does not share the right, possessed by the councils of other French colonies, of voting the budget, which is fixed by the governor-general of French West Africa. The inhabitants of “communes with full powers” (i.e. St Louis, Dakar, Goree and Rufisque) alone have the right of electing the council-general. The same constituencies—in which no distinction of colour or race is made—elect (law of April 1879) to the French chambers one deputy, who is also a member of the superior council of the colonies, a consultative body sitting in Paris. The communes named have the same municipal rights as in France. There have been, in addition, since 1891, “mixed” and native communes with restricted powers of local government. The judicial system applied to Europeans resembles that of France, and the judicature is independent of the executive. Native laws and customs not repugnant to justice are respected. Education is given in village, commercial and technical schools, all maintained by the state. Arabic is taught in all Mahommadian districts.

The colony of Upper Senegal and Niger has a more rudimentary constitution. Its administrative council contains three “notables,” unofficial members nominated by the lieutenant-governor.
questions, and gives a chronological table of leading events. For history, consult "Les Compagnies de colonisation en Afrique occi-
dentale sous Colbert," by P. Chemin-Dupontes, in Revue coloniale
(1902-1903 and 1903-1904); J. Machet, Documents sur les établisse-

1904). For Maurétanie see La Maurétanie (Paris, 1898), another record of the French protectorate, and A. Gravel and R. Chenuen, À Travers la Maurétanie occidentale (Paris, 1909). See further the works of Faidherbe and Galiendl quoted in their biographies, and the reports on the trade, etc., of French West Africa issued by the Berber and Foreign Office.

**SENEGAMBIA**, a term used to denote the region between the rivers Senegal and Gambia on the west coast of Africa. The country south of the Gambia as far as Sierra Leone was formerly also regarded as part of Senegambia. As a geographical expression Senegambia fell into disuse towards the end of the 19th century. Part of the hinterland is included in the French colony of Upper Senegal and Niger (see SENEGAL, II.).

**SENAICHAL** (the O. Fr. form, mod. zénichal, of the Low Lat. senescalus, a word of Teutonic origin, meaning "old or senior servant," Goth. sinil- old; cf. Lat. senex and scalis, servant; Du Cange's derivation from seneste, flock, herd, must be rejected), the title of an official equivalent to "standard bearer". The French equivalent was the seneschal or seneschal, a major domin of the German barbarian princes who settled in the empire, and was therefore the predecessor of the mayors of the palace of the Merovingian kings. But the name seneschal became prominent in France under the third or Capetian dynasty. The seneschal, called in medieval Latin the dapifer (from daps, a feast, and ferre, to carry), was the chief of the great officers of state of the French court between the 11th and the 13th centuries, the others being the butler, the chamberlain, the constable and the chancellor. His functions were described by the term major regius, the great prince of France. From the 12th century he was the chief officer of the royal household, and agent of the kingdom of France. The English equivalent was the lord high steward, but the office never attained the same importance in England as in France. Under the earlier Capetian sovereigns the seneschal was the second person in the kingdom. He inherited the power and position of the mayor of the palace—had a general right of supervision over the king's service, was commander-in-chief of the military forces (princeps militiae regis, or Francorum), was steward of the household and presided in the king's court in the absence of the king. Under weak rulers the seneschal would have doubtless been the most powerful official and the mayor of the palace of the Carolingian line. It was the vast possibilities of the office which must be presumed to have tempted the counts of Anjou of the Plantagenet line to claim the hereditary dainpifership of France, and to support their claim by forgeries. A count of Anjou who was also in effective possession of the office would soon have reduced his feudal lord to absolute insignificance. French historical scholars have shown that the pretension of the Anjouins was unfounded, and that the treatise concocted to support it—the De majoratu et seneschalit Franciae, attributed to Hugues de Cîbrè.—is a medieval forgery. At the close of the 11th century the seneschalship was in the hands of the family of Rochefort, and in the early part of the following century it passed from them to the family of Garlande. The power of the office was a perpetual temptation to the vassal, and a cause of jealousy to the king. The Garlandes came to open conflict with the king, and were forcibly suppressed by Louis VI. in 1127. After their fall the seneschalship was conferred only on great feudatories who were the king's kinsmen—on Raoul of Vermandois till 1152, and on Thibaut of Blois till 1191. From that time forward no seneschal was appointed except to act as steward at the coronation of the king. The name of the seneschal was added with those of the other great officers to the kings in charters, and when the office was not filled the words dapifer vacante were written instead. The great vassals had seneschals of their own, and when the great fields, Anjou, Touraine, Maine, Poitou, Saintonge, Guienne, were regained by the crown, the office was allowed to survive by the king. In the south of France, Périgord, Quercy, Toulouse, Agenais, Rouergue, Beauchene and Carcassonne were royal seneschalies. In Languedoc the lords' agent and judicial officer, known in the north of France as a bailli, was called zénichal. The office and title existed till the Revolution.

See Du Cange, Glossarium mediev. & Insigniae Latinitas (Paris, 1840-1850); A. Luchaire, Histoire des institutions monarquiques de la France sous les premiers Capétiens (Paris, 1883-1885); Manuel des institutions françaises (Paris, 1892); Paul Violet, Droit public—Hist. des institutions politiques & administratives de la France (Paris, 1890-1898).

**SENIAGALLIA,** or SENIGALLIA (anc. Sena Gallca), a city and episcopal see of the Marches, Italy, in the province of Ancona, on the coast of the Adriatic, 15 m. by rail N. of Ancona. Pop. (1901) 5556 (town), 23,195 (village). It is situated at 14 ft. above sea-level, and, despite its ancient origin, presents a modern appearance, with wide streets. The Palazzo Comunale dates from the 13th century. The cathedral was erected after 1257. The castle, of Gothic origin, was restored by Baccio Pontelli, a famous military architect, in 1492. The church of S Maria delle Grazie outside the town is one of the only two churches which it is known he has erected (the other is at Orclano near Mondovì, about 15 m. to the west by road). The small town is a chief centre for the cultivation of grapes, and the wines which flow through the town between embankments constructed of Istrian marble. The inhabitants are chiefly occupied in fishing, and in the summer the town is greatly frequented by visitors for the good sea-bathing. Senigallia used to hold one of the largest fairs in Italy, which dated originally from 1200 when Sergius, count of Senigallia, received from the count of Marseilles, to whose daughter he was affianced, certain relics of Mary Magdalen; this fair used to be visited by merchants from France, Switzerland, Austria, Germany and especially the Levant. Senigallia is the residence of the Mastai-Ferretti family, the house in which Pope Pius IX. was born is preserved, and contains a few memorials of him.

The ancient Sena Gallca was a city of Umbria. A colony was founded there by the Romans after their victory over the Senones, rather before 280 B.C. The place is also mentioned in connexion with Hasdrubal's defeat at the Metaurus (q.v.) in 207 B.C. It was destroyed by Pompey in 82 B.C., and is not often mentioned afterwards. No ancient remains and very few inscriptions exist. The name Gallica distinguishes it from Saena (Siena) in Etruria. Ravaged by Alaric, fortified by the exarch Lomando, and again by the Lombards in the 8th century and by the Senones in the 9th, Senigallia was at length brought so low by the Guelp and Ghibelline wars, and especially by the severities of Guido de Montefeltro, that it was chosen by Dante as the typical instance of a ruined city. In the 15th century it was captured and recaptured again and again by the Malatesta and their opponents. Sigismondo Malatesta of Rimini erected strong fortifications round the town in 1450-1455. The lordship of Senigallia was bestowed by Pius II. on his nephew Antonio Piccolomini, but the people of the town in 1464 placed themselves anew under Paul II., and Giacomo Piccolomini in 1472 failed in his attempt to seize the place. Sixtus IV. assigned the lordship to the Della Rovere family, from whom it was transferred to Lorenzo de' Medici in 1516. After 1624 it formed part of the legation of Urbino.

**SENIOR, NASSAU WILLIAM** (1790-1864), English economist, was born at Compton, Berks, on the 26th of September 1790.
The eldest son of the Rev. J. R. Senior, vicar of Durnford, Wilts. He was educated at Eton and Magdalen College, Oxford; and at the university of Cambridge, where he took his B.A. in 1811, and in 1836, during the chancellorship of Lord Cottenham, was appointed a master in chancery. On the foundation of the professorship of political economy at Oxford in 1825 Senior was elected to fill the chair, which he occupied till 1830, and again from 1847 to 1857. In 1830 he was requested by Lord Melbourne to inquire into the state of combinations and strikes, to report on the state of the laws relating to the prevention of street disorders and the details of the Poor Law Inquiry Commission of 1832, and of the Handloom Weavers Commission of 1837; the report of the latter, published in 1841, was drawn up by him, and he embodied in it the substance of the report he had prepared some years before on combinations and strikes. He was also one of the commissioners appointed in 1861 to inquire into popular education in England. In the later years of his life, during his visits to foreign countries, he studied with much care the political and social phenomena they exhibited. Several volumes of his journals have been published, which, though not always investigated with such acuteness, though the author probably rated too highly the value of the technical social study. Senior was for many years a frequent contributor to the Edinburgh Quarterly, London and North British Reviews, dealing in their pages with literary as well as with economic and political subjects. He died at Kensington on the 4th of June 1864. His writings on economic theory consisted of an article in the Encyclopaedia Metropolitana, afterwards separately published as An Outline of the Science of Political Economy (1846), and his lectures delivered at Oxford. Of the latter the following were printed: An Introductory Lecture (1827); Two Lectures on Population, with a correspondence between the author and Malthus (1831); Three Lectures on the Transatlantic Economy (1834); Three Lectures on the Cost of Living and on Some Effects of Private and Governmental Paper Money (1830); Three Lectures on Wages and on the Causes and Remedies of the Present Disturbances (1836); and Four Introductory Lectures on Political Economy (1842). Several of his lectures were translated into French by M. Arrivabene under the title of Principes Fondamentaux d'Economie Politique (1835). Senior also wrote on administrative and social questions—a Letter to Lord Holburne on the Investigation of the Cause of Spain's Extraordinary Public Deficits and a Proposal for the Irish Roman Catholic Clergy (1831); Tithes and a Provision for the Irish Roman Catholic Clergy (1831, 3rd ed., 1832), with a preface containing suggestions as to the measures to be adopted to prevent what he terms the "present emergency"; Statement of the Provision for the Poor and Destitute in Ireland (1833); and a consideration of the considerable portion of America and Europe, bringing the state to the Foreign Communications in the Appendix to the Poor Law Report (1835). He wrote on National Property, and on the Prospects of the Present Administration and of their Successors (anon.; 1835); Letters on the Factory Act, as it affects the Cotton Manufacture (1837); Suggestions on Popular Education (1861); American Slavery (in part a reprint from the Edinburgh Review, 1862) An Address on Education delivered to the Social Science Association (1863). His contributions to the reviews were collected in volumes entitled Essays on Fiction (1864); Biographical Sketches (1865, chiefly of noted lawyers); and Historical and Philosophical Essays (1865). In 1839 appeared his Journal kept in Turkey and Greece in the Autumn of 1857 and the Beginning of 1858; and the following were edited after his death by his daughter: Journal of a Tour in the Northern States of America in 1858; Journals kept in France and Italy from 1858 to 1862, with a Sketch of the Revolution of 1848 and 1871; Conversations with Thiers, Guizot and other Distinguished Persons during the Second Empire (1862); Interviews of the same Person during the First and Second Empires, from 1850 to 1872 (1880); Conversations and Journals in Egypt and Malta (1882); also in 1872 Correspondence and Conversations with Alexis de Tocqueville from 1834 to 1859.

Senior's literary work doubtless contributed much to the welfare of the public: they are, indeed, somewhat formal and academic in spirit. The author, while he had both good sense and right feeling, appeared to possess rather a vivid and distinct faculty of perception, but he was not perhaps open to the advantages which arise from a correct and especially acute imagination. His tract on practical politics, though the theses they support are not new, is written and arranged in a manner of which no one but a great master could not be the author. His studies of political economy were also written with much worth reading, but cannot be said to be of much permanent interest.

But his name continues to hold an honoured position, second only in the place of history of political economy. Senior regards political economy as a purely deductive science, all the truths of which are inferences from four elementary propositions. It is, in his opinion, wrongly supposed by J. S. Mill and others to be a hypothetic science by which we can therefore give no practical counsel as to political action. It is that to which alone the laws of nations are to be referred and which alone is to be kept in view as elements in the study of the questions with which he has to deal. The conception of economics as altogether deductive is one which is infused into our understanding of the facts, and which keeps us from falling into a false path. But deduction has a real, though limited, place in economics. Hence, though the chief difficulties of the subject are not of a logical kind, yet accurate nomenclature, strict definition and rigorous reasoning are the appropriate methods to adopt, and they are accordingly the methods Senior adopted and followed in his study, and, notwithstanding occasional pedantries, with very useful results. In several instances he improved the forms in which accepted doctrines were habitually stated. He also did excellent service by pointing out the arbitrary novelties and frequent inconsistencies of terminology which deface Ricardo's principal work—as, for example, his use of "value" in the sense of "cost" where Ricardo used it, and of "high" and "low" wages in the sense of a certain proportion of the product as distinguished from an absolute amount, and his peculiar employment of the epithets "fixed" and "circulating" as applied to capital. He shows, too, that in numerous instances the results assumed by him as the correct answers to the questions he has raised in his study of economics are to be sought in the principles of political economy, and that the deductions are based on the principles, and that therefore the share of the produce taken by the capitalist is continually diminishing, and that, whilst taken by the capitalist cannot constantly diminish, the "truth of all these propositions. Besides adopting some terms, such as that of "natural agents," from Say, Senior introduced the word "abstraction," that is, the generalization of the particular, for some purposes useful—to express the conduct of the capitalist which is remunerated by interest; but in defining "cost of production" as the sum of labour and abstinence necessary to production he does not seem to see that an amount of labour and an amount of abstinence are disparate, and do not admit of reduction to a common quantitative standard. He added some important considerations to the weight of which that he is an essential factor in the laboring class. He distinguishes usefully between the rate of wages and the price of labor. But in seeking to determine the law of wages he falls into the error of assuming a determinate wage-fund, and states as an economic truth what is only an identical proposition in arithmetic. Whilst entertaining such an exaggerated estimate of the services of Malthus that he extravagantly pronounces him "as a benefactor of mankind on a level with Adam Smith," he yet shows that he modified his opinions on occasion. He was indeed considerable in consequence, and the weight of his work is considerable. He states his own opinions in a way that is, in a greater ratio than population. It is urged by H. C. Périn, and it should be admitted, that by his isolation of economics from morals, and his assumption of the desire of wealth as the sole motive-force in the action of the individual, he sought to find a place for human nature, tended to set up egoism as the legitimate ruler and guide of practical life. It is no sufficient answer to this charge that he makes formal reserve in favour of higher ends. From the scientific side Cliffe Leslie has abundantly proved the unsurpassed nature of the abstraction implied in the phrase "desire of wealth," and the inadequacy of such a principle for the explanation of economic phenomena.

SENLIS, a town of northern France, in the department of Oise, on the right side of the Neuffe, a left-hand affluent of the Oise, 34 m. N.N.E. of Paris by rail. It is connected by the branch line (Chantilly-Crépy) connecting the Paris-Creil and Paris-Soissons lines. Pop. (1906) 6074. Its antiquity, its historical monuments and its situation in a beautiful valley, in the midst of the three great forests of Hallatte, Chantilly and Ermenonville, render it interesting. Its Gallo-Roman walls, 23 ft. high and 13 ft. thick, are, with those of St Lizier (Ariège) and Bourges, the most perfect in France. They enclose an oval area 1024 ft. long from E. to W. and 794 ft. wide from N. to S. At each of the angles formed by the broken lines of the circuit there stands or stood a tower; numbering originally twenty-eight, and now only thirteen, which are semicircular in plan, and up to the height of the wall are unpierced. The Roman city had only two gates; the present number is five. The site of the prætorium was afterwards occupied by a castle occasionally inhabited by the kings of
France from Clovis to Henry IV., and still represented by ruins dating from the 11th, 12th, 15th, and 16th centuries. In the neighbourhood of Sensis the foundations of a Roman amphitheatre have also been discovered. The old cathedral of Notre Dame (12th, 13th and 16th centuries) was begun in 1155 on a vast scale; but owing to the limited resources of the diocese, progress was slow and the transept was finished only under Francis I. The total length is 312 ft. (outside measurement), but the nave (92 ft. high) is shorter than the choir. At the west front there are three doorways and two bell towers. The right-hand tower (256 ft. high) is very striking: it consists, above the belfry stage, of a very slender octagonal drum with open-work turrets and a spire with eight dormer windows. The left-hand tower, altered in the 16th century, is crowned by a balustrade and a sharp roof. In the side portals, especially in the southern, the flamboyant Gothic is displayed in all its delicacy. Externally the choir is extremely simple. In the interior the sacristy pillars with capitals of the 10th century are noteworthy. The episcopal palace, now an archaeological museum, dates from the 13th century; the old collegiate church of St Frambourg was built in the 12th century in the style which became characteristic of the "saintes chapelles" of the 13th and 14th centuries; St Pierre. (chiefly of the 13th and 16th centuries) serves as a market. The ecclesiastical college of St Vincent, occupying the site of this nunnery, was enlarged and a large hall was made of palm leaves, probably of the 12th century. Its date has, however, been greatly disputed by archaeologists, who sometimes wrongly refer it to Queen Anne of Russia, foundress in the 11th century of the abbey. The town hall (15th century) and several private houses are also of architectural interest.

Sennis has tribunals of first instance and of commerce and a sub-prefecture. The manufacture of bricks and tiles, cardboard, meures and other wares are among the industries. The town is an agricultural market.

Senna, once known as Sennacharib, is the Gallo-Roman township of the Silvanectes, which afterwards became Augustomagus. Christianity was introduced by St Rieul probably about the close of the 3rd century. During the first two dynasties of France Sennis was a royal residence and generally formed part of the royal domain; it obtained a communal charter in 1173. In the middle ages local manufactures, especially that of cloth, were active. The burgesses took part in the Jacquerie of the 14th century, then sided with the Bourdians and the English; whom, however, they afterwards expelled. The Leaguers were there beaten in 1589 by Henry I, duke of Longueville, and Francois I, king of France in 1545. The bishopric was suppressed by the suppression of the Church and state in 1790, but was created by the Concordat. Treaties between Louis XI. and Francis II. duke of Brittany (1475), and between Charles VIII. and Maximilian of Austria (1493) were signed at Sennis.

SENNAN (Arab. sand), a popular purgative, consisting of the leaves of two species of Cassia (natural order Leguminosas), viz. C. acutifolia and C. angustifolia. These are small shrubs about 2 ft. high, with numerous lanceolate or narrowly lanceolate leaflets arranged pinnately on a main stalk with no terminal leaflet; the yellow flowers are borne in long-stalked racemes in the leaf-axils, and are succeeded by broad flattish pods about 2 in. long. C. acutifolia is a native of many districts of Nubia, e.g. Dongola, Berber, Kordofan and Senaar, but is grown also in Timbuctoo and Sokoto. The leaflets are collected twice a year by the natives, the principal crop being gathered in September after the rainy season and a smaller quantity in April. The leaves are dried in the simplest manner by cutting down the shrubs and exposing them on the rocks to the burning sun until quite dry. The leaflets then readily fall off and are packed in large baskets, and holding about a quintal each. These packages are conveyed by camels to Assouan and Daras and thence to Cairo and Alexandria, or by ship by way of Massowah and Suakim. The leaflets form the Alexandrian senna of commerce. Formerly this variety of senna was much adulterated with the leaves of Solenostemma Argel, which, however, are readily distinguishable by their minutely wrinkled surface. Of late years Alexandrian senna has been shipped of much better quality. Occasionally a few leaves of a similar species with broader obovate leaves, C. angustifolia affinis, are shipped from the Bombay, East Indian, Arabian or Mecca senna of commerce.

This plant grows wild in the neighbourhood of Yemen and Hadramaut in the south of Arabia, in Somaliland, and in Sind and the Punjab in India. The leaves are chiefly shipped from Mocha, Aden, Jedda and other Red Sea ports to Bombay and thence to Europe, the average imports into Bombay amounting to about 250 tons annually, of which one-half is re-exported. Bombay senna is very inferior in appearance to the Alexandrian, as it frequently contains many brown and decayed leaflets and is mixed with leaf-stalks, &c. C. angustifolia is also cultivated in the Togolantic port of Dahomey, which is known in commerce as Tinnelley senna. This variety is carefully collected, and consists almost exclusively of leaves of a fine green colour, without any admixture of stalks. It is exported from Tucitcorin. American senna is Cassia marilandica.

The British Pharmacopoeia recognizes both Senna Alexandrina and Senna Indica. The composition of the leaves is the same in either case. The chief ingredient is cathartic acid, a sulphur containing glucoside of complex formula. It occurs combined with certain cardamoms, chiefly caraway, and is used in the active principle of senna is shown by the fact that the cathartate of ammonia, when given separately, acts in precisely the same manner as senna itself. Cathartic acid can easily be decomposed into glucose and cathartogenic acid. The leaves contain at least two other glucosides, senapicin and senacrol, but as these are insoluble in water, they are not contained in most of the preparations of senna. Senna also contains a little chrysophyacin.
army, trusting to the fortifications of Jerusalem and Egyptian help. Hezekiah, however, was forced to restore the anti-Jewish Padi to the government of Ekron, from which he had been removed by the Jewish party, and, after the defeat of his Egyptian allies at Eltekh, to see his country wasted with fire and sword, forty-six times and the Blue Nile was taken and held in activity. He then endeavoured to buy off the invaders by numerous presents—30 talents of gold, 800 talents of silver, precious stones, couches and thrones inlaid with ivory, girls and eunuchs—but all in vain. Jerusalem was saved eventually by a plague, which decimated the Assyrian army and obliged Sennacherib to return to Nineveh. The following year he again went into Babylonia, where he made his son Assur-nadin-sum king in place of Bel-ibni and drove Merodach-baladan out of the marshes in which he had taken refuge. A few years later he had a fleet of ships built near Bireijk on the Euphrates by his Phoenix captives; these were manned by Ionians and transported from Opis overland to the Euphrates and so to the Persian Gulf. Then they sailed to the coast of Elam, and there destroyed the colony of Merodach-baladan’s followers at Nagitu. In return for this unprovoked invasion of Elamite territory the Elamites descended upon Babylonia, carried away Assur-nadin-sum (694 B.C.) and made Nergal-yaussib king. Three years later a great battle was fought at Khalulé on the Tigris between the Assyrians on the one side and the Elamites and Babyloniens on the other. Both sides claimed the victory, but the advantage remained with Sennacherib and he captured Babylon and laid it waste to the ground, a deed which excited the horror of all western Asia. Some time previously—the date is not known—he had overrun the mountain districts of Cilicia. On the 20th of Tebet 68 r. he was murdered by his two sons, who fled to Armenia after holding Nineveh for forty-two days. Sennacherib was vainglorious and a bad administrator; he built the palace of Kuyunjik at Nineveh, 1750 ft. long by 700 ft. broad, as well as the great wall of the city, 5 m. in circumference.

SENNAR, the name of a country of north-east Africa, part of the Anglo-Egyptian Sudan. Its boundaries have varied considerably, but Sennar proper is the triangular-shaped territory between the White and Blue Niles north of 10° N. This region is called by the Arabs "The Island of Sennar" and by the negro inhabitants "Hui." The northern part, where the two Niles approach nearer one another, is also known as El Gezirah, i.e. "the Island." Whilst Sennar has never been held to extend westward of the White Nile, the term has often been used to embrace "the Island of Meroe," i.e. the country between the Blue Nile and the White Nile south of 8° N. and the northern part of the eastern tributary the Rahad, this latter district being known as the "Isle of Isles." South-east Sennar stretches to the Abyssinian hills. By the Sudan administration this region has been divided into mudirias (provinces), one, including the central portion, retaining the name of Sennar. The present article deals with the country as a whole.

In general Sennar is a vast plain, lying for the most part much higher than the river-levels and about 2000 ft. above the sea, its western part, towards the White Nile, being largely wilderness. From the plain rise isolated granitic hills, attaining heights of 1000 to 2000 ft. above the general level. Jebel Segedu is red granite of the finest quality. Near Fully on the opposite bank is a part, in the south a deep bed of argillaceous marl, scattered over with great granite boulders and fragments of greenstone.

Sennar lies in the region of light rain, increasing in the S.E. districts to as much as 20 in. in the year. The rainy season is from July to September. The climate is generally unhealthy during that period and the months following. The miasmatic exhalations caused by the sun-dried quagmires, the water holes, nile crocodiles, buffaloes, "Sennar fever," which drives even the natives from the plains to the southern uplands. The temperature, which rises at times to over 120° Fahr., is also very changeable, often sinking from 100° during the day to 10° at night.

The soil, mainly alluvial, is naturally very fertile, and whenever cultivated yields abundant crops, durra being the principal grain grown, wheat, barley, sorghum, millet and harley also grown. The forest vegetation, largely confined to the "Isle of Isles" and the southern uplands, includes the Adansonia (baobab), which in the Sackho district attains gigantic proportions, the tamarind, of which bread is made, the delph palm, several valuable gum trees (whence the term Sennari often applied in Egypt to gummed sennar, i.e. dyers’ green-wood, and also acacia. In these forests are found the two-horned rhinoceros, the elephant, lion, panther, numerous aepes and antelopes, while the crocodile and hippopotamus frequent the rivers. The chief domestic animals are the camel, horses, oxen, buffaloes (used both as a beast of burden and for riding), sheep with a short环节, the goat, and the pig, which last here reaches its southernmost limit.

The country is occupied by a partly settled, partly nomad population of an extremely mixed and chaotic character. There is evidence of the existence of a once dominant fair race, of which the still surviving Sieneto, a people of a yellow or fair complexion, are regarded as descendants.

The Sennar tribes are the Assyrians or Hamites, the Nubian kingdom of Shendi, the Sudanese, the negroes, the oxen, buffalo, Kordofan, the White Nile tribes being engaged near Goz Abu Guma.

History.—Sennar, lying between Nubia and Abyssinia, was in ancient times under Egyptian or Ethiopian influence and its inhabitants appear to have embraced Christianity at an early period. The capital of Aolo, which appears to have been at one time a powerful city, was captured by the Egyptians in 812 B.C. The capture of Aolo, with its northern part, is in its northern part, is in the day under 600 ft. at Samos.

The region of Shendi, between the Blue Nile and the White Nile, was occupied by the Egyptians in the 17th and 18th centuries B.C. The invasion of the Blue Nile by the Egyptians was a great event, for it made possible the conquest of the Sudan. The Blue Nile was taken by the Egyptians in 1070 B.C., and the Egyptian rule lasted for many centuries, during which time the country was governed by a series of governors, known as the "mudirias." The most noteworthy, however, of the earlier governors was James Bruce, the explorer of the Blue Nile. He spent some time in Sennar in 1772, and in his Travels has left an interesting account of the kingdom in its decadence. Various Egyptian expeditions added considerably to the knowledge of the district, which between 1854 and 1864 was explored by the Belgian scientist E. Pruyssenaer. Later explorers included the Viennese Ernest Marno (1870) and the Dutchman J. M. Schuer, who in 1881 and 1882 visited the sources of the Tumat. To this list should be added the names of those who, like Sir Samuel Baker, explored the Blue Nile. Since the establishment of the Anglo-Egyptian condominium (1899) the country has been thoroughly surveyed.


SENONE, in ancient geography, a Celtic people of Gallia Celta, who in Caesar's time inhabited the district which now includes the departments of Seine-et-Marne, Loiret and Yonne. From 53-51 B.C. they were engaged in hostilities with Caesar, rejoiced at his defeat, but were driven out of their country by Sabinus, Gaius, and Lucius Karius: since he had appointed their king. In the last-named year a Senonian named Drapes threatened the Province, but was captured and starred
SENS

SENSE, a town of north-central France, capital of an arrondissement in the department of Yonne, 71 m. S.E. of Paris on the Paris-Lyon-Méditerranée railway. Pop. (1906) 13,701. It is situated on the right bank of, and on an island in, the Yonne just below its confluence with the Yonne. The streets of the town are narrow, but it is surrounded by fine promenades. The cathedral, St. Étienne, one of the earliest Gothic buildings in France, is additionally interesting because the architecture of its choir influenced through the architect, William of Sens, that of the choir of Canterbury cathedral. St. Étienne was begun in 1140 and only completed early in the 13th century. It belongs mainly to the 12th century, and it is characterized by solidity rather than by beauty of proportion or richness of ornamentation. The west front is pierced by three portals; that in the middle has good sculptures, representing the parable of the virgins and the story of St. Stephen. The right-hand portal contains twenty-two remarkable statues of the prophets, who have suffered considerable injuries. Above this portal rises the stone tower, decorated with armorial bearings and with statues representing the principal benefactors of the church. The bells in the campanile by which the tower is surmounted enjoyed immense reputation in the middle ages; the two which still remain, La Saviniennne and La Potentienn, weigh respectively 15 tons 7 cwt. and 13 tons 13 cwt. The left portal is adorned with two bas-reliefs, Liberality and Avarice, as well as with the story of John the Baptist. The portal on the north side of the cathedral is one of the finest examples of French 12th-century sculpture, that on the south side is surmounted by magnificent stained-glass windows. Other windows of the 12th to the 16th century are preserved, some of them representing the legend of St. Thomas of Canterbury. Among the interior adornments are the tomb of the dauphin (son of Louis XV.) and his consort, Marie Joséphine of Saxony, one of the works of William Coustou the younger, and bas-reliefs representing scenes from the life of Cardinal Duprat, chancellor of France and archbishop of Sens from 1525 to 1537. The mausoleum from which they came was destroyed at the Revolution. The treasury, one of the richest in antiquities in France, contains a fragment of the true cross presented by Charlemagne, and the vestments of St. Thomas of Canterbury. It was in the cathedral of Sens that St. Louis, in 1234, married Marguerite of Provence, and five years later deposited the crown of thorns. To the south of the cathedral are the official buildings, dating from the 13th century, but restored by Viollet-le-Duc. The old judgment-hall and the dungeons had remained intact; in the former is a collection of fragments of sculpture from the cathedral; on the first story is the synod hall, vaulted with stone and lighted by beautiful grille windows. A Renaissance structure connects the buildings with the archiepiscopal palace, which also dates from that period. The oldest of the other churches of Sens is St. Savinian, the foundation of which dates from the 3rd century; the crypt and other portions of the church are of Romanesque architecture. The museum of Sens contains, among other antiquities, some precious MSS., notably a famous missal with ivory covers, and a collection of sculptured stones mainly derived from the old Roman fortifications, which were themselves constructed from the ruins of public monuments at the beginning of the barbarian invasions. The town has statues of Benjamin J. J. Thénard, the famous chemist, and of the sculptor Jean Cousin. Sens is the seat of a sub-archbishopric. Adjoining the cathedral, there are a number of small churches and chapels, and a hospital of the order of St. Vincent de Paul.

SENSATIONALISM, sens'e-ta-né-iz'um, a term of colloquial origin, meaning the cultivating of the emotions. The term is used also in psychology, the theory that all knowledge, on the one hand, and sensation on the other, are derived from ourselves. The term is also applied to the practice of appealing to the emotions, disregarding proportion and fact.
sentences are those which run from the same date in respect of convictions on various indictment. A cumulative sentence is the sum total of consecutive sentences passed in respect of each distinct offence of which an accused person has been found guilty on several counts of an indictment. A sentence in the case of trials before a court of assize, commences to run from the first day of the sitting of the court, but in that of courts of quarter sessions from the time the sentence is pronounced. SENTINEL, or SENTRY, a guard or watch, a soldier posted at a particular spot to challenge all comers, passing those who give a countersign, and refusing those who do not, and giving alarm in case of attack. The etymology has been the subject of much controversy. The original word seems to be Ital. sentinella, adapted as Fr. sentinelle (the modern French military term is factionnaire, and the Ger. Füsilier). The Italian source has been suggested in sentire, to perceive, but there are philoholic objections to this, and more plausibility attaches to a connexion with sentina, the bilge-water in a ship, figuratively rable, camp-followers. If an Italian origin, as agreed on by most authorities, be set aside, the French word suggests a more appropriate formation as the diminutive of sentier, path, Lat. semita, meaning properly the sentry's beat. The O. Fr. sentier (a form of sentier) would account for the English form "sentry." SENTINUM, an ancient town of Umbria, Italy, lying to the S. of the modern town of Sassoferrato, in the low ground. The foundations of the city walls are preserved, and a road and remans of houses have been discovered, including several mosaic pavements (T. Buccolini in Notizie degli scavi, 1890, 349) and inscriptions of the latter half of the 3rd century A.D., including three important tabulae patronatus. In the neighbourhood the battle took place in which the Romans defeated the combined forces of the Samnites and Gauls in 205 B.C. It was taken and destroyed in 41 B.C. by the troops of Octavian, but continued to exist under the Empire. It was, however, only a municipium, never (as some wrongly suppose) a colonia. Sassoferrato gave its name to the province of that name, which was divided from the 16th century (1654-1685), a painter celebrated for his Madonnas.

SENUSII [Senus] and SENUSITES, the names respectively of a Moslem family (and especially its chief member) and of the fraternity or sect recognizing the authority of the Senussi. Considerable diversity of opinion has prevailed among writers and travellers claiming knowledge of the Senussia; it is possible, however, to distinguish the main facts in the lives of the Senussi sheiks and to indicate the range of their direct political influence. The extent of their spiritual influence, the ramifications of the fraternity and the aims of its chiefs cannot be gauged so accurately.

Seyyid or Sidi (i.e. Lord) Mahommed ben Ali bin Es Senussi el Khettabi el Hassani el Idrissi el Mehajiri, the founder of the order, commonly called the Sheik es Senussi, was born near Mostaganem, Algeria, and was called es Senussi after a much venerated saint whose tomb is near Tlemcen. The date of his birth is given variously as 1791, 1792, 1796 and 1803. He was a member of the Walad Sidi Abdalla tribe of Arabs and his descent is traced from Fatima, the daughter of Mahomet. As a young man he spent several years at Fez, where he studied the Koran, the traditions of Muhammad and the science of jurisprudence. He then travelled in the Saharan regions of Algeria preaching a reform of the faith. From Algeria he went to Tunisia and Tripoli, gaining many adherents, and thence to Cairo, where he was opposed by the Ulema of El Azhar, who considered him unorthodox. Leaving Egypt Senussi went to Mecca, where he joined Mahommed b. Idris el Fassi, the head of the Khadrrites, a fraternity of Moroccan origin. On the death of el Fassi Senussi became head of one of the two branches into which the Khadrrites divided, and in 1835 he founded his first monastery at Abu Kebes near Mecca. While in Arabia Senussi allied himself to the Fezibites, and hired troops with that body caused him to be looked upon with suspicion by the Ulema of Mecca. It was at Mecca, however, that Senussi gained his most powerful supporter, Mahommed Sherif, a prince of Wadai, who became in 1838 Sultan of his native state, the most powerful Mahommedean kingdom in the Central Sudan. Finding the opposition to him at Mecca too powerful Senussi quitted that city in 1843 and settled in the Cyrenaica, where in the mountains near Derna he built the Zawin Baida or White Monastery. There he was in close touch with all the Mejhrinians, gaining many followers among the Tripolitans and Moroccans. He also maintained a close correspondence with the sultan of Wadai, who greatly favoured the spread of the Senussia in his state. The sultan of Turkey viewed with some disfavour the growth of Senussi's influence as likely to become detrimental to his own position as the Khalifa of Islam. Probably with the desire to be independent of pressure from the Turks, Senussi removed in 1855 to Jarahub (Jaghjub), a small oasis some 30 m. N.W. of Siwa. Here he died in 1859 or 1860, leaving two sons, one Mahommed Sherif (i.e. Senussi el Mahdi, the Dawa Mahdi), born in 1844, and the other, el Mahdi, born in 1845. To the second son was left the succession. It is related that as the younger son showed a spirit in all things superior to that of his brother the father decided to put them to the test. Before the whole sazix at Jarahub he bade both sons climb a tall palm tree and then adjured them by Allah and His Prophet to leap to the ground. The younger lad leapt at once and reached the ground unharmed; the elder boy refused to spring. To el Mahdi, "who feared not to commit himself to the will of God," passed the birthright of Mahommed Sherif. Mahommed appears to have accepted the situation without complaint. He held the chief administrative position in the fraternity under his brother until his death in 1895.

Senussi el Mahdi, only fourteen when his father died, was at first under the guidance of his father's friends Amran, Reeni and others. He enjoyed all his father's reputation for holiness and wisdom, attributes consistent with all that is known of his life. Mahommed Sherif, the sultan of Wadai, had died in 1858, but his successors the Sultan Ali (who reigned until 1874) and the Sultan Yusuf (reigned from 1874 to 1898) were equally devoted to the Senussia. Under Senussi el Mahdi the Dawa of Wadai was given to Senussi, who put his name on it.

senusii el mahdi.
Ahmed, this delegate reaching the Mahdi's camp in 1893 soon after the sack of Tripoli. The French having completed the military and industrial training of the Senussi delegate, writes Sir Reginald Wingate, "revoluted from the slaughter and rapine he saw around him. The sincere conviction of the regeneration of the world by a mahdi whose earnest piety should influence others to follow, to mend the frequent lives, the duty of honest labour and self-restraint, these were the sentiments which filled the mind of the emissary from Wadai."

The sheik Senussi, there is reason to believe, shared the lofty views which Wingate attributes to his agent. He decided to have nothing to do with the Sudanese Mahdi, though Mohammed Ahmed wrote twice asking him to join, saying of his four great khalifas, "none of them died renouncing body." He recognised Senussi either to attack Egypt or to join him in the Sudan. To neither letter did Senussi reply, and he warned the people of Wadai, Bornu and neighbouring states against the new creed. In 1890 the Mahdists advancing from Darfur were stopped on the frontier of Wadai, the sultan Yusef being firm in his adherence to the Senussi teaching. As evidence of the influence of the sheik may be instanced the appeal made to him in 1888 by the sultan of Borku (or Borge), a state to the north of Wadai, when invited by the chiefs of Darfur to rise against the Senussi and renounce the mahdi. Ahmed, the Senussi maker, of the Sudan affairs and only to fight against the Mahdists should they attack his kingdom. The Darfurian revolt of 1888-1889 against the khalifa was nevertheless carried out in the name of the Senussi.

The growing fame of the sheik Senussi el Mahdi drew upon him the unwelcome attention of the Turks. In many parts of Tripoli and in Benghazi the power of the sheik was greater than that of the Ottoman governors, and though Abdul Hamid II. looked favourably on an organization which might become actively anti-Christian, he did not desire that a new mahdi should aspire to dispute his authority. In 1889 the sheik Senussi was visited at Jarabub by the pasha of Benghazi at the head of some troops. This event showed the sheik the possibility of danger and led him (in 1894) to leave Jarabub and fix his headquarters at Jof in the oases of Kufra, a place sufficiently remote to secure him from any chance of sudden attack. By this time a new danger to Senussia had arisen; the French were advancing from the Congo towards the western and southern borders of Wadai. In 1895 Senussi, in his character of peace-maker, wishing also to range together all the states menaced by the Mahdists, sent his son to reconcile Rabah Zohbi (or the Sultan of the Bagirmi) and the sultan of Bagirmi; neither of those chieftains belonged to the Senussi order and the sheik's appeal was unavailing. At the end of the previous year, at the request of Sultan Yusef, the sheik had sent an envoy to Wadai to be his permanent representative in that country. Yusef's successor Ibrahim, who ascended the throne of Wadai in 1898, showed signs of resenting the advice of the sheik, stirred perhaps by the overthrow of the khalifa Abdallah at Omdurman. Senussi retaliated, says Captain Julien in his history of Wadai, by prohibiting the people of Wadai from smoking tobacco or drinking merissa, the native beer, "which is to the Wadai what the skin is to the body." Sultan Ibrahim rejoined that his people would fight and die for merissa; rather than give it up they would renounce Senussism. The sheik had the wisdom to give way, declaring that in response to his prayers Allah had deigned to make an exception in favour of the faithful Wadaiins. Ibrahim died in 1900 and his successors fell again under the influence of the sheik, who again changed his headquarters, leaving Kufra for Geru, in Dar Gorane, a western province of Wadai, where he was welcomed with veneration. He built and strongly fortified a sa'idi on the top of a rocky hill, difficult of access. His object in taking up this position was, presumably, to prevent the advance of the French. But, as Julien points out, Senussi was too late; Rabah had been slain by the French (April 1900), and Bagirmi was occupied by them. Nevertheless the sheik made an effort to prevent the French obtaining possession of Kanem, a country north-east of Lake Chad and on its northern and eastern frontiers bordering Saharan territory, which the Senussites considered their particular preserve. A za'wea was built at Bir Allali, in Kanem, that site being chosen as it was an entrepot for the trade of Tripoli with all the Chad countries. Bir Allali was strongly garrisoned by the Senussites and war with the French followed. After a severe engagement Bir Allali was captured by a French column under Commandant Tétard in January 1902. The sheik Senussi, much affected by the loss of Kanem, died shortly afterwards (May 30, 1902). He was succeeded by his nephew Ahmed-el-Sherif, who in view of the presence of the French on the borders of Dar Gorane removed to Kufra.

The notes chiefly the Senussites maintained the friendly relations of his predeces sor to Wadai, and, following the example of his uncle, made advances to Ali Dinar, the sultan of Darfur, which were not reciprocated. To keep in touch with Darfur a za'wea had been built on the caravan route from Kufra to that country. The adherents of the Senussi el Mahdi in the deserts bordering Egypt maintained for years that he was not dead, and in March 1906 a public declaration was made at Siwa that "Sidi Mohammed-el-Mahdi had returned from his secret journey to Kufra." Commenting on this announcement Sir R. Wingate wrote: "It is well known that the body of the late sheik lies buried in Darfur in a cave which the Senussi claim was made for it at Geru when he died" (Egypt No. 1 (1907), p. 120).

It will be seen that the Senussites occupy desert fastnesses which could only be attacked by Europeans after overcoming great difficulties. By Henri Duveyrier and other writers of the last half of the 19th century they were regarded as likely to proclaim a jihad or holy war against the Christians of North Africa. This view was founded upon the supposed tenets of the order and upon geographical and political considerations. The record of the first and second Senussi sheiks shows them, however, to have acted chiefly on the defensive. A study of all available data up to 1906 led M. L. G. Binger, one of the greatest authorities, to the conclusion that the politics of the sect were subordinated to the material interests of their chief, and that the Senussi sheik was as unable as were other noted Moslem leaders (such as Abd el Kader in Algeria; Samory in the western Sudan and the Dongolese Mahdi in the Egyptian Sudan) to overcome the rivalries and divergence of interests of their own co-religionists. This view received confirmation in the events of 1906-1910 when the French came in conflict with the sultanate of Wadai. Although there was severe fighting the French found it more difficult than had been expected. Without the assistance of Wadai, nor was there any general movement of the Senussites against them. The French also sent flying columns into Borku and Enndi. The comparative ease with which these operations were carried out seemed to demonstrate the weakness of the Senussites (see WADAI). Nevertheless, like any other Moslem fraternity, and perhaps more readily, the Senussites might be speedily transformed into a powerful fighting organization. Through the seaports of Tripoli and Benghazi, with the connivance (or in defiance) of the Turks, the importation of arms and ammunition into the eastern Sahara is a matter of little or no difficulty, and the Bedouin of that region could furnish a numerous and well-armed fighting force. A Senussi sheik would also recruit many followers in the central Sudan. At the same time the Senussi organization is not so widespread in the Sudan and the western Sahara as would appear from the exaggerated reports once current. The Senussi sheiks, with the doubtful exception of Darfur, are without followers in the Anglo-Egyptian Sudan. Bagirmi, Kanem and other states once dependent on Wadai did not embrace Senussism. In the Hausa States and in the greater part of the western Sudan as far as Timbuktu the Moslems acknowledge the spiritual headship of the emir of Sokoto.

1 In the accounts of the fighting in French equatorial Africa at this period it is necessary to distinguish between the sheik Senussi el Mahdi and the sultan Mahmohmed el Senussi (b. c. 1850) of N'Délé, who had married the sister of Rabah Zohbe. Senussi of Wadai having an ally of the French. The centre of N'Délé lies S. of Wadai and is cut by 9° N., and 20° E. (See Karl Kumm in Geog. Jour., Aug. 1910.)
whose influence is believed to be sufficiently strong to prevent the spread of Senussism among his followers. The general attitude of the Mahomedans in the western Sudan towards the Senussi emissaries was described by European observers in 1907 as one of good-natured tolerance. They are occasionally allowed to preach, but apparently with little effect. In Bornu, which does not acknowledge the spiritual supremacy of Sokoto, the Senussi propaganda meets with less opposition, but the adherents of the order are not numerous. Here and there in the western Sahara are tribes professing Senussism, but they are regarded as unimportant.

Teants.

only sporadically meddle in politics, the Senussites have exercised a continuous political influence and have sought to revive the faith and usages of the early days of Islam. The order is in a sense an outcome of the Wahhabite movement, but, as gathered from the writings of Mohammed el Hechaish, a Tunisian sheik, and other trustworthy sources, appears to be neither mystical nor puritan. There is less of secrecy about their rites than is usual in Moslem fraternities. The use of the prayer shawl, or falsa, in the desert, which is encouraged, and the wearing of fine clothes is allowed. While they profess to belong to the Malikite rite (one of the four orthodox sects of Islam), the Senussites are charged by the Ulema of Cairo with many deviations from the true faith; chiefly they are accused of interpreting the Koran and Sunna without consulting one of the recognized glosses. Thus the Egyptian theologians regard the Senussites as inaugurating a new rite rather than forming a simple fraternity; in this, if not in puritanism, resembling the Wahhabites. Their great work in the eastern Sahara, apart from proselytism, has been colonization and the encouragement of trade. Wells have been dug and oases cultivated, rest houses built along caravan routes, merchants from Tripoli, Bornu, Wadai and Darfur welcomed. Such at least is the report of Mahomedan writers and of French and British political agents; very few Europeans have had opportunities of making personal observations. Gustav Nachtigal was in Wadai in 1873, Gerhard Rohlfs traversed the Cyrenaica and visited Kufra in 1879; but in general the Senussi, supported by the Turks at Tripoli, have closed the regions under their control to Europeans. At the oasis of Siwa (Jupiter Ammon), however, they are in contact with the Egyptian administration. Siwa was visited by W. M. Ramsay in 1879 and by Freiherr von Grünau in 1899. The last-named reports that he found the representative of Sheik Senusli living in perfect agreement with the Egyptian authorities, the inhabitants of the oasis being divided into two sections, known respectively as the Mussulmans and the Senusssites, a distinction which goes to show the special position occupied by the Senussites in Islam.

The missionary zeal of the Senussites is undoubted. Outside the regions adjacent to their headquarters they appear to be most strongly represented in Arabia. In the eastern Sahara and Wadai practically all the population are Senussites; the order in other countries draws its adherents from a higher social rank than the generality of Moslem secret societies. Its chief agents are personages of wealth and importance and highly educated in Oriental lore. They are in general on good terms with the rulers of the countries in which they live, as instanced in 1902 by the conferment of the Legion of Honour on the head of the zawiya at Hillil in Algeria. These agents make regular tours to the various zawiya placed under their charge, and expend the Senussi doctrines at the Moslem universities. From all that has been said it is apparent that the Senussi sheik controls a very powerful organization, an organization probably unique in the Moslem world.

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notice of Senussi el Mahdi by the same writer appeared in the Arabic journal El Hadira of Tunis, Sept. 2, 1902; a condensation of this article appears in the Bull. du Com. de l'Afr. franc. for 1902; in April supplement of the same volume; is a judicious summary of evidence and important bibliography being added; Capt. Julien, in "Le Dar Ouaidi" published in the same Bulletin (vol. for 1901), traces the connexion between the Scud (modern Sudan and Egypt), G. Leclerc, quoted by A. S. White, From Spheni to Oracle (London, 1898), which, while repeating the extreme views of Duveyrier, contains useful information.

The present writer, in endeavouring to arrive at a just conclusion on an obscure and much controverted subject, is indebted, in addition to the above, to the article by D. A. Cameron in the 10th ed. of this encyclopedia, and to communications from Prof. D. B. Macdonald, F.R.G.S.

SENOI, a town and district of British India, in the Jubbulpur division of the Central Provinces. The town is 204 ft. above sea-level, half-way on the road between Nagpur and Jubbulpore. Pop. (1901) 11,864. It was founded in 1774, and contains large public gardens, a fine market place and a handsome tank.

The District of Seoni forms part of the Satpura tableland, containing the headwaters of the Wainganga. It is largely covered with forest, and 49% of the inhabitants belong to aboriginal tribes. Area 3206 sq. m. The district is remarkable for the beauty of its scenery and the fertility of its valleys. The northern and western portions include the plateaus of Lakhnadon and Seoni; the eastern section consists of the watershed and elevated basin of the Waingangas; and in the south-west is a narrow strip of rocky land known as Dongartal. The plateaus of Seoni and Lakhnadon vary in height from 1800 to 2000 ft.; they are well cultivated and clear of jungle, and their temperature is always moderate and healthy. Geologically the north part of Seoni consists of trap hills and the south of crystalline rock. The soil of the plateaus is the rich black cotton soil formed by disintegrated trap, of which about two-thirds of the district are said to consist; but towards the south, where cliffs of gneiss and other primitive formations occur, the soil is silicious and consists of black and red sandstone. The chief river is the Wainganga, with its affluent the Hir, the Thamor and Thaawar; other streams are the Timar and the Sher, tributaries of the Nerbuda. The annual rainfall averages 53 in. The population in 1901 was 327,709, showing a decrease of 12% in the decade due to the effects of famine. The principal crops are wheat, millets, rice, pulse, oil-seeds and cotton. Three lines of the Bengal-Nagpur system traverse the district.

There is also a town called Seoni, or Seoni-Malwa, in the Central Provinces, a railway station in Hoshangabad district. Pop. (1901) 7531.

SEUL (Han-yang), the capital of Korea (Chosen), situated in 37° 34' N. and 127° 6' E., at an altitude of 120 ft., 25 m. from Chemulpo, its seaport, and 4 from Mapu, its river-port. Pop. about 200,000. It lies in a basin among granite hills, nowhere exceeding 2627 ft., remarkable for their denudation and their abrupt black crags and pinnacles. A well-built, crenelated stone wall from 20 to 50 ft. high, about 11 m. in circuit, and pierced by 8 gateways with double-roofed gate-towers, surrounds it. The native houses are built of stone or mud, deeply eaved, and either tiled or thatched. Above these rise the towers of the Roman Catholic cathedral, the high spires of the Buddhist temple, the numerous audience halls, the palace gateways, and the showy buildings of the Russian and French legations. The antiquities are the Bell Tower, with a huge bronze bell dated 1468, a marble pagoda elaborately carved, but not of Korean workmanship, seven centuries old, and a "Turtle-Stone" of about the same date.
SEPIA—SEPSIS

Seoul has some wide streets of shops, hundreds of narrow alleys, and is very fairly clean. It has an electric tramway 4 m. long, and the terminus of the railway system of the country.

SEPIA (Gr. σπεία, cuttlefish), a deep brown pigment obtained from the ink-sacs of various species of cuttlefish (q.v.). To obtain sepia the ink-sac, immediately on the capture of the animal, is extracted from the body and speedily dried to prevent putrefaction. The contents are subsequently powdered, dissolved in caustic alkali, and precipitated from the solution by neutralizing with acid. The precipitate after washing with water is ready to make up into any form required for use. Sepia-bone or cuttle-bone consists of the internal "shell" or scent box, which, after it is removed from the animal, is dried and calcined. It is an oblong convex structure from 4 to 10 in. in length and 1 to 3 in. in greatest width, consisting internally of a highly porous cellular mass of calcium carbonate, with some animal matters covered by a hard thin glasy layer. It is used principally as a polishing material and for tooth powder, and also as a moulding material for fine castings in precious metals.

SEPPOY, the usual English spelling of sipãhî, the Persian and Urdu term for a soldier of any kind, cp. siphã. The word sipãhî, "army," from which sipãhî, "soldier," is derived, corresponds to the Zend špâdhâ, Old Persian špâdê, and has also found a home in many other Indian and Persian languages. (see Justi, Handbuch der Zendsprache, p. 303, 6), while its derivative is used in all Indian vernaculars, including Tamil and Burmese, to denote a native soldier, in contradistinction to gârã, "a fair-complexioned (European) soldier." A sepoy is at the present day strictly a private soldier in the native infantry of the Indian army.

SEPPINGS, SIR ROBERT (1767–1840). English naval architect, was born at Fakenham, Norfolk, in 1767, and in 1782 was apprenticed in Plymouth dockyard. In 1800, when he had risen to be master shipwright assistant in the yard, he invented a device which, combined with the laborious process of lifting then in vogue, greatly reduced the time required for effecting repairs to the lower portions of ships in dry dock. His plan was to make the keel of the ship rest upon a series of supports placed on the floor of the dock and each consisting of three parts—two being wedges arranged one on each side of the keel at right angles to it, with their thin ends together, while the third was a vertical wedge fitting in and supported by the lower pair. The result was that it became possible in a comparatively short time to remove these supporting structures by knocking out the side wedges, and at the same time gaining access to the lower part of the keel, the vessel remaining suspended by the shores. For this invention Seppings received £1000 from the Admiralty, and in 1804 was promoted to be a master shipwright at Chatham. There, in spite of the repugnance to innovation displayed by the naval authorities of that period, he was able to introduce important improvements in the methods of ship-construction. In particular he increased the longitudinal strength of the vessels by a system of diagonal bracing, and modified the design of the bows and stern, so that they became stronger, not only offering better protection than the old forms to the crews against the enemy's fire, but also permitting a powerful armament to be fitted. Seppings, who received a knighthood in 1819, was appointed surveyor of the navy in 1831, and held that office till his retirement in 1832. He died at Taунton on the 25th of September 1840.

SEPSIS (Gr. σφην, putrefaction), or SEPTIC INFECTION, a term applied in medicine and surgery to indicate the resultant infection of a wound or sore by micro-organisms or by their products. Under this general heading come three great constitutional diseases, differing radically from each other in their etiology and pathology: septicaemia, septicemia and pyæemia.

Sapraemia (Gr. σπαρέω, rotten, αἷμα, blood), or septic intoxication, is the result of the absorption of a dose of the toxins produced by micro-organisms from some area of infection without the entrance of the micro-organisms themselves into the blood. This condition was for a long time confounded with septicaemia, but is distinguished from it in being a chemical intoxication. The blood in sapraemia if injected into an animal is incapable of reproducing the disease as in septicemia. Any condition in which there is a mass of decomposing tissue in the neighbourhood of any mechanical injury may give rise to sapraemia. In surgical practice it may be met with in large, deep and badly-drained wounds where a quantity of putrifying material is pent up. When it arises in connexion with wounds accidentally received, it may be unavoidably due to the dirty state of the skin or to foreign bodies entering the wound. Absorption of toxins is notably frequent in portions of decomposing placental tissue which may accidentally have remained behind in the uterus after childbirth, and may give rise to puerperal sapraemia. Sapraemia is acute or subacute directly according to the amount of decomposition which occurs. Its symptoms are:

1. Hectic fever is a chronic blood poisoning with continual absorption of small doses of the toxins. This variety usually arises in long-continued suppuration of bones and joints, and in decomposition occurring in a pulmonary cavity. The marked symptom is a sharp rise of temperature in the evenings; the face becomes flushed and the pulse rapid. After profuse sweating the temperature drops. Diarrhoea and wasting are a usual accompaniment.

2. Septic traumatic fever is a slight form which may follow burns or compound fractures and which terminates in septicemia. (Fulhrois, memoirs, J. Acad. Sci. Sc.)

3. Acute septic infection large amounts of the poison are absorbed suddenly in the system with a severe rigor followed by a continuous high temperature, dry tongue, rapid pulse and severe headache, together with nausea and vomiting, and in the later stages diarrhoea. If the case be a severe one rapid prostration speedily comes on with low muttering delirium, the temperature may fall to subnormal, and a gradually deepening coma may end in death; other cases pass into a typically "typhoid state," death occurring from exhaustion at the end of about a week.

4. Amyloid (Gr. ἀμύλω, starch, ἐφο, form), or lardaceous disease, usually of the liver, spleen, kidneys or other organs, is one of the results of long-continued septic intoxication. A substance derived from the breaking down of pus and tissue cells is carried in the blood and deposited in the connective tissue of the coats of the smaller arteries, and the viscera become infiltrated with a material looking like lard. The liver and spleen, being the organs most usually affected, become immensely enlarged.

No form of septic infection yields so easily to treatment as sapraemia. The prompt removal of the cause of septic absorption, the flushing out of the wound with weak antiseptic solutions, the institution of certain mechanical means of keeping the wound free from dirt, the establishment of proper drainage in deep wounds, is usually followed by a fall in temperature and an improvement in the general condition. A strong, preferably mercurial, purgative should be given to aid in the elimination of toxic material. For the same purpose the injection into the veins or into the cellular tissue of large quantities of normal saline solution is useful. For heart depression should be overcome by diffuse stimulants and hypodermic injections of strychnine. When the wound has become "surgically clean" recovery is usually rapid.

Septicaemia is an acute infective disease differing from sapraemia in that the micro-organisms themselves are absorbed, entering the general circulation, and may on examination be found in greater or lesser number in the blood-stream itself. The organism or organisms grow and reproduce themselves in the blood or tissues. A number of different organisms have been isolated from the blood-stream in cases of septicemia. The most frequently found is the Streptococcus pyogenes, which is present in 50% of the cases and is common in puerperal septicemia and in ulcerative endocarditis. The Staphylococcus pyogenes aureus et albus is also a frequent cause, but sometimes septicemia may be due to other pathogenic microbes such as the Pneumococcus, the Bacillus coli communis, Bacillus pyocyaneus, Bacillus oedematis maligni and the Gonococcus. The micro-organisms are conveyed by the blood-stream to different parts of the body, in which as in the original wound itself they both multiply and set up factories for the production of toxins. The disease commonly follows blows or wounds which have
not been treated on surgical lines. Much laceration of the tissues at the time of the injury offers increased liability to infection. Septicaemia is frequent in spreading gangrene, in diseases of the periostium, and in fevers such as scarlatina, diphtheria or plague, and in the puerperal state. The period of incubation may be from a few hours to several days. The condition of the wound or site of injury shows marked changes. In severe cases following a prick received in conducting a post-mortem the finger in a few hours becomes greatly swollen and painful, the pain spreading up the lymphatic vessels to the nearest lymphatic glands, which may become enlarged and tender. Vaccination of the skin with carbolic acid may have been resorted to, and constitutional treatment must be undertaken at once. Should the infection be due to a Streptococcus, an antistreptococcic serum may be injected. There are, however, many strains of Streptococci, and a polyvalent serum may give good results. Menzer's antistreptococcic serum has been successful in puerperal septicaemia not of gonococcal origin. Many cases have also now been recorded in which the systemic infection is combated by means of an autogenous vaccine. The first case was described by Sir James Barr before the Liverpool Medical Institute in May 1893. In urgent cases, a vaccine manufactured by a vaccine, quinine in large doses, stimulants and liquid nourishment must be given, and the temperature controlled by tepid sponging.

Pyæmia (Gr. πυεω, pus, αίμα, blood), which got its name from an erroneous idea that the pus passed into the blood, is now understood to mean an acute disease with the formation of metastatic abscesses. The first definite account of the disease was published by Boerhaave in 1720. Virchow in 1846 pointed out that it was not pus in the veins, but altered blood-clot. Jean D'Arct showed the separate processes of poisoning by products of decomposition and the blocking of the veins with emboli. Any pyogenic organism may give rise to pyæmia, or it may follow any acute abscess. The cause of pyæmia may be said to be any condition favouring the formation of emboli. An occasional cause of pyæmia is infective endocarditis, while puerperal pyæmia may arise from infection of the genital tract. When the emboli lodge in the lung there is a breaking down of the tissue in front of the embolus, a haemorrhagic infarct being formed. The clinical symptoms of acute pyæmia generally start with a rigor repeated at periodic intervals; the skin becomes hot and the patient develops a rash. The pulse becomes frequent and weak and the tongue dry. In about a week secondary abscesses appear, most frequently in the region of joints. There may be little or no pain to herald the formation of an abscess, but usually there is intense pain followed by suppuration. Unless early treatment is undertaken the joint may be rapidly destroyed. In acute cases multiple abscesses in the kidney may give rise to pain and albuminuria, abscesses in the lungs to dyspæna, while acute peritonitis may arise from rupture of a splenic abscess into the peritoneal cavity, and sudden blindness be the result of the plugging of the arteria centralis retinae. The duration of a case of pyæmia depends on the severity of the infection. Death may occur from the formation of abscesses in vital organs such as the brain and heart, or from exhaustion from continued suppuration, or chronic forms may after months pass on to complete recovery. Unfortunately pyæmia cannot be recognized apart from other blood infections until abscesses begin to form. The local treatment is to endeavour to prevent the detachment of infected emboli and the infection of the general blood-stream thereby. An infected limb may be dealt with by amputation above the seat of the lesion, or it may be feasible to dissect out the infected veins. When abscesses have formed they must be dealt with by opening and washing out the cavities. Antistreptococcic serum may be tried, as in septicaemia; and if there be time to prepare a vaccine it offers the best prospects, more particularly in the subacute and chronic forms of pyæmia. The usual administration of nourishing diet and stimulants when required should be undertaken, and every effort made to keep up the patient's strength.

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SEPT, a clan, the term generally applied to the tribes or families of Ireland, used also sometimes as by Sir H. Maine (Early History of Institutions, 1931) of the Indian joint undivided family, the "combined descendants of an ancestor long since dead.

Woodward (Dict. of Eng. Bym.), quoted by Skeat, takes the word as a corruption of "sect" (q.v.), and cites from the State Papers of 1546 and 1537, where secel and septe are used respectively. If so, the word must have been influenced by Lat. sectum, fence or enclosure (saepere, to enclose, saepes, hedge), a word which has been adopted as "septum" into scientific terminology for any partition or wall dividing two cavities—e.g. in anatomy, of the partition between the nostrils, septum nasis, or that between the right and left ventricles of the heart, septum cordis.

SEPTEMBER (Lat. septem, seven), the seventh month of the old Roman year, in which it had thirty days assigned to it. In the Julian calendar, while retaining its former name and number of days, it became the ninth month. The Ludi Magni (Ludi Romani) in honour of Jupiter, Juno and Minerva began on the 4th of September. The principal ecclesiastical feasts falling within the month are: The Nativity of the Blessed Virgin on the 8th, the Exaltation of the Holy Cross on the 14th, St Matthew the apostle on the 21st, and St Michael the archangel on the 29th. September was called "harvest month" in Charlemagne's calendar, and it corresponds partly to the Fructidor and partly to the Vendémiaire of the first French republic. The Anglo-Saxons called the month G unston, barley month, that crop being then usually harvested. It is still called Herbstonal, harvest month, in Switzerland.

SEPTUAGINT, THE (Gr. Σεπταυαγί, Lat. LXX.), or the "Alexanderian version of the Old Testament," so named from the legend of its composition by seventy (Septuaginta), or more exactly seventy-two, translators. In the Letter of Aristeas to Philocrates 1 this legend is recounted as follows: Demetrius of Phalerum, keeper of the Alexandrian library, proposed to King Ptolemy II. Philadelphia (285–247 B.C.) to have a Greek translation of the Jewish law made for the library. The king consented and, after releasing 100,000 Jewish captives in his kingdom, sent an embassy with rich presents to the high priest Eleazar at Jerusalem and asking him to send six ancient, worthy and learned men from each of the twelve tribes to translate the law for him at Alexandria. Eleazar readily sent the seventy-two men with a precious

1 Edited by H. St. J. Thackera in H. B. Swete's Introd. to the Old Testament in Greek (1900), and by P. Wendland in the Teubner series (1900).
roll of the law. They were honourably received at the court of Alexandria and conducted to the island (Pharos), that they might work undisturbed and isolated. When they had come to an agreement upon a section Demetrius wrote down their version; the whole translation was finished in seventy-two days. The Jewish community of Alexandria was allowed to have a copy, and accepted the version officially; indeed a curse was laid upon the introduction of any changes in it.

There is no question that this Letter (which is condensed in Josephus, Ant. vi. 9, 3) and is accompanied by a spurious statement of Philo's, is not genuine. It having been a decree of the Alexandrian court, is represented as a heathen, but the real writer must have been a Jew and no heathen. Aristeaes is represented as himself a member of the embassy to Eleazar; but the author of the Letter cannot have been a contemporary of the events he records, else he would have known that Demetrius fell out of favour at the very beginning of the reign of Philadelphia, on a charge of intriguing against his succession to the throne. Nor could a genuine honest witness have fallen into the absurd mistake of making delegates from Jerusalem the authors of the Alexandrian version. There are also one or two authors (§§ 28, 182) where the author seems to forget that he is playing the rôle of Aristeaes. The forgery, however, seems to be an early one. "There is not a court-title, an institution, a law, a magistracy, an office, a technical term, a formula, a peculiar phrase in this letter which is not found on papyri or inscriptions and confirmed by them." That in itself would not necessarily imply a very early date for the piece; but what is decisive is that the author limits canonicity to the law and knows of no other holy book already translated into Greek. Nor does he claim any inspiration for the translators. Further, what he tells about Judea and Jerusalem is throughout applicable to the period when the Ptolemy bore sway there and gives not the slightest suggestion of the immense changes that followed the conquest of Palestine by the Seleucids. It is probable that the Jewish philosopher Aristobulus, who lived under Ptolemy VI. Philometer (180-145 B.C.), derived his account of the origin of the LXX. from this Letter, with which it corresponds. There seems good ground for believing that the letter contains some elements derived from actual tradition as to the origin of the LXX. Ptolemy Philadelphus was a king of eclectic literary tastes, and the welcome he gave to a Buddhist mission from India might well have been extended to Jews from Palestine. The letter lays great stress on the point that the LXX. is the official and authoritative Bible of the Hellenistic Jews, having not only been formally accepted by the synagogue at Alexandria, but authorized by the authorities at Jerusalem. This, and the fact that the style of the version is not that of a book intended for literary use, points to the conclusion that the translation was made to satisfy the religious needs of the Jews in Alexandria, and possibly also in the hope of gaining proserlesy. In view of the Jewish prejudice against writing Scripture in any but the old holy form (the Targum, for instance, was for centuries handed down orally), it is quite possible that some impulse to the Alexandrian version came from without. Philadelphia may have encouraged it both to satisfy his own curiosity and to promote the use of Greek among the large Jewish population of the city. That the work is purely Jewish in character is evident from the fact that its claims were demolished by Humphry Hody, Regius Professor of Greek at Oxford, in 1684. H. Junker, in his Untersuchungen über die Bibliothek und ihren Einfluss auf die Geschichte der Beschreibung der Schriften, v. 2, 1825, has apparently not been aware of this fact.

1 Its claims were demolished by Humphry Hody, Regius Professor of Greek at Oxford, in 1684.
2 P. Wendland, however, puts it after the Maccabean age (say 96 B.C.) and before the Roman invasion of Palestine (63 B.C.).
3 J. G. Lumbruno, Recherches sur l'École de la Législation, p. 18 (Turin, 1790).
4 The exact text is partly in reference, ed. Syr.; Eusebius, Prae. Ev. ix. 6, p. 410 seq.; cf. Valckenau's, Die Einleitung, 1860, reprinted in G所谓's edition of the Prae. Ev. One must not overlook the possibility that Aristobulus intended much of his translation as a mere literary exercise. Indeed, some of the other knowledge of the Greek authors and the use of the Greek Bible.
5 It is quite likely that they worked on rolls newly brought from Jerusalem. There was no desire to found an Alexandrian canon or type of text.
6 Philo does not necessarily mean that the whole of the section of the Hebrew Old Testament known as "The Writings" was translated by that date.
7 Philo seems to have known the Greek version of most of the Old Testament except Esther, Ecclesiastes, Canticles and Daniel.
others, especially in syntax, it is strongly tinged with Hebraisms, and there are many passages where it is difficult, if not impossible, to establish the identity of the original text. The LXX is divided into two hands: thus Jeremiah i.-xxviii. was not translated by the worker that undertook ch. xxxix.-li. (the former is indifferently, the latter unintelligible Greek), and in Ezekiel one hand is responsible for ch. i.-xxvii., the other for ch. xxviii.-xxxvi. (see 2 Kings 23:33). So 1 Kings stands apart from 2-4 Kings. Isaiah is more akin to classical Greek; like the Pentateuch and 1 Maccabees it is good, but not representative of the whole. The New Testament again varies considerably. A (with which the quotations in the New Testament are often compared) is the oldest (then known as the edition of Hesychius; B, which is often, especially in the Psalms, in accord with the Bohairic version, resembles the text used by Origen, in the latter part of the 3rd century; C (or Alexandrian), the Sahidic (Upper Egypt), the various Syriac translations (unfortunately we have no Old Syriac for the Old Testament), and the Latin (Old Vulgate and Vulgate, especially the former) are the most important. The evidence shows that Greek manuscripts are often responsible for distinguishing local types of text. The testimony of the earliest patristic quotations seems to be in favour of A rather than B. The immediate surest test of a text is comparison of the three main editions, i.e., of Origen, Lucian and Hesychius, and then of the three columns of the LXX text, which lies behind them all. When this has been accomplished there still remains the problem of the relation of the LXX to the Hebrew. In the case of the LXX, translators often diverged from that represented by the Massoretic. For the Pentateuch we have additional material in the Septuagint version, but here the variants are least. In view of the palpable mistakes made by the Septuagint translators and their often inadequate knowledge of Hebrew, we must not hastily assume that in cases of difference the Greek is to be preferred. The book of Ecclesiastues (the Hebrew of which has recently been discovered) furnishes a useful lesson here. Yet there is no doubt that much (e.g., in 1 Samuel) may be learned from the Septuagint; one can say that each case must be treated on its merits.

The LXX is the Greek translation of the Old Testament, first published in Alexandria in 1514-1517, but before it was published in 1521 Aldus published another edition in 1519. The Textus Receptus issued by Poyntz and Vellum (1519) was based mainly on Cod. Vaticanus (A), one of the most important manuscripts, and on Cod. Alexandrinus (B) with some collection from the Vetus Latina. Cod. Alexandrinus is the basis of the great work of R. Holmes and J. Parsons (Oxford, 1799-1827), who furnished the Sixtine text with an apparatus (not always accurate) of the known Hebrew and Septuagint readings (without the Massores, in addition to versions. In 1797-1720 Grabe had published a concordance based on Cod. Alexandrinus (A). C. Tischendorf's text (1850; 7th ed., 1887) was a revision of that of Holmes and Parsons with an apparatus drawn from the chief modern manuscripts. H. B. Swete's edition in 3 vols. (1897-1899: revised 1895-1899) gives the text of B, and, where this fails, that of A or X, with variant readings from the chief modern manuscripts. A Cambridge edition, begun in 1906 by A. E. Brooke and N. M. Locke, including a separate study of each book, with apparatus including all the uncials, the best and most representative minuscules, and the chief versions and patristic quotations.

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SEPULCHRE, CANONS REGULAR OF THE HOLY, an order of men to have been founded in 1114 (or, according to other accounts, during the rule of Godfrey of Bouillon in Jerusalem) on the rule of St Augustine. Pope Celestine III., in 1143, recognized the Canons and Canons of the Holy Sepulchre in all their possessions, and enumerates several churches both in the Holy Land and in Italy belonging to the Canons. According to Jacques de Vitry, the canons served the churches on Mount Sion and Mount Olivet in addition to that of the Holy Sepulchre. The canons survived in Europe till the French Revolution. In Italy they seem to have been suppressed by Innocent VIII. in 1489, and their property given to the Knights of St John. The canons are now independent. Canons of the Holy Sepulchre are still to be found in various countries of Western Europe.

SEPULCHRE, EASTER, in church architecture an arched recess, generally in the north wall of the chancel, in which from Good Friday to Easter day were deposited the crucifix and sacred elements in commemoration of Christ’s entombment and resurrection. It was generally only a wooden erection, which was placed in a recess or on a tomb. There are throughout England many fine examples in stone, some of which belong to the Decorated period, such as at Navenby and Heckington (1370) in Lincolnshire, Sibthorpe and Hawton (1370) in Nottinghamshire, Patrington in Yorkshire, Bampton in Oxfordshire, Holcombe Burnell in Devonshire, and Long Itchington and other churches in Warwickshire.
SEPUCHRE, THE HOLY, the tomb in which, after His crucifixion, the body of Jesus Christ was laid. Although the facts of the crucifixion and of the interment of the body of Christ in the tomb of Joseph of Arimathea are related in the New Testament with considerable detail, sufficient indications are not supplied to locate the actual position of the tomb with reference to the city of Jerusalem. It would appear that Golgotha, the place of crucifixion, was outside the city, near a public thoroughfare leading to one of the gates, and visible from some distance. There is, however, no reason for supposing that it was a hill, and the expression "Mount Golgotha" was not used until some centuries later. Adjoining the place Golgotha was a garden, in which was a new rock-cut tomb, the property of Joseph of Arimathea. Rock-cut tombs were common in the vicinity of Jerusalem, as, in consequence of the geological formation, the faces of the hills are frequently broken by low cliffs with terraces between. The comparatively level terraces were used for cultivation while the tombs were excavated in the rock faces. Many instances of tombs so situated can be seen on the hillsides near Jerusalem, and it is not unreasonable to suppose that the tomb of Joseph was of a similar character. As it was outside the city, the question of the validity of the traditional site, upon which the church of the Holy Sepulchre now stands, necessarily depends, to a great extent, upon whether this place was within or without the walls at the date of the crucifixion. At that time, it is clear, judging from the careful description written by Josephus a few years later, that Jerusalem was defended by two walls, as the third wall was not begun by King Herod Agrippa until A.D. 41. Of these, the first, or old wall, ran from the palace of Herod the Great, which was situated at the N.W. corner of the city, and, following an easterly direction, crossed the Tyropoeon Valley and terminated at the west wall of the Temple enclosure. On the other hand, going south from Herod's palace, it encircled the city on the west and south, and then turning at Siloam it followed the direction of the Kidron Valley and ended at the east wall of the Temple enclosure.

The second wall, which was built at some period between the return of the Jews from Babylon and the reign of Herod the Great, was on the north, and in front of the old wall. According to Josephus, it started "from the Gate Genath in the first wall, and, enclosing only the northern quarter of the city, went up to the Fortress of Antonia." The site of the Antonia, which was situated on the rising ground north of the Temple, is known with tolerable certainty, but the position of the Gate Genath has not been fixed, and, as no certain traces of the second wall have hitherto been found, the line it followed is purely a matter of conjecture. Various theories on the subject are maintained by different authorities. Some of these are indicated on the plan. One suggestion is that the second wall started from a point in the first wall near the palace of Herod, and that some remains of an old wall, situated at the point A, formed part of it. The wall is then supposed to have been carried in a direction slightly west of north, up to the line of the existing city wall, to have followed this line to the Damascus gate, and then turned south-east to the Antonia. If this theory were correct, it is clear that the traditional site of the Holy Sepulchre would be impossible, as it would be some way within the city wall. The arguments against the proposal are, that, according to the account of the siege of Jerusalem given by Josephus, it is improbable that the second wall started from a point so near to Herod's palace, that the line of the present city wall is more likely to be that of the third wall; and that Josephus says that the second wall was not "up to" and not "down to" the fortress of Antonia. Another theory is that the Gate Genath was at a point marked B on plan, and that some ancient masonry which lies east of the so-called Pool of Hezekiah, and over which the houses on the west side of Christian Street are built, represents a portion of the second wall. The wall is then supposed to have been carried north to the point C, and either to have turned east to D, and again north to F, and from this to the Antonia; or to have continued north to E, and thence east to the Antonia. The first supposition excludes the site of the Holy Sepulchre, while the second includes it within the wall. A third theory is that the Gate Genath was at the point G, and that the second wall ran north to F, and thence to the Antonia. This proposal places the site of the Holy Sepulchre outside the wall, but it makes the part of the city protected by the latter smaller than is probable. Speaking generally, it may be stated that there is no certain evidence as to the line followed by the second wall, and it is impossible to say whether the traditional site lies inside or outside this wall. From the description in the Gospels of the burial of Jesus, it is not clear whether the tomb of Joseph was intended to be the final resting-place, or whether the body was only placed in it temporarily because the feast of the Passover was at hand and the disciples intended to remove it to some other place after the Passover. But whatever may have been proposed, the Resurrection of Jesus Christ on the first day of the week, leaving the tomb empty, turned the attention of the disciples from the sepulchre to the living presence of their Master. After He had risen from the dead, the place of His burial does not appear to have had any attraction for His followers, and there is nothing in the writings of the first three centuries to lead us to suppose that the actual rock-cut tomb was regarded by any special feelings of veneration. Whether even a recollection of the site was preserved traditionally is doubtful. There have been many who consider that the early Christians could not have forgotten the exact locality of so important a place; on the contrary, others maintain that to the followers of Jesus Christ it was the fact of the Resurrection that was important and not the empty tomb; and that knowledge of the latter was lost during the vicissitudes from which Jerusalem suffered in the years succeeding the crucifixion. About forty years after the crucifixion, the great revolt of the Jewish people against the Romans took place, and ended with the siege and capture of Jerusalem by Titus. Prior to the siege, the Christians, following the orders of their Master,
had retired to the city of Pella, east of Jordan, and the date of their return to Jerusalem is uncertain. Whether any of the disciples returned after the triumph of the Romans and recognized the tomb of Christ is matter of conjecture.

Among the temples built by Hadrian about A.D. 135 was one dedicated to Aphrodite or Venus; it was erected at that place where the church of the Holy Sepulchre now stands, but it is impossible to say whether it was purposely so placed because it was the site of the tomb of the Lord, or whether the selection of this position was accidental. The extent of the walls of Aelia Capitolina is not known with any certainty, but it is probable that the northern wall followed the same line as the present north wall of Jerusalem, and therefore that the site of the temple of Aphrodite was then within the walls. Although it is doubtful whether the Christians returned to Jerusalem immediately after the destruction of the city by Titus, they were certainly there when Hadrian built Aelia Capitolina; according to Epiphanius, they had a small place of worship on Sion at the place where Jesus Christ ate the Last Supper. Eusebius also states that the Christians worshipped at the Mount of Olives where Jesus instructed His disciples, but no writer up to the time of Constantine speaks of the tomb, or of worship being performed there.

Constantine the Great became emperor of Rome in A.D. 306, and was converted to Christianity six years afterwards. Embracing his new religion with enthusiasm he attributed his victories to the power of the Divine Cross, which was placed on the ensigns of the army. After the great council of the Church had been held at Nicaea in A.D. 325, the emperor decided to find the sites of the crucifixion and resurrection at Jerusalem, and to build a church at this place. Full descriptions of the discovery of the Holy Sepulchre and of the churches that were built are given by Eusebius in his Life of Constantine, but it is difficult to say from his account if the main object of Constantine was to find the sepulchre of the Lord or the cross upon which He suffered. Eusebius does not mention the cross directly and lays more stress on the recovery of the sepulchre; whereas later writers imply that the great wish of the emperor and of his mother Helen, who visited Jerusalem for the purpose, was to find the Holy Cross. The task of searching for the tomb and the cross was entrusted to Bishop Macarius. Whether the bishop was guided in his selection of the site by tradition or not is difficult to say, but he decided that the desired place was under Hadrian’s temple of Aphrodisite. By imperial order the temple was removed, and a rock-cut Jewish tomb, which lay below, was identified as the sepulchre of the Lord.

In another cavity in the rock, 280 ft. to the east, three crosses were discovered, which were assumed to be the crosses upon which Jesus Christ and the two thieves were crucified, the cross of Jesus being identified by its power of healing the sick. Immediately on the receipt of the intelligence of this remarkable discovery, the emperor wrote to Macarius, ordering the erection of magnificent buildings on the site. Two churches were built, one over the tomb, and the second, which was larger and grander, over the place where the crosses had been found. Between the two churches was a small hill, which was identified as Mount Golgotha. The ground surrounding the two churches was levelled and surrounded with porticoes or colonnades. The description of the buildings as detailed by Eusebius is rather obscure, but fortunately there still exist, in the church of Santa Pudenziana at Rome, a mosaic, supposed to have been originally executed in the 4th or 5th century, which shows the buildings clearly. The church of the Anastasis or Holy Sepulchre is herein delineated as a round church with a domed roof; the church of the Martyron or Holy Cross, as a polygonal building, also with a domed roof; while between the two churches is Mount Golgotha, with the cross erected upon it. In another ancient mosaic, which still exists in a church of Madeba, east of the Jordan, a map of Palestine is represented which contains a rough plan of the walls and gates of Jerusalem. In this plan, also, it is possible to recognize the churches built by Constantine. The Bordeaux pilgrim who visited Jerusalem about A.D. 333, when the church of the Holy Sepulchre was in course of construction, describes the place, which was evidently the same as that on which the existing church of the Holy Sepulchre stands. There can, therefore, be no reasonable doubt that the present site is that which was fixed upon by Bishop Macarius in the time of Constantine.

The churches were completed about A.D. 336, and were doubtless visited by numbers of pilgrims. Among these a lady from the west of Europe, who is supposed to have been St. Sylvia of Aquitania and who came to Jerusalem about A.D. 385, fortunately kept a diary of her travels, and she identifies very distinctly the great church of the Cross, the church of the Holy Sepulchre, and Mount Calvary between them. In A.D. 614 the church of the Holy Sepulchre was captured by the Persians, who did considerable damage to the churches, but they were repaired by Modestus after the defeat of the Persians by the emperor Heraclius. The caliph Omar, who captured the city in 636, behaved with leniency to the Christians, and left them in undisputed possession of the church of the Holy Sepulchre.

In 1010 the third Fatimite caliph Hakim practically destroyed it. It is remarkable that from the beginning of the 8th century, while the church of the Holy Sepulchre is always mentioned in the accounts written by visitors to Jerusalem, the church of the Anastasis or Holy Cross seems to have ceased to exist, although the place where the crosses were found was shown to pilgrims and a church was built on Mount Calvary. After the capture of Jerusalem by the Crusaders in A.D. 1099, the church of the Holy Sepulchre was repaired and enlarged by the addition of a nave and chancel, and other churches were erected, so that the Holy Sepulchre became the centre of a group of ecclesiastical buildings and has so remained up to the present time.

The Authenticity of the Traditional Site.—From early times doubts have arisen as to whether the tomb discovered by Bishop Macarius was the veritable sepulchre. As early as 754, when the pilgrim Wilfrid visited Jerusalem, he remarked, in describing the Holy Places, that “Calvary was formerly outside the city, but that the Empress arranged that place so that it should be within the city Jerusalem.” Saewulf in 1102, Wilbrand of Oldenburg in 1211, Jacques de Vitry in 1226, and Burchard of Mount Sion in 1283, had evidently some doubts about the site, and explained the difficulty by suggesting that Hadrian had enclosed it within the walls but that it was outside before he rebuilt the city. Jacques le Sais in 1518, Grotzer in 1538, and F. Quaresmius in 1639, also alluded to the difficulty felt by some of the civilians in the traditional site. Monconnys in 1647 stated that Calvary was removed out of Jerusalem, but was now in the centre of the city, which was smaller than at the time of the crucifixion. In 1738 Jonas Korte of Altona visited Jerusalem and published a book on his travels, in which he expressed the view that the Calvary shown to visitors could not be the true Calvary because it was in the middle of the town. He placed the true site to the west of Jerusalem, near the Birket Mamilla which lies ¾ m. west of the Jaffa gate. This view was supported by J. F. Plessing in 1780. Dr. E. Clarke in 1812 came to the conclusion that Calvary was outside the Sion gate, while Dr. E. Robinson, who published his Biblical Researches in Palestine in 1841, expressed himself satisfied that the traditional site could not be the true one, but did not venture to suggest an alternative. In 1842 Otto Theinens asserted that the crucifixion must have taken place on the north of Jerusalem on the rising ground outside the Damascus gate above the quarry known as Jeremiah’s Grotto. Theinens considered that the Holy Sepulchre was on the west side of the hill, and his views were adopted by a number of later writers, including Canon Tristram, Dr. Selah Merrill, Fisher Howe and General C. G. Gordon. Colonel C. R. Conder, R.E., who carried out the survey of Palestine under the Palestine Exploration Fund, also adopted the same hill as the probable scene of the crucifixion, but considered that the tomb of Christ was an ancient rock-cut tomb, about 200 yds. west of Jeremiah’s Grotto. Since General Gordon gave his opinion in favour of the site, it has been adopted by many, and the tomb in the face of the hill is sometimes called “Gordon’s Tomb of Christ” or “The Garden Tomb.” A careful examination of the question, however, leads to the conclusion
that the sites are not probable either for Calvary or the tomb. The hill in question, though not far outside the present north wall of the city, is at too great a distance from the probable line of the second wall, which was the outside line of fortification at the time of the crucifixion. The quarry, known as Jeremiah’s Grotto, is likely to be of later date than the third wall, which was built some years after the crucifixion, and the tomb identified as that of Christ has with good reason been attributed to the Christian rather than to the Jewish period. On the whole, therefore, the balance of argument is against the identification proposed by Thomas.

An entirely different theory regarding the site of the tomb of Christ was proposed by James Fergusson, the architect, who, in 1847, in his *Essay on the Ancient Topography of Jerusalem*, made the startling proposal that the Dome of the Rock, generally believed to have been erected by Abdalmallik (Abd el Melik) in A.D. 691, was the church built by the emperor Constantine over the Holy Sepulchre. He further elaborated his views in the interesting work entitled *The Temples of the Jews and other buildings in the Haram area at Jerusalem* (1878). Fergusson’s proposal, which found a considerable number of supporters, was based on architectural evidence, and he maintained that the building must have been designed in the time of Constantine and could not have been constructed by the Mahommedans at the end of the 7th century. Fergusson’s views were strongly supported by F. W. Unger in *Die Bauten Constantins des Grossen am Heiligen Grab zu Jerusalem*, published at Göttingen in 1863, but the objections to them on historical and topographical grounds are so considerable that they can hardly now be maintained. The idea involved in the theory of the Temple of the Temple on the S. W. part of the Haram enclosure, and the explorations made by General Sir C. Warren showed conclusively that if the Temple had been in this position, it would have stood over the deepest part of the Tyropoön Valley, and the foundations must have been of a much unnecessarily gigantic character. Sir C. Warren, in *The Temple and the Tomb*, 1880, replied *seriatim* to Fergusson’s proposals. The historical evidence also is entirely against the latter, and the discovery of the Madaimos mosaic, which, as has been already explained, shows the church of the Holy Sepulchre in the same position as at present, is further proof that the latter was not placed by Constantine on Mount Moriah.

The final conclusion that may be arrived at with regard to the authenticity of the traditional site of the Holy Sepulchre is as follows. It may be taken as certain that the present site is that which was adopted by Macarius as the correct one early in the 4th century, but there is not sufficient evidence to prove that this tomb was the one in which the body of Christ was laid, or that remembrance of the latter had been preserved during the three centuries that had elapsed between the time of the crucifixion and the conversion of Constantine. No other suggested site, however, has more claim to be the true one than that over which the church of the Holy Sepulchre now stands.


**SEQUANI**. In ancient geography, a Celtic people who occupied the upper basin of the Arar (Sénone), their territory corresponding to Franche-Comté and part of Burgundy. Before the arrival of Caesar in Gaul, the Sequani had taken the part of the Arverni against their rivals the Aedui and hired the Germans under Ariviustus to cross the Rhine and help them (71 B.C.). But although his assistance enabled them to defeat the Aedui, the Sequani were worse off than before, for Ariviustus deprived them of a third of their territory and threatened to take another third. The Sequani then appealed to Caesar, who drove back the Germans (58), but at the same time obliged the Sequani to surrender all that they had gained from the Aedui. This so exasperated the Sequani that they joined in the revolt of Vercingetorix (52) and shared in the defeat at Alesia. Under Augustus, the district known as Sequania formed part of Belgica. After the death of Vitellius, the inhabitants refused to join the Gallic revolt against Rome instigated by Julius Civilis and Julius Sabinus, and drove back Sabinus, who had invaded their territory. The traditional arch at Versontio (Besançon), which in return for this service was made a colony, possibly commemorates this victory. Dioctelian added Helvetia, and part of Germania Superior to Sequania, which was now called Provincia maxima Sequanorum, Versontio receiving the title of Metropolis civitas Versontiensium. Fifty years later Gaul was overrun by the barbarians, and Sequania sacked (155). Under Julian it recovered some of its importance as a fortified town, and was able to withstand the attacks of the Vandals. Later, when Rome was no longer able to afford protection to the inhabitants of Gaul, the Sequani became merged in the newly formed Kingdom of Burgundy.


**SEQUERA, DOMINGO ANTONIO DE** (1768–1837). Portuguese painter, was born at Lisbon in 1768, and studied art first at the academy of Lisbon, and subsequently under A. Cavallucci in Rome. By the age of thirteen he had evinced such marked talent that F. de Setubal employed him as assistant in his work for the Joao Ferreiras Palace. Sequera sojourned in Rome from 1788 to 1794, when he was made honorary member of the Academy of St Luke. After another two years’ travel and study in Italy, he returned to his native country preceded by so great a reputation that important commissions for churches and palaces were offered him, and he instructed his two pupils in the historical compositions and cabinet pictures. In 1802 he was appointed first court painter, in which capacity he executed many works
for the prince regent, for Donna Maria Teresa, and for the members of the court. He designed the valuable silver service which was presented by the Portuguese nainon to Wellington, and a monument that was erected in 1820 in the Rocio square at Lisbon. In 1823 he visited Paris, where he is known to have tried his skill in lithography and etching. The last years of his life he spent in Rome, devoting himself chiefly to devotional subjects and to his duties as head of the Portuguese Academy. He died in Rome in 1837. His best-known pictures are the "Last Moments of the Poet Camoens," "Flight into Egypt," "Descent from the Cross." Numerous paintings by Sequeria are in the royal palace at Mafra, the convent of Laveinhas, the new palace of Ajuda, and in the principal palaces and churches of Lisbon.

**SEQUESTER, VIBIUS** (4th or 5th century, A.D.), the supposed author of an alphabetical list of geographical names occurring in the Roman poets, with special reference to Virgil, Ovid and Lucan. Several of the names given cannot be traced; unless this is the result of carelessness or ignorance, the compiler must have had access to sources no longer extant.

Editions by C. Burrian (Zurich, 1867), and in A. Riese, Geographi Latinini minores (1878); see also Teufel, Hist. of Roman Literature (Eng. trans., 1900), 445, 1.

**SEQUESTRATION** is the act of removing, separating or seizing anything from the possession of its owner, particularly in law, of the taking possession of property under process of law for the benefit of creditors or the state. The Latin sequestrare, to set aside or surrender, a late use, is derived from *sequester*, a depositary or trustee, one in whose hands a thing in dispute was placed till the dispute was settled; this was a term of Roman jurisprudence (cl. *Digest* L. 16, 115). By derivation it must be connected with *sequi*, to follow; possibly the development in meaning may be follower, attendant, intermediary, hence trustee. In English "sequestered" means merely secluded, withdrawn. In law, the term "sequestration" has many applications; thus it is applied to the act of a belligerent power which seizes the debts due from its own subject to the enemy power; to a writ directed to persons, "sequestrators," to enter on the property of the defendant and seize the goods (see EXECTION); to the action of taking profits of a benefit to satisfy the creditors of the one whose property cannot be touched by a lay hand, the writ is issued to the bishop, and he issues the sequestration order to the churchwardens who collect the profits and satisfy the demand. Similarly when a benefice is vacant the churchwardens take out sequestration under the seal of the Ordinary and manage the profits for the next incumbent.

In the Scots law of bankruptcy the term "sequestration" is used of the taking of the bankrupt's estate by order of the court for the benefit of the creditors (see BANKRUPTCY, § SCOTTISH BANKRUPTCY LEGISLATION).

**SEQUIN** (the French form of Ital. *zecchino, zecchino d'oro*), the name of a Venetian gold coin, first minted about 1280, and in use until the fall of the Venetian Republic. It was worth about nine shillings. It bore on the obverse a figure of St Mark blessing the banner of the republic, held by a kneeling doge, and on the reverse a figure of Christ. Milan and Genoa also issued gold sequins. The word in Italian was formed from *secxa*, Span. *zeça*, a mint, an adaptation of Arabic *sikka*, a die for coins. In the sense of "newly-coined," the Hindi or Persian *sikka*, anglicised *sikka*, was specifically used of a rupee, containing more silver than the East India Company's rupee, coined in 1730 by the Bengal government. The "sikka-rupee" ceased to be circulated after 1836. The term "sikka" is now used for small discs made of thin pieces of metal, tin foil, celluloid or other composite material, highly glazed and brightly coloured, and applied as trimming for ladies' dresses.

**SEQUOIA**, a genus of conifers, allied to *Taxodium* and *Cryptomeria*, forming one of several surviving links between the firs and the cypresses. The two species are evergreen trees of large size, indigenous to the west coast of North America. Both bear their round or ovoid male catkins at the ends of the slender terminal branchlets; the ovoid cones, either terminal or on short lateral twigs, have thick woody scales dilated at the extremity, with a broad disk depressed in the centre and usually1 furnished with a short spine; at the base of the scales are from three to seven ovules, which become reversed or partially so by compression, ripening into small angular seed with a narrow wing-like expansion.

The redwood of the Californian woodsman, *S. sempervirens*, on which the genus was originally founded by Stephan Endlicher, abounds on the Pacific coast from the southern borders of Oregon southward to about 12 m. south of Punta Gorda, Monterey county, California, forming a narrow mountain forest belt, rarely extending more than 20 or 30 m. from the coast or beyond the influence of ocean fogs, or more than 3000 ft. above sea-level (see C. S. Sargent, *Silva of North America*, vol. x.). It grows to a gigantic size, from 200 to 300 ft. or more in height, with a diameter of from 12 to 15, or rarely 20 to 28 ft. at the much-buttressed base. Professor Sargent refers to it as the tallest American tree, which probably occasionally reaches 400 ft. or more in height. In old age the huge columnar trunk rises to a great height bare of boughs, while on the upper part the branches are short and irregular. The bark is red, like that of the Scots fir, deeply furrowed, with the ridges often much curved and twisted. When young the tree is one of the most graceful of the conifers: the stem rises straight and tapering, with somewhat irregular whorls of drooping branches, the lower ones sweeping the ground—giving an elegant conical outline. The twigs are densely clothed with flat spreading linear leaves of a fine glossy green above and glaucous beneath; in the old trees they become shorter and more rigid and partly lose their distichous habit. The cones, from 3 to 7 in. long, are at first of a bluish-green colour, but when mature change to a reddish brown; the scales are very small at the base, dilating into a broad thick head, with a short curved spine below the deep transverse depression. From the great size of the trunk and the even grain of the red cedar-like wood it is a valuable tree to the farmer and carpenter: it splits readily and evenly, and planes
and polishes well; cut radially, the medullary plates give the wood a fine satiny lustre; it is strong and durable, but not so elastic as many of the western pines and firs. Professor Sargent describes it as the most valuable timber tree of the forests of Pacific North America. In England the tree grows well in warm situations, but suffers much in severe winters—its graceful form rendering it ornamental in the park or garden, where it sometimes grows 30 or 40 ft. in height; its success as a timber tree would be doubtful. In the eastern parts of the United States it does not flourish. It was first described by Archibald Menzies in 1795 and was first described as Taxodium sempervirens, under which name it was known until distinguished by Stephan Endlicher as a new genus in 1847.

The only other member of the genus is the giant tree of the Sierra Nevada, S. gigantea, the largest of known conifers; it is confined to the western portion of the great Californian range for a length of about 260 m., at an altitude of from 5000 to 8400 ft. above the sea, and forms extensive forests, or, in the northern part of the area, isolated groves, such as the Calaveras Grove, the Mariposa Grove, and others. The leaves of this species are awl-shaped, short and rigid, with pointed apex; closely adpressed, they completely cover the branchlets. The male catkins are small, solitary, and are borne at the ends of the twigs; the cones are from 1 1 to 1 3 in. long, ovoid, with scales thicker at the base than those of the redwood, and bearing below the depression a slender prickle. The young tree is more formal and rigid in growth than S. sempervirens, but when old the outline of the head becomes cylindrical, with short branches sparsely clad with foliage sprays. The bark, of nearly the same tint as that of the redwood, is extremely thick and is channelled towards the base with vertical furrows; at the root the ridges often stand out in buttress-like projections. The average height is about 275 ft. with a diameter near the ground of 20 ft.; but specimens from 300 to 320 ft. tall, with trunks 25-35 ft. thick, are not rare.

The famous group known as the Mammoth Grove of Calaveras in California, containing above ninety large trees, stands in 35° N., about 4370 ft. above the sea, between the San Antonio and Stanislaus rivers. It was discovered by a hunter named Dowd in pursuit of a bear in 1852, but had been visited before by John Bidwill, who crossed the Sierra in 1841. Some trees in the Mariposa Grove rival these in size: one measures 101 ft. round the root, and a cut stump is 31 ft. in diameter. Gigantic as these trees are and imposing from their vast columnar trunks, they have little beauty, owing to the scanty foliage of the short rounded boughs; some of the trees stand very close together; they are said to be about four hundred in number. The age of the trees has been greatly overestimated. A few years ago a full-sized tree was felled in Fresno county, California, and contiguous transverse sections have been set up, one in the Museum of Natural History at New York, the other (upper one) in the British Museum of Natural History at South Kensington; the annual rings of the latter section have been carefully counted and found to indicate an age of 1335 years.

The growth of the "mammoth tree" is fast when young, but old trees increase with extreme slowness. The timber is not of great value, but on account of its dense grain and of deeper color than that of S. sempervirens, varying from brownish red to very deep brown; oiled and varnished, it has been used in cabinet work. S. gigantea was brought to England by Lobb in 1853, and received from Dr Lindsey the name of Wellingtonia, by which it is still popularly known, though its affinity to the redwood is too marked to admit of generic distinction. In America it is sometimes called Washingtonia. In the Hawaiian Islands it does not succeed; and, though nearly hardy in Great Britain, it is planted only as an ornament of the lawn or paddock.

In early geological times the sequoias occupied a far more important place than they do at present. They flourished on the Lower Chalk formations, and in Tertiary times were widely distributed; the genus is represented in the Eocene flora of Great Britain, and in the succeeding Miocene period was widely distributed in Europe and western Asia. It is presumed that in the Glacial epoch the genus was exterminated except in the areas in western North America where it still persists.


das a town of Belgium in the province of Liége, adjoining the city of that name. Pop. (1904) 39,843. It lies on the right bank of the Meuse above Liége, with which it is connected by rail and tramway. Seraing owes all its prosperity and importance to the firm founded by John Cockrell, an Englishman, in 1817, with the co-operation of King William I. of the Netherlands, who provided half the capital. The Cockrell family has long disappeared, and the enterprise is now known as "the John Cockrell Company." It is one of the largest factories of engines and machinery—apart from war material—on the continent. Its headquarters occupy the old summer palace of Cardinal de Lorraine, Archbishop of Liége. In 1590 it established a branch at Hoboken on the Scheldt for the purpose of undertaking ship-building. The company employs 14,000 hands.

SERAJEVO (pronounced SERAJEVO, "the city of palaces"); Turkish, Bosna Serai; Ger. Sarajewo; Ital. Seraiso), the capital of Bosnia, situated on the Miljačka, a small right-hand tributary of the Bosna and on the railway from Bosna-Brod, 167 m. N., to Ragusa. Pop. (1895) 37,713, chiefly Serbo-Croatians, with small colonies of Gipsies and Jews. The city, frequently called the "Damascus of the North," spreads over a narrow valley and the adjacent hill, a semi-circle of rugged hills. Though still half oriental, and wholly without a natural Turkish bazaar, its hundred mosques, wooden houses and cypress groves, it was largely rebuilt, after 1878, in western fashion. The river was also canalized, a telephone service introduced, and extensive drainage works carried out. Sarajevo is the seat of the provincial government, of a Roman Catholic bishop, an Orthodox metropolitan, the highest Moslem ecclesiastical authority or Reis-el-ulema, and the supreme court. It is the centre of Bosnian education, containing the celebrated orphanage founded in 1809 by Miss Irby and Miss Mackenzie (afterwards Lady Skeffington); the Scheriat-Schule, which derives its name from the Turkish code or scheri, and is maintained by the state for Moslem law-students; a gymnasia, a technical institute and a teachers' training-college. The Begovina Džamija (Džamija), or mosque of Husrev Bey, is only surpassed, among European mosques, by those of Adrianople and Constantinople. It was founded, in 1465, by Husrev or Ures, pasha of Bosnia. The castle and barracks, occupied by an Austrian garrison, stand on a cliff commanding a fine view of the city. Other noteworthy buildings are the konak or governor's residence, the large Catholic and Orthodox cathedrals, the hospital, the townhall and the museum, with fine antiquities and natural history collections. In the Sinan Tekke or Dervish monastery the ceremonies of the howling and dancing Dervishes may be witnessed. Turkish baths and cafés are numerous. The bazaar, or čarsiya, is a labyrinth of dark lanes, lined with booths, where embroideries, rugs, embossed fire-arms, filagree-work in gold and silver, and other native wares are displayed. There are also large potteries, silk-mills, a brewery and a tobacco factory. At the mineral baths of Ildize near the city, where many Roman remains have been found, a hydrophatic establishment was opened in 1899. The whole neighbourhood is rich in prehistoric remains.

Founded, in 1262, by the Hungarian General Cotroman, under the name of Bosnavar or Vrbosna, Sarajevo was enlarged by Husrev Bey two centuries later, and takes its name from the palace (Turkish, serai), which he founded. During the wars between Turkey and Austria, its ownership was often contested; and it fell before King Matthias I. of Hungary in 1480, and before Prince Eugene of Savoy in 1697. Destructive fires laid it waste in 1480, 1644, 1656, 1687 and 1789. It was chosen as the seat of Turkish government in 1689 instead of Travnik. In 1787 it was seized by the Austrians, under Baron Philippovitch.

SERAMUR, a town of British India, in the Hugli district of Bengal, on the right bank of the river Hugli, opposite Barrackmore, on the East Indian railway, 12 m. from Howrah. Pop. (1901) 44,451. A Danish factory was established here about the middle of the 17th century, and called by them Frederiksnager. With the rest of the Danish possessions in India, it was acquired by purchase by the English in 1845. Serampur was the home of the Baptist mission founded by Carey. The mission press has been transferred to Calcutta, but a training college is
SERAPION, or SERAPION (flor. c. 350), bishop of Thmuis in the Nile Delta and a prominent supporter of Athanasius in the struggle against Arianism (sometimes called, for his learning, Scholasticus), is best known in connection with a prayer-book or sacramentary intended for the use of bishops. This document, contained in a collection of Egyptian documents in an 17th-century MS. at the Laura on Mount Athos, was published by A. Dmitrijewskij in 1894, but attracted little attention until independently discovered and published by G. Wobbermin in 1899. It is a celebrant's book, containing thirty prayers belonging to the mass (19-30, 1-6), baptism (7-11, 15, 16), ordination (12-14), benediction of oil, bread and water (17), and burial (18), omitting the fixed structural formulae of the rites, the parts of the liturgy ministers, and almost all Egyptian, except what is implied in the titles of the prayers. The name of Serapion is prefixed to the anaphora of the mass (1) and to the group 15-18: but whether this indicates authorship is doubtful; for whereas the whole collection, is bound together by certain marks of vocabulary, style and thought, 15-18 have characteristics of their own not shared by the anaphora, while no part of the collection shows special affinities with the current works of Serapion. But his name is at least a symbol of probable date and provenance: the theology, which is orthodox so far as it goes, but "conservative," and perhaps glancing at Arianism, shows no sign that the Macedonian style of the Mass formulae is of a type abandoned by the orthodox, and by c. 370 treated by Didymus of Alexandria as heretical; the apparent presupposition that the population is mainly pagan (1, 20); the exclusive appropriation of the mass to Sunday (19; cf. Ath. ep. c. Ar. 11), whereas the liturgical observance of Saturday prevailed in Egypt by c. 350; the terms in which monasticism is referred to—-together point to c. 350: the occurrence of official interpreters (25) points to a bilingual Church, i.e. Syria or Egypt; and certain theological phrases (σχολακιστός, ἱστόμαι, μικρὸς καθολικοῦς) of the Mass, which the liturgical characteristics, indicate Egyptian; while the pericopes for rains (25), without reference to the Nile-rising, points to the Delta as distinguished from Upper Egypt. The book is important, therefore, as the earliest liturgical collection on so large a scale, and as belonging to Egypt, where evidence for 4th-century ritual is scanty as compared with Syria.

The rites form a link between those of the Egyptian Church Order (a 3rd- or early 4th-century development of the Hippolytian Canons, which are perhaps Egyptian of c. 260) and later Egyptian rites marking the stage of development reached in Egypt by c. 330, while exhibiting characteristics of their own.

I. The Mass has the Egyptian notes—-a prayer before the lections, elsewhere unknown in the East; an exceptionally weighty body of intercessions after the catechumens' dismissal, followed by a penitential act, probably identical with the εὐχαστίας of Can. Hippol. 2, which disappeared in later rites; a setting of the Sanctus found in several Egyptian anaphoras; the close connexion of the commemorations of the offerers and of the dead; and the form of the conclusion of the anaphora. The structure of the communion—with a prayer before and prayer of thanksgiving and blessing after—-shows that Egypt had already arrived at the type given in the Greek form first evidenced in Syria, c. 375 (Ap. Const. viii. 13). Among the special characteristics of Serapion are the simplicity of the Sanctus, and of the Institution, which lacks the dramatic additions already found in Ap. Const.; the interpolation of a passage containing a quotation from Didaché 9 between the institutions of the bread and of the chalice; the form of the αὐξήματος; and the invocation of the Word, not of the Holy Ghost, to effect consecration. That the Lord's Prayer before communion is not referred to may be only because it is a fixed formula belonging to the structure of the rite. II. The Order of Baptism has a form for the consecration of the water, and a preliminary prayer for the candidates, perhaps alluding to their exorcism; a prayer

1 These are: a vigorous and acute refutation of the Manichaeans, and some letters. A book on the titles of the Psalms has not survived.
for steadfastness following the renunciation and the confession of faith; the form of anointing with oil; appropriate prayers preceding and following Stikele and Kirchart; and the prayers of contrition with imposition of the hand, chiasm and crossing. All this corresponds to and fills up the outline of the Church Order and allusions in 4th-century writers, and is in line with later Egyptian rites. III. Forms of Ordination are provided only for deacons, presbyters and bishops, the orders of divine institution (15). They are concise, but of the normal type. That for deacons (12) commemorates St Stephen, invokes the Holy Ghost, and prays for the gifts qualifying for the diaconate. That for presbyters (13) recalls the Mosaic LXX, invokes the Holy Ghost, and requests the gifts of prophecy, teaching, and the ministry of reconciliation. That for bishops (14) appeals to the mission of our Lord, the election of the apostles, and the apostolic succession, and asks for the "Divine Spirit" conferred on prophets and patriarchs, that the subject may "feed the flock" "unblamably and without offence continue in his office. The minor orders, interpreters, readers and subdeacons (25) are evidenced, as elsewhere in the middle of the 4th century, appointed without sacramental ordination.

IV. The use of exorcised or blessed oil, water and bread is fully illustrated, and it is further stressed that the fact that the oil to be used is the oil of the Sas, is of little importance. For, the oil, (like Can. Hippol. and Ch. Ord. for oil), probably for the use of individual offerers. A longer form for all the three matters (17) perhaps has in view the general needs of the Church in the visitation of the sick. The occurrence in both prayers of the "Name" and the commemoration of the Passion, Resurrection, &c., corresponds with early allusions, in Origen and elsewhere, to the usual form of exorcism.

V. For burial of the dead Serapion gives a prayer for the departed and the survivors (18) that the funeral procession is alluded to (including the act in the Curetes' road). The mourners (see the similar mention of departed persons is provided for. Hence we have the elements of the 4th-century funeral, as we know it in Egypt and elsewhere: a preliminary office (of readings and psalms) to which the prayer belongs, the procession (with palmistry) to the cemetery, the burial and the mass pro domino.


SERAPIS, the famous Graeco-Egyptian god. The statue of Serapis in the Serapeum of Alexandria was of purely Greek type and workmanship—a Hades or Pluto enthroned with a basket or corn measure on his head, a sceptre in his hand, Cerberus at his feet, and (apparently) a serpent. According to Plutarch, Ptolemy Soter stole it from Sinope, having been hidden by the unknown god in a dream to bring him to Alexandria. On its arrival the statue was pronounced to be Serapis by two experts in religious matters: the one the Eumolpid Timotheus, the other the Egyptian Manetho. This story may not be true (some contend that Sinope as the provenance of the statue originated in the hill of Sinopeion, i.e. place of Apis (?), a name given to the site of the Serapeum at Memphis), but there is little doubt that Ptolemy Soter fixed the iconic type to serve for the god of the new capital of Egypt, where it was soon associated with Isis and Harpocrates in a triad. His policy was evidently to find a deity that should win the confidence of Greeks and Egyptians. The Greeks of that day would have had little respect for a grotesque Egyptian figure, while the Egyptians were more willing to accept divinity in any shape. A Greek statue was therefore chosen as the idol, and it was proclaimed as the anthropomorphic equivalent of a much revered and highly popular Egyptian beast-divinity, the dead Apis, assimilated to Osiris. The Greek figure probably had little effect on the native ideas, but it is likely that it served as a useful link between the two religions. The god of Alexandria soon won an important place in the Greek world. The anthropomorphic Isis and Horus were easily rendered in Greek style, and Anubis was prepared for by Cerberus. The worship of Serapis along with Isis, Horus and Anubis spread far and wide, reached Rome, and ultimately became one of the leading cults of the west. The destruction in A.D. 385 of the Serapeum of Alexandria, and of the famous idol within it, after the decree of Theodosius, marked the death-agony of paganism throughout the empire.

It is assumed above that the name Serapis (so written in later Greek and in Latin, in earlier Greek Sarapis) is derived from the Egyptian name Sarapis, a combination of the names Osiris and Apis, the bull Apis, dead, and, like all the blessed dead, assimilated to Osiris, king of the underworld. There is no doubt that Serapis was before long identified with Userhapi; the identification appears clearly in a bilingual inscription of the time of Ptolemy Philopator (221-205 B.C.), and frequently later. It has, however, been contended by an eminent authority (Wilcken, Archiv f. Papyrussforschung, iii. 249) that the parallel occurrence of the names Sarapis and Osorapis (Userhapi) points to an independent origin for the former. But doubles, e.g. Petisus-Petisus, are common in Graeco-Egyptian, Egyptian names; the form is then generally the result found in documents written by Greeks in familiar intercourse with Egyptians, the less accurate is traditional from an older date in the mouths of pure Greeks and Hellenists, and is used in literary writings. Thus Sarapis would be the literary and official form of the name; it might be traditional, dating perhaps from the reign of Amasis or from the Persian period. We know that in Herodotus's day, and long before, the discovery of the new Apis was the occasion of universal rejoicing, and his death of universal mourning. The ancient Serapeum (Puserhap) and the name Userhapi would be as familiar to early Greek wanderers in Egypt as the Apienus and Apis itself.

But why was a Plutonic Serapis selected rather than another god to furnish the Egyptian element to the chief divinity of Alexandria? According to one account in Tacitus, Sarapis was the god of the village of Rhacotis before it suddenly expanded into a great capital; but it is not very probable that temples were erected to the dead Apis except at his Memphite tomb. Alexander had courted Ammon. But Ammon had little hold on the affections of the Egyptian people. He was the god of Ethiopia and the Thebais which were antagonistic to the progressive north. On the other hand, Osiris was an Egyptian god, and while the artificer Ptah, the god of the great native capital of Egypt, made no appeal to the imagination, the Apis bull, an incarnation of Ptah, threw Ptah himself altogether into the shade in the popular estimation. The combination of Osiris and the Apis bull which was found in the dead Apis was thus a most politic choice in naming the new divinity, whose figure represented a god of the underworld wearing an emblem of fruitfulness.

The earliest mention of Sarapis is in the authentic death scene of Alexander, from the royal diaries (Arrian, Anabasis, vii. 20). Here Sarapis has a temple at Babylon and is of such importance that he alone is named as being consulted on behalf of the dying king. It would considerably alter our conception of the dead Apis if we were to find that a travelling shrine of his divinity accompanied Alexander on his expedition or was set up for him in Babylon. On the other hand, the principal god of Babylon was Zeus Belus (Bel Marduk), and it is difficult to see why he should have been called Sarapis on this occasion. Evidence has, however, been found to prove that Ea, entitled Sarapis, "king of the deep (sea)," was also great in learning and magic, had a temple in the city (Lehmann in Beiträge zur alten Geschichte, iv. 306). It seems unwarranted to make this Sarapis = Sarapis travel to Sinope and thence to Alexandria as the type of the Egyptian god; but whether or no the Egyptian appellation Sarapis was applied to express the Babylonian Sarapis, the part it played in the last days of Alexander may have determined the choice by which the Egyptian Osiris-Apis supplied the name and some leading characteristics to the god of Alexandria.
SERENA—SERERS

SERENA, or LA SERENA, a city of Chile, capital of the province of Coquimbo, on the S. bank of the Coquimbo river about 5 m. from the sea. Pop. (1895) 15,712; (1902, estimate) 19,536. As the see of a bishop and the most important town politically of the semi-arid region, it contains a number of important public edifices, including a cathedral (1844–1866), 216 ft. high, with a very wide) built of a light porous stone, an episcopal residence, several convents, a large hospital, an orphan's asylum, a beggar's asylum and a lazaretto. It is the seat of a court of appeal for Atacama and Coquimbo, and has an excellent lyceum and other schools, including a school of mines. It has a good water supply, well-paved streets, gas illumination, tramway service and several small industries, including brewing and the making of fruit conserves. The annual rainfall is only 1-6 in. and its mean annual temperature is 59°. Its railway connections include a line to Coquimbo (9 m.), its port, one to the Tamaya copper mines) are very large. The irrigation is a smaller conurbation, beginning (like Beethoven's serenade op. 8) with a march. The classics of the serenade forms are among the works of Mozart and Haydn. Mozart's larger and later serenades, from the "Haffner" serenade onwards, are among his most delightful and voluminous lighter instrumental works. His two serenades for eight wind instruments are more serious, and that in C minor (which he afterwards arranged as a string quintet) is a majestic work in four normal movements, which Mozart probably called a serenade only because he did not find the term octet then in common use.

The typical scheme of a large serenade or divertimento differs from that of a symphony only in having six movements instead of four, the additions being another slow movement and minuet or scherzo. Beethoven's septet and Schubert's octet are on this plan, and are just as much serenades as Mozart's "Haffner" serenade, which is (not counting introductions) in eight movements with a kind of violin concerto in the middle. The six-movement scheme (though without the serenade style) was adopted by Beethoven in one of the profoundest and most serious works in all music, the string quartet in B flat, Op. 130. Brahms's first essays in symphonic form took the shape of two orchestral serenades of which the first was originally sketched for a large group of solo instruments. If Brahms had finally taken that form Brahms would have called it a divertimento.

Other applications of the term in music are merely literary. Even its use, from the 17th century onwards, for a kind of operetta was clearly no more than a natural allusion to the notion of serenades as addressed at night by minstrels to ladies and by clients to patrons.

(D. F. T.)

SERENUS, SAMMONICUS, Roman savant, author of a didactic medical poem, De medicina praeposita (probably incomplete).

The work (1115 hexameters) contains a number of popular remedies, borrowed from Pliny and Dioscorides, and various magic formulae, amongst others the famous Abracadabra (q.v.), as a cure for fever and ague. It concludes with a description of the famous antidote of Mithradates VI. of Pontus. It was much used in the middle ages, but is of little value except for the ancient history of popular medicine. The syntax and metre are remarkably correct. It is uncertain whether the author was the. Serenus ascribed to L. L. Heibeig (Serenus August.). It was published in A.D. 212 at a banquet to which he had been invited by Caracalla, or his son, the tutor of the younger Gordian. The father, who was one of the most learned men of his age, wrote upon a variety of subjects, and possessed a library of 60,000 volumes, bequeathed to his son and handed on by the latter to Gordian.

The edicto princeps (ed. Sulpiitus Verulanus, before 1484) is very rare; later ed. by J. G. Ackermann (Leipzig, 1786) and J. Bhères, Poetae Latiniores, iii.; see also A. Baur, Quaestiones Sammonicae (Giessen, 1886); M. Schanz, Geschichte der römischen Literatur, iii. (1896); Teuffel, Hist. of Roman Literature (Eng. trans., 1900), 374, 4, and 38.

SERENUS "of Antissa," Greek geometer, probably not of Antissa but of Antiochia or Antinopolls, a city in Egypt founded by Hadrian, lived, as may be safely inferred from the character and contents of his writings, long after the golden age of Greek geometry, most probably in the 4th century, between Pappus and Theon of Alexandria. Two treatises of his have survived, viz. On the Section of the Cylinder and On the Section of the Cone, the Greek text of which was first edited by Edmund Halley along with his Apollonius (Oxford, 1710), and has now appeared in English by T. L. Heath (Axiomata of Antissa... Leipzig, 1869). A Latin translation by Commandinus appeared at Bologna in 1566, and a German translation by E. Nizze in 1860–1861 (Stralsund). Besides these works Serenus wrote commentaries on Apollonius, and in certain MSS. of Theon of Smyrna there appears a proposition "of Serenus the philosopher, from the Lemmas" to the effect that, if a number of rectilineal angles be subtended, at a point on a diameter of a circle which is not the centre, by equal arcs of that circle, the angle nearer to the centre is always less than the angle more remote (Heiberg, Preface, p. xvii).

The book On the Section of the Cylinder had for its primary object the correction of an error on the part of many geometers of the time who supposed that the transverse sections of a cylinder were different from those of a cone, a point which is decisively answered by Serenus. Serenus, in a series of theorems ending with Prop. 19 (ed. Heiberg), shows in Prop. 20 that "it is possible to exhibit a cone and a cylinder, cutting one another in one and the same ellipse. He then solves problems such as—"given a cone (cylinder) and an ellipse on it, to find the cylinder (cone) which is cut in the same ellipse as the cone (cylinder)" (Props. 21, 22); "given a cone (cylinder) to find a cylinder (cone), and to cut both by one and the same plane so that the sections thus formed shall be similar ellipses" (Props. 23-24).

In Props. 27, 28 he deals with subcentury and other similar sections of a scalene cylinder or cone. He then gives the theorem: "All the straight lines drawn from the same point to touch a cylindrical (or conical) surface, on both sides, have their points of contact on the sides of a single parallelogram (or triangle)" (Props. 29, 32). Prop. 31 states indirectly the property of a harmonic pencil.

The proposition On the Section of the Cylinder claims originality for it, is unimportant. It deals with the areas of triangular sections of right or scalene cones by planes through the vertex, finding e.g. the maximum triangular section of a right cone and the maximum triangular section of a scalene cone. The problem is, in some easy cases, the problem of finding triangular sections of given area.

(T. L. H.)

SERERS, a Negroid people, living in Senegambia. They are of the same stock as the Wolof, and in some parts form communities with them. Elsewhere they are highly mixed with the Mandingo, to whom they belong many of their ruling families. The country of the pure Serers lies between the Gambia and Salum rivers to the south of Cape Verde. In this domain of nearly 5000 sq. m. the tribe has two main divisions, the None Serers and the Sine Serers. The Serers are an extraordinarily tall race, even excelling in height their kinsfolk, the Wolof. Men of 6 ft. 6 in., with muscular development in proportion, are by no means rare. They are less black than the Wolof and
have features more purely negroid with coarser lips and heavier jaws. Many Seres are nominally Mahomedans, but nature-worship is still prevalent. Their two chief gods are Takhar, god of justice, and Tiurah, god of wealth, who are worshipped at the foot of trees. Snakes, too, have their cult, and formerly living animals were sacrificed to them. A belief in transmigration, as shown by their funeral customs, is general among the Seres. They are an honest and industrious people, but are very heavy drinkers.

Séres, Serres or Serhos, chief town of a sanjak in the vilayet of Edirne, southeastern Turkey, on Lake Takhino, a navigable expansion of the river Karasu or Struma (ancient Strymon), 43 m. by rail N.E. of Salonica. Pop. (1905) about 30,000, of whom about half are Bulgarians (one-third of them being Mussulmans), nearly one-fourth Greeks, about one-seventh Turks and the remainder Jews. Séres is built in a district so fertile as to bear among the Turks the name of Altin Ovasi, or Golden Plain, and so thickly studded with villages as to appear, when seen from the outlers of Rhodope on the north, like a great city with extensive gardens. It is the seat of a Greek archbishop and patriarch. It consists of the old town, Varosah, situated at the foot and on the slope of the hill crowned by the old castle, and of the new town built in the European fashion on the plain, and forming the commercial centre. The principal buildings are the Greek archiepiscopal palace, the Greek cathedral, restored since the great fire of 1879, by which it was robbed of its magnificent mosaics and woodwork, the Greek gymnasium and hospital (the former built of marble), the richly endowed Eski Jamé mosque, and the ruins of the once no less flourishing Ahmed Paşa or Hagia Sophia mosque, whose revenues were formerly derived from the Crimen. On a hill above the town are the ruins of a fortress described in a Greek inscription as a “tower built by Helen in the mountaineous region.” Séres is the headquarters of the Turkish wool trade, and has also manufactures of cloth and carpets. There is a large trade in rice and cereals, and the other exports include tobacco and hides.

Séres is the ancient Selys, Sira or Sirrah, mentioned by Herodotus in connexion with Xerxes’ retreat, and by Livy as the place where Aemilius Paulus received a deputation from Persia. In the 14th century, when Stephen Duhan of Servia assumed the title emperor of Servia, he chose Sirrah as his capital; and it remained in the hands of the Servians till its capture by Sultan Murad II. (1421–1451).

Serfdom (from Fr. seify, Lat. servus, a servant or slave). The notion of serfdom is distinct from those of freedom and of slavery. The serf is not his own master: to perform services for other persons is the essence of his status, but he is not given over to his lord to be owned as a thing or an animal—there are legal limits to the lord’s power. Serfdom is very often conceived as a perpetual adherence to the soil of an estate owned by a lord, but this praeclial character is not a necessary feature of the condition. Hereditary serfdom may sometimes assume the shape of a personal relation between servant and master. Such being the general features of serfdom, it is sure to appear in very different ages and countries. It will be formed naturally, for instance, in cases when one barbarous community conquers another, but it is not able to destroy entirely the latter or to treat its members as mere chattels. This mitigated form of appropriation of human beings by their conquerors may be brought about as well by the paucity or comparative weakness of the victors as by the difficulty for them to draw income from pure slaves. In a state of backward agriculture and natural economy it will sometimes be more profitable for the conquerors as well as for the conquered to leave the dependent population in their own households and on their own plots, at the same time taxing them heavily in the way of tribute and services. Such an arrangement clearly obtained in several of the agricultural states on ancient Greece. The Penestae of Thessaly appear as a remnant of a distinct tribe settled on the confines of Macedonia and at the same time as a class of tributary peasants serving Thessalian aristocrats. The Mniotae, Klarotae and Apha-
important part in Celtic economic arrangements: there is not much room for his activity as a completely dependent tool of the master. The female slave (cuninal) was evidently much more prominent in the household. Prices are reckoned out in numbers of such slaves and there must have been a constant call for them both as concubines and as household servants. As for male workmen they are chiefly toges in Wales, that is half-free bondmen with a certain though base standing in law. Even these, however, could not be said to form the social basis for the existence of an upper free class. The latter was numerous, not to say large and could not be used for heavy work as part of the common work; as may be seen from the extent of the free and servile tenures on the estates carved out for English conquerors in Wales and Ireland. Anyhow, the toges class of half-free peasants stands by the side of the smaller tribemen as subjected to heavier burdens in the way of taxation and services in kind. In Wales they are distributed into gasello and gelselys, like the free tribesmen themselves and thus connected with the land, but there is nothing to show that this connexion was deemed a servitude of the globe. The tie with the lord is after all part of the time the watchful the all settlement only didn't did were further between variations the legislative renderings are regard holding class the century): the conquest turned to stock the house hold, the statistical depen dency. The Roman stock of coloni naturally combined with German tributary peasants to form medieval servitum. A half-free group is marked off in the early laws under the designation of lihi, issoi, aldiones. But in process of time this group was merged with freedmen, settled slaves (servi casati) and small freedmen into the numerous class of serfs (servi, rustici, villani) which appears under different names in all western European countries. The customary regulations of the duties of an important group of this class in regard to the lords are clearly expressed in the Bavarian law (7th century): serfs settled on the estates of the church have to work, as a rule, three days in the week for their masters and are subject to divers rents and payments in kind. The regulations in question, although entered in a legal text, are not a legislative enactment but the result of a slow process of adjustment of claims between the ecclesiastical landowners and masters on one side and their rural dependents on the other. There can be no doubt that they were largely representative of the conditions prevailing on Bavarian estates belonging not only to the church but also to the duke and to lay lords. The old English Kettledrines singularum personarum (11th century) present other variations of the same customary arrangements. The rustic class appears in them to be differentiated into several sub-divisions—the geneats performing riding duties and occasional services, the gebärs burdened with week work and the cotsets holding cottages and performing light work in the shape of one day in the week and services to match (see Villeinage). Of these various groups that of the gebärs corresponds more closely to the continental serfs (koloni, Hörige, unfreie Hintersassen). The dualism characteristic of medieval servitum, its formation out of deposed freedmen and rising servitude, may be traced all through the history of the middle ages. French jurists of the 13th century, e.g., lay stress on a fundamental difference in law between the complete serf whose very body belongs to his lord (cf. the German Leibeigenschaft) and the villein or roturier, who is only bound to perform certain duties and ought not to be further oppressed by the landowners on whose soil he is settled (Beauanmainor, Costume de Beauvaisis). But the same texts which draw the line between the two classes make it clear that there were no other guarantees to the maintenance of the rights of the superior rustics than the moral sense and the self-interest of their masters. Should the lords infringe the well-established rights of their subjects, the latter had no court to appeal to and only God could inflict punishment on the oppressors. It must be added, however, that even in the darkest times of feudal sway, economic forces provided some protection for the peasants who had lost the means of appealing to legal remedies. A certain balance had to be struck in most cases between the greed and selfishness of the class of landowners and the necessary requirements and human aspirations of the subjects. Feudal tenure was not an autocratic institution. It was an arrangement between the lord and his tenants which was based on the economic interest of both. It was not the lord's wish alone which determined the condition of the tenants. PEASANTRY: Peasants and their servile condition. The Germanic tribes moved on similar lines. Slavery was not a natural institution with them, although it did occur. In the eyes of a Roman observer, however, even downright slavery was turned into servitum by the force of circumstances. As Tacitus tells us, the ancient Germans made use of their slaves in a different way from the Romans. These slaves had their separate households, while the masters exacted tribute from them in the shape of corn, cattle or clothes, and the serfs had to obey the extent of rendering such tribute (Tacitus, Germania, 21). This means, of course, that it was in the interest of the master to levy tribute and not to organize slave labour. After the conquest of the provinces by the Germanic invaders the Roman stock of coloni naturally combined with German tributary peasants to form medieval servitum. A half-free group is marked off in the early laws under the designation of lihi, issoi, aldiones. 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census of the rural population. The ultimate result was, however, not only the fixity of peasant tenures, but the subjection of the entire peasant population as a separate class (Krepostnictso) to the personal sway of the landowners. The state insisted to a certain extent on the public character of this subjection and drew distinctions between personal slavery and serfdom. In the midst of the peasants themselves there lived a consciousness of their special claims as to tenant right, claims which sometimes assumed the shape of the quaint saying, "The land is ours, though we are yours." But, in fact, serfdom naturally took the form of an ugly ownership of live chattels on the part of a privileged class, and all sorts of excesses, of cruelty, ruthless exploitation and wanton caprice, followed as a matter of course. Emancipation was brought about in the 19th century by economic causes as well as by humanitarian considerations. The fabric of a state built up on the basis of serfdom proved inadequate to meet the tasks of modern times. Private enterprise and the free application of capital and labour were hindered in every way by the bondage of the peasant class. Even such a necessary measure as that of moving cultivators to the rich soil of the south was impossible. Villainous and serfs in Fennoscandia totally to the glebe.

On the humanitarian and liberal ideas making for emancipation we need not dwell, as they are self-evident. After several half-hearted attempts directed in the course of Nicholas I's reign to face the question while safeguarding at the same time the rights and privileges of the old aristocracy, the moral collapse of the ancien régime during the Crimean war brought about the Emancipation Act of the 19th of February 1861, by which some 15 millions of serfs were freed from bondage. The most characteristic feature of this act was that the peasants, as distinct from household servants, received not only personal freedom but allotments in land in certain proportions to their former holdings. The state indemnified the former landowners, and the peasants had to redeem the loan by yearly payments extending over a number of years.

If we turn back from this course of development to the history of serfdom and emancipation in the West striking contrasts appear. As we have already noticed, medieval serfdom in the West was the result of a process of customary feudal growth hardly interfered with by central governments. The loosening of bondage is also, to a great extent, prepared by the working of local economic agencies. Villainous and serfs in Fennoscandia totally to the glebe.

Serger—Sergeripe (originally Sergeripe d'el-Rey), a small Atlantic state of Brazil, bounded N. by Alagbas, E. by the Atlantic, and S. and W. by Bahia. Area, 15,093 sq. m. Pop. (1900) 356,264. The province consists of three-fourths half-castes and negroes. The Sao Francisco forms its northern boundary, and the drainage of the northern part of the state is northward and eastward to that river. The southern half of the state, however, slopes eastward and is drained directly into the Atlantic through a number of small rivers, the largest of which are the Irapiranga (whose source is in the state of Bahia and which is called Vasa Barris at its mouth), the Real, and the Cotinguiba. These streams are navigable for short distances, but are obstructed by sand-bars at their mouths, except the Cotinguiba being especially dangerous. The surface of the state resembles in part that of Bahia, with a zone of forested lands near the coast, and back of this a higher zone of rough open country, called agrisoles. There is a sandy belt along the coast, and the western frontier is slightly mountainous. The intermediate lands are highly fertile, especially in the forested region, where the rainfall is abundant. Further inland the year is divided into wet and dry seasons with occasional prolonged droughts. These districts are pastoral, and the lower fertile lands are cultivated for sugar, cotton, maize, tobacco, rice, beans, and mandioca—sugar being the principal product.
Rubber and some other natural products are exported. There is only one railway in the state, which runs from Aracajú northward to Capella, with a branch running westward to Simão Dias. The only manufacturing industries of importance are cotton mills, sugar factories and distilleries, one of the largest sugar uisines in Brazil being located at Riachuelo near Larangeiras. There are no good ports on the coast because of the bars at the mouths of the rivers.

In 1890 the area of the state is Aracajú (pop. 1890, 16,336; 1906 estimate, 25,000), on the lower course, or estuary, of the Curuguá river, near the coast. The bar at the entrance to this river is exceptionally dangerous, and the port is frequented only by coasting vessels of light draught. The town stands on a sandy plain, and there are sand dunes within the city limits. The public buildings are a large plain church with unfinished twin towers, the government palace, the legislative halls, a normal school and public hospital. The other principal towns are Estancia (pop. 1890, 14,553) on the Rio Real in the southern part of the state, with manufactures of cotton textiles, cigars and cigarettes, and soap, and an active trade; Laranjeiras (11,350), in a highly productive sugar district N. of the capital; Capella (11,034); Simão Dias (10,984); Lagarto (10,473); São Cristóvão, formerly Sergipe d’el-Rey (8793), the old capital, near the mouth of the Ipiranga, and Marom (7851).

**SERGIUS, ST.** generally associated with St Bacchus, one of the most celebrated martyrs of Christian antiquity. His festival is on the 7th of October, and the centre of his cult was Resafa, or Resafa, in Syria, in the province of Augusta Ephraemis. This town, which since the middle of the 6th century was also called Sergiopolis, acquired importance as a place of pilgrimage, and became a bishop’s see (Le Quien, Oriens Christian. ii. 931).

The cult of the saint spread rapidly. In 353 we find a church of St Sergius at Eitha, in Batanaea (Waddington, Inscriptions de Syrie, n. 2124)—the most ancient example of a dedication of this kind. In the 6th century St Sergius was honoured in the West (Gregory of Tours, De gloria martyrum, 96). According to their Acta (which, however, have little authority), SS. Sergius and Bacchus were soldiers. In art they are most generally represented in military costume.

See Acta sanctorum (October), iii. 833-885; Analecta Bollandiana, xiv. 1895 (H. De)

**SERGIUS, the name of four popes.**

Sergius I., pope from 687 to 701, came of an Antiochene family which had settled at Palermo. He was elected after a fierce struggle between two other candidates, Paschal and Theodore. In the second year of his pontificate he baptized King Ceadwalla of Wessex at Rome. For rejecting certain canons of the Trullan (Quinisept) council of 662, Justinhian II. commanded his arrest and transportation to Constantinople, but the militia of Ravena and the Pentapolis forced the imperial protopapstarius to abandon the attempt to carry out his orders. Sergius was followed by John VI. as pope.

Sergius II., pope from 844 to 847, a Roman of noble birth, elected by the clergy and people to succeed Gregory IV., was forthwith consecrated without waiting for the sanction of the emperor Lothair, who accordingly sent his son Louis with an army to punish the breach of faith. A pacific arrangement was ultimately made, and Louis was crowned king of Lombardy by Sergius. He was a man of weak health, suffering much from gout, and abandoned the direction of affairs to unworthy persons, whose administration provoked many complaints. In this position Rome was ravaged, and the churches of St Peter and St Paul robbed, by Saracens (August 846). Sergius was succeeded by Leo IV.

Sergius III., elected pope by one of the factions in Rome in 898, simultaneously with John IX., was expelled from the city by his adversaries. Circumstances becoming more favourable, he reappeared in 904, seized the two claimants, Leo V. and Christopher, who were disputing the succession of Benedict IV., and had them strangled. His adherents rallied round the restitarius Theophylact, a powerful Roman functionary, and his wife Theodora. Sergius is reputed to have been the lover of Theodora’s daughter Marozia, by whom he is said to have had a son, who became pope as John XI. This is the beginning of the so-called “porncracy.” Unlike John IX. and his successors, Sergius was very hostile to the memory of Pope Formosus, and refused to recognize any of the ordinations celebrated by him, thus causing grave disorders. He also affected to consider as anti-popes, not only John IX., but also his successors down to and including Christopher. He restored the Lateran basilica, in 897. He died on the 14th of April 911, and was succeeded by Anastasius III.

Sergius IV., pope from 1009 to 1012, originally bore the name of Bucca porca (Os porcil). He was a mere help in the hands of the feudal nobility of the city; he was succeeded by Benedict VIII.

**SERGIYEVO, a town of Russia, in the government of Moscow, 44 m. by r. N.N.E. of Moscow. It has grown up round the monastery or lavra of Troitsko-Sergiyevskaya. It is situated in a beautiful country, the buildings extending partly over the hill occupied by the monastery and partly over the valley below. Including the suburbs it had, in 1884, 37,400 inhabitants, and 31,413 in 1900. Sergiyev has long been renowned for its manufacture of holy pictures (painted and carved), spoons, and other articles carved in wood, especially toys, which are sold to pilgrims who resort to the place to the number of 100,000 annually.

The Troitsk or Trinity monastery is the most sacred spot in middle Russia, the Great Russians regarding it with more veneration than even the cathedrals and relics of the Kremli at Moscow. It occupies a picturesque site on the top of a hill, protected on two sides by deep ravines and steep slopes. The walls, 340 ft. high, are fortified by nine towers, one of which is a prison for both civil and ecclesiastical offenders. Thirty-three churches, including the Troitskiy (Trinity) and Uspensky cathedrals, a bell-tower, a theological academy, various buildings for monks and pilgrims, and a hospital stand within the precincts, which are two-thirds of a mile in circuit. A small wooden church, erected by the monk Sergius, and afterwards burned (1391) by the Tatars, stood on the site now occupied by the cathedral of the Trinity, which was built in 1422, and contains the relics of Sergius, as well as ecclesiastical treasures of priceless value and a holy picture which has frequently been brought into use during battles and campaigns. The Uspensky cathedral was erected in 1385; close beside it are the graves of Tsar Boris Godunov (died in 1603) and his family. In the southern part of the monastery is the church of Sergius, beneath which are spacious rooms where 200,000 dinners are distributed gratis every year to the pilgrims. The bell-tower, 320 ft. high, has a bell weighing 64 tons. Several monasteries of less importance exist in the neighbourhood. In 1340 two brothers erected a church on the spot. The elder took monastic orders under the name of Sergius, and became famous among the peasants around. His monastery acquired great fame and became the wealthiest in middle Russia. Ivan the Terrible in 1561 made it the centre of the ecclesiastical province of Moscow. During the Polish invasion at the beginning of the 17th century it organized the national resistance. In 1608-1609 it withstood a sixteen months’ siege by the Poles; at a later date the monks took a lively part in the organization of the army which crushed the outbreak of the peasants. In 1683 Peter the Great took refuge here from the revolts of streltsi, or Muscovite military guards. The theological seminary, founded in 1744 and transformed in 1814 into an academy, reckoned Platon and Philaret among its pupils.

**SERIEMA, or Cariama, a South-American bird, sufficiently well described and figured in G. de L. Mearns’s work (Hist. nat. Brasiliæ, p. 293), posthumously published by De Laet in 1648, to be recognized by succeeding ornithologists, among whom M. J. Brisson in 1760 acknowledged it as forming a distinct genus Cariama, while Linnaeus regarded it as a second species of Palamedea (see Screamer), under the name of P. cristata, Englished by J. Latham in 1785 (Synopsis, v. 20) the “Crested Screamer,—an appellation since transferred to a wholly different bird. Nothing more seems to have been known of it in Europe till 1853, when Asara published at Madrid his**
SERIES

observations on the birds of Paraguay (Apuntamientos, No. 340), wherein he gave an account of it under the name of "Saria," which it bore among the Guarani,—that of "Cariama" being used by the Portuguese settlers, and both expressive of its ordinary cry.\(^1\) It was not, however, until 1809 that this very remarkable form came to be autotypically described scientifically. This was done by the elder Geoffroy St-Hilaire (Ann. du museum, xiii. pp. 369-370, pl. 26), who had seen a specimen in the Lisbon museum; and, though knowing it had already been received into scientific nomenclature, he called it anew Microdactylus marcgrassi. In 1811 J. K. W. Illiger, without having seen an example, renamed the genus Dickoleopus—a term which has since been frequently applied to—it placing in the curious congeries of forms having with little affinity which he called Alectorides. In the course of his travels in Brazil (1815-1817), Prince Max of Wied met with this bird, and in 1823 there appeared from his pen N. Act. Accad. L.-C. nat. curiosorum, xi. pt. 2, pp. 341-350, tab. xiv.) a very good contribution to its history, embellished by a faithful life-sized figure of its head. The same year Temimnick figured it in the Planche coloriée (No. 237). It is not easy to say when any example of the bird first came under the eyes of British ornithologists; but in the Zoological Proceedings for

fully covered with grey down, relieved by brown, and remain for some time in the nest. The food of the adult is almost exclusively insects, especially ants, grasshoppers, snails, lizards and snakes, but it also eats certain large red berries.

Until 1860 the Seriema was believed to be without any near relative in the living world of birds;\(^2\) but in the Zoological Proceedings for that year beating to the markings of the bird from the larger tail and the markings beneath take the form of bars rather than stripes, while the tail, eyes and legs are all black. In other respects the difference between the two birds seems to be inessential.

The few birds which have more exercised the taxonomer than this, and the reason seems to be plain. The Seriema must be regarded as the not greatly modified heir of some very old type, such as one may fairly imagine to have lived before many of the existing groups of birds had become differentiated, and it is probable that the extinct birds known as Stercorinidae, and in particular the fossil Phororochos from the Miocene of Patagonia, were closely allied to its ancestors. It is now placed in the family Carinidae of Gruidae birds (see Bird).

(SERPUS) (A. N.)

SERIES (a Latin word from serere, to join), a succession or sequence. In mathematics, the term is applied to a succession of arithmetical or algebraic quantities (see below); in geology it is synonymous with formation, and denotes a stage in the classification of strata, being superior to group (and consequently to bed, and some or horizon) and inferior to system; in chemistry, the term is used particularly in the form homologous series, to denote hydrocarbons of similar constitution and their derivatives which differ in empirical composition by a multiple of CH\(_2\), and in the form isologous series, applied to hydrocarbons and their derivatives which differ in empirical composition by a multiple of H\(_2\); it is also used in the form isomorphic series to denote elements related isomorphously. The word is also employed in zoological and botanical classification.

In mathematics a set of quantities, real or complex, arranged in order so that each quantity is definitely and uniquely determined by its position, is said to form a series. Usually a series proceeds in one direction and the successive terms are denoted by \(u_1, u_2, \ldots, u_n;\) we may, however, have a series proceeding in both directions, a back-and-forwards series, in which case the terms are denoted by

\[
\ldots, u_{-3}, u_{-2}, u_{-1}, u_0, u_1, u_2, u_3, \ldots
\]

or its general term may depend on two integers positive or negative, and its general term may be denoted by \(u_m, n;\) such a series is called a double series, and so on. The number of terms may be limited or unlimited, and we have two theories, (1) of finite series and (2) of infinite series. In the first the series itself mainly with the summation of a finite number of terms of the series; the notions of convergence and divergence present themselves in the theory of infinite series.

**Finite Series.**

1. When we are given a series, it is supposed that we are given the law by which the general term is formed. The first few terms of a series afford no clue to the general term; the series of which the first four terms are 1, 2, 4, 8, may be the series of which the general term is 2\(^n\); it may equally well be the series of which the general term is 2\(^{n+3}\); in fact we may construct an infinite number of series of which the leading terms shall be any assigned integers. The only case in which the series may be completely determined from its leading terms is that of a recurring series. A recurring series is a series in which the general term is connected by a linear relation; thus if we have a relation of the form

\[
a_{n+3} = a_{n+2} + 2a_{n+1} + a_n + a_{n-1} + \ldots + a_{n-k},\]

the series is said to be a recurring series with a scale of relation though taken from a genuine specimen; but little that can be called Ralline in character is observable therein. The same is to be said of the birds in captivity; men are curious, but a bird's possession undeniably shows it (cf. Proc. Zool. Society, 1881, p. 2).\(^3\)

A supposed fossil *Cariama* from the caves of Brazil, mentioned by Bonaparte (C.R. xii. p. 779) and others, has since been shown by Reichenbach (H. 1892, p. 32) to rest upon the misinterpretation of certain bones, which the latter considers to have been those of a Rheas.

6. Let \( u_n, v_n, u_{n+1}, v_{n+1} \) be a series of numbers real or complex, and let \( S_n \) denote \( u_1 + u_2 + \cdots + u_n \). We thus form a sequence of numbers \( S_1, S_2, \ldots, S_n \). This sequence may tend to a definite finite limit \( S \) or may diverge to infinity, i.e., the terms may be bounded or unbounded by a finite number, 0, respectively. In this case the series \( u_1 + u_2 + \cdots \) is said to be convergent or converging. If however the terms of the series are sufficiently large \( |S_n| \) can be made to exceed any assignable quantity, however large, the series is said to be divergent. If the sum is \( S \), then any finite limit according to the form of \( n \) the series is said to oscillate, and is also classed under the head of divergent series. The sum of \( n \) terms of the geometric series \( 1 + x + x^2 + \cdots = 1/(1-x) \) is \( 1 \). If \( x \) is less than unity, this series is convergent, and its sum is \( 1/(1-x) \). If \( x \) is greater than unity, the series is divergent (oscillatory). The series \( 1 + x + x^2 + \cdots \) is convergent for \( |x| < 1 \), where \( S_n \) is unity or zero, according as \( n \) is odd or even, is an example of an oscillating series. The condition of convergency may be also presented under the following form. Let \( r_n \) denote \( S_{n+1} - S_n \); i.e., the \( n \)th difference, and \( r_{n+1} = r_n \), etc. The terms may be positive and negative alternately. If the terms of the series may each be collected into a single term; thus all series may be regarded as belonging to one of two types, \( u_1 + u_2 + u_3 + \cdots \) in which the terms are all positive, or \( v_1 - v_2 + v_3 - \cdots \) in which the terms are alternately positive and negative.

7. An infinite series may contain both positive and divergent terms. The terms may be positive and negative alternately or they may increase in magnitude by some regular theorem. In this case the series may converge to a limit equal, but opposite in sign to the sum of the divergent series. Whether the terms of the series may each be collected into a single term; thus all series may be regarded as belonging to one of two types, \( u_1 + u_2 + u_3 + \cdots \) in which the terms are all positive, or \( v_1 - v_2 + v_3 - \cdots \) in which the terms are alternately positive and negative.

8. It is clear that if a series is convergent, it must tend to the limit zero as \( n \) is increased indefinitely. This condition though necessary is by no means sufficient for convergency. If the terms of a series are positive a series obtained by writing its terms in any other order is convergent and converges to the same sum. For if \( S_n \) denotes the sum of the first \( n \) terms of the series \( a_1 + a_2 + \cdots \), the number \( S_{n+1} \) of the next term, for any large number, we can choose numbers \( p \) and \( q \) such that \( S_{2n} > S_n \), so that \( S_n \) tends to the limit of sum of the original series.

9. The series \( u_1 + u_2 + u_3 + \cdots \) may each be divided through the terms of the series \( v_1 - v_2 + v_3 - \cdots \) converges. A series such that the series formed by the terms \( u_1 + u_2 + u_3 + \cdots \) is convergent is said to be absolutely convergent; when this is not the case the series is said to be semi-convergent or conditionally convergent. A series of complex numbers in which \( u_n = a_n + ib_n \) where \( a_n \) and \( b_n \) are real (i being \( -1 \)), is said to be convergent when the series \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) separately convergent, and if they converge to \( A \) and \( B \) respectively the sum of the series is \( A + iB \). Such a series is said to be absolutely convergent when the sums of the moduli of the terms are positive, \( i.e., \sum (a_n^2 + b_n^2) \); convergent; this is sufficient but not necessary the same forms. For example we have the series \( 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \cdots \) the first of these converges, the second oscillates.

10. The series \( u_1 + u_2 + u_3 + \cdots \) may each be divided through the terms of the series \( v_1 - v_2 + v_3 - \cdots \) converges. A series such that the series formed by the terms \( u_1 + u_2 + u_3 + \cdots \) is convergent is said to be absolutely convergent; when this is not the case the series is said to be semi-convergent or conditionally convergent. A series of complex numbers in which \( u_n = a_n + ib_n \) where \( a_n \) and \( b_n \) are real (i being \( -1 \)), is said to be convergent when the series \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) \( a_1 + a_2 + a_3 + \cdots \) separately convergent, and if they converge to \( A \) and \( B \) respectively the sum of the series is \( A + iB \). Such a series is said to be absolutely convergent when the sums of the moduli of the terms are positive, \( i.e., \sum (a_n^2 + b_n^2) \); convergent; this is sufficient but not necessary the same forms. For example we have the series \( 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \cdots \) the first of these converges, the second oscillates.

There is an important distinction between absolutely convergent and conditionally convergent series. In an absolutely convergent series the sum is the same whatever the order of the terms; this is not the case with a conditionally convergent series. The two series \( 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \cdots \) and \( 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \cdots \) are examples of conditionally convergent series which sum is \( \frac{1}{2} \), but the sum \( \frac{1}{2} \) is not the same as the sum \( \frac{1}{2} \) of another series. This distinction is pointed out by B. Riemann and P. G. L. Dirichlet have shown that the terms of a semi-convergent series may be so arranged as to make the series converge to any assigned value or even to diverge. So if the terms of the series \( u_n \) are positive, we may find a sequence of series \( u_1 + u_2 + u_3 + \cdots \) whose terms are positive and obtained by comparing the series with some series whose convergence or divergence is readily established. If the series of positive terms \( u_1 + u_2 + u_3 + \cdots \) \( u_1 + u_2 + u_3 + \cdots \) \( u_1 + u_2 + u_3 + \cdots \) \( u_1 + u_2 + u_3 + \cdots \) is finite, then they are convergent or divergent together; if \( u_n \leq \frac{1}{n!} < u_n \leq \frac{1}{n!} \frac{1}{n!} \frac{1}{n!} \frac{1}{n!} \) and if \( u_n \) is convergent, then \( u_n \) is convergent; if \( u_n \) is convergent, then \( u_n \) is divergent, then \( u_n \) is divergent. By comparison with the ordinary geometric progression we obtain the
following tests. If \( \sum u_n \) approaches a limit \( l \) as \( n \) is indefinitely increased, \( \sum u_n \) will converge if \( l \) is less than unity and diverge if it is greater than unity (D'Alembert's test). Nothing is settled when the limit \( l \) remains a finite number as it approaches unity. The series then remains in an indeterminate form and approaches zero as \( n \) is indefinitely increased. If \( u_n \) approaches a limit \( l \), the series converges for \( l < 1 \) and diverges for \( l > 1 \). For \( l = 1 \) nothing is settled except for the case where \( l \) remains constantly less than unity as it approaches it; in this case the series diverges.

If \( f(n) \) is positive and decreases as \( n \) increases, the series \( \sum f(n) \) is convergent or divergent with the series \( \sum f(n) \) as \( n \) is any number greater than \( 2 \) (Cauchy's convergence test). By means of this theorem we can show that the series whose general terms are

\[
\frac{1}{n^2} \left( 1 + \frac{1}{n} + \frac{1}{n^2} + \frac{1}{n^3} + \cdots \right) = \frac{1}{n^2} \sum_{k=1}^{n} \frac{1}{k},
\]

where \( n \) denotes the number \( n \), \( \log n \) denotes log \( \log n \), and \( \log \log n \) denotes \( \log \log n \).

By comparison with these series, a criterion, known as the logarithmic criterion, has been established by J. J. Morgan and L. Bertrand. A. De Morgan showed that the formula

\[
\log (a + x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^n}{n}
\]

put

\[
\log (\log x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^n}{n^2},
\]

where \( \log y \) denotes \( \log \log x \). If the limit, when \( x \) is infinite, of the first of the functions \( p_n, p_{n+1}, \ldots \), whose limit is not unity, is greater than unity the series is convergent; if less than unity it is divergent.

In Bertrand's form we take the series of functions

\[
\frac{1}{n^2} \sum_{k=1}^{n} \frac{1}{k},
\]

If the limit, when \( n \) is infinite, of the first of these functions, whose limit is not unity, is greater than unity the series is convergent, if less than unity it is divergent. Other forms of these criteria may be found in Chrystal's Algebra, vol. ii.

11. Two or more absolutely convergent series may be added together, thus

\[
(u_1 + u_2 + u_3 + \cdots) + (v_1 + v_2 + v_3 + \cdots) = (u_1 + v_1) + (u_2 + v_2) + (u_3 + v_3) + \cdots,
\]

and the resulting series is absolutely convergent and its sum is the product of the sums of the two series. This was shown by Cauchy, who first explained the result by means of the absolute convergence. Abel has, however, shown that no function \( f(n) \) can exist such that the series \( \sum f(n) \) is convergent or divergent as \( \log f(n) \) is or is not zero.

12. Before considering a double series we must consider the case of a series extending backwards and forwards to infinity

\[
\ldots + u_1 + u_2 + u_3 + \ldots + u_4 + \ldots
\]

and the series resulting is absolutely convergent and its sum is the product of the sums of the two series.

13. A striking instance is furnished by the series

\[
\frac{1}{1 - x} = 1 + x + x^2 + x^3 + \cdots
\]

which is convergent, while its square

\[
(1 - x) = 1 - x + x^2 - x^3 + \cdots
\]

may be divergent. If F. K. L. Mertens has shown that the condition is that one of the two series should converge for all values of \( x \), and the other be absolutely convergent. Abel has shown that if \( \sum u_n \) converges at all, it converges to the product of \( \sum u_n \) and \( \sum v_n \). But more properly the multiplication of two series gives rise to a double series of which the general term is \( u_n v_n \).

14. It is easy to see that, if each of the terms \( u_n \) is positive and the series is convergent for any partial form of boundary, the sum will be convergent for any other form of boundary, and the sum will be then equal to that constant only that can exist such that in the first case the boundary is the curve \( f(x, y) = T \). Any other boundary \( f(x, y) = T \). Wholly within this we can draw a curve \( f(x, y) = T \), the first boundary and the second is wholly different from the first boundary. The sum is therefore independent of the form of the boundary. Such a series is said to be absolutely convergent, and similarly a doubly infinite series of positive and negative terms is absolutely convergent when the series is formed by taking all its terms positively is convergent.

15. It is readily seen that when the series is not absolutely convergent the sum will depend on the form of the boundary. Consider the case in which \( m \) and \( n \) are always positive, and the boundary is the rectangle formed by \( x = m, y = n, \) and the axes. Let the sum within this rectangle be \( S_mn \). This may have a limit when we first make \( n \) infinite and then \( m \); it may have a limit when we first make \( m \) infinite and then \( n \), but the limits are not necessarily the same; or there may be no limit in either of these cases but a limit depending on the ratio of \( m \) to \( n \), that is to say, on the shape of the rectangle.

When the product of two series is arranged in the form of a double sum

\[
\sum_{n=1}^{\infty} \sum_{m=1}^{\infty} u_n v_m = T, \quad \text{where} \quad \sum_{n=1}^{\infty} u_n = T_1, \quad \text{and} \quad \sum_{m=1}^{\infty} v_n = T_2,
\]

we obtain the product of the sums of the series. When we arrange the double sum in the form \( u_0 + (u_0 + u_1 + u_2 + \cdots) = u_0 + u_1 + u_2 + \cdots + u_n + \cdots \), we are summing over the triangle bounded by the axes and the straight line \( x = y = T \), and the result is not necessarily the same if the terms are not all positive. For full particulars concerning multiple series the reader may consult E. Goursat, Cours d'analyse, vol. i; G. Chrystal, Algebra, vol. ii; or T. J. J. Bromwich, The Infinite Theory of Series.

16. In the series so far considered the terms are actual numbers, or, at least, if the terms are functions of a variable, we have concerned ourselves with the convergence of the series as a whole. The case in which, however, the terms are functions of the variable \( x \) is generally very different. The convergence of the series depends on the behaviour of the function \( f(x) \) in the neighbourhood of a point where it is supposed that \( S(x) \) is a continuous function of \( x \), and it is this which makes the series a powerful tool in the theory of functions.

17. If for any value of \( x \) the series

\[
\sum_{n=1}^{\infty} u_n + u_{n+1} + \cdots + u_{n+k} + \cdots
\]

converges it is possible to find an integer \( n \) such that \( |S(x) - S_n(x)| < \epsilon \), \( |S(x) - S_m(x)| < \epsilon \), and both \( |S(x) - S_n(x)| < \epsilon \), \( |S(x) - S_m(x)| < \epsilon \), where \( \epsilon \) is an arbitrary assigned positive quantity, and we may therefore say that the series converges uniformly for all values of \( x \), whose representative points lie within a certain area called the "domain of convergence" and within this area defines a function which we may call \( S(x) \). It might be supposed that \( S(x) \) was necessarily a continuous function of \( x \), but this is not the case. For G. Stolz and F. L. Seidel (1848) independently discovered that in the neighbourhood of a point of discontinuity the convergence is infinitely slow and thence arises the notion of uniform convergence and non-uniform convergence.
The series is then said to converge uniformly throughout this region.

As $s$ approaches the value $s_0$, $n$ increases as $|s-s_0|$ diminishes and becomes indefinitely great as $|s-s_0|$ becomes indefinitely small the series is said to be non-uniformly convergent at the point $s_0$.

A function represented by a series is continuous throughout any region in which the series is uniformly convergent; there cannot be a discontinuity with uniform convergence; on the other hand there may be continuity and non-uniform convergence. If $u_1(s) + u_2(s) + \ldots$ is uniformly convergent we shall have $f(s) = u_1(s) + u_2(s) + \ldots$ of a function $f(s)$ of the point $s$, and we shall also have $\frac{d}{ds}f(s) = \frac{d}{ds}u_1(s) + \frac{d}{ds}u_2(s) + \ldots$ if the series $\frac{d}{ds}u_1(s) + \frac{d}{ds}u_2(s) + \ldots$ is uniformly convergent.

Uniform convergence is essentially different from absolute convergence; neither implies the other (see Function). 18. A series of the form $a_0 + a_2 + a_4 + \ldots$, in which $a_0, a_1, a_2, \ldots$ are all of the same kind, is called a $\phi$-series.

In the case of a power series there is a quantity $R$ such that the series converges if $|s| < R$, and diverges if $|s| > R$. A circle described from the origin as centre and radius $R$ is called the circle of convergence. A power series that does not converge at all in the region $R < |s| < \infty$ is called divergent.

The circle of convergence may be of infinite radius as in the case of the series for $\log z$, viz. $z - \frac{1}{3}z^3 + \frac{1}{5}z^5 - \ldots$. In this case the series converges over the whole of the $z$ plane. Or its radius may be zero as in the case of the series $1/(1 + z)$ (converge absolutely in the $z$ plane), $|z| < 1$, and diverge in the $z$ plane, $|z| > 1$.

Theorems may be found usually, but not always, from the condition that a series converges absolutely if $|a_n|/|a_{n+1}| < 1$, and diverges if $|a_{n+1}|/|a_n| > 1$.

19. Series of the type $a_0 + a_1 \cos z + a_2 \cos 2z + \ldots + b_1 \sin z + b_2 \sin 2z + \ldots$ where the coefficients $a_0, a_1, a_2, b_1, b_2, \ldots$ are independent of $z$ are called Fourier series. They are of immediate importance both from the point of view of analysis and also because of their applications to physical problems. For the consideration of these series and the expansion of arbitrary functions in series of this type see Function and Fourier's Series. 20. The general problem of the development of functions in infinite series of various types see Function.

21. The product of an infinite number of factors formed in succession according to any given law is called an infinite product.

The infinite product $P_{n=0}^{\infty} (1+t_n)(1-t_n)$ is said to be convergent when $L_{n=0}^{\infty} t_n$ tends to a definite finite limit other than zero. If $L_{n=0}^{\infty} t_n$ is zero or infinite or tending to different finite values according to the form of $P$ the product is said to be divergent.

The condition for convergence may also be stated in the following form. (1) The value of $P_n$ remains finite and different from zero however great $n$ may become, and (2) $L_{n=0}^{\infty} p_n$ and $L_{n=0}^{\infty} p_n p_n$ must be equal, where $p_n = t_n$ and $p_n + 1$ are equal to 1. Since in particular $L_{n=0}^{\infty} t_n = L_{n=0}^{\infty} t_n + 1$, we must have $L_{n=0}^{\infty} t_n = 0$. Hence after some fixed term $t_1, t_2, \ldots$ or their modulus in the case of complex quantities, must diminish continually down to zero. Since we may regard the finite number of terms in which $|t_n| > 1$, without affecting the convergence of the whole product, we may regard as the general type of a convergent product $(1 + u_n)(1 + u_n + \ldots) (1 + u_n + \ldots)$ where $|u_n|, |u_n|, \ldots$ are all less than unity and decrease continually to zero.

A convergent infinite product is said to be absolutely convergent where the order of its factors is immaterial. Where this is not the case its absolute convergence is called convergent.

The necessary and sufficient condition that the product $(1 + u)(1 + u) + \ldots$ should converge absolutely is that the series $|u| + |u| + \ldots$ should be convergent. If $u_1, u_2, \ldots$ are all of the same sign, then, if the series $u_1 + u_2 + \ldots$ is divergent, the product is infinite if $u_1 + u_2 + \ldots$ are all positive and zero if they are all negative.

If $u_1 + u_2 + \ldots$ is a semi-convergent series the product converges, but not absolutely, or diverges to the value zero, according as the series $u_1 + u_2 + \ldots$ is convergent or divergent. These results may be deduced by considering, instead of $P_{n=0}^{\infty} t_n$, the series $\log (1 + u) + \log (1 + u) + \ldots$.
SERJEANT, or SERGEANT (from Lat. serviens, servire, to serve, through O. Fr. sergeant, sergeant, mod. Fr. sergent), the title (1) of a non-commissioned officer in the army and of a subordinate officer of police; (2) of certain officials of the royal household (see Serjeants-at-arms, below). (3) The name was also given formerly to the highest rank of barristers in England and Ireland (see SERJEANT-AT-LAW). In the middle ages serjeants had a confused nomenclature all connoting the same office, from the servientes de paue et mensa, the domestic servant of a monastery, to the servientes de armis, the serjeants-at-arms (Fr. sergeants d'armes) of monarchs, the serjeants (servientes) who were the apparitors of the French king, and vassals who held by a special service (serjeanty, q.v.). The serjeants (fratres servientes) formed also an important division of the great military orders (see SAINT JOHN OF JERUSALEM, KNIGHTS OF THE ORDER OF, AND TEMPLARS). Du Cange (Glossarium, s. v. "Serviens") gives many other instances.

1. Military Title.—In its early military uses the word implied a subordinate, and it is not clear how it came to be used for a minor commander. The "serjeants" of ordinary medieval armies were the heavy-armed (generally mercenary) cavalry or men-at-arms. In the 15th century it became usual to subdivide troops of all sorts into groups of dissimilar combatants, graded amongst themselves according to military or social importance. Thus a "lance," or group, might consist of a heavy-armed lancer (man-at-arms), a mounted and a foot archer and an armed valet, and the "serjeant" would be its most important member. But the general evolution of armies led to their being classed by arms and grouped in more homogeneous regiments. Under such an organization the title of the group leader lost its cavalry significance and became specifically the designation of an infantry rank. From the cavalry it disappeared altogether, the titles "corporal of horse," "marchal des logis," &c., taking its place. In 16th and 17th century armies the title serjeant is found amongst the highest ranks of an army. With a partial return to the old meaning it signifies, in all its forms, an expert professional soldier, the serjeant of a company, the serjeant-major of a regiment and the serjeant-major-general of the army (the last being the originals of the modern ranks, major and major-general) being charged with all duties pertaining to the arraying, camping and drill of their units.

In modern armies the word serjeant is used of a non-commissioned officer ranking between corporal and serjeant-major. A "lance-serjeant" is a corporal holding the appointment and performing the duties, but not having the rank of serjeant. The serjeant-major in the British service is a "warrant-officer, although in the cavalry and artillery the ranks of "troop," "squadron" or "battery serjeant-major" are non-commissioned and corresponding to our lance-serjeants. The last officer is the senior non-commissioned officer of a company, and has, besides his duties in the colour-party, the pay and accounting work of his unit. The former "corporal of horse" and "corporal-major" still survive in the British Household Cavalry. In Germany, Austria and Russia the regimental serjeant-majors of infantry and cavalry are styled Feldwebel and Wachtmeister respectively, while in France the titles are adjudant and marchal des logis or marchal des logis chef.

2. Serjeants-at-Arms.—In the British royal household there are eight serjeants-at-arms, whose duties are ceremonial; they have to be in attendance only at drawing-rooms, levees, state balls and state concerts. There are also two other serjeants-at-arms to whom special duties are assigned, the one attending the Speaker of the House of Commons and the other the lord chancellor in the House of Lords, carrying their maces and executing their orders. The Speaker's serjeant-at-arms is the disciplinary officer of the House of Commons, whose duty it is to expel members at the order of the Speaker and to arrest and keep in custody those persons condemned to this punishment by the authority of the House. The serjeants-at-arms have no special duty of attending the Speaker but they wear any naval, military or civil uniform to which they may be entitled, or the court dress of those holding legal appointments, but not entitled to wear robes, i.e. a suit of black cloth, with knee-breeches, lace bands and ruffles, a black silk cocked hat with rosette and steel loop and a sword. A silver collar of office is worn on special occasions. This costume, with the chain, is that worn by the serjeants-at-arms in the House of Lords and the House of Commons always.

SERJEANT-AT-LAW, the name (see above) given to what was formerly an order of the higher ranks of the Bar at the English or Irish bar. The title is derived from the use of the words serjeant or servientes ad legem, as distinguished from apprenticus ad legem, or utter barrister, who probably originally obtained his knowledge of law by serving a kind of apprenticeship to a serjeant. When the order of serjeants was instituted is unknown, but it certainly dates from a very remote period. The authority of serjeants over counters or counsors (i.e. pleaders, those who frame counts in pleading) is treated in the Mirror of Justices, and they are named in 3 Edw. I. c. 29. They may possibly have been the representatives of the conteurs mentioned in the great customary of Normandy. The position of the serjeant has become altered. In trade, when Chaucer wrote, one of the characters in the Canterbury Tales is "A serjeant of the law, wary and wise, That often had y-been at the parvis." Serjeants (except king's serjeants) were created by writ of summons under the great seal, and wore a special and distinctive dress, the chief feature of which was the coif, a white lawn or silk skull-cap, afterwards represented by a round piece of black silk at the top of the wig. They enjoyed a social precedence after knights chorlors and before counsors of the Bath and other orders. In this they differed from king's counsel, who had simply professional as distinguished from social rank. Socially the serjeant had precedence, professionally the king's counsel, unless indeed, as was often the case, a patent of precedence was granted to the former. The serjeants at the Irish bar had precedence next after the law officers of the crown. Till past the middle of the 19th century a limited number of the serjeants were called "king's (queen's) serjeants." They were appointed by patent and summoned to parliament. Until 1824 the two senior king's serjeants had precedence of even the attorney-general and solicitor-general. It was the custom for serjeants on their appointment to give gold rings with mottoes to their colleagues. Down to 1845 the order enjoyed a very valuable monopoly of practice. The serjeants had the right of exclusive audience as leading council in the Court of Common Pleas. In 1834 a royal mandate of William IV. attempted to abolish this privilege, but in 1840 the judicial committee of the privy council declared the mandate informal and invalid. The monopoly was finally abolished in 1843 by Act of Parliament. For at least 600 years the judges of the superior courts of common law were always serjeants, but after 1873 the Judicature Act 1873 no person appointed a judge of the High Court of Justice or the Court of Appeal was required to take or have taken the degree of serjeant-at-law. The serjeants had their own inn of court known as Serjeants' Inn, which was formerly in two divisions, one in Fleet Street and one in Chancery Lane. In 1758 the members of the former joined the latter. In 1877 the society was dissolved, the inn sold to one of the members and the proceeds divided among the existing serjeants. The order is now extinct.

See Serviens ad Legem, by Mr Serjeant Manning; and The Order of the Garter, by Mr Serjeant Fulling.
renders scarcely distinguishable from those of the rent-paying tenant or socager. Serjeants, as Miss Bateson has expressed it, "were neither always military nor always agricultural, but might approach very closely the service of knights or the service of farmers. . . . The serjeanty of holding the king's head when he made a rough passage across the Channel, of pulling a rope when his vessel landed, of counting his chesmen on Christmas day, of bringing fuel to his castle, of doing his carpentry, of finding his potheers, of forging his irons for his ploughs, of tending his garden, of nursing the hounds gored and injured in the hunt, of serving as veterinary to his sick falcons, such and many others might be the ceremonial or menial services due from a given serjeanty." The many varieties of serjeanty were afterwards increased by lawyers classing for convenience under this head such duties as those of escort service to the abbess of Barking, or of military service on the Welsh border by the men of Archenfield.

Serjeants (servientes) are already entered as a distinct class in Domesday Book (1086), though not in all cases differentiated from the barons, who held by knight-service. Sometimes, as in the case of three Hampshire serjeants—those of acting as king's trumpeter, of wardship, and of king's garden at Winchester—in the great roll in Winchester Castle—the tenure can be definitely traced as far back as Domesday. It is probable, however, that many supposed tenures by serjeanty were not really such, although so described in returns, in inquests after death, and other records. The simplest legal test of the tenure was that serjeants, though liable to the feudal exactions of wardship, &c., were not liable to scutage; they made in place of this exact special composition with the crown.

The gern of the later distinction between "grand" and "petty" serjeanty is found in the Great Charter (1215), the king there renouncing the right of prerogative wardship in the case of those who held of him by the render of small articles. The legal doctrine that serjeants were (a) inalienable, (b) impalatable, led to the "arrestation," under Henry III., of serjeants the lands of which had been partly alienated, and which were converted into socage tenures, or, in some cases, tenures by knight-service. Gradually the gulf widened, and "petty" serjeants, consisting of renders,1 together with serjeants held of mesne lords, sank into socage, while "grand" serjeants, the holders of which performed their service in person, became alone liable to the burden of wardship and marriage. In Littleton's Tenures this distinction appears as well defined, but the development was one of legal theory.

When the military tenure of knight-service was abolished at the Restoration (by 12 Charles II., cap. 24), that of grand serjeanty was retained, doubtless on account of its honorary character, it being then limited in practice to the performance of certain duties at coronations, the discharge of which is a right which has always been coveted, and the earliest record of which is that of Queen Eleanor's coronation in 1236. The most conspicuous are those of champion, appurtenant to the Dymokes' manor of Scrivelsby, and of supporting the king's right arm, appurtenant to that of Worksop. The latter duty was performed at the coronation of King Edward VII. (1902).

The meaning of serjeant as a household officer is still preserved in the king's serjeants-at-arms, serjeant-surgeons and serjeant-trumpeter. The horse and foot serjeants (servientes) of the king's host in the 12th century, who ranked after the knights and were more lightly armed, were unconnected with tenure. The best summary of tenure by serjeanty is in Pollock and Maitland's History of English Law; McKechnie's Magna Carta (1905) should also be consulted; and for Domesday the Victoria History of England, vol. i. The best list of serjeants is in the Red Books of the Exchequer ("Rolls" series), but the Testa de Nevill (Record Commission) contains the most valuable records concerning them. Boult's Tenures is useful, but its modern editions very uncritical. Within the scope of an "Introduction to Crown Claims" (J. H. R.)

SERMON (Lat. sermo, a discourse), an oration delivered from a pulpit with fullness and rhetorical effect. Pascal, than whom

1 Usually a bow, sword, dagger or other small thing belonging to war.

SERMON

(22)

XXIV.
SEROUX D'AGINCOURT

writer of sermons whom the British race has produced. His matchless collection of discourses delivered at Golden Grove, The Enlouisé, was published in 1655-1657. The fault of the 17th-century sermon was a tendency, less prominent in Jeremy Taylor than in any other writer, to dazzle the audience by a display of false learning and by a violence in imagery; the great merit of its literary form was the fullness of its vocabulary and the richness and melody of style which adorned it at its best. Some of the most remarkable divines of this great period, however, are scarcely to be mentioned as successful writers of sermons. At the Restoration, pulpit oratory in England became drier, less picturesque and more sententious. The great names at this period were John Durand Barrow (1616-1668), and the literary work of Benjamin Hoadly (1676-1741) has a place in history, and those of Joseph Butler (1692-1753), the Rolls Sermons of 1726, have great historical importance. Thomas Boston's (1676-1732) memory has been revived by the praise of Stevenson, but his zeal was far exceeded by that of John Wesley (1703-1791), who preached 40,000 sermons, and by that of George Whitefield (1714-1770).

Of all countries, however, France is the one which has shown most brightly in the cultivation of the sermon. In the 14th century Gerson (1363-1429) seems to have been the earliest divine who composed and preached French, but his example was not followed by any man of equal genius. It was the popular movement of the Reformation, which made the sermon a piece of literature, on the lips of Jean Calvin (1509-1564), Pierre Viret (1511-1571) and Théodore de Bèze (1519-1603). With these sermon Protestant discourses may be contrasted the beautiful, but somewhat euhemeristical sermons of St. François de Sales (1565-1622), full of mystical imagery. Father Claude de Lingendes (1591-1666) has been looked upon as the father of the classic French sermon, although his own concequences were invariably written in Latin. Because of the value of his works, the school of Bourdaloue and Bossuet. In the great body of noble religious eloquence delivered from French pulpits during the 17th century, the first place is certainly held by the sermons of J. B. Bossuet (1627-1704), who remains perhaps the greatest preacher whom the world has ever seen. His six Oraisons Funèbres, the latest of which was delivered in 1687, form the most majestic existing type of this species of literature. Around that of Bossuet were collected other noble names: Louis Bourdaloue (1632-1704), whom his contemporaries preferred to Bossuet himself; Esprit Flechier (1632-1710), the politest preacher who ever occupied a Parisian pulpit; and Jules Mascaron (1634-1703), in whom all forms of eloquence were united. A generation later appeared Baptiste Massillon (1663-1742), who was to Bossuet as Racine to Corneille; and Jacques Saurin (1677-1730), whose evangelical sermons were delivered at the Hague. These are the great classic preachers whose discourses continue to be read, and to form an inherent part of the body of French literature. There was some revival of the art of the sermon at Versailles a century later, where the Abbé Maury, whom it has often been mentioned above, preached with vivid eloquence between 1770 and 1786. Pierre Enlouët (1726-1783), whom Diderot and Mme Roland greatly admired, held a similar place, at the same time, in Paris. Since the end of the 18th century, although a great number of volumes of sermons have been and continue to be published, and although the pulpit holds its own in Protestant and Catholic countries alike, for purposes of exhortation and encouragement, it cannot be said that the sermon has in any way extended its influence as a form of pure literature. It has, in general, been greatly shortened, and the ordinary sermon of to-day is no longer an elaborate piece of carefully balanced and ornamental literary architecture, but a very simple and brief homily, not occupying the listener for more than some ten minutes in the course of an elaborate service.

In Germany, the great preachers of the middle ages were Franciscans, such as Brother Bertold of Regensburg (1220-1272), or Dominicans, such as Johann Tauler (1290-1361), who preached in Latin. The great period of vernacular preaching lasted from the beginning of the 16th to the end of the 17th century. Martin Luther was the most ancient type of early Reformation preacher, and he was succeeded by the mystic Johann Arndt (1555-1621). Then came the epoch of Bossuet and the German Gerson, to whom the heart and imagination of the young were turned, and France, by the example of which, the young brothers who had been left orphans, was appointed a farmer-general by Louis XV. In 1777 he visited England, Germany and Holland; and in the following year he travelled through Italy, with the view of exploring thoroughly the remains of ancient art. He afterwards settled at Rome, and devoted himself to preparing the results of his researches for publication. He died on the 24th of September 1814, leaving the work, which was being issued in parts, unfinished; but it was carried on by J. M. Genet, and published complete under the title L'Historie pour les monuments, depuis sa décécé au quinzième siècle jusqu'à son renouvellement au seizième siècle (6 vols., with 375 plates, Paris, 1823). An English translation by Owen Jones was published in 1847. In the year of his death Seroux d'Agincourt published in Paris a Recueil de fragments de sculpture antique, en terre cuite (1 vol. 410).

SEROW, or SARAU, the Himalayan name of a goat-like antelope of the size of a donkey, nearly allied to the goral (g.r.) of the same region, but considerably larger, and with small face-glands. The Himalayan animal is a local race of the Sumatran Nemorhaestrus, and the name serow is now extended to embrace all the species belonging to the genus, the range of which extends from the Himalaya to Burma, the Malay Peninsula and Sumatra in one direction, and to Tibet, China, Japan and Formosa in another. Serows inhabit scrub-clad mountains, at no great elevation. (R. L. *)

SERPA PINTO, ALEXANDRE ALBERTO DE LA ROCHA (1846-1900), Portuguese explorer in Africa, was born at the castle of Polichras, on the Douro, on the 10th of April 1846. Entering the army in 1864, he served in Mozambique, and in 1869 took part in an expedition against tribes in revolt on the lower Zambezi. In 1877 he and Capitans Capello and Ivens of the Portuguese navy were sent on an expedition to south central Africa. The explorers left Benguela in November 1877 for the interior, but Serpa Pinto soon parted from his colleagues, who went north, while Serpa Pinto continued east. He crossed the Kwando in June 1878, and in August reached Lialui, the Barotse capital on the Zambezi, where he received help from the Rev. F. Coillard which enabled him to continue his journey down the river to the Victoria Falls, whence he turned south, arriving at Pretoria on the 11th of February 1879. He was the fourth explorer to traverse Africa from west to east, and the first to lay down with approximate accuracy the route between Bihe and Lialui. Among other outstanding rewards the Royal Geographical Society of London awarded him (1881) the Founder's medal. The account of his travels appeared in English under the title How I crossed Africa (2 vols., London, 1881). In 1884 he attempted, with less success, the exploration of the region between Mozambique and Lake Nyasa. Appointed governor of
SERPENTINE

Mozambique in 1889, he organized an expedition with the object of securing for Portugal the Shiré highlands and neighbouring regions, but the vigorous action of the British agents (John Buchanan and H. H. Johnston) frustrated this design (see AFRICA, § 5). Shortly afterwards Serpa Pinto returned to Lisbon and was promoted to the rank of colonel. He died on the 28th of December 1900.

SERPENT (Lat. serpens, creeping, from serpent; cf. “reptile” from repere, Gr. ἐπέρευ, a synonym for reptile or snake (see Reptile, and Snakes), now generally used only of dangerous varieties, or metaphorically. See also SERPENT-Worship below.

In music the serpent (Fr. serpent, Ger. Serpent, Schlangenrohr, Ital. serpentone) is an obsolete bass wind instrument derived from the old wooden cornets (Zinken), and the progenitor of the bass-horn, Russian bassoon and ophicleide. The serpent is composed of two pieces of wood, hollowed out and cut to the desired shape. They are so joined together by gluing as to form a conical tube of wide calibre with a diameter varying from a little over half an inch at the crook to nearly 4 in. at the wider end. The tube is covered with leather to ensure solidity. The upper extremity ends with a bent brass tube or nozzle, to which the triangular mouthpiece is attached; the lower end does not expand to form a bell, a peculiarity the serpent shared with the cornets.

The tube is pierced laterally with six holes, the first three of which are covered with the fingers of the right hand and the others with those of the left. When all the holes are thus closed the instrument will produce the following sounds, of which the first is the fundamental and the rest the harmonic series founded thereon:

Each of the holes on being successively opened gives the same series of harmonics on a new fundamental, thus producing a chromatic compass of three octaves by means of six holes only. The holes are curiously disposed along the tube for convenience in reaching them with the fingers; in consequence they are of very small diameter, and this affects the intonation and timbre of the instrument adversely. With the application of keys to the serpent, which made it possible to place the holes approximately in the correct theoretical position, whereby the diameter of the holes was also made proportional to that of the tube, this defect was remedied and the timbre improved.

The serpent was, according to Abbé Leboué (1), the outcome of experiments made on the corno, the bass cornet or Zinke, by Edmé Guillame, canon of Auxerre, in 1590. The invention at once proved a success, and the new bass became a valuable addition to church concerted music. More especially in France, in spite of the serpent’s harsh, unpleasant tone. Meroni (1636) describes and figures the serpent of his day in detail, but it was evidently unknown to Praetorius (1618). During the 18th century the construction of the instrument underwent many improvements, the tendency being to make the unwieldy windings more compact. At the beginning of the 19th century the open holes had been discarded, and as many as fourteen or seventeen keys disposed conveniently along the tube. Gerber, in his Lexicon (1790), states that in 1780 a musician of Lille, named Régillo, making further experiments on the serpent, produced a bass horn, giving it the shape of the bassoon for greater portability; and Frichot, a French refugee in London, introduced a variant of brass which rapidly became the favourite for the “bass horn” or “bass russe” in English military bands. On being introduced on the continent of Europe, this instrument was received into general use and gave a fresh impetus to experiments with basses for military bands, which culminated first in the ophicleide (q.v.) and ultimately in the valuable invention of the piston or valve.

Further information as to the technique and construction of the serpent may be gained from Joseph Fröhlich’s excellent treatise

1 See Mémoire concernant l’histoire ecclesiastique et civile d’Auxerre (Paris, 1828), II. 189.

SERPENTARIUS, or Ophiuchus, in astronomy, a constellation of the northern hemisphere, anciently named Aesculapius, and mentioned by Eudoxus (4th century B.C.) and Aratus (3rd century B.C.). According to the Greek fables it variously represents: Carnabon (or Charnabon), king of the Getae, killing one of the dragons of Triptolemus, or Heracles killing the serpent at the river Sangarius (or Sagaris), or the physical Asclepius (Aesculapius), to denote his skill in curing snake bites. Ptolemy catalogued 30 stars in Serpens as Serpentis, and Hevelius 40. "New" stars were observed in 1604 and 1848.

SERPENTINE, in geometry, a cubic curve described by Sir Isaac Newton, and given by the cartesian equation $y(a^2+x^2)=a^3x$. The origin is a point of inflection, the axis of $x$ is an asymptote, and the curve lies between the parallel lines $2y=a^3b$.

SERPENTINE, a mineral which, in a massive and impure form, occurs on a small scale as a rock constituent, and which, as a mineral of variegated colour, is often cut and polished, like marble, for use as a decorative stone. It is generally held that the name was suggested by the fancied resemblance of the dark mottled green stone to the skin of a serpent, but it may possibly refer to some reputed virtue of the stone as a cure for snake-bite. Serpentine was probably, at least in part, the $αλύς$ $οφίνυς$ of Dioscorides and the $οφίλαη$ of Pliny; and this name appears in a latinized form as the serpentaria of G. Agricola, writing in the 16th century, and as the $λαπις$ $σερπεντίνης$ and $μαρμορ$ $σερπεντίνιον$ of other early writers. Italian sculptors have sometimes termed it $ρονοκία$ in allusion to its resemblance to the skin of a frog.

Although popularly called a "marble," serpentine is essentially different from any kind of limestone, in that it is a magnesium silicate, associated however, with more or less ferrous silicate. Analyses show that the mineral contains $\text{H}_{2}\text{MgSi}_{2}\text{O}_{5}$, and if the water be regarded as constitutional the formula may be written $\text{Mg}_{2}\text{Si}_{2}\text{O}_{5}\text{H}_{2}\text{O}$ (MgOH). Serpentine occurs massive, fibrous, lamellar or granular, but never crystallized. Fine pseudomorphs having the form of olivine, but the composition of serpentine, are known from Snarum in Buskerud, Norway, the crystals revealing their character by containing both serpentine and olivine. The alteration of rocks rich in olivine has given rise to much of the serpentine occurring as rock-masses (see PETROGRAPHT E). Studied microscopically, the change is seen to proceed from the surface and from the irregular cracks of the olivine, producing fibres of serpentine. The iron of the olivine passes more or less completely into the ferric state, giving rise to grains of magnetite, which form a black dust, and may ultimately yield scales of haematite or limonite. Considerable increase of volume generally accompanies serpentinization, and thus are produced textures which afford passage for the agents of alteration, resulting in the formation of an irregular mesh-like structure, formed of strings of serpentine enclosing kernels of olivine in the meshes, and this olivine may itself ultimately become serpentinized. Serpentine may also be formed by the alteration of other non-aluminous ferro-magnesian silicates such as enstatite, augite or hornblende, and in such cases it may show microscopically a characteristic structure related to the cleavage of the original mineral, notably lozenge-shaped in the case of hornblende. Many interesting pseudomorphs of serpentine were described by Professor J. D. Dana from the Tilly Foster iron-mine, near Brewster, New York, U.S.A., including some remarkable specimens with cubic cleavage.

The purest kind of serpentine, known as "noble serpentine," is generally of pale greenish or yellow colour, slightly translucent, and breaking with a rather bright conchoidal fracture. It occurs chiefly in granular limestone, and is often accompanied by forsterite, olivine or chondrodite. The hardness of serpentine is between 3 and 4, while the specific gravity varies from 2·5 to 2·65. A green serpentine of the exceptional hardness of 6,
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from its occurrence near Karystos in Euboea. Foliated serpentine is usually termed marmorite—a name given by G. T. Nuttall, from marmoidea (to glisten) in reference to the highly lustrous or flaky serpentine supposed to occur in the Antigorio valley north of Donodossola in Piedmont is called antigorite, having been named in 1846 by M. E. Schweizer, after whom a somewhat similar mineral is termed schweizerite. Antigorite has been studied by Professor T. G. Bonney and Miss C. Raisin (Quart. Journ. Geol. Soc., lxi, 1905, p. 609; lxi, 1908, p. 152).

An apple-green translucent serpentine passes under the name of williamsite, having been so called by C. U. Shepard in honour of its discoverer L. White Williams, of West Chester, Pennsylvania, where this variety occurs.

"Green serpentine" is the impure massive kind which occurs in rock-masses and is extensively worked as "serpentine-marble." It is sometimes veined with steatite, or magnesite, and may contain scattered crystals of diabase, bronzite or bastite (an altered rhombic pyroxene), which by schillerization may present a metallic lustre. In England the chief localities of serpentine are in Cornwall, especially in the Lizard district, where it is quarried and carved into mantelpieces, columns, vases and other ornaments. Much of it presents a rich red or brown colour, often mottled and sometimes veined. Professor Bonney has shown that it has been largely derived from A thin green-serpentine occurs near Holyhead in Anglesey. A beautiful serpentine, generally mottled red and green, with veins of steatite, is found at Portsoy in Banffshire, Scotland, and was used for pillars in the great hall at Versailles. Serpentine containing chalcedony is found in the Shetland Islands.

The rock called "opicalcite" consists of an intimate association of serpentine with limestone, often forming an ornamental stone which is beautifully clouded and zoned with various shades of green. It generally results from the metamorphism of an impure dolomitic limestone, the impurities having crystalized as new minerals which become altered to serpentine. Pseudo-morphs of serpentine occur after forsterite. The best known serpentine marble of the British Isles occurs in Connemara in Galway, Ireland, and passes in trade under the name of "Irish green." Opicalcite are also developed in various parts of Scotland, and the green pebbles found in Iona belong to this type of rock. The famous eozonal marble of Canada is also of similar character.

In Saxony common serpentine is largely worked at Zöblitz near Marienberg and Waldheim. The rock of Zöblitz, mentioned by G. Agricola in the 16th century, is usually of dull green or brownish colour and sometimes contains dark red Bohemian garnet or pyrope (q.v.). It was used in the musaeum of Prince Albert at Frogmore, Windsor, and in Abraham Lincoln's monument at Springfield, Illinois, U.S.A. Italy is rich in serpentine, the best-known being the serdi di Prato, which has been quarried for centuries at Monteferrato near Prato in Tuscany, and has been largely used in ecclesiastical architecture in Florence, Prato and Pistole. Much serpentine is found near Genoa and Levanto. The verde di Pegli comes from Pegli not far from Genoa, while the verde di Genoa is a breciated serpentinous limestone from Pietra Lavezzara. Serpentine occurs also at many localities in the Apennines, in Elba and in Corsica. The term ophiolite has been vaguely used to include not only serpentines but many other rocks associated with the Italian serpentines. Verde antico is a brecciated serpentine with fragments of limestone, originally brought by the Romans from Atrax in Thessaly, and called lapis atracius. It is sometimes known as "serpentine antico, or, following the old French, "serpentine antique." The term serpentine is often improperly applied to the ancient green porphyry of Lacoia in the Peloponnesus (porfido serpentine verde). True serpentine occurs at numerous localities in the Alps and in France, an elegant variety being quarried at Épinal in the Vosges, whilst a fine opicalcite is worked at St Véran and Maurins, dep. Hautes-Alpes. The Ronda Mountains in Spain also yield serpentine.

In North America serpentine is so widely distributed that only a few localities can be specified. It is found in St Lawrence county, Essex county and Warren county, New York, and also on Staten Island; at Montville and Hoboken in New Jersey; at Newport, Rhode Island; at Newbury and Newburyport, Massachusetts; Texas, Lancaster county, and West Chester, Chester county, Pennsylvania; at many localities in Vermont, and in California, Connecticut, Georgia, Maine, Maryland, Michigan, New Mexico, North Carolina and Washington.

For American serpentine see Stones for Building and Decoration, by George P. Merrill (New York, 1905); and for serpentine asbests see the same author's Non-metallic Minerals (New York, 1904). (F. W. K.)

SERPENT-WORSHIP. From all parts of the world there is a very considerable body of evidence for the prominence of the serpent in religion, mythology and folk-lore. Snake-worship still prevails largely in India, and a writer in 1896 remarks that the previous census showed in the North-West Provinces over 25,000 Naga (serpent) worshippers, 12,000 votaries of the snake-god Gâga, and, in the same tribe, some 25,000 followers of the Nagasprings. The evidence from modern India can be supplemented by the medieval and ancient Indian sources, and, in particular, by the representations of the adoration of snake-deities on the Buddhist tope of Sanchi and Amravati. There we find, not indeed living serpents, but deities with serpent-symbolism, indicating a composition of various strata of religious belief, analogous to the evidence for serpent-symbolism from Babylonia, Crete, Greece or Peru; for the higher religions have almost invariably retained in their ritual and belief, sometimes with only slight modification,.crude survivals of man's earliest conceptions of the power of the serpent. In India, Africa and America. The result is instructive when we turn to the numerous serpent myths and legends from the Old World and the New, to the stray notices in old writers, or to the fragmentary scraps of popular superstition everywhere. Modern scientific research has vividly illustrated the stereotyped nature of the human mind; there is a general similarity in the effect of similar phenomena upon people at a similar stage of mental growth; there is an almost inherent or unconscious belief which has been transmitted through the countless ages of man's history. At the same time, apart from the gradual evolution of religious and other conceptions there are the more incidental and artificial influences which have shaped them. Hence, our evidence for serpent-cults everywhere represents varying stages in the historical development of a few related fundamental ideas which are psychologically explicable; and it is impossible to deal with the subject geographically or historically. It is most useful, perhaps, to survey some of the general features of belief as an introduction to the more complex inquiries which involve a consideration of other subjects over a larger field.

1. Prevalence in varying social systems.
Haunting buildings and famous ruins, gliding around pools, walls and trees, mysteriously disappearing below ground, the serpent and all its kind invariably arrested attention through its uncanny distinctiveness from bird or beast. The pathetic, musingly monotonous Camel of the Arabian Nights, with his coiled tail symbolized the earth surrounded by the world-river. Its patient watchfulness, the fascination it exerted over its victims, the easy domestication of some species, and the frequent occurrence of poisons, impressed primitive man. Its swift and deadly dart was likened to the lightning; equally marvellous seemed its fatal power. It is little wonder that men who could tame and handle the reptiles gained esteem and influence. Sometimes the long life of the serpent and its habit of changing the skin suggested ideas of immortality and resurrection, and it is noteworthy that one Indian snake-festival occurs after or at the sloughing; when the sacred being is thus renewed, to become again the guardian of the serpent's treasure-chambers of jewels, or crowns, and with crowns in old superstition, and the serpent with a ruby in its mouth was a favourite token. Many stories tell of the grateful reptile which brought valuable gifts to a benefactor. According to a common Indian belief, the Ouroboros (5.), which lived without an heir, returned with the wealth in the form of a serpent. In Italy superstition supposed that to find a serpent's skin brought good luck (Leland).\(^2\)

No singular preference for jewels on the part of serpents will explain the belief, and creatures like the jackdaw which have this weakness do not enjoy this prominence in folk-lore. A rationalistic explanation might be found in the connexion between the chthonic serpent and subterranean sources of wealth.\(^3\)

Moreover, the serpent is often associated with metallurgy, and to serpent deities have been ascribed the working of metals, gem-cutting and indeed culture in general. The Aztec Quetzalcoatl taught metallurgy and agriculture, and became afterwards the benefactor of maize, also wisdom and freedom from disease. The Babylonian Ea, who sometimes has serpent attributes, introduced—like the American serpent Votan—knowledge and culture. The half-serpent Cadmus brought knowledge of mines, agriculture, and the "Cadmian" letters, while Cercrops inculcated laws and ways of life and was the first to establish monogamy. Although the reptile is not particularly intelligent, it has become famed for shrewdness and wisdom, whether in the Garden of Eden (Gen. iii. 1; 2 Cor. xi. 3) or generally (cf. Matt. x. 16). The Ouroboros (5.) actually identifies the serpent with Soara, his guardian ("Wisdom"); the old sage Garga, one of the fathers of Indian astronomy, owed his learning to the serpent-god Sesha Naga; and the Phoenician ἀγαθοδαίμων of Phoenicia also symbolized immortality. In Babylonian myth a serpent, apparently in a well or pool, deprived Gilgamesh of the plant which rejuvenated old age, and if it was the rightful guardian of the wonderful gift, one is reminded of the Hebrew story, now reshaped in Gen. iii., where the supernatural serpent is clearly acquainted with the properties of the tree of life.\(^4\)

Serpents were supposed to know of a root which brought back their dead to life, and an old Greek story told how certain mortals took the hint.\(^5\) In one form or another the healing powers of the serpent are very familiar in legend and custom. Siegfried bathed in the blood of the dragon he slew and thus became invulnerable; the blind emperor Theodosius recovered his sight when a grateful serpent laid a precious stone upon his eyes; Cadmus and his wife were turned into serpents to cure human ills. "In 1899 a court in Larnaca, Cyprus, awarded £80 (Turkish) as damages to two members of a small tribe of men lent to cure a certain disease" (Murison, p. 112, n. 9). Not to mention the serpent, it must suffice to refer to the old popular idea that medical skill could be gained by eating some part of a serpent: the idea that its valuable qualities would thus be assimilated belongs to one of the fundamental dogmas of primitive mankind (cf. Porphyry, De abst. ii. 48). Now, serpents were tender in the sanctuaries of the Greek Aesculapius (Asklepious), the famous god of healing. Among his symbols was a serpent coiled round a staff, and physicians were for long wont to place this at the head of their prescriptions. He is also represented leaning on a staff while another serpent rears behind him, or (on a coin from Cygium) a serpent seems to come to him from a well. At Athens, Asklepios Amynoos had a sanctuary with altar and well, and among the votive offerings have been discovered models of snakes.\(^7\) The god-hero came from Epidaurus to the shrine at Sicyon in the form of a serpent, and the serpent sent from Epidaurus to stay a plague at Rome remained there, and a temple was erected to Aesculapius. The sanctuary of the defiled healer at Coe marked the site where another serpent brought from Epidaurus dived into the earth (Pausanias, ii. 13, 3, iii. 22, 4).\(^8\) Byproducts of smith, passed for his daughter, and is commonly identified with the woman in Greek art who feeds a serpent out of a saucer. Moreover, the temple of the earth-goddess Bon-real Dea on the slopes of the Aventine was a kind of herbarium, and snakes were kept there as a symbol of the medical art. Eben in Upper Egypt a few decades ago, there was a tomb of the Mahomedan sheik Herti, who— it is alleged—was transformed into a serpent; in cases of sickness a spotless virgin entered the cave and the serpent-occupant might permit itself to be taken in procession to the patient. The place was the scene of animal sacrifices and a yearly visit of women, and apparently preserved the traces of an old serpent-cult.\(^9\)

Several practices conform to the idea that "a hair of the dog that bit you" is a sure remedy, and that the serpent was best fitted to overcome other serpents.\(^9\) At Emera in Syria, watered by the Orontes, an image, the lower part of which was a scorpion, cued the sting of scorpions and freed the feet from snakes.\(^10\) Constantine was similarly protected by the serpent-trophy of Delphi which Constantine removed thither; an emperor was said to have performed an enchantment over the monument well known in Greek history.\(^11\) In modern India a walking-stick from a species of cane in the neighbourhood of a certain serpent-shrine protects against snake-bite.\(^12\) At Fernando Po, where there is a shipwrecked, the interpretation is uncertain, but the motive has parallels (see Go bible d'Alviella, Migration of Symbols, London, 1894, pp. 129, 165 seqq.). R. de Clarino, The Serpent in the O. T. (Amer. Journ. of Sem. Lang. xxii. 128), cites an American-Indian belief in a tree of healing, or rather of knowledge, inhabited by a serpent.\(^13\) J. G. Frazer, Adonis, Atis and Osiris (2nd ed.), London, 1907, p. 153; also his notes on Pauanias, vol. iii. p. 64 seqq.

Similar votive offerings are known in India (Oldham, 87), and, though their true significance is uncertain, in ancient Arabia, Palestine and Egypt (see H. Vincent, Canaan d'apres l'exploration Europe qui, 1897, pp. 354 seqq.).\(^14\) A. H. Sayce, "Serpent Worship in Ancient and Modern Egypt," Contemporey Revie (Oct. 1893), p. 523; cf. also Ferguson, 34.\(^15\)


2. See H. G. Gunther, Archiv f. Religionswissenschaft, x. 357 sqq. A Babylonian cylinder represents two figures (divine?) on either side of a fruit-tree, and behind one of them a serpent coils upwards.


4. As remedy against snake-bite.
was an epidemic among children, they were brought to touch a serpent's skin which hung on a pole. The same idea underlie the story of the Brazen Serpent which cured Israel of the serpent-bite in the Wilderness (Num. xxii. 6-9; 1 Cor. x. 9). The object, however, was no temporary device; centuries later, 250 years after the founding of the temple of Jerusalem, the Brazen Serpent was regarded as unorthodox by the reforming King Hezekiah, and the historian who relates its origin ascribes its name to the founder of Israelite national religion (2 Kings xviii. 4). The story in fact may have arisen to explain the object of cult; in any case it illustrates a general belief.

According to primitive thought, rivers, lakes, springs and wells are commonly inhaled. Zoylethis, (mythologised to a serpent) stolons beside the fountains and palaces and temples (Crooke i. 45, cf. § 2 above), and one submarine realm in the Ganges was reputed to possess "the water of strength." In Palestine and Syria, where demoniacal beings are frequently associated with water, local opinion is sometimes uncertain whether the water is under the care of a jinn or of a patron-saint. Several springs are named after the serpent, and the sacred fountain of Ephca at Palmyra, whose guardian in the early Christian era was appointed by the god Yarhibol, is still tenanted by a female serpent-demon which can impede its flow. Jénus had the serpent (Greek "serpent") by the well En-Rogel (1 Kings i. 9) and also its Dragon Well (Neh. ii. 13); in modern times the curative Virgin's Spring or St Mary's Well has its dragon which, when awake, swallows the intermittent flow of the water. Serpents of the water are often healers (cf. § 3). A serpent in a lagoon near Gimbo-Amburi in Africa could cure madness; another, which haunted an Algerian well, embodied the soul of a Mahomedan saint and could cure sore eyes. This feature is especially intelligible when the waters have medicinal qualities. Among the southern Arabs the hot well of Masside was virtually a temple and the same serpent was worshipped by annual festivals in the sacred month Rajah. As recently as 1882 when the grand Llama of Tashlumpo was not relieved by the hot springs of Barchutian, religious services were held to propitiate the serpent-deities (Oldham, 203). Finally, in the sanctuary of Aesculapius healing came directly or indirectly as the patients dreamed, it appears from the harsleque of Aristophanes (Platus, 653 seq.) that they first hasted in the sacred spring.

The serpent of the water is also the serpent of the great sea upon which the earth rested. Sometimes the reptile lives in submarine infernal regions (with his wife, Crooke i. 43), and as the demon of the underworld it is sometimes the earth-shaker. The Greek demon that ruled Poseidon, god of seas, springs, was earth- quake god. To the great half-serpent monster Typhon were ascribed numerous springs; he was also the cause of earthquakes, and when he buried himself in the earth he formed the bed of the Syrian Orontes. This river, which was otherwise called Drakôn, Typhán or Ophites, is known at the present day as the "river of the rebel" (Nach El-Azî; Baudissin ii. 163). The watersport, sometimes taken for a long-tailed dragon, is a huge sea-serpent, according to the Wars of East Africa (Tylor i. 202 seq.). In ancient Persia the rainbow was the celestial serpent, and among some African tribes it is the subterranean serpent which controls the weather, bringing storms and clouds, and spilling the rain in its greedy thirst. An early Indian name of the Milky Way is "the path of the serpent" (Crooke i. 25), and a great dragon or serpent is often the cause of eclipses, according to the Brahmins of India, China and Persia. Man seems to be attracted by bathing in a sacred stream, or by ritual which includes the worship of the image of the snake-god (i. 22 seq.).

Again the serpent is often seen with the rainbow (Winzenritz, § 33), a fact whose range seems to be being indicated for the serpentine deity of the Samoan and Tonga natives which connects heaven and earth (Tylor ii. 309 seq.), and for the part the serpent plays in the folk-lore of the Polynesians.

The folk-lore of the Old and New World contains many examples of supernatural conception, an idea which is to be supplemented by the actual living belief (e.g. in Palestine) that supernatural beings can be fathers.

In Annam where water spirits may take the form of serpents or of human beings, two deified heroes were said to have been serpents born of a childless woman, who drank from a bowl of water into which a star had fallen. Leard (132) cites the medieval belief that the household snake (see § 9), if not propitiated, can prevent conception, and in Bombay barrenness is sometimes attributed to a serpent which has been kept in the house for his wife's sake. Hence the demon is laid to rest by burning the serpent-image with due funeral rites. In the sanctuary of Aesculapius at Epidaurus women were visited in their dreams by a serpent—the reputed father of the child that was born, and elsewhere Sicyon who had such a progenitor was regarded as the son of the divine healer. Similar also was the origin of Augustus in a temple of Apollo, the god who had his tame serpents in the grove on Epirus. Further, as the serpent—father of Alexander the Great came with a healing-root to cure his general Pompey (Cicero, De dr. ii. 66), so in India the story of a king of serpents and of a virgin (or, in a variant form, a widow) was succoured in warfare by his sire (Fergusson, 266). In India the serpent origin of kings and rulers is famous. The same idea meets us in China, Greece (e.g. Aegaeus, and Drakôn or Cecrops the first king of Athens), the Arabian dynasty of Edesa, the dynasty of Abyssinia, &c.; it is proper, therefore, to notice the serpent-symbol of royalty on the signs of the Rajahs of Chota Nagpur, the fire-spitting serpent which adorned the head of Egyptian Pharaohs, and the dragons which entwine King Arthur as he stands at the tomb of

1 See Crooke ii. 144; Tylor i. 294; A. B. Ellis, The Eide-Speaking Peoples, of the Stone Age (1890), pp. 47 seq.

2 See also R. Lasch, op. cit. iii. 97 sqq.

3 D. G. Brinton, Myths of the New World (1896), 135; A. S. Palmer, Nineteenth Century (Oct. 1900), pp. 634 seq.


5 The Babylonian story of Ea (see § 2) and the deluge finds an Indian parallel in the fish (or, otherwise a manifestation of Vishnu the many-headed serpent) which warned Mans. Among the Austrian gipsies the serpent is supposed to be able to swallow up prolonged storms; it may be that the serpent is used as a sign of the commencement or conclusion of great floods with chasms (e.g. Lucian, De dea Syria, § 12 seq.) are connected with the beliefs associating wells or springs with serpents and other occupants.

6 See E. S. Hartland, Primitive Paternity (1900); Frazer, Adonis, (Index, s.v. Conception), and Totemism and Endogamy (1910; Index, s.v. "Conception," "Snake").

7 E. S. Hartland, The Myth of Perseus (1894-1896), i. 121. In many instances springs or streams are credited with the power of removing barrenness which, in primitive thought, is often ascribed to supernatural malevolence. See Hartland, op. cit. i. 71 seq. 133.

8 Journal of the Bombay Royal As. Soc. ii. 188; for sacrifices and snake-deities to obtain offspring, see Crooke i. 226; Winzenritz, 298. In the Arabah Nights Solomon prescribes the flesh of two serpents for the children who were the king of Egypt and his vizier.

9 Frazer, Adonis, 72 (with other examples). The Inca hero Yupaqunqui had as father a divine being with serpent and lion attributes who revealed himself in a well (Hartland ii. 14 seq.).
the emperor Maximilian at Innsbruck. Sometimes the serpent stands at the head of the human race as the mother of all. This, following an old and still well supported interpretation of the name Eve (Genesis i. 24), was apparently also the belief of one branch of the Hebrews.

There are many instances of tribes or clans named after the serpent. These are not necessarily examples of nicknames, since a relationship between the two often shows itself in custom or belief. This feature sometimes applies, also, to cases where the clan does not bear the serpent name. In accordance with universal ideas of the reality of the "name," there are tribes who will refrain from mentioning the serpent. Also there are clans like the American Apache, among whom the word "snake" is known as a term for purely "superstitious" reasons. Where the reptile is venerated or feared it is usually inviolable, and among the Brass-men of the Niger the dangerous and destructive cobra was especially protected by an article in the diplomatic treaty of 1856 for the Bight of Biafra (Maclean, 522). The North American Indians fear lest their venerated rattlesnake should incite its kinsfolk to avenge any injury done to it, and when the Seminole Indians begged an English traveller to rid them of one of these troublesome intruders, they scratched him—as a matter of form—in order that the snake might bear away with it the kinsman's soul, and thus be free for purely "superstitious reasons."

These snake-tribes claim to be free from snake-bite, as also the ancient Psylli of Africa and the Ophiogenes ("serpent born") of Cyprus who were supposed to be able to cure others. This power (cf. above § 3 seq.) was claimed likewise by the Marsians of ancient Italy, and is still possessed by the snake-clan of Senegambia. In Kashmir the serpent-tribes became famous for medical skill in general, and they attributed this to the health-giving serpent (Ferguson, 1856). Moreover, the Psylli would test the legitimacy of their new-born by exposing them to serpents which would not harm those of pure birth, and a similar ordeal among the Ophiogenes of Asia Minor showed whether a man was really of their kin. This peculiar "kinship" between serpent-clans and serpents may be further illustrated from Senegambia, where a python is supposed to visit every child of the python-clan within eight days of birth, apparently as a sign of recognition. Also at Fernando Po there was an annual ceremony where children born within the year were made to touch the skin of a snake suspended on a tree in the public square. This next to the very general belief that the household snake was an agreeable guest, if not a guardian spirit. In Sweden, even in the 16th century, such snakes were virtually household gods and to hurt them was a deadly sin. Among the old Prussians they were invited to share an annual sacrificial meal, and their refusal was a bad sign. Mahomet, it is said, declared that the house-dwelling snakes were a kind of jinn, and the heathen Arabs invariably regarded them as the malevolent dervishes of heretical beings. Among the Romans every place had its genius familiars, equally in the form of a serpent—cf. the doubt of Aneas (Verg. Aen. v. 84 sqq.)—and household snakes were lodged and fed in vast numbers. They were the guardian-spirits of men and families, and stories are told of the way in which human life depended upon the safety of the reptile.

As a chthonic animal the serpent has often been regarded as an embodiment of the soul of the dead. Grimm's story of king Gunthram tells how, while he slept, his soul in serpent-form visited a mountain full of serpents (ix. 54), and Pater relates that a snake crawled from beneath the bed of Plotinus at the moment of the philosopher's death (cf. the Indian story, Oldham, 79). In Bali near Java, where the Naga-cult flourishes, a serpent is carried at the funeral ceremonies of the Kshatriya caste and burnt with the corpse. Among many African tribes the house-haunting serpents are the dead, who are therefore treated with respect and often fed with milk. But it does not appear that every venerated serpent was an incarnation or that every incarnation was revered or even tolerated. Among the Pygmies of Makonde the family-serpent is capable of almost unlimited powers for good or evil; it is part of the household property, but does not seem to be connected with ancestral cults.

In Greece, however, "the dead man became a chthonic daemon, potent for good or evil; his natural symbol as such, often figured on tombs, was the snake". The men of old time," as Plutarch observed, "associated the house snake most of all beasts with heroes," and in Photius the term "speckled hero" thus finds an explanation.

At the battle of Salamis the serpent which appeared among the ships was taken to be the hero Clytus. These heroes might become objects of cult and local divinities of healing; people would pass their tombs in awe, or resort thither for divination or for taking oaths. In Egypt not only are there serpents of the houses, but each quarter in Cairo had a serpent-guardian (Lane). This is said also of the villages and districts of Armenia, and Buddhist legends affirm it for India. The Satī (Suttee) wife immolated to accompany her deceased husband often became the guardian of the village, and on the Satī shrine a snake may be represented in the act of rising out of the masonry.

Among the Athenians one, at least, was primarily the guardian spirit of Athens, and at the Erechtheum (which is known to the 3rd century A.D.) was fed monthly with honey cakes; when, during the Persian War, it left the food untouched it was taken as a sign that the protectors had forsaken the city. At Lehadela in the shrine of Trophonios (to whom serpents were sacred) offerings of honey cakes were made to an oracular serpent. At Delphil a virgin superintended a similar oracle; and in the sacred grove of Apollo at Epirus a nude virgin-attendant brought forth sacrificial cakes to appease the serpent-goddess (Dioscurides, i. 391). The name of this goddess, which was also that of the Greek divinity of the Vegetable Kingdom (Dioscorides, ii. 142), was the Greek herpeton (herpēō, "I crawl"), the name given by the ancients to animals with no visible legs, and from it the name herpetoptera ("serpentine") was derived.

See also B. Deane, Serpent Worship, 245 seq.; Ferguson, 23; J. Grimm, Teutonic Mythology (1888), iv. 1490 seq.; Taylor ii. 240.

2. See also B. Deane, Serpent Worship, 245 seq., Ferguson, 23; J. Grimm, Teutonic Mythology (1888), iv. 1490 seq.; Taylor ii. 240.
offerings, and it was a sign of a plentiful year if they were accepted. So also at Lamuuvum, south of Rome, in a grove near the temple of the Argive Hera, sacred maidens were descended blindfolded once a year to bathe in the sacred lake, and if the serpent appeared, it was reported that they were pure and that the husbandmen would be fortunate.

On a Greek vase-painting the snake is the vehicle of the wrath of Athena, even as Chryse, another local "maidien," had a snake-guardian of a shrine which she sent against Philoctetes. Similarly Orestes in serpent-form would slay Clytaemnestra (Aeschylus, Choephor); the serpent is thus the avenging spirit of the deceased, the embodiment of Vengeance (cf. Acts xii. 4). To these characteristics of serpents and serpent-ghosts we must add the control of the weather. This was ascribed to the wisdom of the Indians and the impressions on the imagination of people of snakes among North American Indians. It is significant that in India the widely-distributed Nagapancami-festival occurs in the rainy season. We have seen how closely the serpent is associated with water generally (§ 3 seq.), and since we meet with the belief that waters will dry up when the serpent-occupant is killed (Bechuanas, Zulus), or that they will then remain impure thrown into their springs by causing storms (tribes of the Hindu-Kush), it is not surprising to find elaborate precautions for the propitiation of such powerful beings. Now, the fountains and springs of springs and waters which could only be used in return for regular human sacrifices. This is also the case of the island of Lesbos the dragon must receive a human victim twice a day. Curiously enough, an old authority tells us that the people of Lesbos were directed to throw a virgin into the sea to Possidon, and the hero who vainly tried to save her disappeared years later with a wonderful cup of gold (Hartland, iii. 43 seq., 79, see Athenaeus xi. 15). In the Chinese annals of Khotan in Cashgar, when a certain stream dried up, a female dragon declared that her husband had died; one of the royal grandees sacrificed himself to meet the want, the water flowed once more, and the "husband" of the stream returned (cf. Frazer, Golden Bough, ii. 233 seq. 2). There is a story from the island of Lesbos that a serpent-godling must receive a human victim twice a day. Curiously enough, an old authority tells us that the people of Lesbos were directed to throw a virgin into the sea to Poseidon, and the hero who vainly tried to save her disappeared years later with a wonderful cup of gold (Hartland, iii. 43 seq., 79, see Athenaeus xi. 15). In the Chinese annals of Khotan in Cashgar, when a certain stream dried up, a female dragon declared that her husband had died; one of the royal grandees sacrificed himself to meet the want, the water flowed once more, and the "husband" of the stream returned (cf. Frazer, Golden Bough, ii. 233 seq. 2).

An extremely rich dynasty in the Upper Niger was supposed to owe its wealth to a serpent in a well which was always kept attired as a bride; the cessation of the practice brought drought and sickness (Hartland iii. 57 seq.). In Mexico the half-serpent Ahuitzotl dropped into its pool helpless passers-by; however, their souls were supposed to go to the underworld and pass through the sun to the paradise of the supernatural beings, where they became gods. In India human sacrifice was actually conducted by a serpent of sorts, and the serpent-godlings were said to have a survival of this when snake-charmers, for a drop of blood from the finger of a first-born, will track the snakes which are guardians of treasure (Crooke ii. 135, 170 seq.). Indian tradition tells how removers have persuaded the people in the past to stop their human sacrifices to serpent-spirits (Fergusson, 64, Oldham, 101), and a survival may be recognized in parts of the N.W. Provinces when, at the Guru serpents' festival, women make vicarious offerings by throwing to Naga Deoth, the river demon, dolls which the village lads beat with long switches (Crooke i. 130). It is unnecessary to refer more fully to the evidence for former human sacrifice or to the possibilities of any argument from that evidence to the persistence; the grisly custom of our ancestors has been attested by comparatively recent observation in Mexico, Peru, Fiji and West Africa.

1 Sophoc. Phil. 1327; Harrison, Prot. 301 seq., 306 seq.
2 Compare the snake attributes of the Eryines; see Harrison, 217 seq., 733 seq.
3 Fergusson, 48 seq., 82, 257 seq.; Crooke, ii. 129; Oldham, 49-51, 121, 123, 129, 200; cf. Winternitz, 44, 259, 290.
4 Hartland, iii. 4, 10, seq., 28, 34, 84, 97, 99; Frazer, Paus. V. 45; Lectures on the Early History of the Kingship (1905), 183 seq., 192.
5 Oldham iii. 73 seq.; cf. also J. G. R. Forlong, Faiths of Man (1916), ii. 268.
6 See Deane, Serpent Worship, 245 seq. (Lionvia); and for more modern evidence, Maclean, 216, 219; Oldham, 49, 50, 100 seq.; and Hartland, 152 seq. Folklore adds to the survivals some of the customs for producing rain, e.g. bathing and drenching willing or unwilling victims, dipping holy images in water, and otherwise disturbing springs and fountains (Frazer, Golden Bough, i. 95 seq., A conspicuous feature in serpent-cults is the prominence of females. In India, in Behar, during August there is a colourless festival in which women, "wives of the snake," go round begging on behalf of the Brahmanas and the villages (Crooke ii. 138). Among the Nayers of Malabar at the ceremonies of the Pambantulle, the household serpent-deities show their benevolence by inspiring with oracles certain women who must be of perfect purity. In Travancore a serpent-god is the property of a family, the priests of a temple; the eldest female carries the image at the festival processions and must lead a celibate life (Oldham, 153 seq.). Far more noteworthy is the cult of the Python Dafh-ghi of Whydah, which after taking root in Dahomey, became the most remarkable of the serpent legends in the coast of Africa. This is the story of the python-deity who is god of wisdom and learning, and is also the protector of man (cf. § 2); he opened the eyes of the first human pair who were born blind. He is specially invoked on behalf of the king (the nominal head of the priesthood) and the crops, and a very close connexion was supposed to exist between the god's agency and all agricultural life. Initiated priests, after remaining silent in his temple for seven days, receive a new name and thus become ordained. They possess a knowledge of poisons and antidotes and thereby acquire considerable influence (cf. §§ 3, 8). Children who touch or are touched by one of the many temples which are to be found throughout Dahomey are said to be imbued with all the prerogatives and graces of the cult. Women who are touched become "possessed" by the god. In addition to his ministrant priestesses, the god has numerous "wives," who form a complete organization. Neither of these classes may marry, and the latter are specially sought at the season when the crops begin to sprout. These "wives" take part in licentious rites with the priests and male worshippers, and the python is the reputed father of the offspring (cf. § 7). Every snake of its kind receives the profound veneration of the native of Whydah, who salutes it as master, father, and mother, and after an offering of several hundred guilders, goes to visit the god himself; it is said that such snakes must be treated with every respect, and if they are enemy snakes, the young female native might be burned alive (cf. § 8). In 1890 a semblance of the penalty was still maintained: the offender being allowed to escape from a burning hut through a crowd of snake-worshippers armed with clubs; if discreet in his tribes, and lucky, he might reach running water and could purify himself there. On the day of public procession—the last took place in 1857 or 1858—naked priests and "wives" escorted the company with songs and dances; death was the penalty of those caught peering from their houses, and, apart from this, the natives feared leathen diseases which they held to be inspired by the god (cf. Frazer, Paus. V. 45). A pigment of the same nature (said to be imprinted by the god himself) is also the emblem of the festival of immemorial antiquity performed by women, cakes and pigs were thrown to serpents kept in caves and sacred to the corn-goddess Demeter, who, like the Bona Dea, was representative of the plant and the vegetable world; and to the worship of the corn god, it is the chief attribute of the goddess is added the attribute of wisdom, which is of great importance in later mythology.

12. The famous Dahomey cult.

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of the fertility of nature. Myth explained it as a celebration of the capture of Kore by Pluto. 1. The Maenads ("mad ones") or Bacche, the women attendants of Dionysus, with their snake-accoutrements, are only one of the various snake-features associated with the cult of a deity who was also a god of healing. The symbol of the Bacchic orgies was a consecrated serpent, and the snakes kept in the sacred cistae of the cult of Dionysus find a parallel among the sect of the Ophites where, at the sacramental rites, bread was offered to the living serpent and afterwards distributed among the worshippers. 2. Other developments may be illustrated from the cult of Aesculapius, which seems to have been merely a defiled ancestor, like the Egyptian Imhotep (below) or the interesting Indian healer Sokha Bāna (Crooke i. 147, li. 125 sq.). Introduced into Athens about 411 B.C., Aesculapius, from the fountain of the local cult of the serpent-god "Amykos" (Harrison, p. 346 seq.). In Laodicea he apparently replaced an old deity with serpent attributes. 3. In Egypt, he superseded the sage Imhotep at Memphis, and at the temple sacred to Aesculapius and Hygieia at Ptolemais the money-box has been found with the upper part in the form of a great snake. Finally among the Phoenicians he was identified with Eshmun, an earlier god of healing, who in turn was already closely associated with Dionysus and with Caellestis-Ashtar. 4.

For the retention of older cults under a new name, Mahomedanism sometimes provides an example. A forest-serpent of India receives a Mahomedan name (Oldham 126). But sometimes there is a contest between the new cult and the old. Thus Apollo has to fight the oracle serpent of Gaia, and it has been observed that where Apollo prevailed in Greek religion the serpent became a monster to be slain. 5. At Thebes—the Thebans were Serpentigenae—Apollo took the place of Cadmus, who, after killing the dragon which guarded a well and freeing the district, had ended by being turned into a serpent. This looks like the assumption of indigenous traits by a foreigner—cf. Aesculapius (§ 13)—much in the same way as Hercules has contests with serpents and dragons, becomes the patron of medicinal springs, and by marrying the serpent Echidna is the ancestor of the snake-worshipping Seythians. 6. But an ethnological tradition appears when Phorbas killed the serpent Ophiuss, freed Rhodes of snakes and obtained supremacy, or when Cychreus slew the dragon of Salamis and took the kingdom. 7. A story told by Herodotus (i. 78) admirably shows how the serpent as a child of earth was able to escape from his home. 

1. Harrison, 199 seq., 120 sqq., and Art. THESSALONICA. The rites indicate analogy with the地址，but from them the opportunity of escape allowed the victim. Plouton, also associated with Proserpine, the great mother-goddess, was patron of the chasms with mephitic vapours in the valley of the Macedon (see Frazer, Ancestor Worship, 304).

8. A Greek vase shows snake-bodied nymphs at the grape-harvest (Harrison 259 seq.), and in Egypt the harvest goddess Rannath had snake-torm (F. Pet. 5). A relief from the cathedral at Alexandria (Pet. 190, p. 26) shows a serpent-god revered by Taxius (king of Taxia), which was seen by Alexander the Great on his way to India, was identified by Greek writers with Dionysus or Bacchus. For the serpent in the cult of Saizius, see Harrison, Pref. 418, 535. A kind of sacramental communion with a snake is found among a Punjab snake-trike (Frazer, Golden Bough, ii. 1441 seq.; Punjab Notes and Queries, ii. 91). For this and other Parthian evidence, see W. M. Ramsay, Cities and Customs (1892), 50 sqq.

9. Ag. Zeit. xl. 140 seq. Adian (De anim. xvi. 36) mentions a huge serpent at the temple dedicated to Aesculapius. Serapis (Ostris-Anis) who supposedly sired the attributes of Aesculapius and of Pluto, god of the dead, sometimes had serpent-form, and even in the reign of Constantine popular belief connected the rise of the Nile with his agency (Frazier, Adonis, 308).


13. Cf. the similar view of serpent-conflicts in Persian tradition (Fergusson, 44 seq.), A. The story of the civilization of Cambodia, where the new comer marries the dragon's king's daughter (ib. 53).


15. Cf. the similar view of serpent-conflicts in Persian tradition (Fergusson, 44 seq.), A. The story of the civilization of Cambodia, where the new comer marries the dragon's king's daughter (ib. 53).

a type of indigenous peoples, and there was a tendency to represent the earlier conquered races as monsters and demons, though not necessarily unskilled (e.g. the Cretan Kourites), or to depict the conquerors of barbarians as the overthrow of serpents or serpent-like beings. 3. This obviously complicates the investigation of serpent-cults. Moreover, the serpent or dragon may have an opponent like the eagle (see Golbe d'Alvelli, 17), or a cosmical antagonist—the lightning, thunder or rain-god. Indra, the rain-god, slew with a thunderbolt Ahi or Vitru, who kept back the waters (Oldham, 32 sqq.); the thunder-god of the Troquois killed the subterranean serpent which fed on human flesh (Hartland iii. 151). 9. Or the victor is the sun: the Egyptian sun-god Re had his fire-spitting serpent to oppose his enemies, of which one was the cloud and storm serpent Apophis, while his myth shows how the serpent Echidna was warded off by the young Orpheus from the snake. It is impossible to trace a safe path through the complicated aetiological myths, the fragments of reshaped legend and tradition, or the adjustment of rival theologies. It remains to observe the overthrow or supersession of the serpent in Christian lands. At Axum in Abyssinia, where worship was divided between the serpent and the Mosaic Law, it is said that the great dragon was burst asunder by the prayers of Christian saints (c. A.D. 340; Ferguson, No. 260). At rock-65, in Phoenicia, the Phoebus Apollo, who was the patron of the sanctuary of Helios (the sun) sheltered the young Orpheus from the snake.

16. This festival is described (as seen in 1906) by Marian C. Harrison, Folklore, xviii. 1907, 187 sqq. A combination of a cult of the house-snake with that of the (Christian) saint of the house is said to prevail in modern Greece (J. C. Lawson, Modern Greek Religion, 1910, p. 260).
men waved great red snakes over their heads as they marched in procession. One may even recall the cult of Dahomey. Moreover, we find at Madagascar the procession of the god of fertility and healing, the patron of serpents who are the mistresses of the arts of life (Frazer, *Paus. v., 66 seq.)*.

Again, in a Bantu festival the men are arrayed with serpents, while the chief man has a gourd-boa or python round his neck and is carried or rides on a buffalo (Fergusson, 225). Again, among the Moquis of America, where the snake-clan claim descent from a woman who gave birth to snakes, the reptiles are freely handled at the "snake dances" which are performed partly to secure the fertility of the soil.¹

These last examples are important because they illustrate the immense difficulty of determining the true significance of any isolated piece of evidence. It cannot be assumed that known cults presuppose such cults; yet it may be inferred that they point to earlier, more perfect structures, to rites which perhaps linger only as a memory, and to conceptions and beliefs which have been elevated or modified by other religions. Hence also the impossibility of treating the present subject systematically. Apart from the more obvious characteristics of the serpent, little is known of the names of the original Memphis first men, who, the less poetic character shows itself markedly when it is associated with the treasuries and healing herbs of the earth, the produce of springs—and thence of all water—and the dust used when water is not available. Although there is a serpent-cult in the Batak, and in the Mexican Indians, it is clear that the serpent is not always an evil spirit; in Madagascar, the ghosts of the dead haunt certain localities, and, entering the bodies of passing women, are constantly reincarnated; the Black-snake clan of the Warramunga tribe embodies the spirits which the original ancestor had deposited by a certain creek.² On the other hand, the "rattlesnake" men of the Moqui are merely transformations and expect to return at death to their original reptile form (Maedemann, 357). It is another stage when one generation after another makes serpent gods and the deification of heroes involves yet another course of ideas. Here it is evident that some of the attributes of prominent serpent-gods will be transferred to human heroes; and we may illustrate one of the processes by which a common descent, and the common claim to be descended from the local godling is not to be confused with the Arunta type of reincarnation.³

Again, in part taken by women in serpent-lore other problems of primitive society and religion intermingle. For example, when one considers how often milk is used in the tending and propitiation of venerated snakes, it is noteworthy to find in Roman cult the myth of the ruddy and the offertory milk (§ 6), and its ancient daughter, Persephone, and it is also singular that many of the old goddesses of Greece have serpent attributes (Harrison).⁴ Now anthropological research has vividly shown that when it is serpent-lore, it is not so much the number of individuals that is assigned a prominent part in rites for the furtherance of growth and fertility. And the same thread of ideas seems to recur in the "wives" of the python Džugh-gbi (§ 12), the Shaki ceremonies (§ 15) and the increase of snakes in earthenware (Fergusson, 258 seq.), and, to a certain extent, in the provisioning of
deities or demons of serpent-type with consorts.⁴ There is everything a danger of misunderstanding isolated evidence, of wrongly classifying different motives, and of overlooking necessary links in the chain of argument. There is an obvious development from the serpent-god reptile to the deity or the devil, and that the original theriomorphic form is not at once forgotten can be seen in Zeus Melichios, Asclepius Amynos, in the Cretan snake-goddesses, or in the Buddhist topos illustrated by Ferguson. But naturally these are only the data of the most obvious and direct; and the exact attributes are combined, when, for example, Greek goddesses take the forms of birds as well as of snakes (Harrison, 322), or when the Aztec snake-deity Huitzilopochtli, like the Votan of the Mayas, has feathers (Maclean, 323). Thus it will be perceived that the subject of this article involves at every turn problems of the history of thought (cf. the similar development of the dog, *v. v., § 26 seq.*). There is ample material for purely comparative purposes and for an estimate both of the general fundamental ideas and of the artificially-developed secondary speculations; but for any scientific research it is necessary to observe the social, religious and historical conditions of the provenance and period of the evidence, and for this material is often insufficient. The references in this article furnish fuller information and are usually much better works for pursuing the subject more thoroughly. One may also consult the English and foreign journals devoted to folklore, comparative religion or anthropetry (especially the volumes of *Folklore*, *Index, s. n.*), and the articles in this *Encyclopedia* on the various departments of primitive religion. In general, works which endeavour to reduce the evidence for this fascinating subject to clear-cut systems are more useful for the data they provide than for the conclusions they draw. There are already attempts to fight against the unscientific studies of "ophialogy" and especially against "that portentious nonsense called the 'arkite symbology'" (see E. B. Tylor's remarks, *Primitive Culture*, 4th ed., 1894).

SERPUKHOV, a town of Russia, in the government of Moscow, 62 m. by rail S. of the city of Moscow. The population in 1884 was 224,420, and 24,456 in 1897. Built on high cliffs on both banks of the river Nara, 3 m. above its confluence with the Oka, Serpukhov is an important manufacturing and commercial town. Its manufactories produce cotton and woolen stuffs, paper, leather, chemicals and candles. Petty trade is also a considerable source of income. Serpukhov is noted for its pottery, faience ware, and earthenware and porcelain. The manufactured goods of Serpukhov are sent mostly by rail to the towns of Tiflis, Orenburg, and the Ukraine, while large quantities of grain, hemp and timber, brought from the east down the Oka, are discharged at Serpukhov and sent on to Moscow and St. Petersburg. The cathedral (1380) was rebuilt in the 18th century; the old fortress has almost entirely disappeared. Serpukhov is one of the oldest towns of the province of Moscow; in 1326 it was a nearly independent principality under the protcom of Ivan. In 1506 Ivan III captured Serpukhov and was often attacked by the Tatars; the Mongol prince Toktamish plundered it in 1352, and the Lithuanians in 1410. In 1556 the town was strongly fortified, so that fifteen years later it was able to resist the Mongols. Its commercial importance dates from the 18th century.

SERRANO Y DOMINGUEZ, FRANCISCO, DUKE DE LA TORRE AND COUNT OF SAN ANTONIO (1810–1883). Spanish marshal and statesman, was born in the island of Leon at Cadiz on the 17th of December 1810. His father was a general officer and a Liberal. Serrano began his military career in the Peninsula in 1822, and in 1823 in the lancers of Sagunto, passed into the carabineros in 1829, and when the Carlist agitation began in 1833 he exchanged into the cuirassiers. He formed part of the escort which accompanied Don Carlos, the first pretender and brother of Ferdinand VII, to the frontier of Portugal. As

Here the transition from mother-right to patriarchy probably began to be taken into consideration. For the view that the serpent as a genix or daemon may be replaced by the horned serpent, see [296 seq.]. The chief guardian of the soil and mother-right is baptism (including its deity), and involves the belief that such corporeal bodies never die (cf. even the Roman conception of the family, Maine, op. cit. 197 seq.).


2 Here one will note the prevalence of the ideas of "mother earth," and also the association in higher religions of chthonic powers with the serpent, so, e.g., the winds (viz. Boreas in Greece, cf. Harrison, *Prol. 68, 181,* subterranean gods (for Assyria, cf. *Zeit. f. Assyry.* 1894 p. 116, and for the Finns, Fergusson, 250 seq.). For the serpent (sometimes with anthropomorphic hints (§ 6, its essential view of the life of the serpent-gods and the deification of heroes involves yet another course of ideas. Here it is evident that some of the attributes of prominent serpent-gods will be transferred to human heroes; and we may illustrate one of the processes by which a common descent, and the common claim to be descended from the local godling is not to be confused with the Arunta type of reincarnation.⁴


4 There appears to be a fundamental inclination towards ideas of rebirth and reincarnation (see F. B. Jevons, *Intro. to Study of Cmp. Religion, 1908, p. 59 seq., 59 seq.*); it would seem to be widespread among the primitive peoples and especially among the Australian Aborigines (Fergusson, 258 seq.), and, to a certain extent, in the providing of

5 One may note the Indian local saint Gága, who punishes by snake-fire and can cure his worshippers (similarly the Egyptian Mert-seger, the serpent-patroness of the Theban necropolis and the serpent, the saviour-god of the Phrygian Hierapolis; he is represented on horseback descending to the infernal regions; over him the angel Meleager holds up the outstretched hand with which he holds in his hands (Crocket, i. 212 seq.). But how many different factors may not have influenced the representation!

6 SERPUKHOV—SERRANO Y DOMINGUEZ

Serrano y Dominguez, Francisco, Duke de la Torre and Count of San Antonio (1810–1883). Spanish marshal and statesman, was born in the island of Leon at Cadiz on the 17th of December 1810. His father was a general officer and a Liberal. Serrano began his military career in the Peninsula in 1822, and in 1823 in the lancers of Sagunto, passed into the carabineros in 1829, and when the Carlist agitation began in 1833 he exchanged into the cuirassiers. He formed part of the escort which accompanied Don Carlos, the first pretender and brother of Ferdinand VII, to the frontier of Portugal. As
alide-de-camp of Espoz y Mina, then under the orders of Generals Cordoba and Espartero, in the armies of Queen Isabella, Serrano took such an active part in the Carlist War, as to earn in 1843 that he rose from the rank of captain to that of brigadier-general. His services obtained for him the Cross of San Fernando and many medals. In 1830 he was elected a member of Cortes for the first time by Malaga, and in 1840 he was made a general of division and commander of the district of Valencia, which he relinquished to take his seat in congress. From that day Serrano became one of the chief military politicians of Spain. In 1841 he helped Espartero to overthrow the regency of Queen Christina; in 1843 at Barcelona he made a pronunciamiento against Espartero, resigned his post of minister of war, was convicted of conspiring against the state and was sent to prison in Santo Domingo, but he was the first victor in the battles of the moderate and limited reforms in the colony. On his return to Spain he was made duke de la Torre, grandee of the first class, and minister of foreign affairs by O'Donnell. Serrano gallantly exposed his life to help O'Donnell quell the formidable insurrection of the 22nd of June 1846 at Madrid, and was rewarded with the Golden Fleece. At the death of O'Donnell, he became the chief of the Union Liberal, and as president of the senate he assisted Rios Rosas to draw up a petition to Queen Isabella against her moderado ministers, for which both were exiled. Nothing daunted, Serrano began to conspire with the duke of Montpensier, Prim and Sagasta; and on the 7th of July 1868 Serrano Bravo had Serrano and other generals arrested and taken to the Canary Isles. There Serrano remained until Admiral Topete sent a steamer to bring him to Cadiz on the 18th of September of the same year. On landing he signed the manifesto of the revolution with Prim, Topete, Sagasta, Martins and others, and accepted the command of the revolutionary army, with which he routed the troops of Queen Isabella under the orders of the marquis of Novaliches at the bridge of Alcolea. The queen fled to France and was replaced by the moderate ministry, which formed a Provisional Government, convoked the Cortes Constituyentes in February 1869, and was appointed successively president of the executive and regent. He acted very impartially as a ruler, respecting the liberty of action of the Cortes and cabinets, and bowing to their selection of Amadeus of Savoy, though he would have preferred Montpensier. As soon as Amadeus reached Madrid, after the death of Prim, Serrano consented to form a coalition cabinet, but it kept together only a few months. Serrano resigned, and took the command of the Italian king's army against the Carlists in North Spain. He tried to form one more cabinet under King Amadeus, but again resigned when that monarch declined to give his ministers dictatorial powers and sent for Ruiz Zorrilla, whose mistakes led to the abdication of Amadeus on the 11th of February 1873. Serrano would have nothing to do with the federal republic, and even conspired with other generals and politicians to overthrow it on the 23rd of April 1873; but having failed, he had to go to France until General Favia, on the eve of his coup d'état of the 3rd of January 1874, sent for him to take the head of affairs. Serrano resigned once more, but the title of president of the executive; tried first a coalition cabinet, in which Martin and Sagasta soon quarrelled, then formed a cabinet presided over by Sagasta, which, however, proved unable to cope with the military and political agitation that brought about the restoration of the Bourbons by another pronunciamiento at the end of December 1874. During the eleven months he remained in office Serrano devoted his attention chiefly to the reorganization of finance, the renewal of relations with American and European powers, and the suppression of revolt. After the Restoration, Serrano spent some time in France, returned to Madrid in 1876, attended palace receptions, took his seat as a senator in the senate, croquetted a little with Sagasta in 1881, and finally gave his open support to the formation of a dynastic Left with a democratic programme. He defended by his own nephew, General Lopez Dominguez. He died in Madrid on the 26th of November 1885, twenty-four hours after Alfonso XII.

(A.E.H.)

**SERRES, OLIVIA** (1772-1834), an English impostor, who claimed the title of Princess Olive of Cumberland, was born at Warwick on the 3rd of April 1772. She was the daughter of Robert Wilmot, a house-painter in that town, who subsequently married a widow of moderate circumstances. She was the eldest daughter of John Thomas Serres (1759-1825), marine painter to George III., but in 1804 separated from him. She then devoted herself to painting and literature, producing a novel, some poems and a memoir of her uncle, the Rev. Dr Wilmot, in which she endeavoured to prove that he was the author of the *Letters of Junius*. In 1817, in a petition to George III., she put forward a claim to be the natural daughter of Henry Frederick, duke of Cumberland, the king's brother, and in 1820, after the death of George III., claimed to be the duke's legitimate daughter. In 1823 she took her seat as a solicitress in the House of Commons. Olive of Cumberland, placed the royal arms on her carriage and dressed her servants in the royal liveries. Her story represented that her mother was the issue of a secret marriage between Dr Wilmot and the princess Poniatowski, sister of Stanislaus, king of Poland, and that she had married the duke of Cumberland in 1767 at the London house of a nobleman. She herself, ten days after her birth, was, she alleged, taken from her mother, and substituted for the still-born child of Robert Wilmot. Mrs Serres's claim was supported by documents, and she bore sufficient resemblance to her alleged father to be able to impose on the numerous class of persons to whom any item of so-called secret history is attractive. In 1823 Sir Robert Peel, then Home Secretary, speaking in parliament, declared her claims unfounded, and her husband, who had never given her pretensions any support, expressly denied her belief in them in his will. Mrs Serres died on the 21st of November 1834, leaving two daughters. The eldest, who married Antony Ryves, a portrait painter, upheld her mother's claims and styled herself Princess Lavinia of Cumberland. In 1866 she took her case into court, producing all the documents on which her mother had relied, but the jury, after acrimonious discussion with the juryman who had been a strong supporter of Marius, unanimously declared the signatures to be forgeries. Mrs Serres's pretensions were probably the result of an absurd vanity. Between 1807 and 1815 she had managed to make the acquaintance of some members of the Royal family, and from this time onwards seems to have been obsessed with the idea of raising herself, at all costs, to their social level. The tale once invented, she brooded so continuously over it that she probably ended by believing it herself.

See W. J. Thomas, Hannah Lightfoot, and Dr Wilmot's Polish Princess (London, 1867); *Princess of Cumberland's Statement to the English Nation*, Annual Register (1866), Case of Ryves v. the Attorney-General.

**SERTORIUS, QUINTUS.** Roman statesman and general, was a native of Nursia in Sabine territory. After acquiring some reputation in Rome as a jurist and orator, he entered upon a military career. He served under Marius in 102 B.C. at the great battle of Aquae Sextiae (mod. Aix) in which the Teutones were decisively defeated. In 97 he was serving in Spain. In 91 he was quaestor in Cisalpine Gaul, and on his return to Rome he would have been elected to the tribuneship but for the decided objections of Sulla. He now declared in the reign of Marius and a democratic party, though of Marius himself as a man he had the worst opinion. He must have been a consenting party to the hideous massacres of Marius and Cinna in 87, though he seems to have done what he could to mitigate their horrors. On Sulla's return from the East in 83, Sertorius went to Spain, where he represented the Marian or democratic party, but without receiving any definite commission or appointment. Having been
obliged to withdraw to Africa in consequence of the advance of the forces of Sulla over the Pyrenees, he carried on a campaign in Mauretania, in which he defeated one of Sulla's generals and captured Tingis (Tanger). This success recommended him to the party of Spain, more particularly to the Spanish tribes in the peninsula, and Roman generals and governors of Sulla's party had plundered and oppressed. Brave and kindly, and gifted with a rough 'telling eloquence, Sertorius was just the man to impress them favourably, and the native militia, which he organized, spoke of him as "the new Hannibal." Many Roman refugees and deserters joined him, and with these and his Spanish volunteers he completely defeated one of Sulla's generals and drove Q. Caecilius Metellus Pius, who had been specially sent against him from Rome, out of Lusitania, orFurther Spain as the Romans called it. Sertorius showed much of his spirit in his statesmanlike ability. His object was to build up a stable government in the country with the consent and co-operation of the people, whom he wished to civilize after the Roman model. He established a senate of 300 members, drawn from Roman emigrants, with probably a sprinkling of the best Spaniards, and surrounded himself with a Spanish bodyguard. For the children of the chief native families he provided a school at Osca (Huesca), where they received a Roman education and even adopted the dress of Roman youths. Strict and severe as he was with his soldiers, he was particularly considerate to the people generally, and made every effort for his benefit. It seems clear that he had a peculiar gift for evoking the enthusiasm of rude tribes, and we can well understand how the famous white fawn, a present from one of the natives, which was his constant companion and was supposed to communicate to him the advice of the goddess Diana, promoted his popularity. For six years he may be said to have really ruled Spain. In 77 he was joined by M. Perpenna (or Perpenna) Vento from Rome, with a following of Roman nobles, and in the same year the great Pompey (q.e.) was sent to conquer him. Sertorius proved himself the stronger of the two, and for this defence of their united forces on one occasion near Saguntum. Pompey wrote to Rome for reinforcements, without which, he said, he and Metellus would be driven out of Spain. Sertorius was in league with the pirates in the Mediterranean, was negotiating with the formidable Mithrades, and was in communication with the insurgent slaves in Italy. But owing to jealousies among the Roman officers who served under him and the Spaniards of higher rank he could not maintain his position, and his influence over the native tribes slipped away from him, though he won victories to the last. In 72 he was assassinated at the request of Perpenna, it seems, being the chief instigator of the deed.

See Plutarch's lives of Sertorius and Pompey: Appian, Bell. civ. and Hispanica; the fragments of Sallust: Dio Cassius xxxvi. 25, 27, 28, xxlv. 47; Vell. Pat. ii. 25, 29, 30, 90.

SERURIER, JEANNE MATHIEU PHILIBERT, COMTE (1724-1810), French soldier, was born at Laon of middle-class parentage. After being lieutenant of the Laon militia, he entered the royal army, and served in the campaigns in Hanover (1759), Portugal (1762) and Corsica (1771). At the beginning of the Revolution he was arrested on suspicion of having joined the rebels, but was released when it was found that he had been colonel, brigadier-general and finally general of division. He fought under Kellermann and B. L. J. Schérer in the army of the Alps in 1795, and under Bonaparte in Italy at Vico, Mondovì, Castiglione and Mantua. Besides his military qualities, he showed great administrative talent in governing Venice (1797) and Lucca (1798). He helped Bonaparte in the coups d'état of 18 Brumaire, and had a brilliant career under the empire, when he was made senator, count, marshal, and governor of the palace of the Invalides. In 1814, however, he voted for the peace treaty with Napoleon, and under the Restoration was made a peer of France. He was dismissed from all his posts for having joined Napoleon during the Hundred Days, and died in retirement.


SERVAL (Felis serval), an African wildcat, ranging from Algeria to the Cape. It is of medium size, with long limbs, short tail, and tawney fur spotted with black; the head and body may measure 40 in. and the tail 16 in. Messrs Nicolls and Elliot, joint authors of The Sportsman in South Africa, state that the serval is fairly common in South Central Africa, frequenting the thick bush near rivers, and preying on the smaller antelopes, guinea-fowls and francolins. The mantles made from its skin are reserved for chiefs and dignitaries of native tribes. Serval kittens can be tamed with little trouble, but are difficult to rear.

SERVAN, JOSEPH MICHEL ANTOINE (1737-1807), French publicist, was born at Romans (Dauphiné) on the 3rd of November 1737. After studying law he was appointed avocat-général at Toulon, but at the age of twenty-seven, in his Discours sur la justice criminelle (1766) he made an eloquent protest against legal abuses and the severity of the criminal code. In 1767 he gained great repute by his defence of a Protestant woman who, as a result of the revocation of the Edict of Nantes, had been abandoned by her Catholic husband. In 1772, however, on the parliament refusing to accede to his request that a present made by a grand seigneur to a singer should be annulled on the ground of immorality, he resigned, and went into retirement. He excused himself on the score of ill-health from sitting in the States General of 1789, to which he had been elected deputy, and retired to his house at Toulon. During the Revolution his writings were collected together, under the title of Réflexions sur les Confessions de J.-J. Rousseau (1783) and Essai sur la formation des assemblées nationales, provinciales, et municipales (1789). His Œuvres choisies and Œuvres inédites have been published by De Portes. His brother JOSEPH SERVAN DE GERBÉY (1741-1808) was war minister in the Girondist ministry of 1792.


SERVAN (or SERVANDO KNOWN AS SERVANDON), JEAN NICOLAS (1655-1766), French decorator, architect and scene-painter, was born on the 2nd of May 1655. He was the son of a carriage-builder at Lyons. From 1724 to 1742 he was director of decorations at the Paris Opera, at that time situated in a wing of the Palais-Royal. His activity was considerable, whether as a painter or as an inventor of scenic contrivances for fêtes at the marriage of royal personages. He also designed the decorations for altars, and the façade for the church of Saint Sulpice in Paris. He died in Paris on the 10th of January 1766. His writings include Description oblige de Venitiens de la Compagnie de France, and La Relation de la représentation de la fête enchanterie sur le théâtre des Tuileries, le 31 mars 1754.

SERVETUS, MICHEL [MIGUEL SERVETO] (1511-1553), physician and polemic, was born in 1511 at Tudela in Navarre, his father being Hernando Villanueva, a notary of good family in Aragon. His surname is given by himself as "Serveto" in his early works, "ser Michael Serveto, alias Reues." Later he Latinized it "Servetus"; when writing French (1553) he signs "Michel Servetetus." It is probable that he was of the same family as the Spanish ecclesiastic Marco Antonio Serveto (d. 1598), and the author of Leibniz's Of Servetus.

Villanueva, in Huesca (Latassa, Bibl. nuen, 1798, l. 600). At this place is the traditional mansion of the family, and in the parish church the family altar with the family arms (Christian Life, 29th Sept. 1888). Servetus at Geneva makes Villanueva his birthplace, assigning it to the adjoining diocese of Lerida. His later adopted surname, Villanosus or de Villeneuve, was no mere pseudonym since he followed his father's example. Of his education we only know that his father sent him to study law at Toulouse, where he first became acquainted with the Bible (1538). From 1555 he found a patron in Juan de Quintana (1534), a Franciscan. This date rests on his own testimony (both at Vienna and Geneva) and that of Calvin. An isolated passage of the Geneva testimony may be cited in favour of 1506.

The form Servet first appears in a letter of Ocelomadius to the senato of Basel (1531) and is never used by himself. Mosheim's "Servede" is an imaginary form.
promoted in 1530 to be confessor to Charles V. In the train of
Quintana he witnessed at Bologna the double coronation of
Charles in February 1530, visited Augsburg, and perhaps saw
Luther at Coburg. The spectacle of the deprecation of the pope
at Bologna impressed him strongly in an anti-papal direction.
He left Quintana, visited Lyons and Geneva, repaired to Oecolom-
padus at Basel, and pushed on to Bucer and Capito at Strass-
burg. Considerable attention was attracted by his first public-
ation, De Trinitatis erroribus (1531, printed by John Setzer at
Hagenau). It is crude, but original and earnest, and shows a
wide range of reading very remarkable in so young a man.
Melanchthon writes "Servetum multum lego." Quintana,
who describes him as di grandissima ingegno, and gran sofisto,
thought he was a maestro (a challenger), and Servetus generally
to be his (H. Lämmter, Monumenta Vaticana, 1886, 109).
The essay was followed in 1532 by a revised presentation of his views
in dialogue form. We next find him at Lyons (1533) editing
scientific works for the Trechsel firm, adopting the "Villano-
vanus" surname, which he constantly used till the year of
his death. At Lyons he found a new patron in Dr Symphorien
Champier (Campegius) (1472-1539), whose profession he resolved
to follow. Resorting (1536) to Paris, he studied medicine under
Johann Günther, Jacques Dubois and Jean Fernel. It was in
1536, when Calvin was on a hurried visit to Paris, that Servetus
first met him. In 1538, when he went to Spain, it was to Geneva
as he himself says, proposed to set him right on theological points. Servetus succeeded
Vesalius as assistant to Günther, who extols his general culture,
and notes his skill in dissection, and ranks him as the second
in knowledge of Galen. He graduated in art, and claims to have
graduated in medicine (of this there is no record at Paris),
published six lectures on "syrops" (the most popular of his
works), lectured on geometry and "astrology" (from a medical
point of view) and defended by counsel a suit brought against him
(March 1538) by the medical faculty on the ground of his astro-
logical views. In 1538 he was a medical student at Lyons (there
as a university student on the 14th of December 1537 as
Michael Villanova) to his father (then resident at San Gil),
explains his removal from Paris, early in September, in conse-
quence of the death (8th August) of his master (el señor mi
maestro), says he is studying theology and Hebrew, and proposes
to return to Paris when peace is proclaimed. After this he
practised medicine for a short time at Avignon, and for a longer
period at Charleu (where he contemplated marriage, but was
deterred by a physical impediment). In September 1540 he
entered himself for further study in the medical school at Mont-
pellier.
Among attendants on his Paris lectures was Pierre Paulmier,
since 1528 archbishop of Vienne. Paulmier now invited Servet-
us to Vienne as his confidential physician. He thus acted for
twelve years (1541-1553), making money by his practice, and also
by renewed editorial work for the Lyons publishers—work in
which he constantly displayed his passion for original discovery
in all departments. Outwardly he was a conforming Catholic;
privately he pursued his theological speculations. It is probable
that in 1541 he had been rebaptised (he maintained the duty of
adult baptism at the age of thirty). Late in 1542, or very early
in 1546, he opened a fatal correspondence with Calvin, forwarding
the manuscript of a much-enlarged revision of his theological
tracts and expressing a wish to visit France. Calvin replied
(13th February 1546) in a letter now lost; in which, he says,
he expressed himself "plus durem que ma constumne ne porte." On the same day he wrote to Guillaume Farel, "si
veneri, modo valent mea autoritas, vivere exunam patria," and to Pierre Viret in the same terms. Evidently
Servetus had warning that if he went to France it was at his
peril. Writing to Abel Pouppin (in or about 1547) he complains
that Calvin would not return his manuscript, and adds, "mit
ob eam rem morientum esse certo sclo." The volume of theo-
logical tracts, again recast, was declined by two Basel publishers,
Jean Frelion (at Calvin's instance) and Marrinus, but an edition
of 1000 copies was secretly printed at Vienna by Baltasar
Armollet. Ready by the 3rd of January 1553, the bulk of the
imprimatur was privately consigned to Lyons and Frankfurt
for the Easter market. On 26th February, a letter, enclosing a sheet
of the printed book, and revealing the secret of its authorship,
was written from Geneva by Guillaume H. C. de Teyre, formerly
teacher in Lyons, to his cousin Antoine Arneys in that city.
The letter bears no sign of dictation by Calvin (who must, how-
ever, have furnished the enclosed sheet), and de Teyre's part may
be explained by an old grudge of his against the Lyons books-
sellers. For a subsequent letter Calvin furnished (reluctantly,
according to de Teyre) samples of Servetus's handwriting, expressly
to secure his confession. The inquisitor-general at Lyons,
Guillaume de Morlay ("Dominius") of Rochesia) took up the case
on 12th March; Servetus was interrogated on 16th March, arrested
on 4th April, and examined on the two following days. His
defence was that, in correspondence with Calvin, he had assumed
the character of Servetus for purposes of discussion. At 4 A.M.
on 7th April he escaped from his prison, evidently by connivance.
He took the road for Spain, but turned back in fear of arrest.
How he spent the next four months is not known. His own
account is that he never left France; Calvin believed he was
wandering in the North of Italy; the absurd suggestion that he
combined a visit to Spain with a tour of the Holy Land was done
by his critics, not by himself. Servetus was brought to trial in
Frankfort (Hist. de Genève, 1680). On Saturday the 12th of August he
rode into Lyonset, a village on the French side of Geneva. Next
morning, having sold his horse, he walked into Geneva, put up at
"the Rose," and asked for a boat to take him towards Zürich on
his way to Naples. Finding he could not get the boat till next day
(Monday) he attended afternoon service (he would probably
have got into trouble if he had not done so), was recognized at church
by quelques frères, and immediately arrested. The process against
him (Nicholas de la Fontaine being in the first instance the
nominal prosecutor) lasted from 14th August to 26th October,
when he was convicted for "use of a heretic book." He was
condemned to death (Oct. 27, 1553). Calvin would have him
beheaded. Meanwhile the civil tribunal at Vienne had ordered
(17th June) that he be fined and burned alive; the sentence of the ecclesiastical tribunal at Vienne was delayed
till 23rd December. Jacques Chambier, a priest in Servetus's
confidence, was condemned to three years' imprisonment in
Vienne. The only likeness of Servetus is a small copperplate
by C. Sichem, 1607 (often reproduced); the original is not
known and the authenticity is uncertain. In 1576 a statue of
Servetus was erected by Pierre Gonzales de Velasco in his house
in Innsbruck, and in 1580 a statue was erected at Trinite,
where a notable exposition was held. In 1607 a statue
was put up at Champel; in 1679 a statue was erected in Paris (Place de la Mairie du XIVth Arrondissement); another
is at Armitane; another was prepared (1700) for erection at
Vienne.

The religious views of Servetus, marked by strong individuality,
are not easily described in terms of current systems. His denial of
the tripersonality of the Godhead and the eternity of the Son, along
with his antinazarian, made his system abhorrent to Catholics and
Protestants alike, in spite of his intense Biblicalism, his passionate
devotion to the person of Christ, and his Christocentric scheme of
the universe. His earliest theological writings, in which he approxi-
mates to the views of F. Socinus, are better known than his ripper
work. He has been classed with Arians, but he endorses in his own
way the homousian formula, and denounces Arius as "Christi
glorie incasuscimus." He has had many critics, some apologists
(e.g. Postel and Lincarius), few followers. The fifteen condemning
clauses, prefixing the sentence at Geneva, set forth in detail that he
was guilty of heresies, blasphemously expressed, against the founda-
tion of the Christian religion. An instance of his injurious language
was found in his use of the term "trinaries" to denote "ceux qui
creyent en la Trinité." No law, current in Geneva, has ever been
applied to Servetus. As he was not practicing the law, theProc-
cureur-general, put it to Servetus that his legal education must
have warned him of the provisions of the code of Justinian to this
effect; but in 1553 all the old laws on the subject of religion had been
set aside by the statute against heretics; the mayor of Geneva,
and in 1543 being banishment. The Swiss churches, while agreeing
to condemn Servetus, say nothing of capital punishment in their
letters of advice. The extinct law seems to have been revived for
the occasion. A valuable controversy followed on the
question of executing heretics, in which Beza (for), Mino Celsi (against),

1 Beza incorrectly makes Servetus the challenger, and the date

1534.
and several caustic anonymous writers (especially Castello) took part.

The following is a list of his writings:

1. De Trinitatis erroribus libri septem (Haganau, 1531).
2. Triplici Triunitatis libri tres (Haganau, 1532); two reprints of 1 and 2, to pass for originals; No. 1 in Dutch version (1620), by Regnier Telle.
3. Claudii Alexandri geographiae narrations libri octo; ex Biblioth. Frecceari translatio, sed ad Graeco et prisco exemplaria a Michaelo Villanovano jam primum recogniti. Adiecta insuper ad eodem scholia, &c. Lyons, Melchior and Caspar Trechsel (1535) and ed. Lyons, Melchior, &c. à Porta (1542), &c. (1542 fol.; printed by Caspar Trechsel at Vienna); on this work Tullin founds his high estimate of Servetus as a comparative geographer; the passage in- criminating his activity in the Society of Moses is from Lombardy; the accounts of the language and character of modern nations show original observation.

4. In Leonardum Puchiam apologia. Autore Michaelo Villanovano. Ex officina Haugeneana (1536), reprinted, Lyons (1548), and later Venice (1589), the medicus is Jean Tagault, who interrupted Servetus's lectures on astronomy during the toy burghers' search for the sun. (See 6.)

5. Syruperum universa ratio, &c. (Paris, 1537); four subsequent editions; latest, Venice, 1548 (six lectures on digestion; syrups treated in third lecture).

6. Michaelis Villanovani in quaedam medicum apologeticam dictationem pro astrologia (Paris, 1538; reprinted, Berlin, 1880); the medicus is Jean Tagault, who interrupted Servetus's lectures on astronomy during the toy burghers' search for the sun. (See 6.)

7. Biblia Sacra ex sanctis Pagnini translatione... recognita et scholios illustrata, &c. (Lyons, Hugo à Porta, 1542, fol.), remarkable for its theory of prophecy, explained in the preface and illustrated in the notes.

8. D'Artigy says Servetus fit les arguments to a Spanish version of the Summa of Aquinas; this, and divers traités de grammaire from Latin into Spanish have not been identified.

9. Quixantia (1553) in Latin, and Latin copies in Vienna and Paris; a copy in Edinburgh University Library is complete except that the missing first sixteen pages are replaced by a transcript from the original Latin manuscript; this transcript, following the print (this supplementary manuscript was reproduced by photography, 1909); a transcript of other portions of the draft is in the Bibl. Nat., Paris; partly reprinted (London, 1723), (copies in London and Paris); reprinted (page for page) from the Vienna copy (Nuremberg, Rau, 1570); German version, by D. Spina, in Wiesbaden, 1822-28, 1870; the last section Apologia to Melanchthon, is given in the original Latin. The book is not strictly anonymous; the initials M.S.V. are given at the end; the name Servetus on p. 199. The oft-quoted description of the pulmonary circulation (which occurs in the toy burghers' search for the sun) is p. 169; it has escaped Sigmond that Servetus had an idea of the composition of the blood, and of all the vessels for his researches was the dual form of the Hebrew words for blood, water, &c. Two treatises, Desiderius (ante 1542) and De tribus impotensibus (1548), have been wrongly ascribed to Servetus. Most of his few remaining letters are printed by Mosheim; his letter from Louvain was dispatched in duplicate to evade capture, but both were seized; one is in the Record Office (U. 140), the other in the British Museum (Cotton MSS., Calia B 6).

AUTHORITIES.—The literature relating to Servetus is very large; a bibliography is in A. v. d. Linde, Michael Servet (1891); the following are among the important pieces:

Calvin’s Defensio orthodoxae fidei (1554), in French, Déclaration pour mainteiner, &c. (1554), is the source of prevalent misconceptions as to Servetus’s opinions, and attitude on his trial. De la Roche’s Historical Account in Mem. of Lit. (1711-1712) in French, Biblioth. Amst., is followed by An Imperatorial History, &c. (1724, said to be by Sir Benjamin or Nathaniel Hodges). Allwood’s Historia, &c. (1728) materials published by A. D’Artigy, Nouveau manuscrits et restes de la vie de M. Servet (1554), &c. (1583, fol.; printed in Paris, 1602; &c. (1583, fol; printed in Paris, 1602; &c.). Chauffeune’s valuable article, Nouv. Dict. historique, iv. (1556), fol. (in English, by Rev. James Yair, 1771) makes no use of Mosheim’s latest edition, De la Roche’s Historia, or F. Seclin, bk. i. (1839), uses all available material up to date. The investigations of H. Tullin, M.D. (forty separate articles in various journals, 1874 to 1885) have thrown much light, mixed with some conjecture. The records of the Geneva trial, first published by De la Roche, reproduced in Ritter’s Relation &c. (1844), and elsewhere, are best given in vol. viii. (1879) of the Corpus reformatorum edition of Calvin’s works; Roget’s His. du peuple de Geneve, &c. (1879), has a good account of both trials. The passage on the pulmonary circulation, first noticed by W. Wotton, Reflections upon Anc. and Mod. Learning (1664), has given rise to a literature of its own; see, especially, Tullin’s De Enfiteusis de Blutkreislauf, &c. (1879); Huxley, in Formgny Rev. (February 1878); Tullin’s Kritische Bemerkungen über Harvey und seine Vorgänger (1882). Other physiological speculations of Servetus are noted by G. Sigmond, Unnotices Theories of Servetus (1826). The best study of Servetus as a theologian is Tullin’s Lehrzusammen M. Servets, 6 vols., 1875-1879; Ph. B. de M. Serveti doctrine (1875), is useful. From a Unitarian point of view, Servetus is treated by R. Wright, Apology (1807); W. H. Drummond, D.D. (1848); R. Wallace, Anti- in Biog. (1840); J. S. Porter, Servete and Calvin (1854). E. Saissset, Rev. des deux Mondes (1849), treats Servetus as a pantheist; he is followed by Menendez Pelayo, Los Antirrados españoles (1880, vol. ii.), and by R. Willis, M.D., Servet and Calvin (1877, an unsatisfactory book; cf. A. Gordon, Theol. Rev. April and July 1878). Of Servetus’s personal character the best vindication is Tullin’s Characterbild M. Servets (1876, in French, with additions by Dardier, Portrai Caractère, 1879). His story has been dramatized by Max Ring, Die Genfer (1890); by José Echegaray, La Muerte en los Labios (1880), by Albert Hamann, Servet (1881), and by Prof. Shields, The Reformer of Geneva (1897). Recent pamphlets by Spanish and French writers are numerous; some of the illustrations in Dr W. Osel’s Michael Servetus (1909), are useful.

(AG.)

SERVIA 1 [Srbiya], an inland kingdom of south-eastern Europe, situated in the north of the Balkan Peninsula. The frontier, as defined by the Berlin Treaty of 1878, is, roughly speaking, indicated by rivers in the north, and by mountains in the south. In the north, between Verciorova and

Belgrade, the Danube divides Servia from Hungary for 157 m.; and between Belgrade and the border village of Rach a the Save divides it from Croatia-Slavonia for 80 m. In the north-west the Drina flows for 162 m. between Bosnia and Servia; 1 The English-speaking races alone write this word with a v instead of a b, Servia for Servia; a practice resented by the Serbs, as suggesting the derivation of their name from the Latin Servus, "a slave."
in the north-east the Danube, for 50 m., and the Timok for 23 m., constitute respectively the Rumanian and Bulgarian boundaries. Various mountain ranges mark the frontiers of Bosnia, on the west, Turkey on the south-west and south, and Bulgaria on the south and south-east. According to the survey carried out by the Servian general staff in 1884 the area of the country is 18,782 sq. m.

Mountains.—The mountain groups which rise confusedly over almost the whole surface of the land, fall into two main blocks, one on either side of the river Morava. On the east of this river, three vast ranges, the Servian Alps, the Carpathians, and the Balkan Alps, encroach upon Servian soil; while on the west there is a chaos of mountain masses, outliers of the Bosnian and Albanian highlands.

Rivers.—The chief navigable river of Servia, which extends from the Lake of Pozar to the Adriatic, and which is partly regulated by way of the Kazan (i.e., "Cauldron ") Pass, near the famous Iron Gates (see Rumania). The Timok, which formed the Bulgarian frontier as long ago as the 9th century, springs in the western Balkans, or Stara Planina, and issues into the Danube, near Negotin, after a course of 70 m. Sooner or later, indeed, all the Servian rivers reach the Danube. The Save, which is also navigable, meets it at Belgrade, after being joined, on the Drina, by the Drina, a Servian river, which rises on the Montenegrin border, 155 m. s. by W. Near Ohrenovats the Kolubara also enters the Save, after traversing 45 m. from its source in the Sokoliska Gora. Apart from frontier rivers, there are numerous small streams which run into the Morava, especially on the western slopes of the Kara Dagh, a little beyond the Servian frontier, enters the country with a north-easterly course near the extreme S.E., and then turns N.N.W. and flows almost in a straight line to the Danube. The length of the Danube is about 150 m. In the upper part of its course it is known as the Bulgarian Morava, and only after receiving the Servian Morava is it known as the Danube.

The Morava is joined on the south by the Ibar, which comes from the Albanian Alps; the combined length of these rivers being about 150 m. The only other important tributary of the Great Morava is the Nish, which it receives on the right side. This stream flows 68 m. W. by N. from its source among the foothills of the Stara Planina. The valleys of all these rivers, especially those of the Slovenian and Servian Morava, are rich. The Nish contains considerable areas of level or low-lying country well suited for the growth of corn, and the low grounds along the Save and the Danube from the Drina to the Morava are also well adapted for agriculture, except the tract of fenland called the Machva, in the extreme north-west.

Geology.—The geological structure of Servia is varied. In the south and west the sedimentary rocks most largely developed are of ancient, pre-Permian age, interrupted by the crystalline rocks of granite, serpentine and other crystalline rocks. Beyond this belt there appear in the north-west Mesozoic limestones, such as are seen on many of the small islands in the Adriatic. In the Peninsular, generally, and the valleys opening in that quarter to the Drina have the same desolate aspect as belongs to these rocks in the rest of that region. In the extreme north-east the crystalline schistose rocks predominate, and the higher ranges on this side of the country are the Corabia, and stretch parallel to the Morava in a band along its right bank. Elsewhere east of the Morava the prevailing rocks belong to the Cretaceous series, which enters Servia from Bulgaria. The Shumadia is made up of low ranges of Territorial age, with interwoven patches of older strata; and the Rudnik Mountains are traversed by metaliferous veins of syenite.

Minerals.—Gold, silver, iron and lead were worked by the Romans, whose operations can still be traced in the Kostolats mines, near Pozharovats, and elsewhere. Even more ancient is the Aava mercury mine, near Belgrade. The heaps of debris which cover so many acres near Belgrade, on the Kopaonik foothills and in the Tnipitsa valley bear witness to the importance of this industry in the past. During the later middle ages the Servian mines brought in a large revenue to the merchant princes of Ragusa. They prospered strongly during the 14th century, under the rule of Turkish, and to this industry after 1459; and the revival only began in 1835, under the patronage of Prince Milosh. The richest coal and lignite seams occur among the north-eastern mountains, generally near the Danube or Timok, and along the Morava. They are worked by the state, by Belgian companies and by private enterprise, the output in 1907 being valued at £121,000. Lead is principally raised in the Popovac, and the Zajecar district. From the Montenegrin department, where zinc and small quantities of gold and silver are obtained. Antimony is mined at Zayечar. Copper and iron are worked by Belgians near Maydanapek, the chief mining centre near Nis. From the Niš region marble, sulphur and oil shales are found in various regions, but the mineral resources of the country, as a whole, remain almost untouched.

The numerous mineral springs are even more neglected than the mines. Waters rich in iodine and sulphur occur in the Machva. About 1878 an unsuccessful attempt was made to convert Arandyelovats into a popular health-resort. The baths near Nish and Vranja are comparatively prosperous, while the beautiful surroundings attract visitors even from abroad.

Agriculture.—Servia methods of farming remain in many respects primitive. Real progress was, however, achieved in the period 1890-1910, chiefly owing to improvements in agricultural education. Indian corn is the principal crop, for corn-cake forms the staple diet of the peasantry, while the grain is also used for feeding pigs, the heads for feeding cattle and the stubble for manure. The normal yield exceeds 5,000,000 bushels yearly, wheat coming next with a little less than 4,000,000. Flax, hemp and tobacco are also grown; hemp, especially near Leskovats. The cultivation of sugar-beet, introduced in 1900, became an important industry, but the attempt to introduce cotton failed. The native tobacco plantations meet all the local demand, except for a small quantity of Turkish tobacco imported for the manufacture of special blends. The best Servian wines are those of Negotin and Semendia. Before the appearance of Phylloxera in 1882 wine was exported to France and Switzerland, but in 1882-1895 thousands of acres of vines were destroyed. Phylloxera was checked by the importation of American vines and the establishment of schools of viticulture. The creation of state vine-nurseries, stocked with American plants, was authorized by a law of 1908. Orchards are very extensive, and all the fruits of central Europe will thrive in Servia. The chief care is bestowed on plums, from which is distilled a mild spirit known as raki or rulika. The favourite kind of raki is škirovica (the škirovica of Austria), extracted solely from plums. There is a considerable trade in dried plums and plum marmalade. Bees are very generally kept, the honey being consumed in the country, the wax exported. Mulberries are grown on many farms for silkworms; sericulture is encouraged and taught by the state, and over 100,000 cases of cocoons are annually exported. Relatively to its population, Servia produces a great deal of other food, such as potatoes (3,000,000 in 1905) and pigs (908,000 in 1905) than any country in Europe. Large herds of swine fatten, in summer and autumn, on the beech- and acorn of the forests, returning in winter to the lowlands. The Servian pig is pure white or black, but other breeds, notably the Berkshire and Yorkshire, are kept. Despite American competition and Austro-Hungarian tariffs the export of wine remains the principal branch of Servian commerce. Cheeses are made from the milk of both sheep and goats; but
cattle are mostly bred for export or draught purposes. The cumbersome wooden carts which afford the sole means of transport in many districts are generally drawn by oxen, although buffaloes may be seen in the south. The native horses, though strong, are, like the cattle, of small size.

Land Tenure.—More than four-fifths of the Servians are peasant farmers; and the great majority of these cultivate the land belonging to their own farms. Holdings are generally small, exceeding an average of 20 acres for each household. They cannot be sold or mortgaged entire; the law forbids the alienation for debt of a peasant’s cottage, his plough, or court-yard, his last six yards of land and the cattle necessary for working his farm. Besides the small farms there is the zadruga, a form of community which appears to date from prehistoric times, and mainly survives among the mountain tribes. The members appear every day and are to be replaced by rural co-operation. Under the zadruga system, each homestead or cluster of cottages is occupied by a group of families connected by blood and marriage. The members are connected by strict family ties; the association is ruled by a house-father (domanyin or staryeshina) and a house-mother (domanyitsa), who assign to the members their respective tasks. The staryeshina may be a patriarch of the community, but is often chosen by the rest of the members on account of his prudence and ability; nor is his wife necessarily the domanyitsa. In addition to the farm work, the members often practise various trades, the proceeds of which are distributed to the members. The community sometimes includes a priest, whose fees for baptism, &c., augment the common fund. The buildings belonging to the homesteads are enclosed within an immense palisade, which is periodically expanded so as to be protected with plum, damson, and other fruit-trees, surrounding the houses of the occupiers. In the midst of these is the house of the staryeshina, which contains the common kitchen, each family having its portion of the floor for little eating places. But that of the staryeshina is often of brick, and is invariably of better construction than the rest. The houses are often raised on piles, above the level of the floods which occur so frequently near the Save and Drina. Zadrugas were very prosperous, as they had always a sufficient number of hands at command, and their members combined to obtain implements and cattle. But with the establishment of order and security, the zadrugas began rapidly to disintegrate. The tenantry of the future, or what is left, are smaller societies, form a single great organization known as the General Union of Peasants.

Small holdings were in themselves a hindrance to Servian agricultural progress, as the peasants cannot afford the labor of clearing, &c., which is necessary; hence the great success of co-operation. As a rule, also, the lots of ground belonging to one household or family do not lie together, but are dispersed in different, very often distant, parts of the village land. To meet this difficulty, a farmer with more crops than he can reap himself would summon his neighbours to his assistance, supplying them with food, but no money, and binding himself to repay the service in kind. This form of voluntary labor is called moka. Another serious drawback to the economic position is that Servia has no seacoast, and that it is far from the nearest export harbours (e.g. Galatz, Salonika, Trieste). In such a situation the country is at the mercy of hostile tariffs.

Manufactures and Commerce.—The scarcity of labour prevents the growth of any great manufacturing industries. There is no native artisan class; for except in very rare cases, the people value the dependence too highly to work in factories, or even to enter domestic service. A large proportion of the artisans throughout Servia are Austro-Hungarians or gipsies. The chief manufacturing industries are those for which the country supplies raw material, notably meat-packing, flour-milling, brewing, tanning, and the weaving or spinning of hemp, flax and wool. There are also iron-foundries, potteries, and sugar, tobacco, and celluloid factories. A law of 1858 authorizes the government to grant concessions on very favourable terms to foreign capitalists willing to promote mining and manufacturing in Servia; but in 1910 the number of large industrial establishments in the kingdom did not exceed 60, nor the number of hands employed 5000. There are a few domestic industries, such as the manufacture of sandals (opanke), and of the hand-woven carpets and rugs made at Pirot, which are popular throughout the Balkan Peninsula.

Commerce.—The following table shows the value of Servian imports and exports for five years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Imports</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>£7,437,000</td>
<td>£2,846,000</td>
</tr>
<tr>
<td>1995</td>
<td>2,224,000</td>
<td>2,879,000</td>
</tr>
<tr>
<td>1996</td>
<td>1,723,000</td>
<td>2,864,000</td>
</tr>
<tr>
<td>1997</td>
<td>2,822,000</td>
<td>3,259,000</td>
</tr>
<tr>
<td>1998</td>
<td>3,023,000</td>
<td>3,019,000</td>
</tr>
</tbody>
</table>

Cotton and woollen fabrics, leather, salt, sugar, iron and machinery are the principal imports, and come chiefly from Austria-Hungary, Germany and Great Britain. Large quantities of prunes, grain, meat, raw hides, eggs and copper are exported, chiefly to Austria-Hungary, Germany and Turkey.

The situation up to 1878 the principal revenues were derived from the customs, excise and a sort of poll-tax. The government required the town and village communities to pay into the state treasury £1,48, per head of the able-bodied citizens living in the community, and the principal burden of the annual expenditure of the state amount due to the government from its citizens according to their estimated wealth or earnings. That system yielded without the slightest difficulty about £75,000 annually. But the Berlin Treaty (1878) stipulated that Servia should in fact part of the international railway to Constantinople and to Salonica, and should pay the Turkish landowners an indemnity for the estates which had been taken from them and divided among their Servian tenants. This and the necessity of indemnifying the people from whom, during the wars with Turkey (1876-1878), requisitions had been taken and money borrowed, forced the government to enter the European financial markets. Up to that time (1881) Servia had practically no public foreign debt, although it owed Russia about £240,000 lent privately for war preparations, and to its own people about £35,000 taken by a forced loan. The new taxes were levied by French banks at 7½ for 5% bonds, and the expenditure had to be immediately increased to £1,240,000:

The introduction of new taxes and the reorganization of the financial administration of the state (1881) has considerably increased the amount of public expenditure, chiefly because the skupishchina was for some time reluctant to replace the old system of direct taxation by a more modern system. When in 1884 the new law of taxation was adopted, the situation became so serious that in 1895 a new scheme was adopted by which the government gave to the bondholders additional securities, the bondholders at the same time accepting the new 4% authorised bonds in exchange for their old 5% bonds. The following table gives an analysis of the national debt on the 1st of January 1899:

| Russian debt of 1876 (5%) | £150,000 |
| Lottery loan of 1881 (2%) | 960,000 |
| Loan of the state treasury (5%) | 291,000 |
| Primary loan of 1887 | 367,000 |
| Unifed loan of 1895 (4%) | 13,516,000 |
| Railway loan (5%) | 3,500,000 |
| Monopoly loan of 1902 (5%) | 2,500,000 |
| Loan of 1906 (4½%) | 3,767,000 |
| Total | £21,572,000 |

The chief sources of revenue are customs duties, the state monopolies of salt, sugar, tobacco, matches and petroleum; national property, e.g. forests, railways, postal service; direct taxes, of which the most important are the poll-tax and the land tax (graduated according to the quality of the land). The heaviest charges are for the service of the national debt and for the army; each of these items exceeded £1,000,000 in 1909. The estimated revenue and expenditure for five years are shown below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905</td>
<td>£6,552,000</td>
<td>£6,505,000</td>
</tr>
<tr>
<td>1906</td>
<td>3,595,000</td>
<td>3,566,000</td>
</tr>
<tr>
<td>1907</td>
<td>3,618,000</td>
<td>3,615,000</td>
</tr>
<tr>
<td>1908</td>
<td>3,812,000</td>
<td>3,788,000</td>
</tr>
<tr>
<td>1909</td>
<td>4,415,000</td>
<td>4,132,000</td>
</tr>
</tbody>
</table>

Banks and Money.—The National Bank of Servia, founded in Belgrade in 1883, has a nominal total of £80,000,000 pa. The Industrial Bank (Uprzna Fondu), founded in 1882, is a state institution which lends money for agricultural operations, &c. The Export Bank, founded in 1901, is a private bank under state supervision, with branches at Belgrade, Trieste, &c. Its chief object is the furtherance of Servian foreign commerce.

One yardro is the area which two oxen can plough in a day.
In 1875 Servia adopted the decimal system for money, weights and measures, which came into actual use in 1878. The monetary unit is the dinar (franc) of 100 paras (centimes). In circulation there are gold pieces of 10 and 20 dinars, silver of 50 paras, and, in paper, 2, 4, 9, 15, 20 and 2 paras; and bronze of 2 paras. Twenty-five dinars equal $1 sterling.

Chiefs and Government.—The chief towns of Servia are Belgrade, the capital, with a population of 113,803 (1890), and Pirot (18,851). There are also many smaller towns, and there are several smaller railways in the valleys of the Save, the Danube, the Servian Morava and their tributaries. Apart from country lanes and footpaths, there are three classes of highways, controlled, respectively, by the nation, department and commune. Construction and repairs are, in theory, carried out by compulsory labour; but this right is seldom enforced. Even in the Shumadia, where materials are plentiful, the roads rapidly give way under heavy traffic in the wintertime. In the more mountainous and richer districts, they are often impassable. The Constantinople and Salonica roads remain the best in Servia. Besides the frontier streams on the north and west, the only river of any importance for navigation is the Morava, which is navigable for small craft from Valjevo to Chupriya, about 60 m. from its mouth.

The postal system dates from 1820, when an organized system of couriers was established, for state correspondence only. From 1843 to 1868 the Servian government undertook the carriage of letters in Servia itself, while the Austro-Hungarian consulate in Belgrade forwarded correspondence to and from central and western Europe. In 1868 the whole business of the post was taken over by the state, and post-offices are also maintained by many communes, and a few are even carried on by private individuals. Servia joined the International Telegraphic Union in 1834, and in 1874 began to use free telegraphic stamps. Telegraphs were constructed as early as 1835; telegrams between Constantinople, Sofia, Budapest and Vienna pass over lines constructed by the Servian government (under conventions with Austria-Hungary and Turkey) in 1890 and 1906. The telephone service, inaugurated in 1903, is a state monopoly (both for construction and operation).

Population.—With a continuous excess of births over deaths, and of male over female children, the population of Servia rose from 1,079,270 in 1880 to 1,750,000 in 1910. More than four-fifths of this number belong to the Serbo-Croatian branch of the Slavonic race; while the remainder is composed of about 160,000 Rumans, 47,000 gipsies, 8,000 Austro-Hungarians and Germans, and 5,000 Jews. Many Servian emigrants returned, after 1878, to the territories which the Treaty of Berlin restored to their country. These territories had been occupied, under Turkish rule, by Albanians, west of the Morava, and by Bulgarians, along the Nisava; but, after 1878, the Albanians withdrew, and the Bulgarians were absorbed. The Rumans reside principally in the north-east, near the borders of their native land, and are peasant farmers, like the Serbs. The gipsies occasionally settle down, forming separate camps or villages, but in most cases they prefer a wandering life. They are often admirable artisans and musicians, almost every town possessing a gipsy band. The Germans and Austro-Hungarians control a large share of the commerce of the country; the Jews, as elsewhere in the Balkans, are retail traders. Anti-Semitism is not prevalent in Servia, owing to the smallness of the Jewish communities. The stature and features of the Serbs vary in different regions; but the northern peasantry are generally taller and fairer than the mountaineers of the south. Those of the Slavonian race are small, but the Montenegrins are generally taller and stronger than the mountaineers of the south. The first census, taken in 1877, showed the total population of Servia to be 1,750,000. The census of 1909 was the first to give an accurate estimate of the population of Servia, being taken simultaneously in all the provinces of the country. It was estimated that the population of Servia on the 31st December, 1908, was 2,962,600. This estimate was confirmed by the census of 1910, which showed the population of Servia on the 31st December, 1909, to be 2,975,000. The census of 1911 showed the population of Servia on the 31st December, 1910, to be 3,000,000. The census of 1912 showed the population of Servia on the 31st December, 1911, to be 3,025,000.

Constitution and Government.—In 1903, after the murder of King Alexander Obrenovich, and the accession of Peter Karageorgevich, the constitution of 1889 was revised. By this instrument the government of Servia is an independent constitutional monarchy, hereditary in the male line, and in the order of primogeniture. The executive power is vested in the king, advised by a cabinet of eight members, who are collectively and individually responsible to the nation, and represent the
ministers of foreign affairs, war, the interior, finance, public works, commerce, religion and education, and justice. The king and the national assembly, or Narodna Skupština, of 130 members, together form the legislature. A general election must be held every fourth year. Each member receives 15 dinars for every day of actual attendance, and travels free on the railways. There is also a state council which deals with various legal and financial matters. Of its 16 members, half are chosen by the king, and half by the Skupština. Apart from soldiers of the active army, all male citizens of full age may vote, if they pay 15 dinars in direct taxes; while, apart from priests, communal magistrates and other officials, paying 100 dinars, are eligible to the Skupština. The Velika Skupština or Grand Skupština is only convoked to discuss the most serious national questions, such as changes in the succession, the constitution or the territories of the kingdom. Its vote is regarded as a referendum, and its members are twice as numerous as those of the Narodna Skupština. For purposes of local government Servia is divided into 17 departments (okrug, pl. okrushi), each under a prefect (nachalkin), who is assisted by a staff of civil servants, dealing with finance, public works, sanitation, religion, education, and public health, and, in the less populous regions, the departmental constabulary or pandurs. Every department is divided into districts (srež), administered by the sub-prefect (sreški nachalkin); and the districts are sub-divided into communes or municipalities, each having its salaried mayor (kmet ot knea), who presides over a council elected on a basis of popular election. Within the smaller spheres of their jurisdiction, the sub-prefect and mayor have the same duties to fulfill as their superior, the prefect. The mayor is, further, responsible for the maintenance of the communal granary, forests and other property. He presents to the councilors (odbornik, pl. odbornsiti) a yearly statement of accounts and estimates, which they may reject or amend. All taxes levied by the state are paid by the communal council, which assesses the property owned by each family under its authority, collects the amount due and has the right to retain one-fourth, or more, for local requirements. The central government cannot veto the election of a communal mayor or councillor.

History.

The highest judicial authority in Servia is the Court of Cassation, created in 1855 and reorganized in 1865. The court of appeal (1840) has two sections, one competent for Belgrade and the seven northern departments, the other for the rest of the kingdom. The law of June 1848 establishes a tribunal for customs, and a commercial court of first instance in Belgrade. Communal courts exist in every commune or municipality, and certain judicial powers are delegated to the police, under laws dated 1848 and 1858. The local courts of the Servia Office, which dates as early as the 13th century and fell into desuetude under Turkish rule, was revived in 1871.

The first Turkish citadels of Belgrade, Nish, Pirot and Semendria have no military value, but some strategic points on the Bulgarian frontier were entrenched between 1889 and 1899, while the modern forts of Nish, Pirot and Zayechar were strengthened and re-armed at the beginning of the 20th century. The defensive force of the country, as reorganized in 1901, consists of the national army (narodna vojska) and the landstorm. In the national army, which is organized in 5 divisions, with headquarters at Nish, Belgrade, Valjevo, Krajevovac and Zayechar, every able-bodied citizen must serve (for two years in the artillery and cavalry or eighteen months in other branches) between his 21st and his 45th year. He must be able to carry 45 to 50 pounds of knapsack. The landstorm consists of 17,000 to 18,000 men. Exemption from service is granted in a few exceptional cases. The national army consists of three bans or classes; the first is the field army, the units of the second exist in peace as cadres only, the third is organized. On a peace footing the strength of the army is 45,000 men; in war it might reach 255,000, including landstorm. The infantry were armed in 1910 with the Mauser rifle (model 93); the field artillery with quick-firing guns on the Schneider-Canet system.

Religion.

The Servian Church is an autocephalous branch of the Orthodox Eastern communion. It is subject, as a whole, to the metropolitan of Constantinople, to whose jurisdiction the bishop of Belgrade, who is also the metropolitan of Servia. Belgrade is the only archiepiscopal see; the four dioceses are Nish, Sabats, Chuprija, and Velika Nish, and the churches belong to the patriarchate of Galicia, the metropolitanate of Servia, and the diocesan primate, Bishop Jovan. There is a synod of the highest ecclesiastical tribunal; there are also two ecclesiastical courts of appeal and diocesan courts of first instance in every bishopric; the canon law is an important part of the law of the land. In 1910 there were 54 monasteries, but only 110 monks, all belonging to the order of St Basil. Študenica, near Kraljevo, and Manasija and Mileševa, near Chič, are the most famous of the monasteries. Much political influence is wielded by the priests, who played a prominent part in the struggles for national independence. They also play a part in art, and, by training their parishioners, from whom a large part of their income is derived, they collect all offerings and fees. The remainder comes principally from church lands; only the highest dignitaries being paid by the state. No able-bodied man may become a priest or monk unless he has served in the army. Liberty of conscience is unrestricted. Liberty of worship is accorded to Roman Catholics, Jews, Mahomedans and certain Protestant communities. The Mahomedans (about 3000 Turks and 11,000 gipsies) are the largest religious body apart from the national Church.

Education.—In 1910, 17% of the population could read and write. Primary education in the state schools is free and compulsory, with a reading of Church Slavonic, nature-study and agriculture (for boys), domestic science (for girls), certain handicrafts, singing and gymnastics are among the subjects taught. There are higher schools (mostly Real-Gymnasia) in many of the larger towns, besides (1910) one theological seminary, 4 training schools for teachers, 4 technical schools, a military academy, and 5 secondary schools for girls. The commune, or municipalities pay the entire cost of primary education, and, in the case of teachers, which, with the cost of higher education, are paid by the state. In February 1905 the Great School (Velika Skola) in Belgrade was reorganized as the University of Servia, for the furtherance of philosophical, scientific and technological education. Other important institutions of a semi-educational character are the Royal Servian Academy (1836), which controls the national museum and national library in Belgrade, and publishes an official scientific periodical (Istoriya, or History of Serbia), the history museum (1904), the national theatre (1890), the State Archives (1866, reorganized 1901), and the state printing office (1831), all in Belgrade.

See also by the Servians, ed. A. Stead (London, 1909): J. Mallat, La Servie contemporaine (Paris, 1902); E. Lazard and J. Hogge, La Servie de nos jours (Paris, 1901). For topography:—J. Tijan and Austrian General Staff Maps; P. Coquelle, La Roumanie de Servie (Paris, 1894); and A. de Gubernatis, La Servie et les Serbes (Florence, 1897). For geology and minerals:—J. Cvicij (Tsvijich), Grundlinien der Geographie und Geology, &c. (Belgrade, 1897); Z. Mirkovich, Geologija, Geografi, i Topografi Servije i Bolgarske (Belgrade, 1893); J. D. Antula, Revue générale des gisements métallifères en Servie (with map, Paris, 1900); Th. Mirkovich (Mirković), Les mines principales de Servie (Paris, 1896). For commerce:—Annual British Consular Reports; Statistical Reports of the Servian Ministry of Commerce. For agriculture:—L. R. Yovanovich (Jovanović), L'Agriculture de Servie (Paris, 1900). For religion:—Bishop N. Ruzichich (Ružičič), Istoriya Srpske Turiste (Belgrade, 1893—1896); and, by the same author, Dâs birchich-religiose Leben bei den Serben (Göttingen, 1896).
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 territory, which as a geographical and political unit was called 
Zhupu or Zhupaniya (county), the political and military chief 
of which was called Zhupan. The country was divided into 
many such Zhupaniyas, which were originally independent of each 
other. The history of the Dalmatian peoples during the first few centuries 
after their arrival in their present country was a struggle between the 
attains at union and centralization of the Zhupaniyas into a state under one government, and the resistance to such union and centralization, a struggle between the centrifugal and the central forces. The more powerful Zhupan was tempted to subjugate and absorb the neighbouring less powerful Zhupaniyas. If successful, he would have in his the Veliki Zhupan (Grand Zhupan). But such unions were followed again and again by decentralization and disruption. It is not to be wondered at that this struggle gave occasion for wars between the Zhupaniyas, for civil wars within the Zhupaniyas, for popular 
rising, court revolutions, dethronements, political assassinations 
and such like. The earlier history of the Serbs on the Balkan territory is especially turbulent and bloody. One of the minor 
causes of that turbulence is to be found in the struggle between the ancient Slavic order of inheritance, according to which a 
Zhupan ought to be succeeded by the oldest member of the family and not necessarily by his own son, and the natural desire 
of every ruler that his own son should inherit the throne. 

This internal political process was complicated by the struggle between the Greek Church and Greek emperors on the one side, and the Roman Catholic Church and the Roman Catholic Powers (Venice and Hungary) on the other side, for the possession of 
exclusive ecclesiastical and political influence in the provinces 
occupied by the Serbs. The danger increased when the Bulgarians came, towards the end of the 7th century, and formed a 
powerful kingdom on the eastern and south-eastern frontiers of the Serbs. Practically from the 8th to the 11th century 
the Serbs were under either Bulgarian or Greek suzerainty, while the Serbo-Croat provinces of Dalmatia acknowledged 
either Venetian or Byzantine sovereignty. 

The Vichese Dynasty.—The first Serb princes who worked with more or less success at the union of several Zhupaniyas into one state, belonged to what might be called "the Vichese dynasty." Zhupan Vicheslav lived in the beginning of the 9th century, and seems to have been the descendant of that leader of the Serbs who signed the settlement treaty with the emperor Heraclius towards the middle of the 7th century. His ancestral Zhupanija comprised Tara, Viva, Lim (the neck of land between the Montenegro and Servia of our days), Vicheslav's son Rastko, and his grandson 
Vlastimir, continued his work. Vlastimir succeeded his father in the western provinces of Servia against the Bulgarian attacks, while the eastern provinces of Servia (Braničev, Morava, Timok, 
Vardar, Podrimlya) were occupied by the Bulgars. The Bulgarian danger, and probably the energetic and successful operations of the Greek emperor Basil the Macedonian (867–886), determined the survival Zhupans to acknowledge again the suzerainty of the Greek 
emperors. One of the important consequences of this new 
relationship to the Byzantine empire was that the entire Servian people embraced Christianity, between 871 and 875. In all 
important transactions the Servians were led by Zhupan Mitkutim Vicheslavich (d. 907). During the reign of his 
descendants all the Servian provinces were conquered by the 
Bulgarian Tsar Simeon (920). In 912 Chaslav, one of the princes of the Vicheslav dynasty, liberated the largest part of the Servian territory from Bulgarian domination, but to maintain that liberty 
he had to acknowledge the Byzantine emperors as his suzerains. 

The Princes of Zetza and the First Serb Kingdom.—Towards the 
end of the 9th century the political centre of the Serbs was transferred to Zetta (Zeta or Zenta; see MONTENEGRO) and 
the Princes (see Coasts of the prince, sometimes called king) of 
Zetta, Yovan Vladimir, tried to stop the triumphal march of the 
Bulgarian Tsar Samuel through the Serb provinces, but in 989 
declared war, was defeated, made prisoner and sent to Samuel's capital, Prespa. 

The historical fact that Vladimir married Kosara, the daughter of Samuel, and was sent back to Zetta as reigning prince under 
the Bulgarian suzerainty, forms the subject of the first Serb novel, 
Vladimir and Kosara, as early as the 13th century. Vladimir, 
who seems to have been a noble-minded and generous man, was 
murdered by Samuel's heir, Tsar Vladislav (1015). By the 
Christians of both churches in Albania he is to this day venerated 
as a saint. But after the death of Samuel the Bulgarians 
rapidly lost the Serb provinces, which, to get rid of the Bulgarians, 
again acknowledged the Greek overlordship. About 1042, 
however, Prince Voislav of Travunia (Trebinje), cousin of 
the assassin Vladimir of Zetta, started a successful insurrection 
against the Greeks, and united under his own rule Travunia, 
Zahumlye and Zetta. His son Michael Voislavich annexed the 
important Zhupaniya of Rashka (Rasicia or Rassia), and in 1077 
proclaimed himself a king (rex), receiving the crown from Pope 
Gregory VI (1073–1085). His son continued the work of his father, 
and enlarged the first Serb kingdom by annexing territory, went up to that time were under direct Greek rule. A body of 
Crusaders under Count Raymond of Toulouse passed through 
Bodin's kingdom about 1101. After Bodin's death the civil wars 
between his sons and relatives materially weakened the first 
Serb kingdom. Bosnia reclaimed her own independence; so did 
Rashka, whose Grand Zhupans came forward as leaders of 
the Serb national policy, which aimed at freedom from Greek 
suzerainty and the union of all the Serb Zhupaniyas into one 
kingship. The task was difficult enough, as the Byzantine house of Trebizond and the realm of the energetic 
Manuel Comnenus, regained much of its lost power and influence. 

About the middle of the 12th century all the Serb Zhupaniyas were 
acknowledging the suzerainty of the Byzantine emperors. 

The Nemanjic Dynasty and the Serb Empire.—A change for 
the better began when Stephen Nemanja became the Grand 
Zhupan of Rashka (1169). He succeeded in uniting all the Serb 
countries under his rule, and although he never took the title of 
kingship, he was the real founder of the Serb kingdom and of the royal 
dynasty of Nemanjic, which reigned over the Serb people for 
about a century and a half. His youngest son of Stephen Nemanja, 
Prince Rastko, secretly left his father's royal court, went to 
a convent in Mount Athos, made himself a monk, and afterwards, 
under the name of Savva, became the first archbishop of Servia. 
As such he established eight bishoprics and encouraged schools 
and learning. He is regarded as the great patron and protector 
of education among the Serbs, as a saint, and as one of the greatest 
statesmen in the national history. After Stephen Nemanja 
and Savva the most distinguished members of the Nemanjic dynasty 
were Uros I. (1242–1276), his son Milutin (1282–1321) and 
and Stephen Dushan (1331–1355). Uros married Helen, a French 
princess, and his heir, Andronicus, then under the protection of the energetic 
and friendly relations with the French court of Charles of Anjou in 
Naples. He endeavoured to negotiate an alliance between 
Serbs and French for the overthrow and partition of the Byzantine 
empire. His son Milutin continued that policy for some time, 
Toward the end of 1345 he proclaimed himself "emperor of the Serbs and the Greeks," 
and was as such solemnly crowned at Uskub on Easter Day 1346. At the same time he raised the archbishop of Ipek, the 
primate of Servia, to the dignity of patriarch. Three years later 
he convoked the Sabor (parliament) at Uskub to begin a codification 
the laws and legal usages. The result was the publication, 
in 1349, of the Zavetik Tsara Dushana (Tsar Dushan's Book 
of Laws), a code of great historical interest which proves to 
Servia was not much behind the foremost European states in
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civilization. In 1355 Dushan began a new campaign against the Greeks, the object of which was to unite Greeks, Serbs and his other Slavic vassals under the united forces, and he was
Turkish power taking root on European ground. To attain his
object he was making preparations for a siege of Constantin-
ople, but in the midst of these preparations, as some historians
assert, on the march towards Constantinople, he died suddenly
at the village of Deabolis on the 20th of December 1355. His
only son Uros, a young man of nineteen, seemed physically
and mentally incapable of holding together an empire composed
of such different races and upholding with such divergent
interests. Some of the powerful viceroys of Dushan's provinces
speedily joined the grand vizier and indignantly denounced him
shaking them was Vukashin, who proclaimed himself king of
Macedonia. He wished to continue Dushan's policy and to
expel the Turks from Europe, but in the battle of Taenarus,
the 26th of September 1371, his army was destroyed by the
Turks, and he was slain. This was the first great blow which
shook the fragile structure of the Serb empire to its foundation.
Two months later (December 1371) Tsar Uros died, and with
his death ended the rule of the Nemanjich dynasty.
The Turkish Invasion: Kosovo.—After a few years of
insecurity of Milan Obilich, and by the united forces, was
Kossovo (5th of June 1389). No historic event has made such a
deep impression on the minds of the Serbs as the battle of Kosovo
—probably because the flower of the Serb aristocracy fell in that
battle, and because both the tsar of the Serbs, Lazar, and the
sultan of the Turks, Murad I, lost their lives. The sultan
was killed by the Serb knight or voivode Milosh Obilich (otherwise
Kobilovich). There exists a cycle of national songs—sung to
this day by the Serb bard (guslar) — concerning the battle of Kosovo,
the treachery of Vuk Brankovich and the glorious
achievements of the Serb nation.
The Despotate.—After the battle of Kosovo Servia existed
for some seventy years (1389-1459) as a country tributary
to the sultans but governing itself under its own rules, who
assumed the Greek title of "despot." The first despot after
Kossovo was Tsar Lazar's eldest son "Stephen the Tall," who
was an intimate friend of Sigismund IV., king of Hungary and
emperor of the Germans. Being childless, Stephen on his death-
bed in 1427 appointed his nephew, George Brankovich, to be his
successor. As despot, George worked to establish an alliance
between Servia, Bosnia and Hungary. But before such an alliance
could practically be arranged, Murad II. attacked Servia in
1437 and forced George to seek refuge in Hungary, where he
continued to work for a Serbo-Hungarian alliance against the
Turks. Having at his disposal a large fortune he succeeded in
organizing a Serbo-Hungarian expedition against the Turks in
1444. This expedition, under the joint command of the Despot
George and of Hunyadi Janos, defeated the Turks in a great battle
at Kuno位sa. The sultan was forced to conclude peace, re-
stoning to George all the countries previously taken from him.
For the remainder of his life George was rather estranged from his
former allies the Hungarians. At the age of ninety he was
wounded in a duel by a Hungarian nobleman, Michael Szilagyi,
and died of his wound on the 24th of December 1457. His
younger son Lazar succeeded him, but only for a few months.
Lazar's widow Helena Palaeologina gave Servia to the pope,
hoping thereby to secure the assistance of Roman Catholic
Europe against the Turks. But no one in Europe moved a finger
to help Servia, and Sultan Mahomed II. occupied the country
in 1459, making it a pashalik under the direct government of the
Pope.

For fully 345 years Servia remained a Turkish pashalik, enduring all the miseries which that lawless régime implied (see Turkey, History). But the more or less successful invasions of the Turkish empire in Europe by the Austrian armies in the course of the 18th century—invasions in which thousands of Serbs always participated as volunteers—prepared the way for a new state of things.
The Struggle for Servian Independence.—The disorganization
and anarchy in the Turkish empire at the beginning of the
19th century gave the Serbs their opportunity, and the people
of Servia, under the leadership of Karageorge (Vukas Obilich),
formed the Servian parliament in 1803. A national assembly met in February 1804 in the village of Orasnice and
elected George Petrovich—more generally known under the
name of "Tsni Gygorye" or "Karageorge" (g.v.)—both mean-
ing "Black George"—as commander-in-chief of all the nation's
armed forces and the leader of the nation (Vodit naroda).
Under his command the Serbs quickly succeeded in breaking the power of the Dahias, as the four chieftains of the Janissaries of Belgrade
were called, who, having rebelled against the sultan, took posses-
sion of Servia, became its political and military masters, and
appointed by them the ruler of central Servia. Not only did the
Serbs clear their country altogether of the Turks, but they also
organized it as a modern European state. In 1807 the sultan
offered to grant the Serbs self-government, and to acknowledge
Karageorge as the chief of the nation with the title of prince.
On the advice of the Russians, who were just going to war with
Turkey, the Serbs refused that offer, preferring to fight against
the Turks as Russian allies. The principal scene of the Russo-
Turkish war being transferred to the Lower Danube, only a few
unimportant actions took place on Servian territory. From
1804 till the autumn of 1813 the Serbs governed themselves as
an independent nation. But when in 1812 Russia, attacked
by Napoleon, had in great haste to conclude at Bucharest a
treaty of peace with Turkey, and omitted to make sufficient
provision for the security of her allies the Servians, the Turkish army
invaded and reconquered Servia, occupying all its fortresses.
Karageorge, with most of the leading men, left the country
(Sepembwe 1813) and founded a refuge first in Austria and then in
Russia. Of those who remained in Servia the natural leader,
by his own position, talents and influence, was Milosh Obrenovich,
voivode of Rudnik. He surrendered to the Turks and was appointed by them the ruler of central Servia. Not until
four years later Milosh began the second insurrection of the Servians
against the Turks (on Palm Sunday 1815, near the little wooden
church of Takovo). He was successful not only in the field but
in his diplomacy, and by 1817 Servia had regained autonomy under
the suzerainty of the sultan. That autonomy was placed
on an international basis by the treaty of Adrianople, concluded
between Turkey and Russia in 1829. In compliance with that
treaty the sultan by the Hatti-Sherif of 1830 formally granted
full autonomy to the Servians, retaining at the same time Turkish
garrisons in the Servian fortresses.

Servia as an Autonomous State 1830-1870.—Milosh, declared
hereditary prince of Servia, worked hard for the internal organization
and for the economic and educational progress of his country.
But his attempts to make Servia independent of Russian
protection brought him into conflict with Russia, and his autocratic
methods of government united against him all who wished for
a constitution. The result was that Prince Milosh was forced
to abdicate and leave the country in 1839. Three days before his
abdication he was induced to sign a constitution (that of 1838)
 imposed on Servia by the Porte, at the instance of Russia, with the
object of undermining his position. This constitution delegated
part of the prince's authority to a council of 70 members appointed
for life. Prince Milosh's eldest son, Prince Milan (Obrenovich
II.), died in a few months, and the younger son Michael (Obren-
ovich III.) ascended the throne. But the politicians who forced
Milosh to abdicate did not feel safe with Milosh's second son as
the reigning prince of Servia. They started a military revolt,
drove Michael also into exile (1842), and elected Alexander
Karageorgevich, the younger son of Karageorge, as prince of Servia. His reign (1842–1858) was quiet and prosperous, and the country made remarkable progress in culture and wealth. But he feared to summon the national assembly, was personally weak and vacillating, and in foreign politics was Turcophil and Austrophil rather than Russophil. Not only Russia but Servia also was dissatisfied with such a policy, and when Alexander Karageorgevich, forced by public opinion, at last dared convok a national assembly, that assembly's first resolution was that Prince Alexander should be dethroned and replaced by the old Prince Milosh Obrenovich I. This change of the reigning dynasty was effected without the slightest disorder or loss of life. Milosh returned to power at the beginning of 1859, but died in 1860. His son Michael then ascended the throne for the second time. He was a man of refinement who had learned much during his long exile (1842–1859). His political programme was that the law should be respected as the supreme will in the country, that Servia's political autonomy should be jealously guarded, and every encroachment on the part of the suzerain power should be resisted and rebuffed. He introduced many important reforms in administration, and replaced the old constitution, granted to Servia by the Porte in 1830, by a new constitution which he himself gave to the country. When in 1862 the Turkish garrison in the citadel of Belgrade bombarded the town, he demanded the evacuation of all the Servian fortresses and forts by the Turks. Only a few of the less important forts were delivered to the Serbs at that time; but in 1863 Prince Michael sent his wife, the beautiful and accomplished Princess Julia (née Countess Hunyadi), to plead the cause of Servia in London, and she succeeded in interesting prominent English politicians (Codden, Bright, Gladstone) in the fate of the Balkan countries. Prince Michael organized the national army, armed it and drilled it, and entered into understandings with Greece, Montenegro, Bosnia and Herzegovina, Bulgaria and Albania, for an eventual general rising against the Turks. In the beginning of 1869 he addressed a formal protest to the Porte, and the Turkish garrisons should be withdrawn from Belgrade and other Serb fortresses. To prevent a general conflagration in the Balkan Peninsula, the powers advised the sultan to comply with the demand, and when the British government strongly supported that advice the sultan yielded and delivered all the fortresses on Servian territory to the keeping of the prince of Servia (March 1867). Prince Michael's great popularity in consequence of his diplomatic successes alarmed the friends of the exiled Kara-georgevich dynasty, more especially when rumours began to circulate about the Servian fortresses and forts by the Turks. His wife Julia and remarrying. A conspiracy was formed, and Prince Michael was assassinated on the 10th of June 1868. The conspirators failed to overthrow the government, and the army proclaimed Milan, the son of Prince Michael's first cousin Milosh Obrenovich (son of Yephrem, brother to Milosh the founder of the dynasty), as prince of Servia. The choice was unanimously approved by the Velika Skupshtina, which had been immediately convoked. As Milan Obrenovich IV. was a boy of only thirteen, a regency, presided over by Jovan Ristic or Ristic (q.v.), was appointed to manage the government until the boy prince attained his full age. A new constitution was adopted by the Parliament, which had substituted a new constitution for that of 1838. Prince Milan followed the policy of his dynasty, and, encouraged by the Russian Panslavists, declared war on Turkey (June 1876). His army, commanded by the Russian General Chernyayev, was defeated by Abdul-Kerim Pasha, whose advance was stopped by the intervention of Tsar Alexander II. But the situation created by Prince Milan's action in the Balkans forced the hand of the tsar, and Russia declared war on Turkey (1877).

The Treaty of Berlin.—Prince Milan was educated in the political school most favourable to Russia, and unhesitatingly followed the Russian lead up to the conclusion of the preliminary treaty of peace between Russia and Turkey at San Stefano. By that treaty Russia, desiring to create a great Bulgaria, took within its limits districts inhabited by Servians, and considered by the Servian politicians and patriots as the natural and legitimate inheritance of their nation. This act of Russia created great dissatisfaction in Servia, and became the starting-point for a new departure in Servian politics. At the Berlin Congress the Servian plenipotentiary, Jovan Kistich, in vain appealed to the Russian representatives to assist Servia to obtain better terms. The Russians themselves advised him to appeal to Austria and to try to obtain her support. The utter neglect of the Servian interests by Russia at San Stefano, and her evident inability at the Berlin Congress to do anything for Servia, determined Prince Milan to change the traditional policy of his country, and instead of continuing to seek support from Russia, he tried to come to an understanding with Austria-Hungary concerning the conditions under which that power would give its support to Servian interests. This new departure was considered by the Russians—especially by those of the Panslavist party—as little less than an apostasy, and it was decided to oppose Prince Milan and his supporters, the Servian Progressives. The treaty of Berlin (13th of July 1878) disappointed Servian patriots, although the complete independence of the country was established by it (art. 34). This was proclaimed at Belgrade by Prince (afterwards King) Milan on the 22nd of August.

The Progressive régime.—The political history of Servia from 1879 to the abdication of King Milan on 3rd March 1889 was an uninterrupted struggle between King Milan and the Progressives on one side, and Russia with her adherents, the Servian Radicals, on the other. King Milan and his government were badly handicapped by several unfortunate circumstances. To fulfil the engagements accepted in Berlin and the conditions under which independence had been granted to Servia, railways had to be constructed within a certain time, and the government had also to pay to the Turkish landlords in the newly acquired districts an equitable indemnity for their estates, which were divided among the peasants. These objects could not be attained without borrowing a considerable amount of money in the European markets. To pay regularly the interest on the loans the government was forced to impose upon the people, and especially the regular army, remained loyal, and the revolt was quickly suppressed.

War with Bulgaria.—The union of Bulgaria and Eastern Rumelia inspired King Milan and his government with the notion that either that union must be prevented, or that Servia should obtain some territorial compensation, so that the balance of power in the Balkan Peninsula might be maintained. This view, which did not find support anywhere outside Servia, led to war between Servia and Bulgaria (see Servo-Bulgarian War); the Servians were defeated at Slivnitz and had to abandon Pirio, whilst the farther advance of the Bulgarian army on Nish was prevented by the Russian intervention. A formal treaty of honourable peace was concluded between the two contending powers in March 1886. Then came the unhappy events connected with Milan's divorce from Queen Natalie. That domestic misfortune was cleverly exploited by King Milan's enemies in the country and abroad, and did him more harm than all his political mistakes. He tried to retrieve his position in the country, and succeeded in a great measure, by granting a very liberal constitution (January 1889, or Dec. 1888 O.S.) at a time when all agitation for a new constitution had been given up. Then, to the great astonishment of the Servians and of his Russian enemies, King Milan voluntarily abdicated, placing the government of the country in the hands of a regency during the minority of his only son Alexander, whom he proclaimed king of Servia on the 6th of March 1889.

King Alexander: The Regency.—The leading man of
regency was Jovan Ristić, who had already been regent during the minority of King Milan (1868–1871). Although he had been since 1868 the leader of the Liberal party, he showed himself, as regent, extremely Conservative. The new constitution was the embodiment of Radical principles, and the numerically strongest party in the country was Radical. The national assembly was composed, therefore, almost exclusively of Radicals, and the government was Radical likewise. From the very beginning the Conservative regency and the Radical government distrusted each other. The government was not strong enough to resist the clamour of their numerous partisans for participation in the spoils of party warfare. Political passions, which had been stirred up by the long struggle against King Milan’s Progressive régime, could not be allayed so quickly; and as the anarchical element of the Radical party obstructed the ascendency over the more cultured and more moderate members, all sorts of political excesses were committed. The old system of borrowing money to cover the yearly deficits were continued, and the expenditure went on increasing from year to year. The administration lost all authority, the police were paralysed and brigandage became rife. The Radical government thought to strengthen their position by letting the national assembly vote a law prohibiting the return of the king’s father to Servia, and forcibly expelling the king’s mother, Queen Natalie. But such laws and such acts only embittered the adherents of Prince Peter Karageorgevich, who, having married the eldest daughter of Prince Nicholas of Montenegro and living at Cettigne, was supposed to enjoy the support of Russia. The political situation became still more confused when on the death of the third regent, General Kosta Protić, the government tried to force the regency to accept in his stead M. Pashich, the leader of the Radical party. The regents thereupon dismissed the Radical cabinet and called the Liberals to the government (August 1892). The Liberal cabinet dissolved the Radical national assembly, and at the general elections used very great pretensions of the Radical party obstructed the ascendency over the third cabinet, and the situation became hopelessly entangled by the fact that the national assembly was Radical, the government Liberal, and the regency practically in all its tendencies Conservative. The legislative machinery as well as the administration of the country was thus completely paralysed. Then the young king Alexander suddenly proclaimed himself of age (although at that time only in his seventeenth year), dismissed the regents and the Liberal cabinet, and formed his first cabinet from among the moderate Radicals (18th April 1893). Administration—The moderate Radicals quickly showed themselves unable to do any serious work. They were fettered by the dissatisfaction of the Left wing of their own party. To satisfy the extreme Radicals they had to impeach the members of the last cabinet. This increased the bitterness of the Liberals, who, though not so numerous as the Radicals, included in their ranks more men of wealth and culture. Political passions were again in full blaze. The anti-dynastic party raised its head again, and in many Radical publications the expulsion of the reigning dynasty and its replacement by the Karageorgevich were advocated. At the same time reports were reaching King Alexander that Russia, who was in a very critical situation, was interested in the statement of the extreme Radicals, and he was anxious to secure a Russian grand-duke to be proclaimed king of Servia.

The ex-King Milan’s Return.—In such circumstances King Alexander thought best to invite his father the ex-King Milan (who was living in Paris) to his side, and to use his great knowledge of men and his political experience. In the beginning of January 1894 King Milan arrived in Belgrade. The Radical cabinet resigned and was replaced by a cabinet composed of people embittered by standing outside the political parties. In June the Radicals of the government of 1889 was suspended, and in its place the constitution of 1869 was re-established. The nation was evidently tired of the violent agitations of recent years. This feeling gave rise to Conservative, even somewhat reactionary, legislation. The duration of the legislature was extended from three to five years; the liberty of the press was curtailed by the enactment that proprietors of political papers must pay to the government a deposit of 5,000 dinars (£200), and that the editors must have completed their studies at a university; the laws on lèse-majesté were made more severe. After the advent to power of Dr Vladan Georgevich (October 1897) persistent and successful efforts were made to improve the country’s financial and economic condition. The violent party strife which from 1880 to 1895 had absorbed the best energies of the country and paralysed every serious and productive work, ceased almost completely, and the nation as a whole turned to improve its agriculture and commerce. The sustained improvement in the political and commercial situation was not influenced materially by the temporary excitement in consequence of the attempt on the life of King Milan (6th July 1896), and of the state of several prominent Radicals accused of having conspired for the overthrow of the dynasty. One remarkable feature in the foreign policy of Servia in the last years of the 19th century was that after King Milan was appointed commander-in-chief of the Servian regular army (1898), Russia and Montenegro practically, although not formally, broke off their diplomatic relations with Servia, while at the same time the relations of that country with Austria-Hungary became more friendly than under the Radical régime.

King Alexander’s Marriage.—All this was suddenly changed when, in 1899, that young and handsome prince, Mme. Dragica Mihailović, once lady-in-waiting to his mother Queen Natalie, he married himself into the arms of Russia, forbade his father Milan to reside in Servia, and followed Russian guidance in all questions of foreign policy. To strengthen his position in the country he promulgated a new constitution in April 1901, establishing for the first time in the history of Servia a parliament with two houses (skupština and senate). But the unpopularity of the king’s marriage was not lessened. Constitutional liberties and especially the free press were mercilessly used to attack both the king and the queen, who neither wished nor were able to conceal their dissatisfaction from their feelings that the constitution contemplated changing the situation by one of his bold and clever coups d’état increased the political unrest. Matters went from bad to worse when persistent rumours were set in motion that Queen Dragica had succeeded in persuading King Alexander to proclaim one of her two brothers heir-apparent to the throne. In 1902 a widespread military conspiracy was rumoured to exist, while Austria and Russia repeatedly gave proofs that they were indifferent to the fate of Alexander, and so encouraged the malcontents. King Alexander felt that he could eventually force his position by a general withdrawal of the Russian policy or by his divorce from the childless Queen Dragica. He seems to have been working for joint action with Bulgaria for the liberation of Macedonia from Turkish rule. Some of his intimate friends asserted that he contemplated divorcing the queen, and that he was only waiting for her departure for an Austrian watering-place, which departure was fixed for the 15th of June 1903. In the first hours of the 11th of June the conspirators surrounded the palace with troops, forced an entrance and assassinated both King Alexander and Queen Draga in a most cruel and savage manner. (C. M.)

King Peter Karageorgevich.—The regicides proclaimed Prince Peter Karageorgevich king of Servia; and a provisional cabinet was formed, with Colonel Mihailović, brother-in-law of the murdered Queen Draga and organizer of the conspiracy, as minister of public works. The skupština and senate assembled, restored the constitution of 1889 instead of the reactionary constitution promulgated by King Alexander on the 19th of April 1901, and ratified the election of Prince Peter, who entered Belgrade as king on the 24th of June 1903. Born in 1844, he was the son of Alexander Karageorgevich and grandson of Karageorge; in 1885 he had married Queen Zorka, daughter of Prince (afterwards king) Nicholas of Montenegro. His authority was at first merely nominal; the highest administrative offices were occupied by the regicides, who received the unanimous thanks of the skupština for the assassination of King Alexander and Queen Draga. Russia, Austria-Hungary and Montenegro were
the only Powers which congratulated King Peter on his accession, and in December 1903 all the Powers temporarily withdrew their representatives from Belgrade, as a protest against the attitude of the Servian government towards the regicides. But at the coronation of King Peter, in September 1904, all the European powers except Great Britain were officially represented, some concessions, more apparent than real, having been made in the matter of the regicides, who were received with unalloyed cordiality by the peasants and in the army. Further protests were made by many of the powers when the illusory nature of these concessions became known, and it was not until May 1906 that diplomatic relations with Servia were resumed by Great Britain. In the same year a convention was concluded by Servia and Bulgaria as a preliminary to a customs union between the two states. This convention, which tended to neutralize the dependence of Servia upon Austria-Hungary by facilitating the export of Servian goods through the Bulgarian ports on the Black Sea, brought about a war of tariffs between Servia and the Dual Monarchy.

The Bosnian Crisis.—In 1908 the annexation of Bosnia and Herzegovina by Austria-Hungary and the revolution in Turkey brought the Bosnian crisis, the Bosnian crisis, still厉害及 as a realization of the so-called “Great Servian Idea,” i.e., the union in a single empire of Servia, Bosnia and Herzegovina, Montenegro and Old Servia (Stara Srbija) or the sanjak of Novibazar with north-western Macedonia—all countries in which the population consists largely, and in some cases almost exclusively, of Orthodox Serbs. The whole nation clouted for war with Austria-Hungary, and was supported in this attitude by Montenegro, despite a temporary rupture of diplomatic relations between Belgrade and Cettigne, due to the alleged complicity of the Servian crown prince in a plot for the assassination of Prince Nicholas. As, however, the armament and finances of Servia were unequal to a conflict with Austria-Hungary, while Great Britain, Russia, France and Italy counselled peace, the skupština, meeting in secret session on the 11th of October 1908, determined to avoid open hostilities, and sent M Milanovich, the minister for foreign affairs, to press the claims of Servia upon the powers. The tariff war with Austria-Hungary was at the same time renewed. Servia demanded compensation in various forms for the annexation of Bosnia and Herzegovina; what the government hoped to obtain was the cession to Servia of a strip of territory between Herzegovina and Novibazar, which would check the advance of Austria-Hungary towards Salonica, make Servia and Montenegro conterminous, pave the way for a union between them, and give Servia commerce an outlet to the Adriatic. Neither the Dual Monarchy nor the Young Turks would consider the cession of any territory, and in January 1909 the outcry for war was renewed in Servia. But the threatening attitude of Austria-Hungary, with the moderating influence of M Pashich, who became the real, though not the nominal, head of a new ministry in February 1909, induced Servia to accept the advice of the Russian government by abandoning all claim to territorial “compensation,” and leaving the Balkan question for solution by the Powers. The Servian government defined its attitude in a circular note to the Powers (9th of March), and finally accepted the terms of a conciliatory declaration suggested by the British government (31st of March). By this declaration Servia abandoned all its demands as against Austria-Hungary, while the Austro-Hungarian foreign minister made simultaneously a public declaration that the Dual Monarchy harboured no unfriendly designs against Servia.

On the 27th of March 1909 the crown prince George (b. 1889), who had been the most outspoken leader of the anti-Austrian party in 1908, was induced to resign his right of succession to the throne. It was alleged that his violence had caused the death of one of his own male servants, and that he was partially insane. On the 27th of March 1909 his brother Alexander (b. Dec. 17, 1888) took the oath as heir-apparent.

The books by Stead, Mallat and Hogge, mentioned above, contain important historical matter. See also the bibliography to the article Balkan Peninsula, with L. von Ranke, Geschichte Serbiens bis 1842 (Leipzig, 1844; Eng. trans. by A. Kerr, The History of Servia (London, 1847); id., Serbien und die Türken im 19. Jahrhundert (Leipzig, 1879); A. Hilferding, Geschichte (ältere) der Serben und Bulgaren (2 vols., from the Russian, Banzten, 1856-1864); S. von Bachofen, Sōris ṭërštī ti Đennē (Schede, 1881); C. G. von Cunibert, Essai historique sur les révolutions et l’indépendance de la Servie: 1803-1850 (2 vols., Paris, 1850-1855); E. L. Mijatovich, Djevojčice i损耗 (London, 1872); Rachié, Le Royaume de Servie, étude d’histoire diplomatique (Leipzig, 1895); Das Ende der Obrenović (Leipzig, 1905); C. Mijatovich, A Royal Tragedy (London, 1906).

**Language**

The Servian language is closely related to Slavic languages (see Slavs). According to the Servian philologist Danichich (Dióba Slov. yestka, Belgrade, 1874), the Servians were the first Slavic branch which separated from the original Slavic stem, while the Russians and the Bulgarians only separated from it at a considerably later date. The Russian and Bulgarian languages undoubtedly stand nearer to Old Slavic than Servian. According to another theory (T. Schmid, The Vocalismus i. ii. 172), two separate branches developed from the Old Slavic stem, one identical with the western Slavs, and the other with the south-eastern group; and from the Slavic of the south-east the first languages to separate were the Russian and the South Slavonic. From the latter developed Bulgarian, on one side, and Servian-Slovene on the other, while from the last-named branch Servian or Serbo-Croatian and Slovene developed on two separate twigs. There can be no doubt that in the south-eastern group of the Slavonic languages Serbo-Croatian and Slovene form a special closely-connected group, in which the Servians and Bohemians are only two dialects of the same, which is known, and with the Russian, the most important and melodious of Slavonic languages.

Servian is spoken in the following countries, forming geographically (although not politically) a connected whole: southern Hungary, the kingdom of Servia, Old Servia (the Turkish vilayet of Kossovo), western Macedonia, the sanjak of Novi-Bazar, Bosnia, Herzegovina, Croatia-Slavonia, Dalmatia and Montenegro. It ranks with Bulgarian as one of the two principal Slav languages of the Balkan Peninsula; the Macedonian dialects are intermediate between these two. Between eight and nine millions of people speak Serbo-Croatian in the countries just enumerated.

Servian is the language of the territory in which the language is spoken, it is not surprising that it should have several dialects. Practically, however, there are only three principal dialects, which are differentiated by the manner in which the Old Slavonic double vocal ye (the so-called yeh) is pronounced. The Old Slavonic words ljevo, bevelo, are pronounced by the Servians of Herzegovina, Bosnia, Montenegro, Dalmatia, Croatia and south-western Servia as leyo, beyo; by the Servians of Syria the same vowel is pronounced sometimes as e (lepo, belo), sometimes as ee (videti, leteti); by the Servians of the Morava valley and its accessory Ressava valley, always only as e (lepo, belo, videti, leeti). Vuk Stefanovich Karajich published the two dialects of Servia: the first dialect he defined as the “Servian dialect,” the second the “Syrman” dialect of the “Kossovo dialect,” Professor Belich of Belgrade University has tried to give in the Servian Dialectological Compendium (Belgrade, 1908) a new division of the Servian dialects. But, as the Servian and Hungarian, Kossovo, Ressava, Shamadiya-Srem (Syriya), Zetta-Bosnia, Adriatic coast. Of all the Servian dialects the most correct, richest and safest is the Servian of Syria. A Servian or some Servian dialect, Karajich and his followers tried to make it the literary language of the Servians. All the national songs which he transcribed from the recitations of the bard were written and published by him in that dialect, into which the Bible was translated in 1904. Thus, the Servian of all the century the kingdom of Servia, speaking the Ressava or Shamadiya- Syrman dialect, became one of the centre of Servian literary activity, the last-mentioned dialect tended to become the literary language. The Servian and Croat dialects are spoken in the common Slavonic language. Servian is sometimes called shkoksakski because the Servian word for “what” is shko, whereas the Croats say cha lor shko, and
The chronicles (letopisi) are without any literary value, although as historical material they are useful. They number about thirty. The oldest of them was written between 1371 and 1390. The best of them is the Defter of Ystek, compiled by the Metropolitan of Koporin, written by Deacon Damyan in 1453; Letopis of Carlomin in 1503; and the chronicle of the monastery of Tronosha, 1526.

To this period of Servian literature belongs the first attempt by an unconnected group to record the sufferings of the Servian prince Vladimir, who lived in the 11th century, and his wife, the Bulgarian princess Kosara, written probably in the 13th century, was very popular among the Servians and other Slavonic nations. Two of the most outstanding of these books of the period were the Life of Alexander the Great, The Story of the Siege of Troy, Stefanije and Ithnysat (an Indian story) and The New World to That Other, all of which were translations from the Greek.

A characteristic example of the literary and also, as it appears, of the official language of the Servians in the middle ages is the Codex Dorianus (Zakonnik), which was promulgated at the Servian parliament (Sabor) in Skopjé (Uskub) in 1349 and 1354. Very interesting material for the study of the Servian literary language during the 12th, 13th and 14th centuries is to be found in several collections of old charters and letters of that period (P. Miklosich's Monumenta Serbica, Putsch's Srpski Spomenu; u Dubrouvackoj Arkhivi, and the publications of the Royal Servian Academy in Belgrade and the South Slavonic Academy of Science in Agram). The oldest document written in the vernacular Servian is considered to be a charter by which Kulín, the ban of Bosnia, grants certain commercial privileges to the Ragusan merchants in 1466.

The oldest printed book in Servian-Slavonic issued in 1483 from the printing-press of Andreas de Theresianis de Asula in Venice. A few years later the Servian nobleman Bozhidar Vukovic bought a printing-press and began in Servian Venice (Zakonnik), which was promulgated at the Servian parliament (Sabor) in Skopjé (Uskub) in 1349 and 1354. Very interesting material for the study of the Servian literary language during the 12th, 13th and 14th centuries is to be found in several collections of old charters and letters of that period (P. Miklosich's Monumenta Serbica, Putsch's Srpski Spomenu; u Dubrouvackoj Arkhivi, and the publications of the Royal Servian Academy in Belgrade and the South Slavonic Academy of Science in Agram). The oldest document written in the vernacular Servian is considered to be a charter by which Kulín, the ban of Bosnia, grants certain commercial privileges to the Ragusan merchants in 1466.

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SERVIA

Theological works. He also wrote *The Sights of the Repenting Magdalen* and the unfinished tragedy *Judith*.

After the Napoleonic Wars, the literary life of Ragoza and Dalmatia during the 18th century has no great name to show, except that of the mathematician, Ruggiero Boshvich (see Bosovich). His two brothers and his sister Anica Boshvich were known in their time and their works are still remembered. But the territory of the coast showed little originality in the 18th century; its writers were content to produce good translations of Latin, Italian and French works.

Mention must be made, however, of an author whose work connects the literature of the Adriatic Servians of the 18th century with the regenerative efforts of the Dubunian Servians in the second decade of the 19th. Paul and Ana, the brothers and sisters of the Adria- nian monk, Metamosei, who by his asceticism and penetration of Slavonic highly distinguished himself from the school of pseudo-ascetics and slavery to the models. As a papal delegate he had to visit all the Roman Catholic communities in Dalmatia, Herzegovina and Bosnia, and had numerous opportunities of hearing the bardic recite songs on old national heroes.

In 1736 he published a book entitled *Razgovor Ugodni Naroda Slavjanka* ("The Popular Talk of the Slavonic People"). In which in 261 songs he described—in the manner and in the spirit of the national bard—the more important historical, legendary, and religious events and heroes of the "Slavonic people." Under this denominia- tion he comprised Servians, Croats, Slovenes and Hungarians, anticipat- ing the modern appellations of the Yugo-Slaveo (Southern Slavon) and Carpathian-Slavon. His work was immensely popular among the Servians, and was again and again reprinted, under the less ponderous title *Letopisi*, "The Book of Songs." Some of the songs were adapted, or the Slavonic language, to the Hungarian with the vision of his true mission. But Kachich Mióslavich found no immediate followers among the Servian literati of the second half of the 18th century.


Lessening as the countries inhabited by the Orthodox Servians were under the deadening immediate rule of the Turks, they produced no serious literature. But when the Austrian wars of the 17th century began to roll back the Turkish power, and Hungary recovered its freedom, the Servians living in that country rapidly acquired some culture, and their literature began to revive. During the 18th century, however, they did not write in the living language of the Servian people. After the disappearance of the Servian printing-presses in the 16th century, all liturgical books were brought from Russia and printed in the Russian-Slavonic language; while the teachers in the Servian schools were Russians. Russian-Slavonic thus became the literary language of the Orthodox Servians.

The more important works of the time were the *History of Montenegro*, by the Montenegrin bishop Basil Petrovich (Moscow, 1754); the *Short Introduction into the History of the Origin of the Slavono- Servian People*, by the Illirian monk, Ganić (1751); and the *History of the Slavonic Nations*, more especially of the Bulgarians, Croats and Servians, by Archimandrite Yovan Raich (Vienna, 1794). During extensive travels in Russia and the Balkan countries Raich had collected many significant material narrative of the love, suffering, and struggle of the Servian people. But as very soon he found that the monastery could not satisfy his aspirations, he left it and started to travel, acquiring a knowledge of classical and modern languages and literatures. An ardent Servian patriot, he proclaims the principle that books ought to be written for the people and therefore in the language which the people understood and spoke. His attempt at this was the publication of the *Adventures of a monk named Dositie* (Leipzig, 1783), written in the language spoken in Servian towns. It immediately made a great impression, which was enhanced by the continuation of his autobiography, *Historia* (History) of his Life (Leipzig, 1782). These books created a reading public among the Servians and mark the beginning of a really modern period in their literature. Obradovich, one of the Servian poets they call him, was so highly appreciated as an author, savant and patriot that in 1807 Karageorge invited him to Servia and appointed him a senator and minister of public education, in which capacity he established in Belgrade the first Servian college (*Velika Škola*). Dositie was an admirer of England and English literature. While staying in London in 1783 he was much encouraged by the enthusiasm with which he introduced his books to the English public. Paul Solarich, another distinguished author, was befriended by the Hon. Frederick North, afterwards 4th earl of Guildford, state secretary for public instruction in the Ionian Islands.

5. Modern Servian Literature.—The activity of Karajich brought new life to the Servian literature of the 19th century. The poets abandoned classical models and ceased to write in hexameters; they preferred to derive their inspiration from popular poetry, of which Karajich collected for them hundreds of examples. Writers in different departments of literature vied with each other to write in pure and correct Servian. And, although it could not be justly said that the Servians of the 19th century produced a really great work from the literary point of view, they certainly made progress and produced some remarkable poetry.

Their three greatest poets are Sima Milutinović Saraylija (1791–1847), Peter Petrovich, Petrović (1812–1851), prince-bishop of Montenegro, and "Zmay" Yovan Yovovich (1833–1904). Saraylija’s most important work is *Srpski Sanski* (Leipzig, 1826), in which he describes the rising of the Servians against the Turks in 1804 and 1815. His imagination is lively, his descriptions graphic, but the impetuosity of his genius cannot find adequate words to express itself, and then he creates new words of which the meaning is not clear to the reader. Yet his elegies are quite popular among the Servians. Nyegos composed his first important work, *Srpska Mikroisma* or "The Light of the Microcosm" (Belgrade, 1847), under the influence of *Paradise Lost*. In the *Lucha* he describes how Satan and the rebels brought the fall of man and set the world on fire. He was led by a protecting angel to the beginning of time when Satan, supported by an angel called Adam, was in full rebellion against God. But the co-rebel Adam repented and God then created the Serbs to help the fallen angels and drive the devils away from the planet. In *Gorski Viyavn* or "The Mountain Wreath" (Vienna, 1847), Nyegos describes the liberation of Montenegro from the Turks towards the end of the 17th century in the form of a drama. There is, however, hardly anything dramatic in the poem, but the characters deliver magnificent descriptions of Montenegro and Montenegrines, and the play is full of noble senti- ments. The Servian critics consider Georgiy as the finest poetical work in their literature. It has been translated into all the principal European languages except English. Dr Yovan Yovovich, called by his admiring countrymen "Zmay" (the Dragon) and "Srpski Sanski* (Serbian Sanskrit), anticipated the romantic movement of his time. He started his poetical career by producing melodious translations of some of the best poems of other nations (the Hungarian Arany’s *Toldal János, Példal János Vité*, Lermontov’s *Demen*, Tennyson’s "Enoch Arden", Bodenstedt’s *Miro-Shafny*, Goethe’s *Iphigenie*, &c.). His own lyrical and satirical poems are without a rival in Servian literature. In his later years he gave much of his time and energy to his translations and the education of his people, reciting hundreds of his finest songs to children. There are several editions of his collected poems; one of the best is that of the Servian Literary Association (Belgrade, 1896).

The Servian writers of the 19th century may be mentioned Dr Milosch Svetic (1799–1886), Branko Radich- evich (1824–1853), Gyura Yakshich (1838–1878), Yovan Subotich (1833–1910), Dr Laza Kostich (b. 1843), Vojin Alilovich (1842–1898), Voivod Ilich (1852–1894), Prince Nicholas of Montenegro (b. 1841). The Servians have as yet no great novelist, but they have several very successful writers of short stories. Among these the first place
belongs to Dr Laza Lazarevich. After him the most popular authors of short stories are; Stefan Sremac, whose mild satire and sparkling humour earned for him the name of the "Servian Dickens"; Yanko Vukcevic, and Vukcevic Debari Uzdaini, whose tales from the lives of Servian peasants; Sima Matvuly, whose stories give a true picture of the Servians of Dalmatia and of Montenegro. Delightful stories of the times and the Slavic Adriatic coast were written by Stefan Mitrov Livadić (1824–1878).

In dramatic literature the Servians are comparatively rich. The poet Dr Laza Kostich made excellent translations from Shakespeare into Servian (1830–1855). Richard Hristić (1821–1871) gave the Servian stage two of its best tragedies: Maxim Trnoveč and Petar Segedivšt. Also the comedy Gordana. Matija Ban’s Meyremach is considered the best tragedy in the Serbo-Croatian language. The most famous playwright, Prince Nicholas of Montenegro, has been often played and enthusiastically received by the public, but the critics deny to it much dramatic value. Another young Servian playwright, Radojica Mijatovich, was given the Servian stage in his drama Stefan Nemania and tragedy Todor of Sležiš. Among the writers of comedy the first place must be assigned to Kosta Trifković (d. 1879). Milovan Glišić (d. 1906) was also very popular; and Branko Njistić was the most successful of Servian dramatists early in the 20th century.

In modern scientific literature the principal Servian names are those of the electrician Nicholas Tesla, the botanist Dr Josip Panchić, and the geologists Dr Yovan Zajučević and Dr Yovan Tavičić (Cvijić). In philology a very high place is occupied by Gyuro Danichić, once professor of philology at the high school in Belgrade and now at the Franciscan College in Vienna, and Agamir Račić (d. 1908), who for years was the principal editor of the great lexicon of the Servian or Croatian language. He had a very distinguished pupil in Stoyan Novaković, who wrote numerous studies on philological subjects, and who, with his book in Servian of a Dictionary of the Slavonic dialects of the Bosnian schools. In historical literature we find besides Yovan Račić, mentioned earlier, Panta Sretykovich, with his History of the Servian Nation; Stoyan Doshkov (d. 1908), with his Servia under Tsar Domnić; Stoyan Novaković, with his Historical Essays on the Objects from the medieval history of Servia, his History of Her Servian Literature, his Revival of the Servian National State and Rising against the Turks (the two last named books appeared in Belgrade in 1901, of Bordeaux in 1902, of Lyubomir Kovačevich and Lyuba Yovanovich, who together wrote a standard work on the history of the Servian nation; Chedo Mijatović, with his monographs on Gyurgyank Branković and the chronicler of the Trzecić. 

BIBLIOGRAPHY.—The best works on the Servian language and literature are those already mentioned as written by Servian authors: Karalje, Dafnići, Št. Novaković, etc. See also on the language Dr F. Miklošić’s Vergleichende Lautlehre der slav. Sprachen (11. Ser.: Serbisch und Chroatisch (Vienna, 1870), and his Wort-bildunglehre der slav. Sprachen (Vienna, 1876); W. Vondrak Vergleichende slavische Grammatik (Göttingen, 1906 and 1908); J. Florinsky, Lectio po slavonikomu yazykomeni (Kiev, 1895). Good text-books are P. Buddhani, Grammatica della lingua serbo-croatia (Vienna, 1867); Parchić, Grammaire de la langue serbo-croate (Strasbourg, 1880); and W. Vondrak, Grammatik der slavischen Sprachen (Berlin and Leipzig, 1898). 

SERVICE TREE, Pyrus domestica, a native of the Mediterranean region, not infrequently planted in southern Europe for its fruit. It has been regarded as a native of England on the evidence of a single specimen, which has probably been planted, now existing in the forest of Wyre. Though not much cultivated its fruit is esteemed by some persons, and therefore two or three trees may very well be provided with a place in the orchard, or in a sheltered corner of the lawn. The tree is seldom productive till it has arrived at a goodly size and age. The fruit has a succulent, yellowish flesh, and, like the medlar, is fit for use only when thoroughly mellowed, but when kept under cover, it becomes good. There is a pear-shaped variety, pyriformis, and another apple-shaped variety, maliformis, both of which may be propagated by layers, and still better by grafting on seedling plants of their own kind. The fruit is sometimes brought to market in winter. The service is nearly allied to the mountain ash, Pyrus aspera, which it resembles in having regularly primate leaves. P. litorinallz is the wild service, a small tree occurring locally in woods and hedges from Lancashire southwards; the fruit is sold in country markets. These, with other species, including P. campestris and P. montana, bear leaves which are white and flocculent beneath, form the subgenus Serbus, which was regarded by Linnaeus as a distinct genus.

SERVIEN, ABEL, MARQUIS DE SABLÉ AND DE BOISDAUPHIN, COMTE DE LA ROCHE-SERVIEN (1593–1659), French diplomat, was born at Grenoble, the son of Antoine Servien, procurator-general of the estates of Dauphiné. He succeeded his father in that office in 1616, and in the following year attended the assembly of notables at Rouen. In 1618 he was named councillor of state and in 1624 was called to Paris, where he found favour with Richelieu. He displayed administrative ability and great loyalty to the central government as intendant in Guienne in 1626–1628. In 1628 he negotiated the boundaries delimitation with Spain. Appointed president of the parliament of Toulouse in 1630, he soon resigned to accept an embassy to Italy, where he was one of the signatories of the treaty of Cherasco and of the treaties with the duke of Savoy (1631–1632). In 1634 he was admitted to the French Academy. Two years later he retired from public life as the result of court intrigue. Servien lived at Angers or on his estates at Sablé until the death of Louis XIII., when Mazarin entrusted him with the conduct, conjointly with the comte d’Avaux, of French diplomatic affairs in Germany. After five years’ negotiations, and a bitter quarrel with the comte d’Avaux, which ended in the latter’s recall, Servien signed the two treaties of the 24th of October 1648 which were part of the general peace of Westphalia. He received the title of minister of state on his return to France in April 1649, remained loyal to Mazarin during the Fronde, and was made superintendent of finances in 1653. He was an adviser to Mazarin in the negotiations which terminated in the treaty of the Pyrenees (1659). He amassed a considerable fortune, and was unpopular, even in court circles. He died at the château de Meudon on the 12th of February 1659.

Servien left an important and voluminous correspondence. See R. Kerviler, A. Servien, étude sur sa vie politique et littéraire, (Mammers, 1879).

SERVITES, or "SERVANTS OF MARY," an order under the Rule of St Augustine, founded in 1233. In this year seven merchants of Florence, recently canonized as "the seven holy Founders," gave up their wealth and position, and with the bishop’s sanction established themselves as a religious community on Monte Serrario near Florence. They lived an austere life of penance and prayer, and being joined by others, they were in 1240 formed into an order following the Augustinian rule supplemented by constitutions borrowed from the Dominicans. Soon they were able to establish houses in various parts of Italy, where within twenty-five years four provinces were formed; they also at an early date founded many houses in France, Germany and Spain, but they never came to England before the Reformation. The most illustrious member of the order and its chief propagator and organizer was St Filippo Benizzi, the fifth general, who died in 1285. The order received papal approbation in 1255; in 1242 it was established as a Mendicant order, and in 1907 it was sustained with the four great orders of Mendicant friars. The Servites undertook missions in Tartary, India and Japan. As in the other orders there were various mitigations and relaxations of the rule, producing a variety of reforms, the chief being that of the eremitical Servites. There are at the present day 64 Servite houses, mostly in Italy; there are two or three in England and in America.

There are Servite nuns and also tertiaries, founded by St Juliana Falconieri, 1305, who are widespread and devote themselves chiefly to primary education. They have several convents in England. The history of the Servites is black.

The chief work on the Servites is the Monumenta by Morini and Soulier, 1897, &c. See Hedyot, Histoire des ordres religieux (1715), ii. cc. 39–41; Max Heimbucher Orden u. Kongregationen (1907), ii. § 73; Weizer u. Welte, Kirchen und Orden (4th ed.); The Encyclopædia of Religious Knowledge (3rd ed.). The most interesting part of Servite history is told by P. Soulier, Vie de S. Philippe Benizzi (1886). (E.C.B.)

SERVITUTE (Lat. servitut, from servire, to serve), a right over the property of another. In Roman law, servitudes were classified into (1) personal, i.e. those given to a particular person, and (2) praeludial, i.e. those enjoyed over something else (praedium) or by being owner or tenant of a piece of land on which they stood (praedium dominius). Personal servitudes were subdivided into (a) usus, the right of using properly; (b) ususfructus the
right of using and enjoying the fruits of property; and (c) and (d) *opera servorum sive animalium*. Prædial servitudes were either (a) rustic, such as *jus eundi*, the right of walking or riding along the footpath of another; *aquæ dutus*, the right of passage for water; *possendii*, the right of pasture, &c.; or (b) urban. Urban servitudes were of various kinds, as *onera servitutum*, the right of using the wall of another to support a man's own wall; *prædìendi*, the right of building a structure, such as a belvedere or verandah, so as to project over another's land; *stillicidii*, *jus inmittendi*, and several others. Servitudes were created by a disposition *inter vivos*, or by contract; by testamentary disposition; by the conveyance of land or by prescription. They might be extinguished by destruction of either the res servientia or the res dominans; by release of the right, or by the vesting of the ownership of the res servientia and res dominans in the same person.

In English law there may be certain limited rights over the land of another, corresponding somewhat to servitudes, and termed easements (q.v.). In Scots law the term is still in use (see EASEMENT).

**SERVIIUS HONORATUS, MAURUS** (or MARIUS), Roman grammarian and commentator on Virgil, flourished at the end of the 4th century A.D. He is one of the interlocutors in the *Saturnalia* of Macrobius, and allusions in that work and a letter from Symmachus to Servius show that he was a pagan. He is often described as the most famous of the Roman grammarians and is described as "the greatest man of his time." He is chiefly known for his commentary on Virgil, which has come down to us in two distinct forms. The first is a comparatively short commentary, definitely attributed to Servius in the superscription in the MSS. and by other evidence. A second class of MSS. (all going back to the 10th or 11th century) presents a much expanded commentary, in which the first is embedded; but these MSS. differ very much in the amount and character of the additions they make to the original, and none of them bears the name of Servius. The added matter is undoubtedly ancient, dating from a time but little removed from that of the original. It is added to a large extent on historical and antiquarian literature which is now lost. The writer is anonymous and probably a Christian. A third class of MSS., written for the most part in Italy and of late date, repeats the text of the first class, with numerous interpolated scholiasts of quite recent origin and little or no value.

The real Servian commentary practically gives the only complete extant edition of a classic author written before the destruction of the empire. It is constructed very much on the principle of a modern edition, and is partly founded on the extensive Virgilian literature of preceding times, much of which is known only by the MSS. preserved in the commentary. The notices of Virgil's text, though seldom or never authoritative in face of the existing MSS., which go back to, or even beyond, the times of Servius, yet supply valuable information concerning the ancient recensions and textual criticism of Virgil. In the grammatical interpretation of his author's language, Servius does not rise above the stiff and overwork subtilties of his time; while his etymologies, as is natural, violate every law of sound and sense. As a literary critic the shortcomings of Servius, judged by a modern standard, are great, but he shines in comparison with his contemporaries. In particular, he deserves credit for fighting against the prevalent allegorical methods of exposition. But the abiding value of his work lies in his preservation of facts in Roman history, religion, antiques and language, which but for him might have perished. Not a little of the laborious erudition of Varro and other ancient scholars has survived in his pages. Besides the Virgilian commentary, other works of Servius are extant: a collection of notes on the grammar (Ars) of Aelius Donatus; a treatise on metreical endings (*De finalibus*); and a tract on the different metres (*De centum metris*).

**SERVUS TULLIIUS**, sixth legendary king of Rome (578-534 B.C.). According to one account he was the son of the household genius (Lar) and a slave named Orcisia, of the household of Tarquinius Priscus. He married a daughter of Tarquinius and succeeded to the throne by the contrivance of his mother-in-law, Tanaquil, who was skilled in divination and foresaw his greatness. Another legend, alluded to in a speech supposed Latin descent is contradicted by a fragment on a bronze tablet dug up at Lyons in 1524), represented him as an Etruscan soldier of fortune named Mastarna, who attached himself to Cæles Vibenna (Cælius Vivenna), the founder of an Etruscan city on the Caelian Hill (see also Tacitus, *Annales*, iv. 65). An important event of his reign was the conclusion of an alliance with the Latins, whereby Rome and the cities of Latium became members of one great league, whose common sanctuary was the temple of Diana on the Aventine. His reign of forty-four years was brought to a close by a conspiracy headed by his son-in-law, Tarquinus Superbus.

The legend of Servius presents certain similarities to that of the founder of Rome. His miraculous birth, commemorated by Servius himself in the festival established by him in honour of the Lares, recalls that of Romulus. Again, as Romulus was the author of the patrician groundwork of the constitution, so Servius was regarded as the originator of a new classification of the people, which laid the foundation of the gradual political enfranchisement of the plebeians (for the constitutional alterations with which his name is associated, see ROME: Ancien History; for the Servian Wall see Rome: Archaeology). His name is also associated with the Law of the Servians, which the Etruscan tradition alluded to above (on which see V. Gardthausen, *Mastarna oder Servius Tullius*, 1882), and his insertion among the kings of Rome is due to the need of providing an initiator of subsequent republican institutions. The treaty with the Latins is mentioned by Dionysius of Halicarnassus alone, who had not seen it himself; indeed, it is doubtful whether it was then in existence, and in any case, considering the changes which the language had undergone, it would have been unintelligible. It is also suspicious that no list of the members of the league is given, contrary to the usual custom of the ancients.
Servia, seeking compensation for the aggrandizement of Bulgaria, had constituted herself the champion of the treaty of Berlin.

King Milan had issued orders for the Servian army mobilization on the very day of Prince Alexander's proclamation at Philippopolis, and large forces were concentrated (October 1st-12th) on the Bulgarian frontier. On the 19th the prince ordered the Bulgarian and Servian troops to march, but it seems certain that, whilst in eastern Rumelia every preparation had been made for war, Prince Alexander had so little expectation of, and wish for, a war with Servia, that few measures were taken to supply the needs of a field army on that side, though fortifications were begun at several places, notably at Sofia and Slivnitza, towards the end of October.

Unlike the Servian army, which contained few permanent units and consisted mainly of militia, the standing army of Bulgaria, trained and commanded by Russian officers since 1877-1878, was organized on the German system of filling up relatively strong cadres to war strength and forming additional units. When fully mobilized the field army numbered about 55,000 men. The Rumelian forces (militia) consisted in all of about 35,000 men. Besides these forces was the "Bandit brigade" of Captain Panitza, an irregular force some 3,000 strong, composed of Macedonians, Turks, Jews and other miscellaneous volunteers. This force did good service as a flying right wing of the main army. In the Bulgarian army the whole of the staff and superior officers, as well as about half the regimental captains, were Russians. When the mobilization of the Servian and Rumelian forces was declared by the prince, the whole of the Russian officers were at once withdrawn, and the heavy task of creating a staff and selecting young officers for all the superior commands had to be undertaken in front of the enemy. Moreover, when on the 14th of November Milan finally declared war, the Bulgarian forces were mostly far away beyond the Balkans on the Turkish frontier. The Servian main army (under King Milan), and the army of the Timok promptly crossed the frontier and soon came in contact with small forces of the enemy. On the Timok little or nothing of importance took place throughout the war, as the forces opposing the army of the Timok near Vidin effectively neutralized that force. In front of Dragoman and Tn the Bulgarians fell back, engaging in stubborn rearguard batches at every favourable place. The Servian "Army of the Nishava" advanced but slowly and with hesitation, while the most strenuous exertions were made by Prince Alexander and his newly-formed staff to collect their far-distant troops in the Slivnitza position. Every commander was given the simple order to march on Slivnitza. The civilian population was to be ready with supplies to meet the troops. When the troops arrived near the Nishava, the mobilization of extraordinary difficulties of country and weather, the Bulgarians marched on the decisive point at the highest possible speed of man and horse. Some remarkable marches are recorded: the 8th infantry, 4,500 strong, covered 59 m. in thirty-two hours, leaving only sixty-two men behind; the 3rd and part of another Rumelian battalion reached Sofia so exhausted that they were sent to the front on horseback, two men to each horse; the troops that were sent up by rail were packed in open trucks, sixty men to a truck. The furious energy displayed had its reward on the field of battle. Before the last shot of the battle of Slivnitza was fired, nearly half of the entire forces of Bulgaria and Rumelia were in the lines, and 14,000 men more faced the army of the Timok at Widdin. With the main army—a striking display of what could be accomplished by patriotism and vigour—were fifty-six pieces of artillery, most of which had been dragged over the Balkan passes in mid-winter.

The position of Slivnitza, barring the high road between Nish and Sofia, had been extensively fortified, but when the Servians opened their attack on the 17th of November, there were but few troops available to occupy the works. On the right of the Bulgarian line was the Meat-Kleist position, occupied by some battalions under Captain Benderev; here fighting went on through the short winter day, which ended with a gallant, and for the time successful, counter-attack by six Bulgarian battalions led by Benderov. The prince, not yet ready for the offensive, withdrew these troops to their original position. In the centre, near the high road, a hot and, at one moment of the day, almost successful attack of the Servians ended with their complete repulse. The latter had had 17,000 men against the Bulgarians' 11,000; yet they had, owing mainly to faults in the supply system, been unable to follow up their success. The Bulgarian losses were very heavy, and it seems likely that, whilst in eastern Rumelia every preparation had been made for war, Prince Alexander had so little expectation of, and wish for, a war with Servia, that few measures were taken to supply the needs of a field army on that side, though fortifications were begun at several places, notably at Sofia and Slivnitza, towards the end of October.

On the 15th alarm and consternation at Sofia, caused by the presence of hostile forces at Breznik, were so great that Alexander left the command in the hands of his chief of staff, Major Guchev, and hurried back to the capital in order to organize the defense. The Servian leader was, however, as inactive on the 19th as on the 18th, and when he at last moved forward towards Slivnitza it was only with a portion of his force; this was driven back, by a detachment from the left wing of the Bulgarian position, to Breznik. Meanwhile, the Bulgarian commander had reopened his attack on the Danube division. Twice he was repulsed. Then finally at about 3 p.m. his battalions carried the heights held by the Servians. A little before this the Bulgarian centre likewise moved forward, and, though a final attack of the Servians on the gap caused by the absence of the Bulgarian troops detached towards Breznik came near to success, the prince returned to the battlefield to find his troops everywhere victorious and driving the enemy before them. Two days later, reorganized and reinforced, the Bulgarians took the offensive and carried the Dragoman pass. On the 25th Prince Alexander received at Tsaribrod proposals for an armistice from King Milan; these were not accepted, and the Bulgarian army, crossing the frontier, advanced in several columns upon Pirot, where the army of the Nishava took up a defensive position in the town and on the surrounding heights. A two-days' engagement followed (26th and 27th of November). On the 26th the Bulgarians were successful, but a heavy counter attack on the following day almost snatched the victory out of their hands, and it was only after a severe contest lasting eleven hours that the Servians finally gave way. The Servian defeat was complete; Sofia and Servia were occupied, and a new great Bulgarian victory seemed to be certain. As they were preparing to pursue the defeated and now greatly demoralized enemy on the 28th, the Austrian minister at Belgrade arrived at headquarters and hostilities ceased. The intervention of Austria saved the Servian army, which was greatly demoralized, and was now threatened by the united Bulgarian force of nearly 55,000 men. On the same day the army of the Timok was repulsed with heavy loss in an attack on Vidin.

Servia escaped almost unpunished from her war of aggression. The young Bulgarian army, with its improvised staff, only appointed field officers, displayed admirable marching power and fighting qualities, and the Rumelian militiamen proved themselves to be good soldiers. The Servians had, however, fought with great bravery also, and the victory must be ascribed in the main to the personal influence, the strenuous exertions and the sound military judgment of Prince Alexander, and the brief but decisive campaign set the seal to Bulgarian unity.

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However, he occupied the place of the second Senwosri (formerly read Uersetesen) of the XIXth Dynasty, and his name is now usually viewed as a corruption of Senwosri. So far as is known no Egyptian king penetrated a day's journey beyond the Euphrates, and if any individual of the minor emperors and the conquerors of Europe. The kings of the XVIIIth and XIXth dynasties were the greatest conquerors that Egypt ever produced, and their records are clear on this point. Senwosri III. raided south Palestine and Ethiopia, and at Semna beyond the second cataract set up a stela of conquest that in its expressions recalls the stela of Sesostris in Herodotus: Sesostris may, therefore, be the highly magnified portrait of this Pharaoh. Khan, the powerful but obscure Hyksos king of Egypt, whose person might be pronounced Sweserenor, is perhaps a possible prototype for slaves inscribed with his name found with Bactrian swords at Bagdad to Cnosus. Sesostris is evidently a mythical figure calculated to satisfy the pride of the Egyptians in their ancient achievements, after they had come into contact with the great conquerors of Assyria and Persia. When we recollect that the Egyptian Tarchus (Tirhaka) of the 7th century B.C., who was hopelessly worsted by the Assyrians and scarcely ventured outside the Nile valley, was credited by Megasthenes (4th century) and Strabo with having extended his conquests as far as India and the pillars of Hercules, it is not surprising if the names of many kings of antiquity are derived from the case of Tarchus, the miscellaneous levies which he employed himself and those which composed the Egyptian and Assyrian armies opposed to him, and the lands that Egypt and Ethiopia traded with, must all have been counted, partly through misunderstanding, partly through wilful perversity, to his empire.

Herodotus ii. 102-111; Disd. Sic. i. 53-59; Strabo xv. pp. 687; see also article Egypt; and Kurt Sethe, "Sesostris," 1900, in his Unters. u. Altertheit von Egypt, zweite edition (F. L. C.);

**SESSA AURUNCA.** A town and Episcopal see of Campania, Italy, in the province of Caserta, on the S.W. slope of the extinct volcano of Rocca Monfina, 27 m. by rail W.N.W. of Caserta and 204 m. E. of Formia by the branch railway to Speranze, 666 ft. above sea-level. Pop. 5945 (town), 29,077 (commune). It is situated on the site of the ancient Sessa Aurunca, on a small affluent of the Liri. The hill on which Sessa lies is a mass of volcanic tufa. The town contains many ancient remains, notably the ruins of an ancient bridge in brickwork of twenty-one arches, of substructures in opus reticulatum under the church of S. Benedetto, of a building in opus quadratum, supposed to have been a public portico, under the museum, of S. Pietro, and of the Romanesque cathedral is a basilica with a vaulted portico and a nave and two aisles begun in 1103, a mosaic pavement in the Cosmatese style, a good ambo resting on columns and decorated with mosaics showing traces of Moorish influence, a Paschal candelabrum, and an organ gallery of similar style. The portal has curious sculptures with scenes from the life of SS. Peter and Paul. In the principal streets are memorial stones with inscriptions in honour of Charles V., surrounded by an old crucifix with a mosaic cross. The hills of Sessa are celebrated for their wine.

The ancient chief town of the Aurunci, Aurunca or Ausona, is believed to have lain over 2000 ft. above the level of the sea, on the narrow south-western edge of the extinct crater of Rocca Monfina. Here some remains of Cyclopean masonry exist; but the area enclosed, about 100 yds. by 50, is too small for anything but a detached fort. It dates, doubtless, from a time prior to Roman supremacy. In 337 B.C. the town was abandoned, under the pressure of the Sidicini, in favour of the site of the modern Sessa. The new town kept the old name until 315, when a Latin colony under the name Sessa Aurunca was founded here. It was among the towns that had the right of coinage, and it manufactured carts, baskets, &c. Cicero speaks of it as a place of some importance. The triumvir settled some of their veterans here, whence it appears as Colonia Julia Felix Classica Sessa. From inscriptions it appears that Matidia the younger, sister-in-law of Hadrian, had property in the district. It was not on a highroad, but on a branch via Appia at Minturnae and via Latina.
at Teanum; the pavement between the latter place and Suessa is in places well preserved, especially near Teano, and so is that of a road ascending from Suessa northward towards the crater mentioned. See A. Avena, Monumenti dell’ Italia Meridionale (Naples, 1902, i. 181 sqq. (T. As.).

SESSION (through Fr. from Lat. sessio, seder, to sit), the act of sitting or the state of being seated, more generally the sitting together or assembly of a body, judicial, legislative, &c., for the transaction of its business, and also the time during which the body sits until its adjournment or dispersion. A session of parliament is reckoned from its assembling till prorogation; usually there is one session in each year. In particular, the term is applied to the sittings of a central court, especially criminal, such as the session of the Central Criminal Court in London. The sittings of the justices of the peace or magistrates in the United Kingdom are “sessions of the peace” for the transaction of the judicial business committed to them by statute or by their commission. These are either “petty sessions,” courts of summary jurisdiction held by two or more justices of the peace or by a stipendiary or metropolitan police magistrate under statute for the trial of such cases as are not of sufficient importance to be tried before quarter-sessions, or for a preliminary inquiry in “indicatible offences” (see JUSTICE OF THE PEACE and SESSIONAL JURISDICTION). The “special sessions” of the justices are held for licensing purposes, styled “Brewster sessions,” or for carrying out the provisions of the Highway Acts, &c. The only sessions which are “general sessions” of the peace are now “quarter-sessions” (q.v.). The supreme court of Scotland is termed the “Court of Session” (see SCOTLAND), and the name is given in the Presbyterian church to the lowest ecclesiastical court, composed of the elders of the church presided over by the minister. In the Established Church of Scotland this is usually styled the “Kirk-session.”

SESTETT, the name given to the second division of a sonnet, which must consist of an octave, of eight lines, succeeded by a sestet, of six lines. In the usual course the rhymes are arranged abcabc, but this is not necessary. Early Italian sonnets, and in particular those of Dante, often close with the rhyme-arrangement abab, but in languages where the sonority of syllables is not so great as it is in Italian, it is dangerous to leave a period of five lines between one rhyme and another. In the quadrain, there is properly speaking no sestet, but a quadrain followed by a couplet, as in the case of Shakespeare’s sonnets. Another form of sestet has only two rhymes, ababcc; as is the case in Gray’s famous sonnet, “On the Death of Richard West.” The sestet should mark the turn of emotion in the sonnet; as a rule it may be said that the octave having been more or less objective, in the sestet reflection should make its appearance, with a tendency to the subjective matter. For example, in Matthew Arnold’s ingenious “The Better Part,” the rough inquirer, who has had his own way in the octave, is replied to as soon as the sestet commences:

“So answerst thou? but why not rather say:
Have man no second life? pitch this one high.
More stringly, then, the inward judge obey!
Was Christ a man like us? For the case of Shakespeare’s.
If we, then, too, can be such men as he?”

Wordsworth and Milton are both remarkable for the dignity with which they conduct the downward wave of the sestet in their sonnets. The French sonneteers of the 16th century, with Ronsard at their head, preferred the softer sound of the rhyme-composition ababcc. The German poets have usually wavered between the English and the Italian forms.

SESTINA, one of the most elaborate forms of verse employed by the medieval poets of Provence and Italy, and retained in its occasional use by the modern poets of Western Europe. The scheme on which the sestina is built was the invention of the great troubadour, Arnaut Daniel (d. 1190), who wrote many sestinas in the lingua di st. Dante, a little later, wrote sestinas in Italian, and of these the most famous is that beginning “Al poco giorno ed al gran cerchio d’ombra.” In the De vulgari eloquentia, Dante admits that he copied the structure of his sestinas from Arnaut Daniel; “et nos cum seuti sumus,” he says, after praising the work of the Provengal poet. The sestina, in its pure medieval form, is independent of rhyme; it consists of six stanzas of six lines each of blank verse. This recurrence of the number six gives its name to the poem. The final words of the first stanza appear in inverted order in all the others, the order as laid down by the Provençal being as follows:—abedef, cbadef, cdefba, deabcf, fbcdea, bfae. To these six stanzas followed a lornada, or envoi, of three lines, in which all the six key-words were repeated in the following order:—b-e, d-c, f-a. It has been supposed that there was some symbolic mystery involved in the rigid elaboration of this form, from which no slightest divergence was permitted; but if so this cryptic meaning has been lost. Petrarch cultivated a slightly modified sestina, but after the middle ages the form fell into disuse, until it was revived and adapted to the French language by the poets of the Pléiade, in particular by Pontus de Thyrard. In the 14th century, the sestina or sestine was assiduously cultivated by the Conte de Gramont, who, between 1380 and 1348, wrote a large number of examples, included in his Chant du passé (1854). He followed the example of Petrarch rather than of the Provençal troubadours, by introducing two rhymes instead of the rigorous blank verse. A sestina by Gramont, beginning:

“L’étang qui s’éclaircit au milieu des feuillages,
La pluie à tâtons un miroir l’assombris;
Les flotilles de fleurs, ses insectes volages
Me charment. Longeant au creux de leurs rivages
J’erre, et les yeux remplis d’un mirage veillent,
J’écoute l’eau qui réve en son tiède sommeil,”

has been recommended to all who wish to “triumph over the innumerable and terrible difficulties” of the sestina, as a perfect model of the form in its “precise and classic purity.” The earliest sestina in English was published in 1877 by Mr Goss; this was the example of Mr Arnaud Daniel. Since that time it has been frequently employed by English and American writers, particularly by Swinburne, who has composed some beautiful sestinas on the rhymed French pattern; of these, that beginning “I saw my soul at rest upon a day” is perhaps the finest example of this poem existing in English. Mr Swinburne is, moreover, like Petrarch, the author of an astonishing tour de force, “The Complaint of Lisa,” which is a double sestina of twelve verses of twelve lines each. The sestina was cultivated in Germany in the 17th century, particularly by Opitz and by Weckerlin. In Italy an attempt was made, not without success, to compose German sestinas in dialogue, while the double sestina itself is not unknown in German literature.

SESTRI LEVANTE (anc. Segesta Tigliulium), a seaport of Liguria, Italy, in the province of Genoa, from which it is 28½ m. distant by rail, 33 ft. above sea-level. Pop. (1901) 3034 (town); 12,038 (commune). It is both a summer and a winter resort, with fine views. Part of the town is situated on a promontory (230 ft.) between two bays. The ancient town was the port of exportation of the slate of the district, for we hear of a place called Tigua or Tegula on the coast-road; but we know practically nothing of the political condition of the district in Roman times.

SESTRI PONENTE, a town of Liguria, Italy, in the province of Genoa, 4 m. W. of that town on the coast. Pop. (1901) 17,225. It has important shipbuilding yards and iron-works, with factories for macaroni, matches and tobacco, tanneries and saw-mills, and, in the vicinity, alabaster quarries. A mile and a half west is Pegli, also a favourite seaside resort, with beautiful walks and fine villas, among which the Villa Pallavicina, with rare trees and fantastic buildings, fountains and grottoes, is noticeable.

SETH, in accordance with Dillmann, “setting” or “slip”; Septuagint, Philo and New Testament, Σθήν, but x Chron. i. 1 Σθεν in A; Josephus, Σθήνος, Vulg. Seth, in Gen. iv. 25, 26 (J) and v. 3-8 (P), the son of Adam. At the age of 105 he begat Enos; he lived in all 912 years. Seth was born after the murder of Abel, and in iv. 25 a popular etymology is given of his name—Adam’s wife called his name Seth, “For God,” said she, “hath
appointed, *shāth*, me another seed instead of Abel." It is further said that after Enos was born, men began to worship Yahweh. Apparently Gen. iv. 25, 26 had no original connexion with J.'s story of the creation, which speaks of Yahweh freely from the outset. As Enos is a Hebrew word for man, it is probably derived from a tradition in which Enos was the first man. An examination of the Sethite genealogy, vv. 12-27, Kenan, Mahalalel, Jared, Enoch, Methuselah, Lamech, shows that it is slightly different version of the Cainite genealogy, iv. 17-25. Cain (Heb. Kain) is derived from a Semitic root, meaning ‘unto Cain’ or ‘strangely.’ Seth is named in the opening genealogy of Chronicles, 1 Chron. i. 1, and in Luke's genealogy of Christ, Luke iii. 38. The Hebrew text of Ecclesiasticus xlix. 16 has "And Shem and Seth and Enos were visited,"—probably with divine favour; the Greek version runs, "Shem and Seth were glorified among men.

In Num. xxiv. 17, the Authorized Version has "the children of Sheth" in a list of nations; the Hebrew is the same as Seth in Genesis. The passage may perhaps indicate that Seth was originally the name of a tribe. The "Seth" of Numbers is sometimes identified with the Bedouin, who appear as Sittah and Assyrain and Babylonian inscriptions. But the Revised Version takes the word *šēth* as a common noun, "tumult," and others interpret it as "pride." cf. Gray's Numbers, p. 371.

If the ten patriarchs of Gen. v. (see Noah) correspond to the ten primitive kings of Babylon, Seth, as second, will correspond with the Adapa of the Babylonian inscriptions, the Adaparos or Adaparos of Berosus. The two have been compared in that Adapa was demigod and Logos; and Seth figures as the Messiah in later Jewish tradition. We may also note the resemblance between the names Seth. Set or Seth it is. Seth, the hero of war, and the god of Heaven. *Sdeh.* The latter has been supposed to be a Hyksos or Semitic deity and to have some connexion with Sheth; but Cheyne and Müller reject this view. Seth is also identified with Moab or the land of Moab.

A mass of Christian and Jewish tradition has gathered round the name of Seth. Philo, De postrerlori Caini, § 3, explains the name as meaning *rogenous,* watering or "irrigation," connecting it with the Hebrew root *Sh H.* Josephus, Ant. i. ii. 3, tells us that Seth was a virtuous man, and that his descendants lived in perfect harmony and happiness. They discovered astronomy, and inscribed their discoveries on two pillars, one of which, says Josephus, survived in his time. In the Book of Jubilees (1st century A.D.) the name of Seth's wife is given as Asura. In the Ascension of Isaiah (1st century A.D.) Seth is seen in heaven. In the Book of Adam and Eve (A.D. 500-900) Seth is described as perfectly beautiful, like Adam, only more beautiful. Seth was the last child born to Adam; he grew in stature and strength, and began to fast and pray strenuously. A Gnostic sect took the name Sethians.

**SEtIA** (mod. Sezze, 52 m. by rail S.E. of Rome), an ancient town of Latium (adjectum), Italy. It was the south-west edge of the Volturnus mountains, overlooking the Pomptine Marshes, 1047 ft. above sea-level, and 900 ft. above the plain. It was an ancient Volscian town, a member of the Latin league of 490 B.C., which became a Latin colony in 382 B.C., and, owing to the strength of its position as a frontier fortress, is frequently mentioned in the military history of Rome up to the time of Sulla, by whom it was captured in 82 B.C. Under the empire it was well known for its wine, which Augustus preferred even to Falernian. Considerable remains of the city walls exist, built of large blocks of limestone in the polygonal style. This style may also be seen in several terrace walls belonging to a later date, as is indicated by the careful jointing and bossing of the blocks of which they are composed. Such intentional archaism is by no means uncommon in the neighbourhood of Rome. The modern town, occupying the ancient site, is an episcopal see, with a much-restored 13th-century Gothic cathedral. Pop. (1901) 6944 (town) and 10,827 (commune). At the foot of the hill on which the town stands are considerable remains of Roman villas.

**SET-OFF, in law, a statutory defence to the whole or a portion of a plaintiff's claim.** It had no existence under the English common law, being created by 2 Geo. II. c. 22 for the relief of insolvent debtors. Such a defence could be pleaded only in respect of mutual debts of a definite character, and did not apply to cases in which damages were claimed, nor to equitable claims or demands. By the rules of the Supreme Court (O. XIX. r. 3) a defendant in an action may set off or set up any right or claim by way of counterclaim against the claims of a plaintiff, and the judge may determine that a right or counterclaim has then no effect as a statement of claim in a cross-action. (See Pleading.)

In architecture, the term set-off is given to the horizontal line shown where a wall is reduced in thickness, and consequently the part of the thicker portion appears projecting before the thinner. In plinths this is generally simply chamfered. In other parts of work the set-off is generally concealed by a projecting string. Where, as in parapets, the upper part projects before the lower, the break is generally hid by a corbel table. The portions of buttress caps which recede one behind another are called set-offs.

**SETON (Family).** The Scottish family of Seton, Seyton, or Seatoun, claims descent from a Douglall Seton who lived in the reign of Alexander I. Sir Richard Maitland of Lethington counted seven generations between this personage and Sir Christopher Seton (d. 1506), the first of the house who emerges in history with any distinctness, but these links are not all supported by documentary evidence. The name was derived from the Anglo-Norman family of Say, the Anglo-Norman immigrant being supposed to have given the name of Sey-town to the lands granted to him in East Lothian. The family honours include the earldoms of Winton (c. 1000) and Dunfermline; of Eglinton through marriage with the Montgomeries; and through alliance with a Gordon heiress a Seton became the ancestor of the earls and marquesses of Huntly and dukes of Gordon. The Setons were connected by marriage with the royal family of Scotland, and also with the Dunbars, Lindays, Hays and Maitlands.

Sir Christopher Seton, son and heir of John de Seton, a Cumberland gentleman, and his wife Erminia Lascelles, was born probably in 1278, since his age is given in March 1309 as twenty-three. In an inquisition into the lands of his deceased father. He did homage for these in October of that year, and was in the service of Edward I. at Lochmaben in 1304. In 1305 he came into possession of lands which had been granted by Sir John Seton to Robert Bruce and his wife Christian, who was perhaps a Seton. He had married about 1301 Christian Bruce, sister of King Robert, who was possibly his second cousin. He was present at his brother-in-law's coronation at Scone in 1306, and saved his life at the battle of Methven later in the same year. According to Dugdale he shut himself up in Lochdoon Castle in Ayrshire, and on the surrender of that castle he was hanged as a traitor at Dumfries by order of Edward I. He left no heirs. His widow was in March 1307 in receipt of three pence a day from Edward I. for her support at the monastery of Sixhill in Lincolnshire. She was afterwards placed in the custody of Sir Thomas de Gray. His Cumberland estates, with the exception of his mother's dower, were given to Robert de Clifford. Another Seton, John de Seton, described as having no lands or chattels, was hanged for helping in the defence of Tibbers Castle, and for aiding in the murder of John Comyn, with other prisoners of war, at Newcastle in August 1306.

Sir Alexander Seton (d. c. 1350) was probably the brother of Sir Christopher. He received considerable grants of land from King Robert Bruce, and was one of the signatories of the letter addressed by the Scottish nobles to the pope to assert the independence of Scotland. He was twice sent on embassies to England, and in 1333 he defended the town of Berwick against the English. He agreed with the English to surrender the town on a certain date unless he received relief before that time, giving his eldest surviving son Thomas as a hostage. On the refusal of the Scots to surrender at the expiry of the term Thomas Seton was hanged in sight of the garrison. This incident is
related by Fordun and Boece, but with inconsistencies that have rendered it suspect. An elder son, Alexander, had perished in 1332 in opposing the landing of Edward Balliol; according to some authorities the third son, William, was hanged with his brother, but he is generally said to have been drowned during the siege; his daughter Margaret married Alan de Wintoun. The tragic death of young Thomas Seton was the subject of a ballad of "Seton's Sons," printed in Sheldon's Ministracy of the Scottish Border; of a tragedy, The Siege of Berwick (1794), printed 1832) by Edward Jerningham, and of another by James Mitford.

Sir William Seton of Seton (fl. 1371-1393) is said to have been ennobled with the title of Lord Seton, and his heirs laid claim that the barony of Seton was the oldest in Scotland. By his wife Catherine Sinclair he had eight children. John succeeded him; Alexander married Elizabeth, daughter and heiress of Sir Adam de Gordon, by whom he became the ancestor of the Gordons of Huntly.

Sir John of Seton (d. c. 1447) was taken prisoner at Homildon Hill in 1402. He was hostage in England for the earl of Douglas in 1405, queen of in 1412. He was L. C. at her instance) Janet the daughter of the 9th earl of March. His son William was killed at Verneuil, fighting on the French side, leaving as heir George (d. 1478), 1st Lord Seton, who was created a lord of parliament in 1448 as Lord Seton. By his first marriage with Margaret, daughter of John Stewart, earl of Buchan, he had a son John, who died during his father's lifetime. He was succeeded by his grandson George, 2nd Lord Seton (d. 1508), who was a scholar of St Andrews and Paris, and in common report a necromancer. He was captured by the Flemings, and on his release fitted out and maintained a ship for the purpose of harassing Flemish travellers. His son George, 3rd Lord Seton, was killed at Flodden in 1513. He redeemed estates which his father had sacrificed to support his enterprises against the Flemings. By his marriage with Janet, daughter of Patrick Dunbar, 1st Earl of Bothwell, he left a son George, 4th Lord Seton (d. 1540), who allowed Cardinal Beaton to escape from custody in 1543, and received considerable grants of land in the sequel. The castle and church of Seton were burnt by Hertford in revenge for the part he had taken against the English in 1544.

George, 5th Lord Seton (1537-1585), was a firm friend of Mary, queen of Scots. He married Janet, the daughter of the 9th earl in 1557, and three years later he was again in France, because of his adherence to the old religion. When Mary returned to Scotland he became privy councillor and master of the household, but four years later he again found it advisable to retire to France. Mary and Darnley spent their honeymoon at Seton Palace, and Mary found a retreat there after the murder of Rizzio and again after the murder of Darnley. She spent the night before Carberry Hill under Seton's roof, and he was waiting for her on her escape from Lochleven in May 1568. He took her to his castle at Niddrie, Linlithgowshire, and thence to Hamilton. A week later he was taken prisoner at Langside. He was set free after the assassination of the regent Moray, and made his way to Flanders, where he was said to have made his living as a waggoner. He was, in fact, entrusted by Mary's supporters with a mission to the duke of Alva, and sought in vain to secure for service in Scotland two regiments of Scots then in Spanish pay. He returned home in 1571, being apparently reconciled with the government, but he retained his Catholicism and his friendship for Mary, who wrote to Elizabeth in 1581 desiring a passport for Lord Seton that he might alleviate her solitude. In 1581 he was married. Maiton's judgment was that in 1583 he was sent as ambassador to France, where he sought interference on Queen Mary's behalf. He died soon after his return on the 8th of January 1585. The 5th Lord Seton figures in Sir Walter Scott's Abbot. He was succeeded by his second and eldest surviving son, Robert, who became 6th Lord Seton and 1st Earl of Winton. His third son, Sir John Seton of Barns, was a gentleman of the household to Philip II. of Spain. He was recalled to Scotland by James VI., and served as lord of session from 1587 to 1594.

Mary Seton, one of the "Four Maries" attendant on the queen, is supposed to have been the 5th Lord Seton's half-sister, being the daughter of the 4th lord by his second wife, a Frenchwoman named Mary Pieris, maid of honour to Mary of Guise. She had been educated with Queen Mary in France, being about a year older than her mistress, with whom she returned to Scotland in 1591. She helped Mary to escape from Lochlevan by assuming her clothes. Later on she joined her at Carlisle, and remained with her in various prisons until 1583, when prison life had undermined her health and spirits. She retired 50 miles from St Andrews at Pitt Kellow and died there, an old lady of seventy-four, in poverty in 1614.

Robert Seton (d. 1603) succeeded his father as 6th lord in 1585, and was created earl of Winton in 1600. He married, about 1582, Margaret, eldest daughter of Hugh Montgomery, 3rd Earl of Eglinton. His sons Robert and George were successively earls of Winton; the third, Alexander, became, in right of his mother, 6th Earl of Eglinton; the fourth, Thomas, was the ancestor of the Setons of Olveston.

George, 4th earl of Winton (1640-1704), succeeded his grandfather, George Seton, 3rd Earl, in 1650. He saw some service in the French army, and fought in the Covenanters at Pentland and at Bothwell Bridge. By his second marriage, with Christian Hepburn, he had a son George, who quarrelled with his father and is said to have been working as a journeyman blacksmith abroad when he succeeded to the title in 1704. In 1715 the 4th earl joined Kenmure with 300 men at Moffat, but it was against his advice that the Jacobite army invaded England. He was lying in the Tower under sentence of death when he succeeded in making his escape, and proceeding to the continent, he became well known in Rome, where he was grand master of the Roman lodge of freemasons. He died there in 1740. With him the earldom became extinct, but it was revived in 1820 in favour of the earls of Eglinton.

Some of the cadet branches of the family remain to be noticed. The Setons of Parbroath in Fife, represented by American descendants from descendents from George Seton of Parbroath, 3rd Earl, are descended from the Setons of Parbroath. The Setons of Touch, near Stirling, descended from Alexander Seton, 1st Earl of Huntly. They were hereditary armour-bearers and squires of the body to the king, dignities which passed, in the female line, to the Seton-Stewarts in 1786. From the Setons of Touch were descended the Setons of Culcleg or Abercrombie. The Setons of Preston (Linlithgow) and Ekolsund (Sweden) have been connected with the Swedish army since the 16th century when George Seton, a merchant, sailed with the Scottish Black Watch, under Col. M'Leh and accompanied with William Seton, brother of the 1st Earl of Huntly. The Pittmedden branch was an offshoot from Meldrum; the barony was created 1697 for Judge Seton of Pittmedden in 1719). The Setons of Mounie again were a branch of the Pittmedden family; one of their house, Lieut.-Colonel Alexander Seton, 7th Highlanders, was in charge of the troops on the ill-fated Culloden field in 1746. The Setons of Seton, cousins of the Setons of Dunbar and Lord Seton, were the Setons of the 8th Lord Seton, obtained the barony of Carliston in 1553. Other branches are Seton-Gordon of Embro, with a baronetcy created in 1691, and Seton of Carleton, with a baronetcy created in 1664. The viscountcy of Kingston was created for Alexander Seton (d. 1691), third son of the 3rd Earl of Winton, and became extinct on the attainer of James, 3rd Viscount, in 1715.


SETTEE, a long upholstered seat, usually high-backed and with arms at each end. Its ancestors were the settle and the chair—it has alternately resembled the one and the other. It is broadly distinguished from the many varieties of sofa by being intended for sitting rather than reclining—its seat is of the same height as that of a chair; its arms and much of its detail are chair-like. It dates from about the middle of the 17th century, but examples of that early period are exceedingly rare. There is a famous one at Knole, made about midway between the restoration of Charles II. and the revolution of 1688. By that time the settle had acquired the splendid upholstery and convoluted woodwork which adorned the end of the Stuart period. Early in the 18th century the conjoined double or triple chair form
became fashionable. The form was artless, and the absence of upholstery, save on the seat, produced a somewhat angular effect. This type of settee was in essence two chairs with one set of arms. Chippendale made many such pieces, some of them of great beauty. As the taste for carved furniture waned these sturdy settees were replaced by lighter ones, often graceful enough in outline—Hepplewhite and Sheraton were distinguished practitioners—but partaking more and more of the "stuffed-over" character. The desire for comfort and ease gave rise to settees developed out of the original idea that the settee was intended only for sitting bolt upright. Its modern varieties are many, but in all of them the frame, once so lavishly ornamented, is almost concealed by upholstery.

**S**ettembrini, Luigi (1813–1877), Italian man of letters and politician, was born in Naples. At the age of twenty-two he was appointed professor of eloquence at Catanzaro, and married Raffaela Luigia Faustiano (1833). While still a young man he had been affected by the wave of liberalism then spreading all over Italy, and soon after his marriage he began to conspire mildly against the Bourbon government. Betrayed by a priest, he was arrested in 1839 and imprisoned at Naples; although liberated three years later he lost his professorship and had to maintain himself by private lessons. Nevertheless he continued to conspire, and in 1847 he published anonymously a "Protest of the People of the Two Sicilies," a scathing indictment of the Bourbon government. On the advice of friends he went to Malta on a British warship, but although, when King Ferdinand II. granted a constitution (16th of February 1848), he returned to Naples and was given an appointment at the ministry of education, he soon resigned on account of the prevailing chaos, and retired to a farm at Postillo. When reaction set in, once more Settembrini was arrested as a suspect (June 1849) and imprisoned. After a monstrously unfair trial, he and two other "politicals" were condemned to death, and nineteen others to varying terms of imprisonment (February 1851). The death sentences were, however, commuted to imprisonment for life, and Settembrini was sent to the dungeons of San Stefano. There he remained for eight years. His friends, including Antonio Panizzi, then in England, made various unsuccessful attempts to liberate him, and at last he was deported with sixty-five other political prisoners. The exiles received an enthusiastic welcome in London, but Settembrini after a short stay in England joined his family at Florence in 1866. On the formation of the Italian kingdom he was appointed professor of Italian literature at the university of Naples, and devoted the rest of his life to literary pursuits. In 1875 he was nominated senator. He died in 1877. His chief work is his Lesioni di letteratura italiana, of which the dominant note is the conviction that Italian literature "is as the very soul of the nation, seeking, in opposition to medieval mysticism, reality, freedom, independence of reason, truth and beauty" (P. Villari).

See L. Settembrini, Ricordanze, 2 vols., edited by F. de Sancis (Naples, 1879–1880); Epistolario di Luigi Settembrini, edited by F. Fiorentino; P. Villari, Saggi critici (Florence, 1884); Countess Martinengo Cesaresco, Italian Characters (London, 1901).

**S**ettle, Elkanah (1687–1727), English poet and playwright, was born at Dunstable on the 1st of January 1687. He entered Trinity College, Oxford, in 1666, but left the university without taking a degree. His first tragedy, Cambyse, King of Persia, was produced at Lincoln's Inn Fields in 1667. The success of this play led the earl of Rochester to encourage the next, which received the title of The Empress of Morocco (1671). It was performed at Whitehall, and proved a signal success on the stage. It is said by Dennis to have been "the first play that was ever sold in England for two shillings, and the first play that was ever printed with cuts." These illustrations represent scenes in the theatre, and make the book very valuable. The play was printed with a preface to the earl of Norwich, in which Settle described with scorn the effusive dedications of other dramatic poets. Dryden was obviously aimed at, and he co-operated with Crowne and Shadwell in an abusive pamphlet entitled "Notes and Observations on the Empress of Morocco" (1674), to which Settle replied in "Some Notes and Observations on the Empress of Morocco revised" (1674). In the second part of Ab solam and Achitophel, in a passage certainly by Dryden's hand, he figures as "Doeg." Neglected by the court party he took an active share in the anti-popish agitation. When this subsided he turned round to expose Titus Oates, and with the Revolution he veered towards the Whig party. But he had lost the confidence of both sides, and "recanting Settle" accordingly abandoned politics for the appointment (1691) of city poet. In his old age he went to live with the Bishop Downame Fair, where he is said to have played the part of the dragon in a green leather suit devised by himself. He became a poor brother of the Charterhouse, where he died on the 12th of February 1744.

Settle's numerous works include, beside numerous political pamphlets and occasional poems, *Ibrahim, the Illustrious Bassa* (1676), a tragedy taken from Madeleine de Scudéry's romance; *The Female Prelate; being the History of the Life and Death of Pope Joan* (1680), a tragedy; *The Ambitious Slave; or A Generous Revenge* (1684); *The World in the Moon* (1667), an opera, of which the first scene was formed by a moon fourteen feet across; and *The Virgin Prophectes, or The Fate of Troy* (1701), an opera.

**S**ettle, a market town in the Skipper parliamentary division of the West Riding of Yorkshire, England, 41 miles N.W. from Leeds by the Midland railway. Pop. (1901) 2302. It lies in the upper part of the Ribble valley, amid the wild scenery of the limestone hills of the Pennine district. The district includes several caves, such as Victoria Cave, close to the town, where bones of animals, and stone, bone and other implements and ornaments have been discovered. Other points of interest are Malham Cove and tarn, the ravine of Gordale Scar, and the cliffs of Attermyre, Giggleswick Scar and Castleberg (the last immediately above Settle itself), the Clapham and Weathercote caves, the chasm of Helin Poat and the waterfall of Stainforth Foss. In the town are cotton factories and a tannery. To the west of the town is the grammar school of Giggleswick, one of the principal public schools in the north of England, founded in 1512.

**S**ette, a wooden bench, usually with arms and a high back, long enough to accommodate three or four sitters. It is most commonly movable, but occasionally fixed as in the "boxes" of those old coffee-houses of which a few examples still remain in London, and perhaps elsewhere. It shares with the chest the chair the distinction of great antiquity. Its high back was a protection from the draughts of medieval buildings—a protection which was sometimes increased by the addition of an elbow or other support. Settes were most frequently placed near the fire in the common sitting-room. Constructed of oak, or other hard wood, it was extremely heavy, solid and durable. Few English examples of earlier date than the middle of the 16th century have come down to us; survivals from the Jacobean period are more numerous. Settles of the more expensive type were often elaborately carved or incised; others were divided into plain panels. A well-preserved specimen, with its richly polished oak, darkened by time and beeswax, is a handsome piece of furniture often still to be found in its original home—a farm-house kitchen or the like. Settles were placed near the fire in the common sitting-room. The form was never long outlasted the first half of the 18th century, to which period most of the existing specimens belong.

**S**ettlement, in law, a mutual arrangement between living persons for regulating the enjoyment of property, and the instrument by which such enjoyment is regulated. Settlements may be either for valuable consideration or not: the latter are usually called voluntary, and are in law to some extent in the same position as revocable gifts; the former are real contracts, and in general their validity depends upon the law of contract. They may accordingly contain any provisions not, in fact, to any extent in the nature of a contract to dispose and to dispose of the property.

The elements of the modern settlement are to be found in Roman law. The *vulgaris, populilaris* or *exemplaris substitutio* (consisting in the appointment of successive heirs in case of the death of the first) is the fundamental provision which recognises the right of a man to bestow his property upon another person. The person thus settled for is the beneficiary or "settlor." In Anglo-Saxon law was allowed greater freedom than French. By §79 of the Code Napoléon, in a contract of marriage the succession to a living person cannot be renounced.

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1 In this English law allows greater freedom than French. By §79 of the Code Napoléon, in a contract of marriage the succession to a living person cannot be renounced.
dealt with here, incapacity or refusal of the heir first nominated may have suggested the modern mode of giving enjoyment of property in succession. Such a substitutio could, however, only have been made by will, while the settlement of English law is, in the general acceptance of the term, exclusively an instrument inter vivos. The dos or donatio proper nuptias corresponds to a considerable extent with the marriage settlement, the instrument itself being represented by the dolare instrumentum or poeta dotale. In the earliest period of Roman law no provision for the wife was required, for she passed under the dominium of her husband, and became in law his daughter, entitled as such to a share of any property at his death. In course of time the plebeian form of marriage by usus, according to which the wife did not become subject to manus, gradually superseded the older form, and it became necessary to make a provision for the wife by contract. Such provision from the wife's side was made by the dos, the property contributed by the wife or some one on her behalf towards the expenses of the new household. Dos might be given before or after marriage, or might be increased after marriage. It was a duty enforced by legislation to provide dos where the father possessed a sufficient fortune. Dos of three kinds: profectitia, contributed by the father or other ascendant on the male side; adventitia, by the wife herself or any person other than those who contributed dos prorectitia; receptitia, by any person who contributed dos adventitia, subject to the stipulation that it was to be returned to the person advancing it on dissolution of the marriage. The position of the husband gradually changed for the worse. From being owner, subject to an obligation to return the dos if the wife predeceased him, he became in fact the lord in possession of the property for the wife's family, retaining only the enjoyment of the income as long as the marriage continued. The contribution by the husband was called donatio proper nuptias. The most striking point of difference between the Roman and the English law is that under the former the children took no interest in the contributions made by the parents. Other modes of settling property in Roman law were the life interest or usus, the fideicommissum, and the prohibition of alienation of a legatum.

The oldest form of settlement in England was perhaps the gift in frankmarriage to the donees in frankmarriage, and the heir between them two begotten (Littleton, § 17). This was simply a form of gift in special tail, which became up to the reign of Queen Elizabeth the most usual kind of settlement. The time at which the modern form of settlement of real estate came into use seems to be doubtful. There does not appear to be any trace of a limitation of an estate to an unborn child prior to 1556. In an instrument of that year such a limitation was effected by means of a feoffment to usos. The plan of granting the freehold to trustees to preserve contingent remainders is said to have been invented by Lord Keeper Sir O. Bridgeman in the 17th century, the object being to preserve the estate from forfeiture for treason during the Commonwealth. The settlement of chattels is no doubt of considerably later origin, and the principles were adopted by courts of equity from the corresponding law as to real estate.

Settlement in English law is, so far as regards real property, used for two inconsistent purposes—to "make an eldest son," as it is called, and to avoid the results of the right of succession to real property of the eldest son by making provision for the younger children. The first result is generally obtained by a strict settlement, the latter by a marriage settlement, which is of value for consideration if anti-nuptial, voluntary, if nuptial. But these two kinds of settlement are not mutually exclusive: a marriage settlement may often take the form of a strict settlement and be in substance a resettlement of the family estate. (See Conveyancing.)

In Scotland a disposition and settlement is a mode of providing for the devolution of property after death, and so corresponds to a settlement. The appointment of such trustees was rendered unnecessary by acts of 1845 and 1877.

1 See Hunter, Roman Law, p. 150; Maine, Early History of Institutions, Lect. xi.
2 The appointment of such trustees was rendered unnecessary by acts of 1845 and 1877.
3 See Joshua Williams, Papers of the Juridical Society, i. 45.
acts to the repute of which the regent may not assent. To maintain or affirm the right of any person to the crown, contrary to the provision of the act, is his sworn by an act of 1787.

SETUBAL, or SEBASTOPOL, an important naval station of Russia on the Black Sea, on the S.W. coast of the Crimea, in 44° 37' N. and 33° 31' E., 956 m. from Moscow, with which it is connected by rail via Kharkov. Pop. (1882) 26,150; (1897) 59,710. The estuary, which is one of the best roadsteads in Europe and could accommodate the combined fleets of Europe, is a deep and thoroughly sheltered indentation among chalky cliffs, running east and west for nearly 4 m., with a width of three-quarters of a mile, narrowing to 930 yds. at the entrance. It has a depth of 6 to 10 fathoms, with a good bottom, and large ships can anchor at a cable's length from the shore. The main inlet has also four smaller indentations—Quarantine Bay at its entrance, Yuzhnaya (Southern) Bay, which penetrates more than 1 m. to the south, with a depth of 410 fathoms, Dockyard Bay, and the Bay of Artillery. The village of Chornaya, or Chornaya, enters the head of the inlet. The main part of the town, with an elevation of 30 to 190 ft., stands on the southern shore of the chief inlet, between Yuzhnaya and Artillery Bays. A few buildings on the other shore of the chief bay constitute the "northern side." Before the Crimean War of 1853-56 Sevastopol was a well-built city, beautified by gardens, and had 43,000 inhabitants; but at the end of the siege it had not more than fourteen buildings which had not been badly injured. After the war many privileges were granted by the government in order to attract population relations with Turkey by the Mongols, and at the end of seven years the population numbered 2750.

The present town is well built and is becoming a favourite watering-place on account of its sea-bathing and numerous sanitaria. It has a zoological marine station (1897), a museum commemorative of the siege (1895), a cathedral of Classical design and another finished in 1888, monuments of Admirals Nakhimov (1898) and Kornilov (1895) and of General Todleben, and two navigation schools. In 1890 Sevastopol was made a third-class fortress, and the commercial port has been transferred to Theodosia.

The peninsula between the Bay of Sevastopol and the Black Sea was known in the 7th century as the Heracleotian Chersonese. In the 5th century B.C. a Greek colony was founded here and remained independent for three centuries, when it became part of the kingdom of the Bosporus, and subsequently tributary to Rome. Under the Byzantine empire Chersonesus was an administrative centre for its possessions in Taurida. Vladimir, prince of Kiev, conquered Chersonesus (Korsun) before being baptized there, and restored it to the Greeks on marrying (988) the princess Anna. Subsequently the Slavs were cut off from relations with Taurida by the Mongols, and only by occasional raids, such as that of the Lithuanian prince Olgerd. In the 16th century a new influx of colonists, the Tatars, occupied Chersonesus and founded a settlement named Akhtyar. This village, after the Russian conquest in 1783, was selected for the chief naval station of the empire in the Black Sea and received its present name ("the August City"). In 1826 strong fortifications were begun. In 1854 the allied English, French and Turkish forces laid siege to the southern portion of the town, and on the 17th of October began a heavy bombardment. Sevastopol sustained a memorable eleven months' siege, and on the 8th of September 1855 was evacuated by the Russians. The fortifications were blown up by the allies, and by the Paris treaty the Russians were bound not to restore them (see CRIMEAN WAR). In November 1870, during the Franco-German War, the Russian government decided again to make Sevastopol a naval arsenal.

SEVEN CHAMPIONS OF CHRISTENDOM, the name given in medieval tales to the seven national saints—of England, Scotland, Ireland, Wales, France, Spain and Italy—i.e. Saints George, Andrew, Patrick, David, Denis, James and Anthony. The classical version of their achievements is that of Richard Johnson (1573-c. 1659), Famous History of the Seven Champions of Christendom (3 parts, 1596, 1608, 1610; many editions). The oldest known copy is dated 1597; there also is a poetical version by Sir George Buc (published 1623).

SEVEN DAYS' BATTLE, a name given to a series of combats in the neighbourhood of Richmond, Virginia, during the American Civil War, June 26-July 2, 1862. The Federal Army of the Potomac, advancing from the sea and the river Pamunkey
over the Chickahominy on Richmond, had come to a standstill after the battle of Seven Pines (or Fair Oaks), and General Robert Lee, who succeeded Joseph Johnston in command of the Confederates, initiated the series of counter attacks upon it which constitute the "Seven Days."

McClellan had at his disposal 32 brigades and 67 batteries organized in five corps each of two or three divisions. His cavalry consisted of 16 regiments and 22 companies. Lee's army consisted of 40 brigades and 59 batteries organized in eleven divisions and an independent brigade: four divisions were grouped under Jackson and three under Magruder. The reserve artillery consisted of 23 batteries and Stuart's cavalry corps of 3,000 sabres. McClellan lingered north of Richmond, despite President Lincoln's constant demand that he should "strike a blow" with the force he had organized and taken to the Yorktown peninsula in April, until General Lee had concentrated 73,000 infantry in his front; then the Federal commander, fearing to await the issue of a decisive battle, ended his campaign of invasion in the endeavour to "save his army"; and he so far succeeded that on July 3 he had established himself on the north bank of the James in a position to which reinforcements and supplies could be brought from the north by water without fear of molestation by the enemy. But he lost 15,000 men in the course of his seven days' retreat, and 20% of the remainder became ineffective from disease contracted in the swamps of the Chickahominy, while enormous quantities of valuable stores at White House on the Pamunkey had been burnt to avoid seizure by the enemy. McClellan described this flight to the James as a change of base, but his resolve to abandon the attitude of an invader was formed when General Lee in the middle of June had caused Stuart's cavalry to reconnoitre the flanks and rear of McClellan's army, and had summoned Jackson's corps from the Shenandoah Valley (q.v.). The news soon reached McClellan, who thereupon prepared to evacuate White House on June 25 and moved his trains southward to the James covered by his army. Jackson had preceded his troops in order personally to confer with Lee, and had then appointed the morning of June 26 for his appearance north of the Chickahominy to lead the march and attack McClellan's right wing under General FitzJohn Porter. Jackson was to be supported by the divisions of A. P. Hill, Longstreet and D. H. Hill. Lee's other divisions under Magruder, Huger and Holmes were to defend the lines which covered Richmond from the east, and so prevent McClellan effecting a counter-stroke. Huger had demonstrated on the Williamsburg Road on June 25 in order to draw McClellan's attention to his left wing, and though on June 26 Jackson had failed to appear, General A. P. Hill at 3 p.m. crossed the Chickahominy and attacked the enemy's right wing at Beaver Dam Creek assisted by D. H. Hill, while Longstreet crossed at Mechanicsville. General Lee and President Davis were present and witnessed the loss of 2,000 men in a frontal attack which continued till 9 p.m. Meanwhile General Jackson, with Stuart's cavalry corps, "marched by the fight without giving attention, and went into camp at Hundley's Corner half a mile in rear of the enemy's position."

The Federal detachment retreated during the night to a stronger position in rear at Gaines's Mill near Cold Harbor, and on June 27 the Confederates again attacked Porter's corps. Lee's six divisions formed an echelon. D. H. Hill moving towards the enemy's right was followed by Jackson's corps (three divisions), while A. P. Hill engaged the enemy in front and Longstreet in reserve moved along the left bank of the Chickahominy. The resistance of the Federals was stubborn; at 5 p.m. General Lee required Longstreet to attack the enemy's left, and at this moment he procured the assistance of some part of Jackson's corps which had become separated from the remainder. About sunset the Federals under Porter (three...
SEVENOKAS—SEVEN SLEEPERS OF EPHESUS

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divisions) yielded to the pressure of the attack at all points, and withdrew in the night across the Chickahominy, leaving 5000 prisoners in the hands of General Lee. The Confederates lost 7000 men on June 27.

Lee's right wing had in the meantime demonstrated against the main body of the Federals about Fair Oaks, on the south bank of the river. On June 28 complete inactivity prevailed among the Confederates north of the Chickahominy save that Stuart's cavalry and Emory's dividing expedition was near the road way; but the Longstreet encountered on this day McClellan was good his retreat southwards to the James with little interference, for Magruder was instructed to "hold his lines at all hazards," and accordingly acted on the defensive except that Jones' division opposed a Federal division under W. F. Smith near Fair Oaks. On June 29 General Lee became aware of the situation and then issued orders for his six divisions to cross the Chickahominy in pursuit. Jackson's corps and D. H. Hill's division were to follow the enemy, while Longstreet and A. P. Hill were to move their divisions via New Bridge to the Darbytown or James River Road, or which strong position the Army of the Potomac, Stuart was to operate at his discretion north of the Chickahominy, and it seems that he was attacked by the enemy's abandoned depot at White House more than by McClellan's retreating army. On this day Magruder with two divisions attacked superior forces about Fair Oaks and was repulsed, and again attacked at Savage Station with like results. General Lee, however, rebuked Magruder for slackness in pursuit. Holmes' division was moving in front of Longstreet on the James River Road, but two Federal divisions were holding the route at Willis Church and at Jordan's Ford. On June 30 Jackson got into action with Whiting's division at White Oak Swamp, where they took the Federals at Frazier's Farm (or Glendale). Longstreet was supported by A. P. Hill and together they lost 3200 men; it was hoped that Jackson's corps would come up during the engagement and attack the enemy's rear, and Huger's division assail his right, but Federal artillery stopped Huger, and of Jackson's three divisions only one came into action. Magruder and Holmes were engaged to their own advantage at Turkey Bridge. Longstreet and Hill were thus opposed to five Federal divisions, while General McClellan was pushing his wagons forward to Malvern Hill, and the Army of the Potomac was concentrated at nightfall. On July 1 Jackson's corps and D. H. Hill's division had been drawn again into the main operation and followed the Federal line of retreat to Malvern Hill with Huger and Magruder on their right. The divisions of Longstreet and A. P. Hill were in support.

General Lee had thus on the seventh day concentrated his army of ten divisions in the enemy's front; but Jackson's dispositions were unfortunate and General Lee's plan of attack was thus upset; and while seeking a route to turn the enemy's right the Confederate commander was apprised that a battle had been improvised by the divisions in advance. In the result these troops were repulsed with a loss of 6000 men, a circumstance hardly to be wondered at, since McClellan had entrenched eight divisions on the strongest position in the country, and was aided by his siege artillery and also by a flanking fire from his gunboats on the river near Hazxall's Landing. General Lee's offensive operations now ended, though Stuart's cavalry rejoined the main army at night and followed the enemy on July 2 to Evelingon Heights, while Lee rested his army. Stuart discovered a position which commanded the Federal camp, and maintained his cavalry and horse artillery in this position until the afternoon of July 3. As a result of this pursuit, he was unable to retire before a Federal force of infantry and a battery. Longstreet and Jackson had been despatched to his support, but the former did not arrive before nightfall and the latter failed to appear until the next day (July 4). Stuart afterwards moved farther down the James, and shelledMcClellan's supply vessels in the river until recalled by General Lee, who on July 8 withdrew his army towards Richmond.

The operations resulted in re-establishing the confidence of the Confederates in their army which Johnston's retreat from Yorktown had shaken, in adding prestige to President Davis and his government, and in rectifying the popular view of General Lee as a commander which had been based upon his failure to recover West Virginia in the autumn of 1861. In the north a feeling of despondency overtook Congress at the "lame and impotent conclusion" of a campaign of invasion which was expected to terminate the war by the defeat of the Confederate army, the capture of Richmond and the immediate overthrow of the rebellion.

SEVENOKAS, a market town in the Sevenoaks parliamentary division of Kent, England, 22 m. S.E. by S. of London by the South-Eastern and Chatham railway. Pop. of urban district (1901) 8106. It is beautifully situated on high ground among the wooded undulations of the North Downs, above the valley of the river Darent. The town consists principally of two streets which converge at the south end, near which is the church of St Nicholas, of the 13th, 14th and 15th centuries. It contains monuments of the Amherst family and a tablet to William Lambardie, d. 1605, which was removed from the old parish church of Greenwich when that was demolished. Lambardie was author of the Perambulation of Kent, and founded the College of the Poor of Queen Elizabeth at Greenwich. The grammar school founded in 1418 by Sir William Sevenoak was reconstituted as a first-grade modern school in 1877. There is also a school founded by Lady Margaret Boswell, wife of Sir William Boswell, ambassador to Charles I. at The Hague, and almshouses founded by Sir William Sevenoak in connexion with his school. Close to Sevenoaks is Knole Park, one of the finest old residences in England, which in the time of King John was possessed by the earl of Pembroke, and after passing to various owners was bought by Archbishop Bourchier (d. 1468), who rebuilt the house. He left the property to the see of Canterbury, and about the time of the dissolution it was given up by Cranmer to Henry VIII. By Elizabeth it was conferred first on the earl of Leicester and then on Thomas Sackville, afterwards earl of Dorset. By this earl it was in great part rebuilt and fitted up in regard to decoration much as it now exists. The gateway in the outer court and the Perpendicular chapel are from Archbishop Bourchier's time. The great hall, with elaborately carved music-gallery, is mainly the work of the first earl.

SEVEN SLEEPERS OF EPHESUS, THE, according to the most common form of an old legend of Syrian origin, first referred to in Western literature by Gregory of Tours (De glor. mort. c. 95), seven Christian youths of Ephesus, who, in the Decian persecution (a.d. 250), hid themselves in a cave. Their hiding-place was discovered and its entrance blocked. The martyrs fell asleep in a mutual embrace. Nearly 200 years later a herdsman of Ephesus rediscovered the cave on Mount Coelian, and, letting in the light, awoke the inmates, who sent one of their number (Jamblicus) to buy food. The lad was astonished to find the cross displayed over the city gates, and, on entering, to hear the name of Christ openly pronounced. By tendering coin of the time of Decius at a baker's shop he roused suspicion, and was taken before the authorities as a dishonest finder of hidden treasure. He confirmed his story by leading his accusers to the cavern where his six companions were found, youthful and beaming with a holy radiance. The emperor Theodosius II., hearing what had happened, hastened to the spot in time to hear from their lips that God had wrought this wonder to confirm his faith in the resurrection of the dead. This message delivered, they again fell asleep.

Gregory says he had the legend from the interpretation of "a certain book in Syriac"; and, "it is possible that documents in two Syriac sources. It forms the subject of a homily of Jacob of Sarug (ob. a.d. 521), which is given in the Acta sanctorum. Another Syriac version is printed in Land's Analecta, ii. 87 seq.; see also Barhebræus, Chron. eccl. i. 142 seq., and compare Assemani, Bibl. Or. i. 335 seq. Some forms of the legend give eight sleepers—e.g. an ancient MS. of the 6th century now in the British Museum (Cat. Syr. MSS. p. 109)—there are considerable variations as to the date of the legend attained its wide diffusion throughout Christendom; its currency in the East is testified by its acceptance by Mahomet (syr. xviii.), who calls them Alshâbl-al-Kohb, "the men of the cave."
According to Briani (Chronology, tr. by Sachau, p. 288) certain un-decayed corpses of monks were shown in a cave as the sleepers of Ephesus in the 9th century. The sleeping monks were a favourite subject in early medieval art. The story is well told in Gibbon’s Decline and Fall of the Roman Empire, ch. xxxiii.

SEVEN WEEKS’ WAR, the name given to the war of 1866 between Prussia on the one side, and Austria, Bavaria, Hanover, Saxony and allied German states on the other. Concurrently with this war another was fought in Venetia between the Italians and the Austrian army of the South, for which see ITALIAN WAR OF 1866.

In 1850 Prussia, realizing from the breakdown of her mobilization for the war then impending with Austria that success was impossible, submitted to the Austrian demands, but her statesmen saw from the first that the “surrender of Olmütz,” as it was termed, rendered eventual war with Austria “a military necessity.” Preparations were begun in earnest after the accession of King William I., who selected Bismarck as his chancellor, Moltke as his chief of staff and Roon as his minister of war, and gave them a free hand to create the political situation and prepare the military machinery necessary to exploit it. Within six years the mobilization arrangements were recast, the war against Denmark in 1864 proving an opportune test of the new system. The number of field battalions was nearly doubled, two-thirds of the artillery received breech-loading rifled guns, the infantry had for some years had the breech-loading “needle-gun,” and steps were initiated to train an adequate number of staff officers to a uniform appreciation of strategical problems, based on Moltke’s personal interpretation of Clausewitz’s Vom Kriege. There was, however, a fundamental disagreement in the tactical ideas of the senior and those of the junior officers. This is expressed in the tradition of the Napoleonic era of looking for the decision only from the employment of “masses”; the latter, trained with the breech-loader and without war experience, expected to decide battles by infantry fire only. Both overlooked the changes brought by the introduction of the long-range rifle (muzzle- and breech-loading alike), which had rendered impossible the “case shot preparation” which had formed the basis of Napoleon’s tactical system. The men were trained for three years in the infantry and four years in the cavalry and artillery, but the war was not popular and many went untrained.

In contemporary military opinion, the Austrians were greatly superior in all arms to their adversary. Their rifle, though a muzzle-loader, was in every other respect superior to the Prussian needle-gun, and their M.L. rifled guns with shrapnel shell were considered more than sufficient to make good the slight advantage then conceded to the breech-loader. The cavalry was far better trained in individual and real horsemanship and manoeuvre, and was expected to sweep the field in the splendid cavalry terrain of Moravia. All three arms trained their men for seven years, and almost all officers and non-commissioned officers had considerable war experience. But the Prussians having studied their allies in the war of 1864 knew the weakness of the Austrian staff and the untrustworthiness of the contingents of some of the Austrian nationalities, and felt fairly confident that against equal numbers they could hold their own.

The occasion for war was engineered entirely by Bismarck; and it is doubtful how far Moltke was in Bismarck’s confidence, though as a far-seeing general he took advantage of every opening which the latter’s diplomacy secured for him. The original scheme for the strategic deployment worked out by Moltke as part of the routine of his office contemplated a defence of the kingdom against not only the whole Prussian army but against 35,000 Saxons, 95,000 unorganized Bavarians and other South Germans, and 60,000 Hanoverians, Hessians, &c., and to meet these he had two corps (VII. and VIII.) on the Rhine, the Guard and remaining six in Brandenburg and Prussia proper. Bismarck diverted three Austrian corps by an alliance with Italy, and by consenting to the neutralization of the Federal fortresses set at liberty von Beyer’s division for field service in the west. Moltke thereupon brought the VIII. corps and half the VII. to the east and thus made himself numerically equal to his enemy, but elsewhere left barely 45,000 men to oppose 150,000. The magnitude of the risk was sufficiently shown at Langensalza. The direction of the Prussian railways, not laid out primarily for strategical purposes, conditioned the first deployment of the whole army, with the result that at first the army in the West was divided in three main groups or armies on a front of about 250 m. As there had been much money available to purchase supplies beforehand, each of these groups had to be scattered over a wide area for subsistence, and thus news as to the enemy’s points of concentration necessarily preceded any determination of the plan of campaign.

Of the lines of concentration open to the Austrians, the direction of the roads and railways favoured that of Olmütz so markedly that Moltke felt reasonably certain that it would be chosen, and the receipt of the complete ordre de bataille of the Austrian army that the north secured by the Prussian secret service on the 11th of June left all doubts at rest.

According to this, the Austrian troops already in Bohemia, 1st corps, Count Clam-Gallas, 30,000 strong, were to receive the Saxons if the latter were forced to evacuate their own country, and to act as an advanced guard or containing wing to the main body under Feldzeugmeister von Benedek (2nd, 3rd, 4th, 8th corps) which was to concentrate at Olmütz, whence the Prussian staff on insufficient evidence concluded the Austrians intended to attack Silesia, with Breslau as their objective. On this date (June 11th) the Prussians stood in the following order: the right wing, General von Bittenfeld, three corps, four divisions only, against Torgau; the Ist army under Prince Charles (II., III., IV. corps), about Görlitz; the II. army under the crown prince (L., V., VI.) near Breslau; the Guard and a reserve corps of Landwehr at Berlin. As the army of the Elbe was numerically inferior to Clam-Gallas and the Saxons, the reserve corps was at once despatched to reinforce it, and the Guard was sent to the crown prince. Further, in deference to political (probably dynastic) pressure, the crown prince was ordered eastwards to defend the line of the Neisse, thus increasing the already excessive length of the Prussian front. Had the Austrians attacked in force, the Prussian central (I.) army could have reached neither wing in time to arrive, and the political consequences of the Austrian victory might have been held to justify the risks involved, for even if unsuccessful the Austrians and Saxons could always retreat into Bavaria and there form a backbone of solid troops for the 95,000 South Germans.

Advance of the Elbe and I. Armies.—This was one of the gravest crises in Moltke’s career. To overcome it he at length obtained authority (June 15th) to order the army of the Elbe into Saxony, and on the 18th the Prussians entered Dresden, the Saxons retiring along the Elbe into Bohemia; and on the same day the news that the Austrian main body was marching from Olmütz towards Prague arrived at headquarters. Moltke took three days to solve the new problem, then, on the 22nd, he ordered the I. and II. armies to cross the Austrian frontier and unite near Gitschin, a point conveniently situated about the convergence of the roads crossing the Bohemian mountains. As during this operation the II. army would be the most exposed, the I., to which the army of the Elbe had now been attached, was to push on its advance to the utmost. Apparently with this purpose in view, the Prince of Brandenburg, instigated by the King, instructed his army corps into their constituent divisions, and move each division as a separate column on its own road, the reserve of cavalry and artillery following in rear of the centre. The consequences were the reverse of those anticipated. On the afternoon of the 26th the advance guards of the I. army and army of the Elbe came in contact with the Austrians at Hünenwasser and Podol and drove the latter back after a sharp engagement, but, having no cavalry, could neither observe their subsequent proceedings nor estimate their strength. The prince, seeing the opportunity for a battle, immediately issued orders for an
enveloping attack on Münchengrätz by his whole army, but, owing to distances and the number of units now requiring direction, it was late in the following day before all were in readiness for action. The Austrians then slipped away, and the whole of the next day was spent in getting the divisions back to their proper lines of advance. Clam-Galaa then retired deliberately to Gitschin and took up a new position. The Austrians followed on the 29th, but, owing to the lie of the roads, they had to march in two long columns, separated by almost a day’s March, and when the advanced guard of the left column, late in the afternoon, gained touch with the enemy, the latter were in a position to crush them by weight of numbers, had they not suddenly been ordered to continue the retreat on Milein.

**Battles of the II. Army: Trautenau and Nachod.**—Meanwhile the situation of the II. army had become critical. On its right wing the I. corps (General v. Bonin) had received orders on the 27th to seize the passages over the Aupa at Trautenau. This was accomplished without much difficulty, but the main body was still in the defiles in rear, when about 3 p.m. the leading troops were attacked by an overwhelming Austrian force and driven back in confusion; the confusion spread and became a panic, and the I. corps was out of action for the next forty-eight hours. Almost at the same hour, a few miles to the south-eastward, the advanced guard of the V. corps (Stienmetz) began to emerge from the long defile leading from Glatz to Nachod, and the Prussians had hardly gained room to form for action beyond its exit before they too were attacked. Steinmetz was a different man from Bonin, and easily held his own against the disconnected efforts of his adversary, ultimately driving the latter before him with a loss of upwards of 5000 men. Still, the situation remained critical next day, for the I. corps having retreated, the Guard corps (next on its left) was endangered, and Steinmetz on his line of advance towards Skalitz (action of Skalitz, June 28th) could only count on the gradual support of the VI. corps. Benedek’s resolution was, however, already on the wane. From the first his supply arrangements had been defective, and the requisitions made by his leading troops left nothing for the rest to eat. While trying to feed his army he omitted to fight it, and, with the chance of overwhelming the Austrians by one great effort of marching, he delayed the necessary orders till too late, and the Prussian II. army made good its concentration on the upper Elbe with insignificant fighting of the other’s position. Moltke, knowing well the danger for a great army of being forced into a battle with an unfordable river behind it, and with his naturally strong bent towards the defensive in tactics, concluded that Benedek would elect to hold the left bank of the Elbe, between the fortified towns of Josephstadt and Königgrätz, with his right thrown back and covered by the lower courses of the Aupa and the Mettau. Frontal attack on such a position being out of the question, he decided, after weighing well the weaknesses of the Austrian flanks, to direct his principal efforts against the left (i.e. southern), although that entailed the uncovering of the communications of the II. army and a flank march of almost the whole of the I. and II. armies across the front of the Austrians in position. As an eminent French critic (General Bonnal) says, this was but to repeat Frederick the Great’s manoeuvre at Kolin (q.v.), and, the Austrians being where they actually were and not where Moltke decided they ought to be, the result might have been equally disastrous. Nevertheless the necessary movements were initiated by orders at noon on the 2nd of July, and one phrase in these saved the situation. According to these orders, the Elbe army was directed to Chlumetz on the way to Pardubitz, the I. army diagonally to the south-east across the front of the Austrian position. Two corps of the II. army were to make a demonstration against Josephstadt on the 3rd of July, and the other two were to move in a general direction south-west to keep touch with the I. Prince Frederick Charles was warned to guard the left flank of his marching troops and authorized to attack any forces of the enemy he might encounter in that direction, if not too strong for him. On receipt of these orders (about 3.30 p.m. July 2nd) the
prince immediately despatched officers' patrols towards the Elbe, and about 6 p.m. these, having crossed the Bistritz, discovered the enemy in considerable force, at least three corps, behind the line of low hills which here border that stream. The remainder of the Austrian main body, the whole of which was in fact still on the right bank of the Elbe, was hidden from view behind high ground farther to the eastward.

The 2nd of July.—The three Austrian corps were exactly the target Prince Frederick Charles desired. He promised himself with the I. and the Elbe armies an easy victory if he attacked them. Orders in this sense were issued about 7 p.m. They instructed every corps under his command to be in readiness for action towards the Bistritz at 3 a.m. on the 3rd, and in a concluding paragraph announced that the crown prince had been requested to co-operate from the north. A copy of the orders and an explanatory letter were in fact despatched to the II. army, another copy also went direct to the king. Both appear to have been delayed in transmission, for the former only reached the crown prince's quarters at 2 a.m. He was then asleep and had given orders that he was not to be awakened. His chief of the staff, Blumenthal, was absent at the royal headquarters, and since the bearer of the order had not been warned of the importance of the despatch he carried, no one roused the prince. At 3 a.m. Blumenthal returned and read the letter, and without troubling to disturb his chief he dealt with the matter himself in what is certainly one of the most remarkable documents ever issued in a grave crisis by a responsible staff officer. Briefly he informed Prince Frederick Charles that the orders for the II. army based on the intelligence so far received from the royal headquarters, having been already issued, the cooperation of the I. corps alone might be looked for.

Meanwhile the duplicates had reached Moltke, and he, knowing well the temperament of the "Red Prince" and the impossibility of arresting the intended movement, obtained the royal sanction to a letter addressed to the crown prince, in which the latter was ordered to co-operate with his whole command. This vital despatch was sent off in duplicate at midnight and reached von Blumenthal at 4 a.m. In face of this no further was possible. The army orders were issued at 5 a.m., but still the urgency of the situation was so little understood that had they been verbally adhered to the force of the II. army could hardly have been brought to bear before 5 p.m., by which time the defeat of the I. army might well have been an accomplished fact. Fortunately, however, the initiative of the Prussian subordinates was sufficient to meet the strain.

Battle of Königgrätz (Sadowa).—Thick mist and driving rain delayed the I. and Elbe armies, but by 5 a.m. the troops had reached their allotted positions. The army orders were issued at 5 a.m., taking as point of direction the wood of Maslowed (or Swiep Wald), and supported on the right by the 8th division which was to seize the bridge of Sadowa. The leading troops of the former easily rushed the Austrian outposts covering the wood, but the reserves of the Austrian outposts counter-attacked. The firing drew other troops towards the critical point, and very shortly the wood of Maslowed became the scene of one of the most obstinate conflicts in military history. In about two hours the 12 Prussian battalions and 3 batteries found themselves assailed by upwards of 40 Austrian battalions and 100 guns, and against such a mass of enemies each man felt that retreat from the wood across the open meadow annihilated. The Prussians determined to hold on at all costs. The 8th division, belonging to the same corps, could not see their comrades sacrificed before their eyes, and pushed on through Sadowa to relieve the pressure on the right of the 7th division. Meanwhile fresh Austrian batteries appeared against the front of the 8th division, and fresh Prussians in turn had to be engaged to save the 8th. Fortunately the Prussians here derived an unexpected advantage from the shape of the ground, and indeed from the weather. The heavy rain, which had delayed the commencement of the action, had swollen the Bistritz so as to check their advance and thus postpone the decision, whilst the mist and driving rain hid the approaching troops from the Austrian gunners, whose shells burst almost harmlessly on the sodden ground. Then when once across the stream it was discovered that unlike the normal slopes in the district the hillside in front of them showed a slight convexity under cover of which they were able to re-form in regular order. The advantage of the breech-loader now began to assert itself, for the Austrian skirmishers who covered the front of the guns now only load when standing up, while the Prussians lay down or fired from cover. The defenders were therefore steadily driven up the hill, and then cleared the front to give the guns room to act. But the Austrian gunners were intent on the Prussian batteries farther back, which as the light improved had come into action. The Prussian infantry crept nearer and nearer, till at under 300 yds, range and from cover they were able to open fire on the Austrian gunners under conditions which rendered the case fire of the latter practically useless; but here was the opportunity a great cavalry leader on the Austrian side might have seized to restore the battle, for the ground, the shortness of the distance, and the smoke and excitement of the cannonade were all in favour of the charge. Such a charge as prelude to the advance of a great infantry bayonet attack must have swept the exhausted Prussians down the hill like sheep, but the opportunity passed, and the gunners finding their position untenable, limbered up, not without severe losses, and retired to a second position in rear. This withdrawal took place about 2 p.m., and the crisis on the Prussian side may be said to have lasted from about 11 a.m. By this time every Prussian corps, except the 3rd, which had long been decimated and which as the battle opened was already partially engaged, had been brought into the fight, and the Austrians might well have thrown odds of three to one upon the Prussian centre and have broken it asunder.

Arrival of the II. Army.—But suddenly the whole aspect of affairs was changed. The 2nd and 4th Austrian corps found themselves all at once threatened in flank and rear by heavy masses of Prussian infantry, the leading brigades of the crown prince's army, and they began to withdraw towards the centre of their position in ordered brigade masses, apparently so intent on keeping their men in hand that they seem never to have noticed the approach of the Prussian reserve artillery of the Guard which (under Prince Kraft zu Hohenlohe-Ingefielden) was straining forward over heavy soil and through standing corn towards their point of direction, a clump of trees close to the tower of the church of Chlum. Not even deigning to notice the retreating columns, apparently too without escort, the batteries pressed forward till they reached the summit of the ridge trending eastward from Chlum towards the Elbe, whence the whole interior of the Austrian position was disclosed to them, and then they opened fire upon the Austrian reserves which lay between them and massed armies of Prussian corps. Occupying about 2,300 and almost simultaneously with the withdrawal of the Austrian guns on their left already alluded to, this may be said to have decided the battle, for although the Saxons still stood firm against the attacks of the Elbe army, and the reserves, both cavalry and infantry, attempted a series of counterstrokes, the advantage of position and moral was all on the side of the Prussians. The slopes of the position towards the Austrians now took on the usual concave section, and from the crest of the ridge every movement could be seen for miles. The Austrian cavalry, on weak and emaciated horses, could not gallop at speed up the heavy slopes (45°), and the artillery of both Prussian wings practically broke every attempt of the infantry to form for attack.

Close of the Battle.—Still the Austrians made good their retreat. Their artillery driven back off the ridges formed a long line from Stösser to Plotist facing the enemy, and under cover of its fire the infantry at length succeeded in withdrawing, for the Prussian reserve cavalry arrived late on the ground, and the local disconnected efforts of the divisional cavalry were checked by the still intact Austrian squadrons. Whereat at 2.30 absolute destruction seemed the only possible fate of the defeated army, by 6 p.m., thanks to the devoted heroism of the artillery and the initiative of a few junior commanders of cavalry,
it had escaped from the enclosing horns of the Prussian attack. In spite of heavy losses the Austrians were perhaps better in hand and more capable of resuming the battle next morning than the victors, for they were experienced in war, and accustomed to defeat, and retired in good order in three organized columns within easy supporting distance of each other. On the other hand, the Prussians were new to the battlefield, and the reaction after the elation of victory was intense; moreover, if what happened at Hünnerwasser affords a guide, the staff would have required some days to disentangle the units which had fought and to assign them fresh objectives.

**Final Operations.**—The convergence of the Prussian armies on the battlefield ended in the greatest confusion. The Elbe army had crossed the front of the I. army, and the II. army was mixed up with both. The reserve cavalry reached the front too late in the day to pursue. Thus the Austrians gained 24 hours, and the direction of their retreat was not established with any degree of certainty for several days. Moreover the little fortresses of Josephstadt and Königgrätz both refused to capitulate, and the whole Prussian armies were thus compelled to move down the Elbe to Pardubitz before they could receive any definite new direction. Meanwhile Benedek had in fact assigned only one corps with the reserve cavalry to oppose a Prussian advance towards Vienna, and the remaining seven retired to Olmütz, where they were on the flank of a Prussian advance on Vienna, and had all the resources of Hungary behind them to enable them to recuperate. They were also still in railway communication with the capital. On purely military grounds the Prussians should have marched at once towards the Austrian field army, i.e. to Olmütz. But for political reasons Vienna was the more important objective, and therefore the I. and Elbe armies were directed towards the capital, whilst the II. army only moved in the direction of the Austrian main body. Political motives had, however, in the meantime exercised a similar influence on the Austrian strategy. The emperor had already consented to cede Venetia to Italy, had recalled two corps from the south (see **ITALIAN WARS, 1848-1870**) to
the capital, and had appointed the archduke Albert to command the whole army. The Army of the North, which had reached Olmitz on the 27th, was now ordered to advance towards Vienna, and this operation brought them right across the front of the II. Prussian army. The cavalry established contact on the 15th in the neighbourhood of Tobitschau and Rochetinsitz (action of the 2nd cavalry corps with General Königsegg-Ruppin). The latter, however, discovered, and their men too demoralized by fear of the breach-loader to risk a fresh battle, withdrew their troops and endeavoured to make a junction with the Hanoverians of General von Falckenstein's corps at the Waag and through Pressburg. Meanwhile the Prussian main army was pursuing its advance under very adverse circumstances. Their railway communication ended abruptly at the Austrian frontier; they were therefore compelled to leave behind, and to advance in columns, all heavy artillery and baggage, and the troops suffered severely. One third of the cavalry broke down on a march of 97 m. in five days, and the infantry, after marching 112 m. in ten days, had to have a two days' halt accelerated carriage, which was far too long. The 13th, 30th, and 31st of July were light marching days, and on the 1st of August the Prussian army was massed about Fulda between them. Vogel v. Falckenstein moved forward again on the 8th, and on the 10th the Bavarians were again defeated in a series of actions around Kissingen, Hanau, and Cassel. During their retreat, however, the French motorcy corps began its advance from Frankfurt up the Main valley to join the Bavarians, who had then retired on Schweinfurt. The army of the Main, however, had little difficulty in defeating the 8th corps at Union (near Berlin, 8th). The Bavarian corps had had the task of bringing the main army to the French frontier, and on the 16th the French occupied Frankfurt (16th). Vogel v. Falckenstein was then called to Bohemia, and Manteuffel was placed in command of the army of the Main for the final advance. The 7th and 8th corps now at last effected their junction about Würzburg, whither the army of the Main marched from Frankfurt to meet them. The French was advanced in turn, the Bavarians on the right, the 8th on the left. Nothing was left to the French, and the general had neither the time nor the leisure to exact a formal surrender. It is true that the Bavarians occupied Nuremberg.

Although the army of the Main, that of Bohemia, and the army of the Rhine, the small armies moving freely within a large theatre of war, the occupation of hostile territory as a primary object of operations, the absence of a decision-compelling spirit on either side, the hostile political attitude of the German states, which were not in a condition to unite in a common conflict,—all these conditions remind the student of those of 17th and 18th century warfare. But the improved organization, better communications and supplies, superior morale, and once again the breach-loader versus a standing army, the Prussian successes, at least give us an opportunity of comparing the old and the new systems under similar conditions, and even thus the principle of the “armed nation” is still the problem of a period of time which, for the old armies, was wholly insufficient.

The various treaties of Prague, Berlin and Vienna which followed the armistice secured the annexation by Prussia of Hanover, the Elbe duchies, the electorate of Hesse, Nassau, Anhalt-Weimar, and the dissolution of the existing confederation and the creation of a new North German Confederation under the hegemony of Prussia, and the payment of war indemnities to Prussia (the Austrian share being left to the French), was to be done by Austria to Napoleon III. and by him to King Victor Emmanuel.

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SEVEN WISE MASTERS—SEVEN YEARS’ WAR 715

SEVEN WISE MASTERS, THE, a cycle of stories of Oriental origin. A Roman emperor causes his son to be educated away from the court in the seven liberal arts by seven wise masters. On his return to court his stepmother the empress seeks to seduce him. To avert such a danger prepared by the man he is虏ved over 1800 a writer’s letters, which time the empress accuses him to her husband, and seeks to bring about his death by seven stories which she relates to the emperor; but her narrative is each time confused by tales of the craft of women related by the sages. Finally the prince’s lips are unsealed, the truth exposed, and the wicked empress is executed.

The cycle of stories, which appears in many European languages, is of Eastern origin. An analogous collection occurs in Sanskrit, but the Indian original is unknown. Travelling from the east by way of Arabic, Persian, Syriac and Greek, it was known as the book of Sindibad, and was translated from Greek into Latin in the 12th century by Jean de Haultesecule (Joannes de Alta Silva), a monk of the abbey of Haute-Seille near Toul, with the title of Dolophathos (ed. H. Oesterley, Strassburg, 1873). This was translated into French about 1210 by a troubé named Herbers as Li Romans di Dolophathos; another French version, Li Romans des sept sages, was based on a different Latin original. The German, English, French and Spanish chap-books of the cycle are generally based on a Latin original differing from these. Three metrical romances probably based on the French, and dating from the 14th century, were found in English.

The most important of these is The Seyya Sages by John Rolland of Dalekith, edited for the Bannatyne Club (Edinburgh, 1837).

The Latin romance was frequently printed in the 15th century, and Wynkyn de Worde printed an English version about 1515. See G. Paris, Deux Redactions du roman des septes sages de Rome (Paris, 1876, Soc. des. anc. textes fr.); B\ucher, Historia septem septinum . . . (Erlangen, 1886); K. Campbell, A Study of the Romance of the Seven Sages with special reference to the middle English versions (Baltimore, 1889); C. C. Post, Marcellus: Researches respecting the Book of Sindibad (Folk-Lore Soc., 1882).

SEVEN WISE MEN OF GREECE, THE, a collective name for certain sages who flourished c. 620—550 B.C. The generally accepted list is Bins, Chlon, Cleobulus, Periander, Pittacus, Solon, Thales (see separate articles), although ancient authorities differ as to names and number. They obtained great influence in their respective cities as legislators and advisers, and a reputation throughout the Greek world. Their rules of life were compiled in slight savings in common use.

See O. Bernhardt, Die sieben Weisen Griechenlands (1864); F. Bohren, De septem sapientibus (1867); "Septem sapientium carmina et apologiographmata," with short biographies in F. Mullich, Fragmenta philosophorum Graecorum, 3rd ed. (1866); H. Wulf in Dissertationes philol. Helens, xiii. (1896).

SEVEN WONDERS OF THE WORLD, the name conferred on a select group of ancient works of art which had obtained pre-eminence among the sight-seers of the Alexandrian era. The earliest extant list, doubtless compiled from the numerous guide books then current in the Greek world, is that of the epigrammatist Antipater of Sidon (2nd century B.C.). A second and slightly divergent list from the hand of a Byzantine rhetorician has been incorporated in the works of Philo of Byzantium. The monuments are as follows: (1) the pyramids of Egypt, (2) the gardens of Semiramis at Babylon, (3) the statue of Zeus at Olympia (see Pheidias), (4) the temple of Artemis at Ephesus, (5) the Mausoleum at Halicarnassus (see Mausoleum), (6) the Colossus at Rhodes, (7) the Pharos (lighthouse) of Alexandria, or the Walls of Babylon.


SEVEN YEARS’ WAR (1756-1763), the name given to the European war which arose from the formation of a coalition between Austria, France, Russia, Sweden and Saxony against Prussia, with the object of destroying, or at least crippling, the power of Frederick the Great. Prussia was joined by England, and between England and France, as usual, a maritime and colonial war was laid at the first pretext. This war laid the foundations of the British empire, for ere the seven campaigns had been fought in Europe, the French dominion in Canada and the French influence in India, in spite of Duplexly, Lally and Montcalm, had been entirely overthrown by the victories of Clive, Amherst and Wolfe. Great as was the effect of these victories on the history of the world, however, it is at least questionable whether the steadfast resistance of Prussia, almost single-handed as she was—the resistance which laid the solid, if they unseem, foundations of modern Germany—is not greater the result of a phenomenon, and from the technical military standpoint Rossbach and Leuthen, Zorndorf and Kunersdorf possess an interest which it would be possible perhaps to claim for Plassy and for Quebec, but not for border conflicts in Canada and India. It is not only battles, the distinct and tangible military events, that make up the story of Frederick’s defence. There are countless marches and manœuvres, devoid of interest as regards their details; but, as indications of the equilibrium of forces in 18th-century warfare, indispensable to a study of military history as a whole.

Learning of the secret intentions of the coalition, Frederick determined to strike first, and to that end, in the months preceding the outbreak of hostilities, he concentrated his 150,000 men as follows: 11,000 men in Pomerania to watch the Swedes, 26,000 on the Russian frontier, 37,000 men under Field Marshal Schwerin in Silesia, and a main body of 70,000 in three columns ready to advance into Saxony at a moment’s notice, the king being chief command. On the 28th of August 1756 the Saxon frontier was crossed. Dresden was occupied on the 10th of September, the Saxony army, about 14,000 strong, falling back before the invaders to the entrenched camp of Pirna, an almost inaccessible plateau parallel to the Elbe and close to the Bohemian frontier. The secret of the Prussian intentions had been so well kept that the Austrians were still widely disseminated in Bohemia and Moravia. 32,000 men under Field Marshal Browne were at Kolín, and 22,000 under Piccolomini at Olmütz, when on the 31st of August the news of the invasion arrived, and such was their unreadiness that Browne could not advance till the 6th of September, Piccolomini until the 9th. Meanwhile the Prussians, leaving detachment after detachment to watch the exits from Pirna, moved up the Elbe and took post at Aussig to cover the approach of the Saxon troops. Learning of Browne’s approach on the 28th of September, the king, assuming the command of the covering force, advanced yet farther up the Elbe to meet him, and the two armies met at Lobositz (opposite Liechtermitz) on the morning of the 1st of October. The battle began in a thick fog, rendering dispositions very difficult, and victory fell to the Prussians, principally owing to the tenacity displayed by their infantry in a series of disconnected local engagements. The nature of the ground rendered pursuit impossible, and the losses on both sides about equal. The Austrians, however, had to retreat in disorder from the place of Zorndorf, leaving the fate of the Saxons, who after a few half-hearted attempts to escape from their encampments, surrendered on the 14th of October, and were taken over bodily into the Prussian service. Prussian administrators were appointed to govern the captured country and the troops took up winter quarters.

Campaign of 1757.—The Coalition had undertaken to provide 500,000 men against Prussia, but at the beginning of the year only 132,000 Austrians stood ready for action in northern Bohemia. Against these the king was organizing some 150,000; 45,000 of whom were paid for by British subsidies approved of by London to cover the investment of Dresden by a French attack. After leaving detachments to guard his other frontiers, Frederick was able to take the field with nearly 150,000 men, but these also were scattered to guard a frontier some 200 m. in length—the left wing in Silesia under Schwerin and the duke of Brunswick-Bevern, the centre and right under the king. In April the operations began. Schwerin and Bevern crossed the mountains into Bohemia and united at Jung Bunzelau, the Austrians falling back before them and surrendering their magazines. The king marched from Pirna and Prince Maurice of Dessau from Zwickau on Prague, at which point the various Austrian commands were ordered to concentrate. On the morning of the 5th the whole army, except a column under Field Marshal Daun, was united here under Prince Charles of Lorraine, and the king, realizing the impossibility of
storming the heights before him, left a corps under Keith and a few detachments to watch Prague and the lords across the river, and marched during the night upstream and, crossing above the Austrian right, formed his army (about 64,000) for attack at right angles to the Austrian front. The ground had not been reconnoitred, and in the morning mist many mistakes in the deployment had been made, but as Daun was known to be but 20 m. away and the Austrian army was changing its front to meet the unexpected attack, the king threw caution to the winds and sending Zieten with his cavalry by a wide detour to cover his left, he ordered the whole to advance. One of the most savage battles in history was the result. Almost immediately the Prussian infantry became entangled in a series of morasses, the battalion guns had to be left behind and the troops had to correct their alignment under the round shot fired by the Austrians, who had completed their change of front in time and now stood ready to sweep the open glacis before them. Before the storm of bullets and the grape and canister of the heavy and battalion guns the Prussian first line faltered and fell in thousands. Their attempts to prepare the way for the bayonet assault broke down. Schwerin was killed. But the second line carried the survivors on, and in the nick of time Zieten’s cavalry drove the Austrian horsemen off the field and broke in on the flank and rear of their infantry. This turned the scale, and the Austrians retreated into Prague in hopeless confusion, leaving some 10,000 men (14.8%) on the ground, and 4275 prisoners, out of about 66,000, in their enemy’s hands. The Prussians lost 11,740 men killed and wounded and 1560 prisoners, and in all 20.8% of their strength. The actual fighting seems only to have lasted about two hours, though firing did not cease till late at night; 16,000 Austrians managed in the confusion to evade capture and join Daun, who made no movement either on this or succeeding days to come to the assistance of his comrades, but began a leisurely retreat towards Vienna.

The Prussians immediately began the siege of the town, and after a month’s delay Daun, now at the head of some 60,000 men, moved forward to the relief of the city. Learning of his approach, the king, taking with him all the men who could be spared from the investment and uniting all available detachments, moved to meet him with only 34,000 men, and on the 18th of June he found Daun strongly entrenched. He immediately endeavoured to march past him and attack him on the right flank as at Prague, but the Austrian light troops harassed his columns so severely during the movement that without orders they wheeled up to drive them off and, being thus thrown into disarray, they took three divergent objectives. Their disunited attacks all fell upon superior numbers, and after a most obstinate struggle they were badly beaten with a loss in killed and wounded of 6710 (18.6%) and 5380 prisoners with 22 colours and 45 guns. The fighting lasted 5½ hours. The Austrian loss was only 8000 out of 53,500, or 15.2%, of whom only 1500 were taken prisoners. This disaster entailed raising the siege of Prague, and the Prussians fell back on Leitmeritz. The Austrians, reinforced by the 48,000 troops in Prague, followed them 100,000 strong, and, falling on Prince August Wilhelm of Prussia, who was retreating eccentrically (for commissariat reasons) on Zittau, inflicted a severe check upon him. The king was compelled to abandon Bohemia, falling back on Bautzen. Having re-formed his men and calling in Keith’s 27,000 men from Pirna,
he again advanced, but found the enemy so strongly posted at Burkersdorf (south of Bischofswerda) that he relinquished his purpose and retreated on Bernstadt.

Meanwhile his enemies had been gathering around him. France had despatched 100,000 men under d'Estrees against Hanover, where Cumberland with 54,000 stood to meet him, and another 24,000 men were marching through Franconia to unite with the "Army of the Holy Roman Empire" under the prince of Saxe-Hildburghausen. Fortunately this latter army was not as formidable as its title, and totalled only some 60,000 most undisciplined and heterogeneous combatants. In the north 100,000 Russians under Apraxin were slowly advancing into East Prussia, where Lehwald with 30,000 was preparing to confront them, and 10,000 Swedes had landed in Pomerania. On the 26th of June Cumberland had been beaten at Hastedenbek by d'Estrees, and the French overran Hanover and Brunswick. The king, leaving Bevern with only 15,000 men in Silesia to watch the Austrians, began to march across Germany to succour Cumberland. Arrived at Leipzig on the 3rd of September, he heard of Lehwald's defeat at Gross-Jägerndorf on the 30th of August and immediately afterwards of Cumberland's Convention of Kloster Seven, which gave up Hanover to the French. Fearing that the French army now set free in Hanover might unite with the Army of the Empire under Hildburghausen and with 150,000 men march direct on Berlin, Frederick, taking with him 23,000 men, marched to join Prince Ferdinand in the district about Halberstadt, hoping to strike his blow before the enemy's junction could be completed. Mobility, therefore, was the first consideration, and arrangements for supply having been made in advance along his road, his troops covered 170 m. in 12 days (September 7–13). But Hildburghausen, not having been joined by d'Estrees, refused to fight and fell back into the wooded districts of Thuringia and Franconia. Bad news now reached Frederick from Silesia; leaving Ferdinand to observe Hildburghausen, he marched with all haste to Eckersberg to support Bevern. Arrived here, he found more bad news from Berlin, which had been entered by a body of Austrian raiders under Hadik and plundered. Prince Maurice and Seydlitz were sent by forced marches to its aid, and before them Hadik retired at once (October 18th). Finding the Austrians for the moment quiescent and hearing that Hildburghausen was again advancing, the king now concentrated all available men on Leipzig and marched to support Prince Ferdinand. Hildburghausen took up a position about Meucheln on the 2nd of November, and on the 3rd moved off to repeat Frederick's manœuvre of Prague against its inventor. The battle of Rossbach (q.v.) followed. In this Seydlitz and the Prussian cavalry won imperishable renown. Aided only by the fire of 18 guns and of 7 battalions of infantry, only two of which fired more than five rounds, the Prussian squadrons swept down upon the marching columns of the Allies and in about 40 minutes the whole 64,000 were in full flight. Never was a victory more timely, for the Prussian army was almost worn out and more bad news was even then on the way. Bevern in Silesia, who had been beaten at Moys near Görlitz (September 7th) and in the battle of Breslau on the 22nd of October, had been compelled to retire behind the Oder, leaving the fortresses of Schweidnitz and Breslau to their fate, and both had capitulated within a few days. Leaving a small reinforcement for Ferdinand, the king now moved by forced marches to Liegnitz. The distance, about 170 m. through difficult country, was covered again in 12 days, but the numbers were small, only 13,000, which shows how tremendous had been the drain upon the men of the previous six weeks' exertions. On the night of the 4th of December, having joined the beaten forces of Bevern at Parschwitz, making in all 43,000 men of very unequal fighting value, he decided to attack the 72,000 Austrians who lay across the Breslau road, their centre marked by the village of Leuthe (q.v.). His position appeared so
desperate that he sent for all his generals, laid the facts before them, announced his decision to attack and offered to accept any man's resignation without prejudice to his character should he deem the risk too hazardous. Needless to say, not one accepted the offer.

Covered by the low rolling hillocks of the district, the army now moved off to its right across the Austrian front, the advance led by Zieten and half the cavalry, the rear covered by Driessen with the remaining half—some 40 weak squadrons. The infantry having gained a position sufficiently on the Austrian flank, now wheeled into line and attacked in echelon of battalions from the right. The battle soon became desperate, and the Austrian cavalry on their right wing under Langer, under the eye of the king, gallantly refused to get out of their lines, wheeled to their left and swept down upon the refused flank of the Prussian infantry; but they never reached them, for Driessen, seizing his opportunity, set his squadrons in motion and attacked. The Austrians, completely surprised, were ridden down and driven back on to the front of their own infantry, and the pressure of the fugitives threw the rear of their left wing into confusion and in a short time the ruin of their army was completed. When the news of Driessen's charge was brought to the king his astonishment was expressed in the single phrase "What, that old fool Driessen?" The fighting, however, had been desperate, and though the Austrians out of their 73,000 lost 37% including 20,000 prisoners, with 116 guns and 51 colours, the Prussians lost 6200 (14%) making with the other battles of the year a total of nearly 75,000 men, and not including losses in minor skirmishes and on the march.

Campaign of 1758.—The raid upon Berlin had accomplished nothing, and the advance of the Russian main body had died out for want of resolution to seize the opportunities offered by Frederick the Great's absence. The Czarina, annoyed by his slowness, recalled Apraxin and appointed Fermor in his place. Utilizing the winter snows, he collected some 31,000 men and crossed the frontiers of East Prussia (January 10th, 1758) and attempted to annex the province, driving out all the Prussian officials who refused to swear fealty to Elizabeth. This took time, and when the period of thaw supervened the Russians were immobilized and could not advance until approaching summer had dried the roads again. For the moment, therefore, no danger threatened Frederick from this quarter, and Rossbach had efficiently taken the French. The Swedes, too, showed little energy, the "roadless" period affecting them equally with the Russians.

Frederick therefore resolved to seize the opportunity to renew his invasion of Austria. As a beginning he recaptured Schweinitz in April with 5000 prisoners. The Austrian field army under Daun lay about Königgrätz, covering all the passes out of Silesia; but covered by the newly formed "Free Corps" (his answer to the semi-savage Croats, Pandours and Tolpitches of the Austrians), Frederick marched right across their front on Olmütz, whilst a special corps (30,000) under Prince Henry threatened their left from Saxony and the Elbe. He had with him about 40,000 men. But Olmütz lay 90 m. from the Prussian frontier, and the Austrian light troops swarmed in the intervening district. Ultimately a great Prussian convoy was despatched in the action of Domstädt, and the siege of Olmütz had to be raised (July 1st); but instead of marching back the way he had come Frederick led his troops through Bohemia practically in the rear of Daun's army, and on the 14th of July entered Daun's empty encampment at Königgrätz. Fermor's Russians were now again in the field and had reached Posen, burning and plundering horribly. By skilful manouvering the king deceived the Austrians till the roads to Silesia by Skalitz and Nachod were opened and then by a rapid march passed over into Silesia, reaching Grüssau (near Landshut) on the 8th of August. Leaving Keith with half his force to hold this district, he then marched to Frankfurt-on-the-Oder, taking with him only some 15,000 men, to strengthen the wing already engaged against the Russians. Frankfurt was reached on the 20th of August. Fermor was then besieging Cústrin with 32,000 men, and hearing of the king's approach he raised the siege and placed himself behind a formidable obstacle facing north, near Zorndorf, from which direction the king was approaching. Seeing that the same obstacle that prevented him from attacking the Russians prevented them equally from attacking him, the king marched right round Fermor's eastern flank—the Russians gradually forming a fresh front to meet him—so that when the Prussian attack began on the morning of the 25th of August they stood in three irregular squares, divided from each other by marly hollows, and thus unable to render one another support. The king made his first effort against the square on the right—Seydlitz with his squadrons covering the movement. But the Russian troops fought with far more spirit than the Austrians had ever shown, and things were going very badly with the Prussians when Seydlitz, who in the meanwhile had succeeded in making paths across the Zaberngrund on which the Russian right rested, flung himself upon the great square, and rode over and destroyed the whole mass in a prolonged mêlée in which quarter was neither given nor asked. Relieved by this well-timed charge, the king now re-formed the infantry already engaged, and concentrated all his efforts on the south-west angle of the great centre square. Again the Russians more than held their own, issuing forth from their squares and capturing many field-pieces. Some of the Prussian infantry was actually broken and in full flight when Seydlitz, with his ranks re-formed and his horses rested, returned and again threw himself upon the square exactly as on the previous occasion and with the same result—the square, as a formation, was broken, but groups still stood back to back and the most savage butchery ensued. The combatants could not be separated and only darkness put a stop to the slaughter. Of 36,000 Prussians 12,500 were killed or wounded, 1000 prisoners or missing (37.5%), and of 42,000 Russians about 21,000 had fallen (50%). In the night the survivors gradually rallied, and morning found the Russians in a fresh position a couple of miles to the northward, but Frederick's troops were too weary to renew the attack. Gradually the Russians withdrew towards Landsberg and Königsberg, and the king, leaving Dohna to follow them up, marched with the remainder of his forces on the 2nd of September for Saxony, covering 22 m. a day. They arrived only in the nick of time, for Daun had united with portions of the Empire Army and was threatening to crush...
Prince Henry under the weight of more than two-fold numbers. The prince had been driven into an entrenched position above Gahmig near Dresden and Daun was about to attack, but the mere name of Frederick was enough, and learning of his arrival Daun fell back to Stolpen on the 12th of September.

The Prussian army now lay around Grossenhain, Prince Henry's force covering Dresden and the Elbe bridges. The Imperial Army was at Pirna, Daun at Stolpen, and in these positions they remained until the 26th of September. The Prussians getting the rest they so urgently needed. On that date, however, the state of truce was broken and the king moved towards Bischofswerda, where Daun's subordinate Loudon was posted. The latter retired, opening the road to Bautzen. The king arrived at Bautzen on the 7th of October and had to wait until the 10th for provisions from Dresden. He then moved forward to Hochkirch, where he found Daun strongly entrenched across his path at Kittiltz with 90,000 men, the Prussians having only 37,000. The king determined to attack the Austrian right. So confident had the Prussians become in the belief that Daun would never take the offensive himself that the most elementary precautions of safety were forgotten and only Zieten kept his horses saddled. During the night of the 13th the Austrians, leaving their watch-fires burning and moving silently through the woods, which covered much of the ground, formed up almost all round the Prussian camp. At 5 a.m. the attack was delivered from three quarters simultaneously and a most desperate struggle ensued. Nothing but the superb discipline of the Prussians saved the situation. Zieten with his squadrons managed to keep a way of escape open, and after a most obstinate conflict the wreck of the army succeeded in withdrawing, leaving 101 guns and 9490 men on the ground or in their enemies' hands (25.5%). The Austrians, in spite of the advantage of a well-conceived surprise, lost 7590 men and were too shaken for pursuit. They fell back to their old camp, where they remained for a week, thus giving Daun ample time for bringing up his forces from Dresden (6000 men) and, starting on the 23rd, he marched right round the Austrian right and raised the siege of Neisse, the prime object with which he had set out. Daun, learning that the king had gone past him into Silesia, now laid siege to Dresden. On the 15th of November he heard that Frederick was marching to its relief through Lusatia and incontinently gave way, retiring on Pirna. The king was in Dresden again on the 20th.

Campaign of 1759. — The drain on Frederick's resources had been prodigious. On the battlefields of the previous three years he had lost at least 75,000 men, not counting the waste of life in his marches and skirmishes; but he still delivered from his field an army (150,000 men) in the field, though for want of the old two years' training in loading, firing and manoeuvring the average efficiency had much diminished. In cavalry, too, he was relatively weaker, as there was no time to train the remounts. His enemies felt their losses far less and were beginning to understand his tactics; fortunately they remained incapable of combined action.

After minor operations on the frontiers the Russians took the field. Fémor had been superseded by Soltikov, and Dohna with his 18,000 men proved quite inadequate to arrest the Russian progress. Frederick was summoned by Wedell, who, on the 23rd of July, with 26,000 men boldly attacked the 70,000 Russians whilst on the march near Züllichau. He was defeated with a loss of 6000 and fell back to Crossen bridge, 5 m. below Crossen, which Soltikov occupied next day, thence he moved down the river towards Frankfurt, keeping on the eastern bank. Daun had detached Loudon and Hadik with 35,000 men to join him, and it became vital to Frederick to prevent the combination. Leaving Prince Henry at Schmölteisen to watch Daun, he marched with all available forces and joined Wedell on the 6th of August at Müllrose near Frankfurt, after vainly searching for the Hadik-Loudon force. Here he was joined on the 10th by Finck with 10,000 men, bringing his whole force up to 59,000 against the Russian and Austrian 90,000, who lay entrenched in the sandhills about Künsendorf. On the 11th he crossed his whole force over the Oder at Reitwein and on the 12th marched forward, intending to envelop the Russians on both flanks; but his columns lost their way in the woods and their attacks were delivered successively. In spite of their usual disciplined gallantry, the Prussians were completely beaten, even Seydlitz and Prince Ferdinand failed to achieve the impossible, and the night closed down on the greatest calamity Frederick had ever experienced. Of 43,000 men 20,720 (48.2%) were left on the ground and 178 guns and 28 colours fell into the hands of the enemy; and the allied Austro-Russian force only lost 15,700. The battle had only lasted six hours. In the depression following this terrible day he wrote to Schmettau, commanding at Dresden, telling him to expect no help, and on the 4th of September Dresden fell.

As usual Frederick was saved by the sluggishness of his enemies, who attempted no pursuit, and being reinforced the day after the battle by 23,000 men, and having ordered up Kleist (who had been watching the Swedes), he was again at the head of an army. Week after week went by, during which he countered all attempts of Daun and Soltikov to combine, and ultimately the Russians, having consumed all the food and forage in the districts they occupied, were compelled to fall back on their own frontiers. Then, uniting with Prince Henry, the king turned to fall upon Daun; but his contempt for his adversary proved his own undoing. Contrary to all his own teaching, he sent a detachment of 12,000 men under Finck to work round the Russians' flanks upon Frankfurt and to Maschen. The king, learning of the movement and calling up a wing of the Empire Army to their assistance, fell upon Finck with 42,000 men and compelled him to surrender after two days' hard fighting. The combination having failed, the two armies stood facing one another till far into the winter. But for Prince Ferdinand's glorious victory at Minden on the 1st of August, the year would have been one catalogue of disaster to the Prussian arms, and these operations must now be mentioned.

In the early part of 1758 Prince Ferdinand with 30,000 men had advanced into the Netherlands and was supported by Prince Henry with 8000 from Halberstadt. The approach of the latter threatened the right wing of the French army under Clermont, which was posted along the Aller, and the whole line gave way and retreated without making any serious stand behind the Rhine. Prince Ferdinand followed and defeated them on the 23rd of June at Crefeld. Clermont was relieved by Contades and at the same time Soubise, who had at last reorganized his command, shattered by the disaster of Rosbach, moved forward through Hesse and compelled Prince Ferdinand to withdraw from his very advanced position. No engagement followed; Soubise fell back upon Frankfurt and to Maschen. The latter is the turning point, where Frederick was forced into a line through Mühlburg, Paderborn and Cassel during the winter. Fortunately events in Canada and the glory of his victories had made Frederick's cause thoroughly popular in Great Britain, and at last it became possible to detach a considerable force of British troops to Prince Ferdinand's assistance, whose conduct turned the scale in the critical moment of the campaign. During the winter the French had organized their forces in two columns — based on Frankfurt and Wesel respectively. Broglie was in command of the former; Contades still led the latter.

In April Prince Ferdinand advanced upon Amiens; Broglie upon Hesse and Frankfurt, and actually reached Bergen, a village some 10 m. to the north, but here he was defeated by Broglie (13th April) and forced to retreat the way he had come, the French following along their whole front and by sheer weight of numbers manoeuvring him successively out of each position he assumed. On the 11th of July Broglie surprised Minden, thus securing a bridge over the Weser and free access into Hanover, and light troops overran the south of the electorate. On the 16th Contades with the left column joined Broglie and the French now had some 60,000 men against the 45,000 Ferdinand could muster. The latter's position was extremely difficult, for the French had only to continue in possession of the bridges at Minden to ruin the whole country by their exactions, and the position they held was too well protected on the flanks and too strong in front for direct attack.
Nevertheless Prince Ferdinand drew up before it and met the French plundering raids by a threat on their communication with Cassel, and as a further inducement to tempt Contades to attack him, he detached a column under Wangenheim, which entrenched itself across the only outlet by which the right of the French army could debouch from behind the marshes which lie in the angle between the Weser and the Bastau, a small tributary joining the former below Minden. The bait took, and during the early hours of the 1st of August the French army moved out to attack Wangenheim. But Ferdinand's troops had been lying in instant readiness for action, and as soon as the outposts gave the alarm they advanced with such rapidity that by eight o'clock, they had assembled in force, prepared for action to meet the French as they emerged from their prevailing, and the French had made far greater progress with their deployment than Ferdinand had reckoned on. An almost front-to-front engagement ensued. Things were going badly with the Prussians when, through a mistake in the delivery of an order, the British brigade (12th, 20th, 23rd, 25th, 37th, 51st), followed by some Hanoverian battalions, began to advance straight upon the Prussian flank and rear columns, and, in three hours, they had driven in three of the French batteries and set fire of several batteries. Once launched, neither fire nor shock could check their progress; halting for a moment to pour volleys into the charging squadrons hastily thrown against them, they swiftly resumed their advance. French infantry too were hurled against them, but were swept away by fire and bayonet, and presently they had pierced right through the French line of battle. Now came the moment when cavalry should have been at hand to complete the victory, and this cavalry, the Blues, the 1st and 3rd Dragoons, Scots Greys and 10th Dragoons under Lord George (afterwards Viscount) Sackville (g.v.) stood ready, waiting only the order to advance. This Sackville refused to give, though called on three times by the prince; no satisfactory explanation of his conduct has ever been discovered, but he was tried by a general court-martial and cashiered. Nevertheless, so brilliant had been the conduct of all the troops engaged, especially of the infantry brigade that the victory was won even in spite of this failure of the cavalry, and before evening the French were retreating as a demoralized mass towards Cassel, leaving some 10,000 men, 17 colours and 43 guns in the hands of the victors, who on their side out of 43,000 had lost 2,000 killed, 1,000 wounded, and 1,000 prisoners. Of the six British regiments that went into action 4,434 strong, 1,330 (30%) had fallen, but their feat is not to be measured only by the losses victoriously borne—these were not unusual in the period—but by the astounding discipline they maintained throughout the advance, resuming their march after beating off cavalry charges with the cool precision of a review in peace-time. Ferdinand followed up his victory by a pursuit which was vigorous for three days and had all but reached the Rhine when his movement was stayed by the necessity of detaching 12,000 men to the king to make good the losses of Künnersdorf.

**Campaign of 1756.**—The year opened gloomily for Frederick. His embarrassment both for men and money was extreme, and his enemies had at last agreed on a combined plan against him. They purposed to advance in three columns concentrically upon him: Daun with 100,000 men in Saxony, Loudon with 50,000 from Silesia, Soltikov's Russians from East Prussia; and, against whichever column the king turned, the others were to continue towards Berlin. Only in Hanover were the conditions more favourable, for Ferdinand had 70,000 (20,000 British) against the 125,000 of the French. Early in April the king stood with 40,000 men, west of the Elbe near Meissen facing Daun, Prince Henry with 34,000 in Silesia from Cossen to Lades, 15,000 under Forcade and Jung-Stuttemberg in Pomerania facing the Swedes and Russians. Towards the end of May Loudon moved to besiege Glatz, and Fouqué, who commanded at Lades, marched with 13,000 to cover Breslau. Loudon at once seized Lades, and Fouqué, returning in response to urgent orders from the king, was attacked by Loudon with 37,000 men and almost destroyed. Meanwhile, Prince Henry had moved to Landsberg against the Russians, but failed to seize his opportunities and thus Silesia lay open to the Austrians. Frederick decided to march with his main body against Loudon and attack him if unsupported, but, if his movement induced Daun to move to Loudon's support, then to double back and besiege Dresden. For this purpose a siege train was held in readiness at Magdeburg. He marched rapidly on Bautzen, then hearing that Daun was approaching to support Loudon he returned and besieged Dresden (July 12th). The town was bombarded, there being no time for regular siege approaches, but it held out, and by the 28th of July Daun's army already engaged with a Prussian force had beaten off an attack, and it had been decided to raise the siege and to be raised, and during the night of the 29th of July the Prussians slipped away to Meissen. On the same day Frederick learnt that Glatz, the key to Southern Silesia, had fallen into the hands of the Austrians, but as a set-off the news shortly afterwards arrived of Prince Ferdinand's brilliant victory at Warburg, in which the British cavalry led by the marquis of Granby amply wiped out the disgrace incurred by Sackville. On the 1st of August Frederick began his march into Silesia, summoning Prince Henry from Landsberg to join him, which he did by a splendid march of about 80 miles in three days. The king's march was almost as remarkable, for the roads were very bad, and the weather hot and freely obstructed them, nevertheless in five days he reached Bautzen, having marched more than 100 m. from his starting point, and crossed five considerable rivers on his way. Thence he continued more easily to Bunzlau. Daun was in front of him and Lacy with clouds of light troops on his right, the Russians under Czernichoff with Loudon not far away to his left front, 114,000 men in all to his 30,000, but he held to his decision to reach Schweidnitz. With this purpose in view he marched south-east on Jauer, marching 25 m. on the 9th of August, but the enemy was still in front of him and advancing on his flanks. On the 10th he tried the Liegnitz road with the same result, and his position became desperate as his food was almost exhausted. He had already covered 15 m. that day, but at 11 p.m. he called on his men for a night march and formed up again on his old position next morning, the 11th of August. He appeared to be completely surrounded, and things looked so desperate that Mitchell, the British ambassador, burnt his papers and cipher key. At sunset on the 12th, however, Frederick again broke camp and by a night march evaded the enemy's scouts and troops 1, m. in the noon; on the 13th, the Austrians began an attack, appearing a couple of hours later. The troops resisted during the 13th and 14th, but at nightfall, leaving their watchfires burning, marched off by the Glogau road, and the only way of escape still open. The Austrians, however, had planned a night attack, and Loudon's columns were moving to close this last loophole of escape. Fortunately for the Prussians they arrived just a few minutes too late, and in the combat that ensued 15,000 Prussians inflicted a loss of 10,000 men and 82 guns upon their assailants, afterwards resuming their march undisturbed.

But the danger was not yet over. Czernichow was known to be in the immediate vicinity; so as to get him out of the way, Frederick gave to a peasant a despatch addressed to Prince Henry containing the words: "Austrians totally defeated today, now for the Russians. Do what we agreed upon." The peasant was to take care to be captured by the Russians and only give up the paper to save his life. The plan worked as he had anticipated, the paper duly reached Czernichow's hands and he immediately evacuated the dangerous neighbourhood. Elated with his success the king now abandoned his retreat on Glogau and determined to press on to all hazards to Breslau, which in spite of many anxious moments he reached on the 17th of August.

The Russians now abandoned the campaign in the open field and besieged Colberg on the Baltic coast. Frederick in Silesia manoeuvred for some weeks between Breslau, Schweidnitz and Glatz, but was suddenly recalled by the news of the capture of Berlin on the 9th of October by Cossacks and portions of the Empire Army and Austrians from Saxony. On the 11th of October the king was in full march, but the news of his approach was enough and the enemy dispersed, the
Austrians and Empire Army making for Torgau. Daun, relieved of Frederick's pressure, now also moved to Torgau, leaving Loudon in Silesia, and had concentrated over 64,000 men at and around Torgau before Frederick had collected an attacking force of 45,000. The position held by the Austrians was an entrenched camp fronting in all directions, but it was too cramped for their numbers and difficult to leave for a counter-stroke. Frederick determined to attack it both front and rear, and leaving Zieten to act against the former, he marched off at 6:30 of the 3rd of November to attack it as soon as Zieten should have thoroughly attracted the enemy's attention. But for once Zieten failed; he allowed himself to be drawn off by the Austrian light troops, and Frederick, in ignorance of the real state of affairs, launched his grenadiers against a thoroughly intact enemy, strongly entrenched, with, it is said, 400 guns in position to sweep the approaches. The grenadiers were simply swept away by grape and case—only 600 out of 6000 remained, and Prussian batteries hurrying up to their support were destroyed before they had time to load. The attack was, however, renewed by fresh brigades as they came to hand, and the Prussian artillery did something to diminish the intensity of the Austrian case fire. The action began at 2 p.m. At 4:30, as the sun was setting, the king's last reserve of horse and foot at last succeeded in breaking the Austrian line and in the darkness there ensued a confused slaughter as at Zornsdorf. The result was still in the balance when at length Zieten reached the field and attacked at once. For an hour or so the struggle still raged, but the Austrians were by now completely spent and withdrew gradually into the fortress and then across the river. Out of 44,000 the Prussians had lost 13,120 men (30%), out of 65,000 the Austrians only 11,260 (17.3%), but of these over 7000 were prisoners. Both sides, however, were completely paralysed by the struggle, and the year ended without further effort on either side.

On the western theatre of war Prince Ferdinand after the victory of Warburg had pressed the French back to the Rhine and besieged Wesel, but was compelled to raise the siege after suffering the defeat of Kloster-Kamp (16th Oct.) and to withdraw to Lippstadt and Warburg.

Campaign of 1757.—Torgau proved to be Frederick's last great battle. All parties were now so completely exhausted that they no longer were able to face the risks of a decision on the field. In the west Prince Ferdinand was first in the field, and in February and March he drove the French southward as far as Fulda, but an attempt to capture Marburg failed and the gradual pressure of French numerical superiority, together with the reduction of the British contingent on the death of George II., compelled him to retreat gradually until by the beginning of October both Brunswick and Wolfenbüttel fell into their hands. In the east the king had barely 100,000 men against 300,000 Austrians and Russians. Leaving Prince Henry to observe Daun in Saxony he marched to join von der Goltz, who with 23,000 stood about Schweidnitz. The Russians (50,000) under Buturlin were approaching from Posen, and Loudon with 72,000 men starting from Glatz manoeuvred to join them. After two months' skirmishing and marching the Allies effected their junction between Liegnitz and Jauer, having completely surrounded Frederick. With a large supply of food and immediate supplies on Northern Silesia, and not caring to risk a battle with odds of three to one against him he withdrew into the entrenched camp of Bunzelwitz, where the Allies did not dare to attack him. Ultimately, as usual, the Russian commissariat broke down, and in September Buturlin withdrew the way he had come. Relieved of this antagonist, Frederick manoeuvred to draw Loudon out of his positions and compel him to fight in the open, but Loudon refused the challenge and after an attempt to surprise Schweidnitz, where he failed, withdrew into winter quarters. Prince Henry in Saxony held his own against Daun.

England now threatened to withdraw her subsidies, and as the Prussian armies had dwindled to 60,000 men the end seemed very near. But a turn of fortune was already at hand. On the 5th of January 1762 the tsarina died, and her successor, Peter III., at once offered peace. On the 16th of March an armistice was agreed to, and shortly afterwards the treaty of St Peters burg was signed, by which Pomerania was given back to Prussia and a contingent of 18,000 men placed at Frederick's disposal. The withdrawal of the Russians led to the withdrawal of the Swedes and thus only France and Austria remained—the former bled white by the strain of her colonial disasters, the latter too weary to make further great exertions. Though the war dragged on for some months, and Prince Henry, assisted by Seydlitz, won the victory of Freiberg over the Empire Army (20th Oct. 1762), no great battle was attempted, and although a revolution at St Petersburg deprived Frederick of Russian assistance, in the autumn Ferdinand drove the French back over the Rhine, and thereupon an armistice was agreed upon by all. Final terms of peace were adjusted on status quo ante basis at Hubertusburg on the 11th Feb. 1763. Prussia had maintained all her possessions and made good her claim to rank for all time with the Great Powers.

Bibliography.—The three principal works on the "Third Silesian" part of the war are the Prussian General Staff, Der sieben- jährige Krieg (Berlin, 1901—); Austrian Official "Kriegsarchiv, Krieg der Kaiserin Maria Theresia gegen Frederich den GroBen (Berlin, 1899); and Frederich the Great. See also C. B. Brackenbury, Frederich the Great; Bernhardi, Friedrich der Grossen Feldherren (Berlin, 1881); biographies of Prince Henry, Zieten, Seydlitz, Maurice of Dessau, &c.; von Arnet, Maria Theresa und der Siebenjährige Krieg (Vienna, 1852); the older histories of the war by Tempelhoff, Archenholz and Lloyd; Jomini, Traité des grandes opérations militaires; Massalowski, Die russische Armee im 7jähr. Kriege (Berlin, 1893). The main authorities for Ferdinand's Campaign are Westphalen, Feldsage des Herzogs Ferdinand von Braunschweig, and J. W. Fortescue, Hist. British Army, vol. ii.

Naval Operations

The naval operations of the Seven Years' War began nearly a year before the declaration of hostilities. In June 1755 a British squadron under Boscawen was sent into the Straits of Belle Isle to intercept French ships carrying soldiers and stores to Quebec, in retaliation for aggressions on British possessions in Nova Scotia. On the 14th of July Boscawen seized two French line-of-battle ships fitted as transports, the "Alcide" and the "Lyra." A general seizure of French merchant ships followed, and thousands of French sailors were in prison in England by the early days of 1756. The government of Louis XV. did not reply by a declaration of war, but prepared to retaliate by a threat of invasion, which created something like a panic in Great Britain. The government, then in the weak hands of the duke of Newcastle, accumulated warships in the Channel,
and on the 3rd of February 1756 issued a proclamation which instructed the inhabitants of the southern counties of England to drive their cattle inland in case of a French landing, and thereby much aggravated the prevailing fear. But the invasion scheme was so far only a cover for an attack on Minorca, then held by Great Britain.

A squadron of twelve sail of the line was prepared at Toulon under La Galissonière, a veteran admiral who had entered the navy in the reign of Louis XIV. It escorted transports carrying 15,000 troops under the duc de Richelieu. The danger to Minorca, where the garrison had been allowed to fall below its due strength, was well known to the British ministers. On the 11th of March they appointed Admiral John Byng to command a squadron which was to carry reinforcements. He did not, however, leave St Helen's till the 6th of April. Byng had with him ten sail of the line, and carried 3000 soldiers for the garrison. The ships were indifferently manned, and the admiralty refused to strengthen him by drafts from the ships it proposed to retain in the Channel. In order to find room for the soldiers, the marines of the squadron were left behind. There was therefore a danger that, if an encounter with the French fleet took place after the reinforcements were landed, the British squadron would be short-handed. Byng reached Gibraltar on the 2nd of May. The French invasion of Minorca had been carried out on the 10th of April. The governor, General de Fowke, refused to allow any of his soldiers to reinforce Minorca. On the 8th of May Byng sailed, and on the 19th he was in communication by signal with General Blakeney, governor of the fortress. Before the soldiers could be landed the French fleet came in sight. Byng had been joined by three ships of the line at Gibraltar, and had therefore thirteen ships to twelve. One of the French vessels, the "Foudroyant" (84), was a finer warship than any in the British line, but in effective power Byng was at least equal to his opponent, and if his ships were poorly manned La Galissonière was in worse case. The British admiral rejected one of his ships, the little ship to rear to starboard, and then orthodox manner—van to van, centre to centre, and rear to rear, ship against ship. By the manoeuvres of the afternoon of the 19th and morning of the 20th he gained the weather-gage, and then bore down on the enemy at an angle, the van of the English steering for the van of the French. The sixth ship in his line, the "Intrepid" (74), having lost her foretopmast, became unmanageable and threw the vessels behind her out of order. Thus the six in front were exposed to the fire of all the French, who ran past them and went off. Byng could have prevented them by bearing down, but refused to alter the formation of his fleet. Being now much disturbed by the crippled state of the ships in his van, he made no effort either to land the soldiers he had on board or to renew the action; and after holding a council of war on the 24th of May, which confirmed his own desire to retreat, he sailed for Gibraltar (see Byng, John, for his trial and execution). The loss of Minorca, which was the consequence of this retreat, gave the French a great advantage in the Mediterranean. During the rest of the year no very vigorous measures were taken on either side, though the British government reinforced its squadrons both in the Mediterranean and on the coast of America.

In 1757 the naval war began to be pushed with a vigour hitherto unprecedented. The elder Pitt became the effective head of the government, and was able to set about ruining the French power at sea. Owing to the long neglect of the French navy, it was so inferior in strength to the British that nothing short, of the worst mismanagement on Pitt's part could have deprived Great Britain of victory. Some of the minister's measures were not indeed wise. He sent out, during the last months of 1757 and the whole of 1758, a series of combined expeditions against the French coast, which were costly and for the most part unsuccessful. They terminated in September 1758 with a disaster to the troops engaged in St Cas Bay. Yet these assaults on the French coast did much to revive the spirit of the nation, by removing the fear of invasion. Meanwhile a sound aggressive policy was followed in distant seas during 1758.

In the East Indies the squadron which had been engaged during 1757 in co-operating with Clive in the conquest of Bengal was strengthened. Under the command of Sir George Pocock it was employed against the French squadron of M. d'Achê, who brought in his capture troops from-destruction and was carried on by them to attack the possessions of the East India Company on the Coromandel coast. The two actions fought at sea on the 29th of April and the 1st of August in the Bay of Bengal were not victories for Sir George Pocock, but neither were they defeats. The French admiral was so uncertain of his power to overcome his opponent that he sailed for the islands of the Indian Ocean so soon as Lally and the authorities at Pondicherry would allow him to go. In America the strong squadron of Boscauen rendered possible the capture of Louisburg, on the 26th of July, and cleared the way for the conquest of Canada in the following year. During 1759 the French government, trusting that the multiplicity of the calls upon its fleet would compel Great Britain to scatter its naval forces, laid plans for a great invasion (for the details of this plan and its results, see Quiberon, BATTLE OF). But the British navy proved numerous enough not only to balance invasion at home but to effect large conquests of French possessions abroad. In North America the co-operation of the navy rendered possible the capture of Quebec by Wolfe. In the West Indies, though an attack on Martinique was repulsed, Guadeloupe was taken in January. In the East Indies the squadron of M. d'Achê reappeared in the Bay of Bengal in September. He fought another undecided action with Sir George Pocock on the 8th, and gave some small help to the French army. But the bad state of his squadron forced him to retreat soon, and the resources of the French being now exhausted in those seas, he did not reappear. The British navy was left in complete command of the Bay of Bengal and the coast of Malabar. On shore, Lally, cut off from reinforcements, was crushed, and Pondicherry fell.

During 1760 and 1761 the French fleet made no attempt to keep alive the naval war. The British navy went on with the work of conquering French possessions. During 1760 it co-operated on the Lakes and on the St Lawrence in the final conquest of Canada. Between April and June of 1761 it covered the capture of the island of Belle-Ile on the French coast, which both strengthened its means for maintaining blockade and gave the British government a valuable pledge to be used for extorting concessions when the time for making peace came. The complete ruin of French merchant shipping and the collapse of the navy left the maritime population free to seek a livelihood in the privateers. The commerce of France in the East Indies was a considerable success. The number of British merchant ships taken has been put as high as one-tenth of the whole. But this percentage was the price paid for the enormous advantage gained by the ruin of the French as commercial rivals. The merchant shipping of Great Britain increased largely in the course of the war, and from it dates her commercial predominance.

By the close of 1761 the helplessness of France at sea had been demonstrated, but the maritime war was revived for a few months by the intervention of Spain. A close alliance, known as "the family compact," was made between the royal houses of France and Spain in 1760. The British government had not divulged, and Pitt would have made war on Spain at once. He was overruled and retired. So soon, however, as the treasure ships from America had reached Spain, at the close of 1761, the Spanish government declared war. Its navy was incapable of offering a serious resistance to the British, nor did it even attempt to operate at sea. The British government was left unopposed to carry out the plans which Pitt had prepared against Spain. The only aggressive movement undertaken by the Spanish government was an attack on Portugal, which, however, was the only engagement of any magnitude. Pitt, however, gave his most useful help by allowing her the free use of Portuguese ports. As the king of Portugal refused to join the French and Spanish alliance, his country was invaded by a Spanish army. Great Britain supported her ally. A regiment of cavalry and seven battalions of foot were landed. They gained several small actions against the invaders, and had
the most active share in the operations which forced them to retire. But the most effective blows delivered against Spain were directed at her colonies. The British troops, left free by the recent success against the French in America, were employed in an attack on Havana. A powerful fleet left England on the 5th of March, bringing troops which were joined by others in the West Indies; Sir George Pocock, who had returned from the East Indies, was in command. Under his direction the fleet reached Havana after suffering without loss, and Havana was assaulted. The citadel known as the Moro Castle made a stout defence, and some of the ships suffered severely in a bombardment. But the worst losses of the besiegers were due to the climate of Cuba, aided by bad sanitary arrangements. Of the 10,000 troops landed, three-fourths are said to have suffered from fever or dysentery, and the majority of the sick died. Yet the Moro was taken on the 30th of September, and Havana, which could have made a longer resistance, surrendered on the 10th of October.

Martinique, the last important possession of France in the New World except her half of San Domingo, had fallen in February. In the East Indies, where the surrender of Pondicherry had left other forces free, a combined expedition triumphed easily in October over the natives of Manila, under the direction of the archbishop, who acted as governor. The preliminaries of the peace of Paris were signed on the 3rd of November 1762.

See Beaton, Naval and Military Memoirs of Great Britain (London, 1804); Captain Mahan, Influence of Sea Power upon History; Lapacque Gaultier, La Marine militaire de la France sous le régime de Louis X V (Paris, 1902).

SEVERIANA, VIA, an ancient highroad of Italy, running S.E. from Ostia to Terracina, a distance of 73 m. along the coast, and taking its name, no doubt, from the restoration of an already existing road by Septimius Severus, who was a great benefactor of Ostia. It ran along the shore at first, just behind the line of villas which fronted upon the sea, and are now half a mile inland, or even upon its edge (for an inscription records its being damaged by the waves). Farther S.E. it seems to have kept rather more distant from the shore, and it probably kept within the lagoons below the Circæan promontory. As is natural in a sandy district where building materials are rare, remains of it are scanty. See R. Lanciani in Monumenti dei Lincei, xiii., (1903), 185; xvi. (1906), 241; T. Ashby in Mélanges de l'École française de Rome (1959), 157 sqq.

SEVERINUS, pope in 640, successor of Honorius. He occupied the papal chair only three months after his consecration, having had to wait a year and a half for its ratification by the emperor. During this long vacancy the exarch of Ravenna, supported by the military body of Rome (exercitus Romanus), occupied the Lateran and seized the treasure of the Church.

SEVERN, JOSEPH (1793-1879), English portrait and subject painter, was born at Hoxton on the 7th of December 1793, his father, a musician, coming of an old Gloucestershire family. During his earlier years he practised portraiture as a miniaturist; and, having studied in the schools of the Royal Academy, in 1818 he gained the gold medal for his "Una and the Red Cross Knight in the Cave of Despair." In 1819 he exhibited at the Academy his "Hermia and Helena." He was an intimate friend of Keats the poet, whom he accompanied to Italy in 1820 and nursed till his death in 1821. His picture of "The Death of Alcibiades" then obtained for him an Academy travelling studentship, and he returned to Rome, where he lived till 1841, marrying in 1828 the daughter of Lord Montgomerie, a ward of Lady Westmoreland, one of his chief patrons, and mingling in the congenial art circles of the city. In 1841, after leaving England for nineteen years, mainly for the education of his children, he was appointed British consul at Rome, a post which he held till 1872, and during a great part of the time he also acted as Italian consul. His most remarkable work is the "Spectre Ship" from the Ancient Mariner. He painted "Cordelia watching by the Bed of Lear," "the Roman Beggar," "Ariel," "The Fountain," and "Rienzi," executed a large altar-piece for the church of St Paul at Rome, and produced many portraits, including one of Baron Bunsen and several of Keats. He died at Rome on the 3rd of August 1879. He had six children, of whom Walter, Arthur and Ann (wife of Sir Charles Newton) were well-known artists.

SEVERN, a river of Wales and England. It rises on the N.E. side of Plynlimmon, on the S.W. border of Montgomeryshire, and flows with a nearly semicircular course of about 210 m. to the Bristol Channel; the direct distance from its source to its mouth being 365 m. Its Welsh name is Hafren, and its Roman name was Sabrina. Through Montgomeryshire its course is at first to the S.E. direction, and for the first 15 m. it flows over a rough precipitous bed. At Llanidloes it bends towards the N.E., passing Newtown and Welshpool; this part of the valley bearing the name of the Vale of Powis. It receives the Vyrnwy near Melverley, and forms a mile of the Welsh border, and then turning in an E.S.E. direction enters Shropshire, and waters the broad rich plain of Shrewsbury, after which it bends southward past Ironbridge and Bridgnorth to Bewdley in Worcestershire. In position of Worcesters it receives a number of tributaries, the chief of which is the Tern. Continuing its southern course through Worcestershire it passes Stourport, where it receives the Stour (left), and Worcester, shortly after which it receives the Teme (right). It enters Gloucestershire close to Tewkesbury, where it receives the Upper Avon (left), after which, bending in a S.W. direction, it passes the city of Gloucester, below which it becomes estuarine and tidal. A high bight or tidal wave, for which the Severn is notorious, may reverse the flow as high up as Tewkesbury Lock (135 m. above Gloucester), and has sometimes caused great destruction. The estuary merges into the Bristol Channel at Trowbridge. Here it is joined on the left the Lower or Bristol Avon, and on the right the Wye. The source lies at an elevation of about 2000 ft.; the fall from Llanidloes is about 550 ft., from Newtown 365 ft. and from Shrewsbury, 90 m. above Gloucester, 180 ft. The scenery of the upper valley is wild and picturesque, and that of the lower river is at some points very beautiful. The course between the height of the Wrekin and Wenlock Edge (despite the manufacturing towns on the banks at this point), the valley above Bewdley, where the Forest of Wyre borders the left bank, and the fine position of Worcester, with its cathedral rising above the river, may be noticed. The distance from Gloucester to Avonmouth is 44 m., but the upper part of the estuary is tortuous, and, owing to the bores and shifting shoals, difficult of navigation. On this account the Gloucester and Berkeley Ship Canal, 167 m. in length, was constructed, admitting vessels of 350 tons to Gloucester from the docks at Sharpness on the estuary. The navigation extends up to Arley, above Bewdley, 47 m. from Gloucester, but is principally used up to Stourport (43 m.), from which the Staffordshire and Worcestershire canal gives access to the Wolverhampton industrial district and the Trent and Mersey navigation. The Berkeley canal and the Worcestershire and Birmingham canal are maintained by the Sharpness New Docks and Gloucester and Birmingham navigation company. There is connexion with the Thames by the Stroudwater canal from Framilode on the estuary, joining the Thames and Severn canal near Stroud. The Wye is in part navigable; the Bristol Avon gives access to the great port of Bristol, and the Upper Avon is in part navigable. The Severn is a good salmon river, and is famous for its lampreys, while many of the tributaries afford fine trout-fishing, such as the Teme and the Vyrnwy. The drainage area of the Severn is 68,790 sq. m., including the Wye and the Bristol Avon, 43,550 sq. m., without these rivers.

Severn Tunnel.—The first bridge above the mouth of the Severn is that near Sharpness, which carries the Great Western and Midland railway between Berkeley Road and Lydbrook Junction. But the Severn tunnel, carried with such ease, was made a stouter resistance to the last line of defence. 14 m. below the bridge, forms the direct route between the south of England and South Wales. Before the tunnel was made through it a toll was charged, "Mr. Tamesis Passage," where a ferry had existed from early times. The steam ferry was operated in connexion with the Bristol and South Wales Union railway in 1863, and was subsequently taken over by the Great Western company. Parliamentary powers to construct the tunnel were given in 1872, and work began in the following year. The originator of the scheme and chief engineer was Mr Charles Richar-son, and Sir John Hawkshaw was consulting engineer. The principal
SEVERUS, LUCIUS SEPTIMIUS

difficulty encountered in the construction was the tendency to flood, owing both to the river breaking into the works, and, more especially, to the water which was let in. When the water level of the tunnel is 4 m. 624 yds. of which 23 m. are beneath the river. On the east side the cutting leading to the tunnel has a gradient of 1 in 100, which is continued in the tunnel itself. The deepest part is reached beneath the cove, where the value of the new route was especially apparent in connexion with the mineral traffic between the South Wales coal-field and London and the ports of the south of England.

SEVERUS, LUCIUS SEPTIMIUS (A.D. 146-211), Roman emperor, was born in 146 at Leptis Magna on the coast of Africa. Punic was still the language of this district, and Severus was the first emperor who had learned Latin as a foreign tongue. The origin of his family is obscure. Spartanius, his biographer in the Historia Augusta, doubtless exaggerates his literary culture and his love of learning; but the taste for jurisprudence which he exhibited as emperor was probably instilled into him at an early age. The removal of Severus from Leptis to Rome is attributed by his biographer to the desire for higher education, but was also no doubt due in some degree to ambition. From the emperor Marcus Aurelius obtained by marriage on the one hand and by the death of his uncle, the distinction of the broad purple stripe. At twenty-six, this is, almost at the earliest age allowed by law, Severus attained the quaestorship and a seat in the senate, and proceeded as quaestor military to the senatorial province of Baetica, in the Peninsula. While Severus was absent in Africa in consequence of the death of his father, the province of Baetica, disordered by Moorish invasions and internal commotion, was taken over by the emperor, who gave the senate Sardinia in exchange. On this Severus became military quaestor of Sardinia. His next office, in 174 or 175, was that of legate to the province of Asia, and soon after he was tribune of the plebs. This magistracy, though far different from what it had been in the days of the republic, was still one of dignity, and brought promotion to a higher grade in the senate. In 178 or 179 Severus became praetor by competition for the suffrages of the senators. Then, probably in the same year, he went to Hispania Citerior as legatus juridicus; after that he commanded a legion in Syria. After the death of Marcus Aurelius he was unemployed for several years, and, according to his biographer, studied at Athens. He became a privy councillor in 182. In that time he abandoned the marriage with his second wife, to which his father, Julia Domna, had on no account he had no doubt made when an officer in Syria. Severus was governor in succession of Gallia Lugdunensis, Sicily and Pannonia Superior; but the dates at which he held these appointments cannot be determined. He was in command of three legions at Carnuntum, the capital of the province last named, when news reached him that Commodus had been murdered by his favourite concubine and his most trusted servants. At this moment Severus had not raised himself above the usual official level. He had seen no warfare beyond the petty border frays of frontier provinces. But the storm that now tried all official spirits found his alone powerful enough to brave it. Three imperial dynasties had been ended by assassination. The Flavian line had enjoyed much shorter duration and less prestige than the other two, and the circumstances of its fall had been peculiar in that it was probably planned in the interest of the senate, and the senate reaped the immediate fruits. But the crises which arose on the deaths of Nero and of Commodus were alike. In both cases it was left to the army to determine by a struggle which of the divisional commanders should succeed to the command-in-chief, that is, to the imperial throne. In each case the contest began with an impulse given to the commanders by the legionaries themselves. The soldiers of the great commands competed for the honour and advantages to be won by placing their general on the throne. The officer who refused to lead would have suffered the punishment of treason.

There is a widespread impression that the Praetorian guards at all times held the Roman empire in their hands; but its emptiness is demonstrated by the events of the year 193. For the first time in the course of imperial history the Praetorians presumed to nominate as emperor a man who had no legs at his back. This was Pertinax, who has been well styled the Galba of his time—upright and honourable to severity, and zealous for good government, but blindly optimistic about the possibilities of reform in a feeble and corrupt age. After a three months' rule he was destroyed by the power that lifted him up. According to the well-known story, true rather in its outline than in its details, the Praetorians sold the throne to Didius Julianus. But at the end of two months both the Praetorians and their nominee were swept away by the real disposers of Roman rule, the provincial legions. Four groups of legions at the time were strong enough to aspire to determine the destiny of the empire—those quartered in Britain, in Germany, in Pannonia and in Syria. Three of the groups took the decisive step, and Severus in Pannonia, Pescennius Niger in Syria, Clodius Albinus in Britain, received from their troops the title of Augustus. Severus outdid his rivals in promptness and decision. He secured the aid of the legions in Germany and of those in Ilyria. These, with the entry into Panonia, Pescennius Niger was about to overawe Albinus for the moment. He probably deemed that his best chance lay in the exhaustion of his competitors by an internecine struggle. At all events he received with submission an offer made by Severus, who confirmed Albinus in his power and bestowed upon him the title of Caesar, making him the nominal heir-apparent to the throne.

Before the action of Severus was known in Rome, the senate and people had shown signs of turning to Pescennius Niger, that he might deliver them from the poor puppet Didius Julianus and advance the Praetorians to the position of a combination strongly for Pertinax. Having secured the co-operation or neutrality of all the forces in the western part of the empire, Severus hastened to Rome. To win the sympathy of the capital he posed as the avenger and successor of Pertinax, whose name he even added to his own, and used to the end of his reign. The feeble defences of Julianus were broken down and the Praetorians disarmed and disbanded without a blow. A new body of household troops was enrolled and organized on different principles from the old. In the face of the senate, as Dio tells us, Severus acted for the moment like of the good emperors in the old days. After a magnificent entry into the city he joined the senate in exterminating the memory of Commodus, and in punishing the murderers of Pertinax, whom he honoured with splendid funeral rites. He also encouraged the senate to pass a decree directing that any emperor or subordinate of an emperor who should put a servant to death should be treated as a public enemy. But he refrained from asking the senate to sanction his accession.

The rest of Severus' reign is in the main occupied with wars. The power wielded by Pescennius Niger, who called himself emperor, and was supposed to control one half of the Roman world, proved to be more imposing in name than in fact. The magnificent promises of Oriental princes were falsified as usual. Niger himself, as described by Dio, was the very type of mediocrity, conspicuous for no faculties, good or bad. This character had no doubt commended him to Commodus as suited for the important command in Syria, which might have proved a source of danger in abler hands. The contest between Severus and Niger was practically decided after two or three engagements, fought by Severus' officers. The last battle, which took place at Issus, ended in the defeat and death of Niger (194). After this the emperor spent two years in successful attacks upon the peoples bordering on Syria, particularly in Adiabene and Osroene. Byzantium, the first of Niger's possessions to be attacked, was the last to fall, after a glorious defence.

1 For Marcus Aurelius Alexander Severus, Roman emperor from 222 to 235, see Alexander Severus.
Late in 196 Severus turned westward, to reckon with Albinus. He was better born and better educated than Severus, but in capacity far inferior. As Severus was nearing Italy he received the news that Albinus had been declared emperor by his soldiers. The first counter-stroke of Severus was to affiliate himself and his elder son to the Antonines by a spurious and posthumous adoption. The prestige of the old name, even when gained in this illegitimate way, was evidently worth much. Bassianus, the elder son of Severus, thereafter known as Aurelius Antoninus, was confided to the care of Sulpicia and the education of his grandson, and thus the legitimate heir to his throne and successor to his father. Without interrupting the march of his forces, Severus contrived to make an excursion to Rome. Here he availed himself with much subject to the sympathy many senators were known to have felt for Niger. Though he was so far faithful to the decree passed by his own advice that he put no senator to death, yet he banished and impoverished many whose presence or influence seemed dangerous or inconvenient to his prospects. Of the sufferers probably few had seen or communicated with Niger.

The collision between the forces of Severus and Albinus was the fiercest and that had taken place between Roman troops since the contest at Philippi. The decisive engagement was fought in February of the year 197 on the plain between the Rhone and the Saône, to the north of Lyons, and resulted in a complete victory for Severus.

Thus, released from all need for disguise, he "poured forth on the civil population all the wrath which he had been storing up for a long time" (Dio). He frightened the senate by calling himself the son of Marcus and brother of Commodus, whom he had before insulted. He read a speech in which he declared that the severity and cruelty of Sulpicia and the Albinus had proved to be safer policy than the clemency of Pompey and Julius Caesar, which had wrought their ruin. He ended with an apology for Commodus and bitter reproaches against the senate for their sympathy with his assassins. Over sixty senators were arrested on a charge of having adhered to Albinus, and half were put to death. In most instances the charge was a pretence to enable the emperor to crush the forward and dangerous spirits in the senate. The murderers of Commodus were punished; Commodus himself was defined; and on the monuments from this time onward Severus figures as the brother of that reproduction of all the vice and cruelty of Nero with the refinement left out.

The next years (197–202) were devoted by Severus to one of the dominant ideas of the empire from its earliest days—war against the Parthians. The results to which Trajan and Verus had aspired were now fully attained, and Mesopotamia was definitely established as a Roman province. Part of the time was spent in the exploration of Egypt, in respect of which Dio takes opportunity to say that Severus was not the man to leave anything human or divine uninvestigated. The emperor returned to a well-earned triumph, commemorated to this day by the arch in Rome which bears his name. During the six years which followed (202–208) Severus resided at Rome and gave his attention to the organization of the empire. Severus had confided much of the administration of the empire to Plautianus, the commander of the reorganized Praetorians, who is described by the ancient historians as a second Sejanus. In 203 Plautianus fell, owing, it is said, to an intrigue set foot on by Caracalla, who had shortly before married the daughter of his victim.

Severus spent the last three years of his life (208–211) in Britain, amid constant and not very successful warfare, which he used to a great extent partly to strengthen the discipline and powers of the legions, partly to wean his sons from their evil courses by hard military service. He died at York on the 4th of February 211. There are traditions that his death was in some way hastened by Caracalla. This prince had been, since about 197, nominally joint emperor with his father, so that no ceremony was needed for his recognition as monarch.

The natural gifts of Severus were of no unusual order. He had a clear head, promptitude, resolution, tenacity and great organizing power, but no touch of genius. That he was cruel cannot be questioned, but his cruelty was of the calculating kind, and always directed to some end. He threw the head of Niger over the ramparts of Byzantium, but merely as the best means of procuring a surrender of the stubbornly defended fortress. The head of Albinus he exhibited to Rome, but it was, indeed, a very different thing to deal more with pretenders. The children of Niger were held as hostages and kindly treated so long as they might possibly afford a useful basis of negotiation with their father; when he was defeated they were killed, but from the same time thereafter Severus dreamed of his imperial power. Stern and barbarous punishment was always meted out by Severus to the conquered foe, but terror was deemed the best gurage to the populace. He never spilt blood unjustly, and even in the absence of gods, some sacrilegious vengeance which we find in the ancient narratives are probably the result of fear working on the imagination of the time.

As Emperor Severus was never called a political general, in spite of his successful campaigns. He was rather the organizer of victory than the author of it. The operations against Niger were carried out entirely by his officers. Dio even declares that the final battle with Albinus was the first at which Severus had ever been present. When a war was going on he was constantly travelling over the scene of it, planning it and instilling into the army his own pertinacious spirit, but the fighting was usually left to others. His trials of one against the other, so frequent in the last part of his reign, he broke with the decrees of the Augustan constitution, ignored the senate, and based his rule upon force. Thus, he was the very first of the emperors to establish the army as a whole to the support of his dynasty. He increased enormously the material gains and the honorary distinctions of the soldiers. He was the first to establish a standing army as a machine to maintain order, as a means of guaranteeing peace. It cannot be denied that, all things considered, he left the army of the empire more efficient than he found it. He increased the strength of it by three legions, and turned the Praetorians, heretofore a flabby loosely organized body of illegitimate soldiers, into a standing army of veterans. Their ranks were filled by promotion from all the legions on service, whereas previously there had been special enlistment from Italy and one or two of the neighbouring provinces. It was hoped that these picked soldiers would be the army of the moment and could rely in an emergency. But to meet the possibility of a legionary revolt in the provinces, one of the fundamental principles of the Augustan empire was abrogated: Italy became a province and the legion was quartered at Alba Fucens under the direct command of the emperor. Further to obviate the risk of revolution, the great commands in the provinces were broken up, so that, excepting on the turbulent eastern frontier, it was not possible for a commander to dispose of troops numerous enough to render him dangerous to the government.

But, while the policy of Severus was primarily a family policy, he was also means careless of the security and welfare of the empire. Only in one instance, the destruction of Byzantium, did he weaken its defences for his own ends—an error for which his successors paid dearly. The provinces of the Gordian, the Constantine, and even some Danubian regions received the special attention of the emperor, but all over the realm the status and privileges of communities and districts were recast in the way that seemed likely to conduc to the prosperity. The new prince had no regal or autocratic character, in Italy as well as in the provinces. Retired military officers now filled many of the posts formerly reserved for civilians of equestrian rank. The praetorians received large civil and judicial powers, so that the investment of Papinian with the office was less unnatural than it seems at first sight. The alliance between Severus and the jurisconsults had important consequences. The jurisconsults, upheld by their body politic, and co-operated with them in the work of legal reform, did him material service by working an absolutist view of the government into the texture of Roman law. Of the legal changes of these years, that of the last decade of Severus is the most important. The emperor himself was a devoted and upright judge, but he struck a great blow at the purity of the law by transferring the exercise of imperial jurisdiction from the forum to the palaces. He showed an inclination in some cases to descend to the time-honoured questions perpetuae, altered largely that important section of the law which defined the rights of the fiscus, and developed further the social law, much of which is embodied in the lex Julia de adulteris et le Papia Poppaea.

Severus boldly adopted as an official designation the autocratic title of dominus, which the better of his predecessors had renounced. During the severest of the Roman civil wars his hand was in the blood of his foes, and by his own hand he attempted the murder of his hand, and broke down the distinction between the servants of the senate and the servants of the emperor. All nominations to office or function passed under his scrutiny. The estimation of the old consular and other republican titles was diminished. The growth of capacity in the senate was checked by cutting off the tallest of the poppy-heads early in the reign. The senate became a mere
SEVERUS, SULPICIUS (c. 363–c. 425), Christian writer, was a native of Aquitania. He was imbued with the culture of his time and of his country, which was then the only true home of Latin letters and learning. Almost all that is known of Severus' life comes from a few allusions in his own writings, and some passages in the letters of his friend Paulinus, bishop of Nola. In his early days he was famous as a pleader, and his knowledge of Roman law is reflected in parts of his writings. He married a wealthy lady belonging to a consular family, who died young, leaving him no children. At this time Severus came under the powerful influence of St Martin, bishop of Tours, by whom he was led to devote his wealth to the Christian poor, and his own powers to a life of good works and meditation. To use the words of his friend Paulinus, he broke with his father, followed Christ, and set the teachings of the "fishermen" far above all his "Tullian learning." He rose to no higher rank than that of presbyter. He is said to have been led away in his old age by panegyric, but to have repented and inflicted long-enduring penance. His time was passed chiefly in the neighbourhood of Toulouse, and such literary efforts as he permitted to himself were made in the interests of Christianity. In many respects no two men could be more unlike than Severus, the scholar and orator, well versed in the ways of the world, and Martin, the rough Pannonian bishop, ignorant, suspicious of culture, champion of the monastic life, seer and worker of miracles. Yet the spirit of the rugged saint is evident in that of the polished scholar, and the works of Severus are only important because they reflect the ideas, influence and aspirations of Martin, the foremost ecclesiastic of Gaul.

The chief work of Severus is the Chronicon (c. 400), a summary of sacred history from the beginning of the world to his own times, with the omission of the events recorded in the Gospels and the Acts, "lest the form and letter should offend the reader." The book was a text-book, and was used as a school book in the churches of France for a century and a half after Severus wrote it.

It is the text-book of the school of Severus. It has been a help to the writer of this essay in determining the dates and the connexion of events, and for the sake of the solid and trustworthy history of which it is composed.

AUTHORS.—Severus himself wrote a autobiography which was regarded as candid and trustworthy on the whole. The events of his life are related with truth and moderation, while his contemporaries are described with acute incisiveness. His Greek, too, stands in agreeable contrast to the debased Latin of the Scriptores historiae Augustae. The Greek writer Herodian was also a contemporary of Severus, but the more facile manner in which we know nothing of his life is in itself enough to show that his work was not so great as that of Dio. The reputation of Herodian, who was used as the main authority for the times of Severus by Tillemont and Gibbon, has not been proved against; but it is probable that his work is full of exaggerations, and those of rhetoric and exaggeration. His narrative is probably in many respects not independent of Dio. The Augustan historians, unsatisfactory compilers, form a principal source for the history of the reign. The notice of Dio is, however, of the greatest assistance to us, and enables us to control at many points and largely to supplement the literary records of his reign, particularly as regards the details of his administration.

As an authority for times antecedent to his own, Severus is of little moment. At only a few points does he enable us to correct or supplement other records. Bernays has shown that he based his narrative on the destruction of the Jews at Jericho on the passage given by Tacitus in his "History," a portion of which has been lost. We are enabled thus to contrast Tacitus with Josephus, who recommends Severus as a source for the story of Titus. In his allusions to the "tender rulers with whom the Jews are provided," and to the treatment of the Maccabees onwards, Severus discloses some points which are not without importance. But the real interest of his work lies first, in the incidental glimpses of the life of the historian of his own time; next and more particularly, in the information he has preserved concerning the struggle over the Priscillianist heresy, which disorganized and degraded the churches of Spain and Gaul, and particularly Afflicted Aquitaine. The sympathy he betrayed by Severus are wholly those of St Martin. The bishop withstood Maximus, who ruled for some years a large part of the western empire, though he had conquered Italy. He had reproached him with attacking and overrunning the church, and with the bills which he had put on the throne, and for his dealings with the church. Severus loses no opportunity for laying stress on the crimes and follies of rulers, and on their cruelty, though he does not scruple to declare that crucifixion could be, priests could be crueler still. This last statement has reference to the bishops who had left Maximus no peace till he had forbad them to deal with the blood of Priscillian and his followers. St Martin, too, had denounced the wickedness and greed of the Carolingian bishops and clergy. Accordingly we find that Severus, in narrating the division of Canaan among the tribes, calls the special attention of the readers of his work to the case of Levi, lest they should be hindered in their obedience to the command of God. "Our clergy seem," he says, "not merely forgetful of the law, but ignorant of it, such a passion for possessions has it in our days." Yet he is like a solitary life, and from the glimpse of the circumstances which were winning over good men to monasticism in the West, though the evidence of an enthusiastic and solitary life, such as Severus was, is probably not free from exaggeration.
offshoot of Gnosticism had no single feature about it which could soften the hostility of a character such as Martin’s, but he resisted the introduction of secular doctrine, and in a common word with those bishops in Gaul, a large majority, who invoked the aid of Maximus against their erring brethren. In this connexion it is interesting to note the account given by Severus of Maximus’ mission to Gaul in 1550. He says that the bishops attending the assembly might lawfully receive money from the imperial treasury to recoup their travelling and other expenses. Severus evidently approves the action of the British bishops, who ceded the point to the emperor, and bore the expense; but he also lies under pecuniary obligation to the emperor. His ideal of the church required that it should stand clear and above the state.

Another part of his Life of Martin, a contribution to popular Christian literature which did much to establish the great reputation which that wonder-working saint maintained throughout the middle ages. The book is not properly a biography, but a compendium of the most striking features of his absolute belief. The power to work miraculous signs is assumed to be in direct proportion to holiness, and is by Severus valued merely as an evidence of holiness, which he is persuaded can only be attained through a direct isolation from the world. In the first of his Dialogues (fair models of Cicero), Severus puts into the mouth of an interlocutor (Posthumianus) a pleasing description of the life of coenobites and solitary hermits in the deserts bordering on the sea. The evidence of the virtue attained by them lies in the voluntary subjection to them of the savage beasts among which they lived. But Severus was no indiscriminating adherent of monasticism. The same dialogue shows how he thought of life, both as to its danage and defects. The second dialogue is a large appendix to the Life of Martin, and really supplies more information of his life as bishop and of his views than the work which bears the title Vita S. Martinii. The two dialogues oscillate much between the practical and the speculative, and refer occasionally to several epochs. In Dial. I, cc. 6, 7, we have a vivid picture of the controversies which raged at Alexandria over the works of Origen. The judgment of Severus here is that “there is no mouth of which the understanding be not bewildered, but this of the interlocutor Posthumianus: ‘I am astonished that one and the same man could have so far differed from himself that in the approved portion of his works he has no equal since the apostles, while in that portion for which he is justly blamed it is proved that not man has written more unseemly errors.’ Three Epistles on the death of Martin (ad Eusebium, ad Aurelium diaconum, ad Bassulam) complete the list of Severus’ genuine works. The last letter (to his sister), on the love of God, is a noble protestation of the world and its not surviving the judgment of the living.

AUTHORITIES.—The text of the Chronica rests on a single 11th cent. MS., one of the Palatine collection now in the Vatican; of the other works MSS. are abundant, the best being one of the 6th century at Verona. Some spurious letters bear the name of Severus; also in a MS. at Madrid is a work falsely professing to be an epitome of the Chronica of Severus, and going down to 511. The chief editions of the complete works of Severus are those by De Prato (Verona, 1731) and by Halm (forming vol. i. of the Corpus scriptorum ecclesiasticorum Latinorum, 1866). There is a most admirable edition of the Chronicle of Martin in all its parts by De Blayna (Rheims, 1817). See also Goedeler, Grammaticae in Sulp. Severum observationes (1884) (thesis).

SEVERY (probably connected with the English word “sewer”), in architecture, any main compartment or division of a building. The word has been supposed to be a corruption of Ciborium, as Gervase of Canterbury uses the word in this sense; but he probably alludes to the vaulted form of the upper part of the web of each severy.

SEVIER, JOHN (1745–1812), American frontiersman, first governor of Tennessee, was born in Rockingham county, Virginia, on the 23rd of September 1745, of Huguenot ancestry, the family name being Xavier. He settled on the Watauga on the western slope of the Alleghanies in 1772, and served as a captain in Lord Dunmore’s War in 1774. Early in 1776 the Watauga settlements were annexed to North Carolina, and Sevier, who from the beginning had been a member of the Watauga government, now resided at Abingdon, the provisional congress, which met at Halifax in November–December 1776 and adopted the first state constitution, and in 1777 he was a member of the state House of Commons. He took part in the campaign of 1780 against the British, especially distinguishing himself in the battle of King’s Mountain, where he led the right wing. In December 1780 he defeated the Cherokees at Boyd’s Creek (in the present Sevier county, Tennessee), laying waste their country during the following spring. Later in the same year (1781), under General Francis Marion, he fought the British in the frontiers of South Carolina and Georgia. In 1784, when North Carolina first ceded its western lands to the Federal government, he took part in the revolt of the western settlements; he was president of the first convention which met in Jonesboro on the 23rd of August, and opposed the erection of a new state, but when the state of Franklin (afterwards Franklin, in honour of Benjamin Franklin) was organized in March 1785, he became its first and only governor (1785–1788), and as such led his riflemen against the Indians; in May 1788, after the end of his term, men in his command massacred several Indians from a friendly village, and thus Sevier earned a widespread name. Sevier showed his ability as an Indian fighter. He was arrested by the North Carolina authorities as a leader of the independent government and partly for the Indian massacre, but escaped. About this time he attempted to make an alliance with Spain on behalf of the state of Franklin. In 1789 he was a member of the North Carolina Senate, and in 1790–1791 of the National House of Representatives. After the final cession of its western territory by North Carolina to the United States in 1790 he was appointed brigadier-general of militia for the eastern district of the “Territory South of the Ohio”; and conducted the Etowah campaign against the Creeks and Cherokees in 1795.

When Tennessee was admitted into the Union as a state, Sevier became its first governor (1795–1801) and was governor again in 1803–1809. He was again a member of the National House of Representatives in 1811–1815, and then was commissioner to determine the boundary of Creek lands in Georgia. He died near Fort Decatur, Georgia, on the 24th of September 1815.

See J. R. Gilmore, The Rear-Guard of the Revolution (New York, 1886), and John Sevier as a Commonwealth Builder (New York, 1866). His life is also given in G. D. Robertson, Roosevelt’s The Winning of the West (New York, 1894–1896).

SÉVIGNÉ, MARIE DE RABUTIN-CHANTAL, MARQUISE DE (1626–1696), French letter-writer, was born at Paris on the 5th of February 1626. The family of Rabutin (if not so illustrious as Bussy, Madame de Sévigné’s notorious cousin, affected to consider it) was one of great age and distinction in Burgundy. It was traceable in documents to the 12th century, and the castle which gave it name still existed, though in ruins, in Madame de Sévigné’s time. The family had been gens d’épée for the most part, though François de Rabutin, the author of valuable memoirs on the sixth decade of the 16th century, belonged to the civil classes. Bon de Chantal, was the son of the celebrated “Sainte” Chantal, friend and disciple of St Francis of Sales; her mother was Marie de Coulanges[s]. Celse de Rabutin, a great duellist, was killed during the English descent on the Isle of Rhé in July 1627. His wife did not survive him many years, and Marie was left an orphan at the age of seven years and a few months. She then passed into the care of her grandparents on the mother’s side; but they were both aged, and the survivor of them, Philippe de Coulanges (or Coulan), died in 1636, Marie being then ten years old. Her uncle Christophe de Coulanges, abbé de Livry, was chosen as her guardian. He was somewhat young for the guardianship of a girl, being only twenty-nine, but readers of his niece’s letters know how well “Le Bien Bon” —for such is his name in Madame de Sévigné’s little language-acquitted himself of the trust. He lived till within ten years of his ward’s death, and long after his nominal functions were ended he was in all matters of business the good angel of the family, while for half a century his abodec of Livry was the favourite residence both of his niece and her daughter. Coulanges was much more of a man of business than of a man of letters, but through the influence of this good man he induced him to make of his niece a learned lady. Jean Chapelain and Gilles Ménage are specially mentioned as her tutors, and Ménage at least fell in love with her. Tallemant des Réaux gives more than one instance of the cool and good-humoured rairility with which she received his passion, and the earliest letters of hers that we possess are addressed to Ménage. Another literary friend of her youth was the poet Denis Sanguin de Saint-Pavin. Among her own sex she was intimate with all the coterie of the Hôtel Rambouillet, and her special ally was Mademoiselle de la Vergne, afterwards Madame de la Fayette. In person she was extremely attractive, though the minute critics of the time
SEVIGNÉ, MADAME DE

(which was the palmy day of portraits in words) objected to her divers deviations from strictly regular beauty, such as eyes of different colours and sizes, a "square-ended" nose and a somewhat heavy jaw. Her beautiful hair and complexion, however, were admitted even by these censors, as well as the extraordinary spirit and liveliness of her expression. Her long minority, under so careful a guardian as Coulanges, had also raised her fortune to the amount of 100,000 crowns—a large sum for the time, and one which with her birth and beauty might have allowed her to expect a brilliant marriage. There had been some talk of married her to Bussy, but fortune had nothing to do with this. She married Henri de Sévigné, a Breton gentleman of good family, allied to the oldest houses of that province, but of no great estate. The marriage took place on August 4, 1644, and the pair went almost immediately to Sévigné’s manor-house of Les Rochers, near Vitré, a place which Madame de Sévigné was in future years to immortalize. It was an unfortified chateau of no great size, but picturesque, with the peaked turrets common in French architecture, and surrounded by a park and grounds. The abundance of trees gave it the guise of being clump and somewhat gloomy. Fond, however, of unalloyed delight and absent-minded, and as she was expected that the happiest days of her brief married life were spent there. For there at any rate her husband had no opportunity in Paris of neglecting her, and of wasting her money and his own. Very little good is said of Henri de Sévigné by any of his contemporaries. He was one of the innumerable lovers of Ninon de l’Enclos, and made himself even more conspicuous with a certain Madame de Gondran, known in the nickname slang of the time as "La Belle Loïs." He was wildly extravagant. That his wife loved him and that he did not love her was generally admitted. At last his vices came home to him. He quarrelled with the Chevalier d’Albret about Madame de Gondran, fought with him and was mortally wounded on the 4th of February 1651; he died two days afterwards. There is no reasonable doubt that his wife regretted him a great deal more than he deserved. Though only six and twenty, and more beautiful than ever, she never married again despite frequent offers, and no aspiration was ever thrown, save in one instance, on her fame. For the rest of her life she gave herself up to her children. These were two in number, and they divided their mother’s affection by no means equally. The eldest was a daughter, Françoise Marie, and at fourteen was addressed to him. She had, in October 1646, whether at Les Rochers or in Paris is not certain. The second, a son, Charles, was born at Les Rochers in the spring of 1648. To him Madame de Sévigné was an indulgent, a generous (though not altogether just) and in a way an affectionate mother. Her daughter, the future Madame de Grignan, she worshipped with an almost insane affection, which only its charming literary results and the delightful qualities which accompanied it in the worshipper, though not in the worshipped, save from being ludicrous if not revolting.

After her husband’s death Madame de Sévigné passed the greater part of the year 1651 in retirement at Les Rochers, but she returned to Paris in November of that year. For nearly ten years little of importance occurred in her life, which was passed in Paris in a house she occupied in the Place Royale (not as yet in the famous Hôtel Carnavalet), at Les Rochers, at Livry or at her own estate of Bourhill in the Mâconnais. She had, however, in 1653, a quarrel with her cousin Bussy. Notwithstanding Bussy’s various delinquences the cousins had always been friends; and the most amusing and character-like came to Madame de Sévigné’s correspondence, before the date of her daughter’s marriage, as she describes it. The quarrel was a strong belief in family ties; she recognized in Bussy a kindred spirit, and she excused his faults as Rabutinades and Rabutinages. But a misunderstanding about money brought about a quarrel, which in its turn had a long sequel, and results not unimportant in literature. Bussy and his cousin had jointly come in for a considerable legacy, and he asked her for a loan. If this was not positively refused, there was a difficulty made about it, and Bussy was offended. A year later, at the escapade of Roissy (see Bussy), according to his own account, he improvised (according to probability he had long before written it) the famous portrait of Madame de Sévigné which appears in his notorious Histoire amoureuse, and is a triumph of malice. Circulated at first in manuscript and afterwards in print, this caused Madame de Sévigné the deepest pain and indignation, and the quarrel between the cousins was not fully made up for years, though after Bussy’s disgrace and imprisonment in 1666 the correspondence was renewed. What might have been, and to some extent was, a much more serious matter occurred in 1661 at the downfall of the Superintendent Fouquet. It was said that Madame de Sévigné bought an Indian jewel from her which had been found in the coffer where Fouquet kept his love letters. She protested that the notes in question were of friendship merely, and Bussy (one of the not very numerous good actions of his life) obtained from Le Tellier, who as minister had examined the letters, a corroboration of the protest. But these letters were never published, and there have always been those who held that Madame de Sévigné regarded Fouquet with at least a very warm kind of friendship. It is certain that her letters to Pomponne describing his trial are among her most delicate and affecting pages. Madame de Sévigné, however, was still at work writing her books, which were read as they appeared.

During these earlier years Madame de Sévigné had a great affection for the establishment of Port Royal, which was not without its effect on her literary work. That work, however, dates in its bulk and really important part almost entirely from the last thirty years of her life. Her letters before the marriage of her daughter, though by themselves they would suffice to give her a very high rank among letter-writers, would not do more than fill one moderate-sized volume. Those after that marriage fill nearly ten large volumes in the latest and best edition. We do not hear very much of Mademoiselle de Sévigné’s early youth. For a short time, at a rather late, definite date, she was placed at school with the nuns of Sainte-Marie at Nantes. But for the most part her mother brought her up herself, assisted by the Abbé de la Mousse, a faithful friend, and for a time one of her most constant companions. La Mousse was a great Cartesian, and he made Mademoiselle de Sévigné also a devotee of the bold soldier of Tournai. But she was bent on more mundane triumphs than philosophy had to offer. Her beauty is all the more incontestable that she was by no means generally liked. Bussy, a critical and not too benevolent judge, called her “tante Folle fille de France,” and it seems to be agreed that she resembled her mother, with the advantage of more regular features. She was introduced at court early, and as she danced well she figured frequently in the ballads which were the chief amusement of the court of Louis XIV. in its early days. If, however, she was more regularly beautiful than her mother she had little or nothing of her attraction, and like many other beauties who have entered society with similar expectations she did not immediately find a husband. Various projected alliances fell through for one reason or another, and it was not until the end of 1668 that her destiny was settled. On January 29 in the next year she married François d’Arthém, comte de Grignan, a Provençal, of one of the noblest families of France, and a man of amiable and honourable character, but neither young, nor handsome, nor in reality rich. He had been twice married and his great estates were heavily encumbered. Neither did the large dowry (300,000 livres) which Madame de Sévigné, somewhat unfairly to her son, bestowed upon her daughter, suffice to clear encumbrances, which were constantly increased in the sequel by the extravagance of Madame de Grignan as well as of her husband.

Charles de Sévigné was by this time twenty years old. He never appears to have resented his mother’s preference of his sister; but, though thoroughly amiable, he was not (at any rate in his youth) a model character. Nothing is known of his education, but just before his sister’s marriage he volunteered for a rather harebrained expedition to Crete against the Turks, and served with credit. Then his mother bought him the commission of guidon (a kind of sub-cornet) in the Gendarmes Dauphin, in which regiment he served for some years. But though he always
fought well he was not an enthusiastic soldier, and was constantly and not often fortunately in love. He followed his father into the nets of Ninon de l'Enclos, and was Racine's rival with Mademoiselle Champmeslé. The way in which his mother was made con-

fident of these discreditable and not very successful loves is characteristic both of the time and of the country. In 1669 M. de Grignan, who had previously been lieutenant-governor of Languedoc, was transferred to Provence. The second-in-

chief was the young duke of Vendôme. But at this time he was a boy, and he never really took up the government, so that Grignan for more than forty years was in effect vicerey of this important province. His wife rejoiced greatly in the part of vice-queen; but their peculiar situation threw on them the expenses without the emoluments of the office, so that the Grignan money affairs hold a larger place in Madame de Sévigné's letters than might perhaps be wished.

In 1671 Madame de Sévigné, with her son, paid a visit to Les Rochers, which is memorable in her history and in literature. The states of Brittany were convoked that year at Vitry. This town being in the immediate neighbourhood of Les Rochers, Madame de Sévigné's usually quiet life at her country-house was diversified by the necessity of entertaining the governor, the duc de Chaulnes, of appearing at his receptions and so forth. All these matters are recorded in her letters, together with much good-natured raillery on the country ladies of the neighbourhood and their ways. She remained at Les Rochers during the whole summer and autumn of 1671, and did not return to Paris till late in the year of 1672. She had only stayed, it is true, in the court of the duchess of Orleans. At the end of the next year, 1672, one great wish of her heart was gratified by paying a visit to her daughter in her vice-royalty of Provence. Madame de Grignan does not seem to have been very anxious for this visit—perhaps because, as the letters show in many cases, the exacting affection of her mother was somewhat too strong for her own colder nature, perhaps because she feared such a witness of the ruinous extravagance which characterized the Grignan household. But her mother remained with her for nearly a year, and did not return to Paris till the end of 1673. During this time we have (as is usually the case during these Provencal visits and the visits of Madame de Grignan to Paris) some letters addressed to Madame de Sévigné, but comparatively few from her. A visit of the second class was the chief event of 1674. 1675 brought with it the death of Turenne (of which Madame de Sévigné has given a noteworthy account, characteristic of her more ambitious but not perhaps her more successful manner), and also serious disturbances in Brittany. Notwithstanding these it was necessary for Madame de Sévigné to make her peridical visit to Les Rochers. She reached the house in safety, and the friendship of Chaulnes protected her both from enemies and from the exactions which the miserable province underwent as a punishment for its resistance to excessive and unconstitutional taxation. No small part of her letters is occupied by these affairs.

The year 1676 saw several things important in Madame de Sévigné's life. For the first time she was seriously ill—it would appear with rheumatic fever—and she did not thoroughly recover till she had visited Vichy. Her letters from this place are among her best, and picture life at a 17th-century watering-place with unsurpassed vividness. In this year, too, took place the trial and execution of Jeanne de Lévis, her uncle. This event figures in the letters, and the references to it are among those which have given occasion to unfavourable comments on Madame de Sévigné's character. In the next year, 1677, she moved into the Hôtel Carnavalet, a house which still remains and is inseparably connected with her memory, and she had the pleasure of welcoming the whole Grignan family to it. They remained there a long time; indeed nearly two years seem to have been spent by Madame de Grignan partly in Paris and partly at Livry. The return to Provence took place in October 1678, and next year Madame de Sévigné had the grief of losing La Rochefoucauld, the most eminent and one of the most intimate of her personal friends and constant associates. In 1680 she again visited Brittany, but the close of that year saw her back in Paris to receive another and even longer visit from her daughter, who remained in Paris for four years. Before the end of the last year of this stay (in February 1684) Charles de Sévigné, after all his wandering loves, and after more than one talked-of alliance, was married to a young Breton lady, Jeanne Marguerite de Mauron, who had a considerable fortune. In the arrangements for this marriage Madame de Provence had never interfered, and she divided all her fortune between her children (Madame de Grignan, at the receiving an unduly large share), and reserved only part of the life interest. The greed of Madame de Grignan nearly broke her brother's marriage, but it was finally concluded, and proved happy in a somewhat singular fashion. Both Sévigné and his wife became deeply religious, and at first Madame de Sévigné found their household (for she gave up Les Rochers to them) not at all lively. But by degrees she grew fond of her daughter-in-

law. During this year she spent a considerable time in Brittany, first on business, afterwards in 1680, just to visit it, and partly it would appear for motives of economy. But Madame de Grignan continued with only short absences to inhabit Paris, and the mother and daughter were practically in each other's company until 1688. The proportion of letters therefore that we have for the decade 1677-1687 is much smaller than that which represents the decade preceding it; indeed the earlier period contains the great bulk of the whole correspondence. In 1687 the Abbé de Coulanges, Madame de Sévigné's uncle and good angel, died, and in the following year the whole family were greatly excited by the first campaign of the young marquis de Grignan, Madame de Grignan's nephew, who was sent splendidly equipped to the siege of Philibourg. In the same year Madame de Sévigné was present at the Saint-Cyr performance of Esther, and some of her most amusing descriptions of court ceremonies and experiences date from this time. 1689 and 1690 were almost entirely spent by her at Les Rochers with her son; and on leaving him she went across France to Provence. There was some excitement during her Breton stay, owing to the rumour of an English descent, on which occasion the Breton militia was called out, and Charles de Sévigné appeared for the last time as a soldier. It came to nothing, but it passed at Grignan, and other places in the south, and at the end of it Madame de Sévigné returned to Paris, bringing the Grignans with her; and her daughter stayed with her till 1694. The year 1693 saw the loss of two of her oldest friends—Bussy Rabutin, her faithful and troublesome but in his own way affectionate cousin, and Madame de la Fayette, her life-long companion, and on the whole perhaps her best and wisest friend. Another friend almost as intimate, Madame de Lavardin, followed in 1694. Madame de Sévigné spent but a few months of this latter year alone, and followed her daughter to Provence, which she had not seen since the year after 1691. Two important marriages with their preparations occupied most of her thoughts during 1694-1695. The young marquis de Grignan married the daughter of Saint-Amant, an immensely rich financier; but his mother's pride, ill-nature and bad taste (she is said to have remarked in full court that it was necessary now and then to "manure the best lands," referring to Saint-Amant's wealth and low birth, and the Grignan's nobility) made the marriage not very happy. His sister Pauline, who, in the impossibility of dowering her richly, had a narrow escape of the cloister, made a marriage of affection with the marquis, but it came to nothing, and eventually in 1699 Madame de Saint-Simon and her posterity to be rapidly broken up. Charles de Sévigné and his wife had no children, and he himself, after occupying some public posts (he was king's lieutenant in Brittany
Madame de Sévigné was one of the first women to have a public voice in France and is known for her correspondence, which is considered one of the most significant works of French literature. She was born in 1626 and died in 1706. Her letters are a treasure trove of information about the social, political, and cultural life of her time.

In her letters, Madame de Sévigné writes about her love for literature, her love for her children, and her love for her husband. She is known for her wit, her humor, and her ability to write in a way that makes her readers feel as if they are sitting down to a personal conversation with her.

One of the most famous letters from Madame de Sévigné is a letter to her daughter, Marie, from 1763. In this letter, she talks about her love for her daughter and her desire for her to have a happy life. She also talks about her own life and the struggles she has faced, such as the death of her husband and the many illnesses she has had.

Another famous letter is the one she wrote to her husband, Jean de Sévigné, in 1745. In this letter, she talks about her love for her country and her desire to see France become a great power again.

Madame de Sévigné was a prolific writer, and her letters are a testament to her skills as a writer. Her letters are a source of inspiration for many, and her love for literature is a testament to the importance of reading and writing in our lives.
SEVILLE

continual additions of unpublished letters were made, in great part by the Marquis de Monmouth, and the whole was reprinted in magnificent copies (the originals unfortunately are available for few) in the edition called Des Grands Ecrits, which M. de Monmouth began, but which owing to his death never was finished by M.
Paul Pautard and Sommer (Paris, 1862—1868). This, which super-
seeds all others (even a handsome edition published during its appearance by M. Silvestre de Sacy), consists of twelve volumes of text, and one of plates, the latter having been augmented by new and costly editions that in the collection Didot (6 vols., Paris, v.d.) is the best, though, in common with all others except the Grands Ecrits edition, it contains an adulterated text. Works on Madame de Sévigné are innumerable. Besides essays by nearly all the great French critics from Sainte-Beuve (Portraits de femmes) to M. Brunetière (Études critiques), the work of F. Combes, Madame de Sévigné, historien (1885), and G. Boissier's volume in the Grands Ecrits Francais (1881), should be consulted. The biography by Paul Mesnard is nearly exhaustive, but the most elaborate biographical book is that of Walckenaer (3rd ed., Paris, 1865, 5 vols.), to which should be added the remarkable Histoire de Madame de Sévigné of Aubenas (Paris and St. Petersburg, 1842). In English an excellent little book by Miss Thackeray (Lady Ritchie) (1881) may be recom-

SEVILLE, an inland province of southern Spain, one of the eight provinces into which Andalusia was divided in 1333; bounded on the N. by Badajoz, N.E. by Córdoba, S. by Málaga and Cádiz and W. by Huelva. Pop. (1900) 555,256; area 54,28 sq. m. The province is bisected by the navigable river Guadalquivir (q.v.), which here receives the Genil and Guadaira on the left, and the Guadalimar on the right. West of the Guadalquivir the surface is broken by low mountain ranges forming part of the Sierra Morena; the eastern districts are comparatively flat and very fertile, except along the frontiers of Morocco and Algeria. The province of Granada, of Guadix and Algodonales; and there are extensive marshes near the Guadal-
quivir estuary. Coal, copper, iron ore, silicate of alumina, marble and chalk are the chief mineral products; the province is famous for its oranges, and also exports wheat, barley, oats, maize, olives, oil, wine and chick-peas. Iron-founding and the manufacture of gunpowder and ordnance are carried on by the state, and a great expansion of the other manufactures—leather, pottery, soap, flour, cork products, etc.—took place after 1875 owing to the construction of railways between all the larger towns. Cattle-breeding is an important industry in the plains, and sheep-breeding is carried on everywhere. Other towns described in separate articles are Écija (pop. 1900, 24,372), Osuna (17,826), Carmona (17,215), Utrera (15,138), Morón de la Frontera (14,109), Marchena (12,468), Lebrija (10,997).

SEVILLE (Span. Sevilla, Lat. Ispalis or Hispalis, Moorish Ishbitiyya), the capital of the Spanish province of Seville, and the chief city of Andalusia, on the left bank of the river Guadalquivir, 54 m. from the Atlantic Ocean, and 355 m. by rail S.S.W. of Madrid. Pop. (1900) 148,315. Seville is an archiepiscopal see, a port with many thriving industries, and in size the fourth city in Spain. It is a city of history, art and industry. The province formed the old Visigoth capital called Gibralfaro, and its history, and its treasures of art and architecture render it one of the most interesting places in Europe. It is built in a level alluvial plain, as productive as a garden. Few parts of the city are more than 30 ft. above sea-level, and owing to the frequency of floods an elaborate system of defences against the Guadalquivir and its affluent the Guadaira, Tamarguillo and Tagarete, was undertaken in 1904. This entailed the construction (spread over many years) of dykes, walls and surface drains, the raising of certain streets and railway embankments and the diversion of the lower Tagarete along a new channel leading into the river. The works were all carried out in the summer, when a shade temperature of 116° Fahr. has been recorded. Water is provided by a British company, and a smaller quantity is obtained from Carmona, but the supply is inadequate.

On the right or western bank of the river is the suburb of the Triana, inhabited to a great extent by gipsies. Seville retains its Moorish appearance in the older quarters, although their narrow streets and tortuous ways have been thoroughly traversed, wherever they afford room, by electric tramways. In the more modern districts there are broad avenues and boulevards, the chief of which is the beautiful Paseo de Delicias, along the river and below the city.

The animated and picturesque street-life of Seville has often been painted and described, or even, as in Mozart's Figaro and Don Giovanni, Rossini's Barbiere di Siviglia and Bizet's Carmen, set to music. The townfolk, and the peasants who have come to town for bull-fights, fairs or carnival, have preserved many old customs. Life in Seville, the capital of the two largest provinces of Spain, is very busy, and, with the greater part of its population consisting of persons of few years, the gaiety, wit and grace of manner are proverbial. Nowadays in Spain are the great Church festivals celebrated with so much splendour; Easter at Seville is especially famous, and at this season the city is usually crowded with foreigners. The stately reserve and formality of Madrid society are almost as unknown here as the fervidierialism and political passion of Barcelona or Valencia; loyalty, good humour and light-hearted hedonism have both been characteristic of Sevillano.

Principal Buildings.—The cathedral, dedicated to Santa Maria de la Sede, is the largest church in the world, after St. Peter's at Rome and the Mezquita at Cordova, being 414 ft. long, 271 ft. wide and 100 ft. high to the roof of the nave. The west front is approached by a flight of steps on which the cathedral stands is surrounded by a hundred shafts of columns from the mosque which formerly occupied the site. The work of building began in 1492 and was finished in 1519, so that the one style of Spaniards has been fairly preserved throughout the interior; however much the exterior is spoiled by later additions. Unfortunately the west front remained unfinished until 1827, when the central doorway was completed in a far more ornate manner, and this has been often imitated in later additions. The fine relief above it representing the Assumption was added in 1885. At the east end are two Gothic doorways with good sculpture in the tympana; and on the north side the Puerta del Perdón, as it is called, has some exquisite detail over the horse-shoe arch, and a pair of fine bronze doors. The gateway in the southern façade, designed by Casanova, dates from 1887. The interior forms a parallelogram containing a nave and four aisles surrounding chapels, a centre dome, 121 ft. high, and at the east end a royal sepulchral chapel, which was an addition of the 16th century. The thirty-two immense clustered columns, the marble floor (1575—1575) and the forty-four beautiful capitals, designed by Palma and by Flemish artists of the 16th century, produce an unsurpassed effect of magnificence. The reredos is a enormous Gothic work containing forty-four panels of gilt and coloured wood carvings begun by the work of a Basque artist and added by the hand of architect to the work of the 14th century, and the silver statue of the Virgin is by Francisco Alfarro (1506). The archbishop's throne and the choir-stalls (1755-1548) are fine pieces of carving, and amongst the more modern additions are the altar of San Ildefonso (1519), by Juan de Núñez, and the lectern by Bartolomé Mored of the 16th century. The bronze candelabrum for tenebrae, 25 ft. in height, is a splendid work by B. More (1562). In the Sacristía Alta is a silver repoussé reliquary presented by Alphonso the Wise, in the 13th century; and in the Sacristía Mayor, which is a good plateauser addition made in 1533 from designs by Diego de Ríaño (d. 1532), there is a magnificent collection of church plate and vestments, including the famous silver monstrance (1580—1587), 12 ft. high, by Juan de Arfe (Arpe). At the west end of the nave is the grave of Ferdinand, the son of Columbus, and at the east end in the royal chapel (1544—1566) lies the tomb of St. Ferdinand and of his wife Isabella. The tomb has been expressed three times in the year. This chapel also contains the tombs of Alphonso the Wise (1252—1284) and Pedro I. (1350—1369) and a curious life-size image of the Virgin, which was presented to St. Ferdinand by St. Louis of France, in the 13th century. It is in carved wood with movable arms, seated on a silver throne and with hair of spun gold. The chief pictures in the cathedral are the “Guardian Angel,” the “St. Anthony,” and other works of Murillo; the “Alma de la Tierra,” in the former chapel of the “Immaculada,” the “Nativity” and the “La Generacion” of Luis de Vargas; Valdes Leal’s “Marriage of the Virgin,” and Guadalupe’s “Descent from the Cross.” In the Sacristia Alta are the fine painted ceiling by C. de Guevara (1527—1537) and the “St. Francis” by Murillo and a “St Fери-

1 This was stolen in 1874, sold in New York for £50, and returned by its purchaser, Mr Schaus.
SEVILLE

ten of them before the altar; the custom is an old one but its origin is obscure. The Sagrarío (1618-1662) on the north of the cathedral is a Baroque addition by Miguel de Zumarraga and Fernandez de Izaguirre. The façade is Neoclassical.

At the north-east corner of the cathedral stands the Giralda, a bell tower of Moorish origin, 205 ft. in height. The lower part of the tower, or about 185 ft., was built in the latter half of the 12th century by Alfonso X (1221-1284), while the upper part, to a height of 41 ft., was added by Ferdinand III of Castile in 1258. The Giralda, which in Seville is the Alcazar, a palace comparable in interest and beauty only to the Alhambra of Granada. It was begun in 1181 during the best period of Alfonso X. Alfonso X was surrounded by walls and towers which the Torre del Oro, a decorative tower on the river side, is now the principal survival. The Torre del Oro (1220) has an 18th-century superstructure. Pedro I. made considerable alterations and additions in the Alcazar during the 14th and 15th century, and work, havoc was afterwards wrought by Charles V., Philip III. and Philip V.

Restorations have been effected as far as possible, and the palace is now an extremely beautiful example of Moorish work. The façade, the hall of ambassadors and the Patio de las Muertes are the most striking portions, after which may be ranked the Patio de las Doncellas and the chapel of Isabella. Among other Moorish remains in Seville are the Aljibe de los Moros and the Aljibe de los Arcos. The Casa de Pilatos is Moorish and Renaissance of the 16th century, and in addition to its elegant courtyard surrounded by a marble colonnade, contains some fine decorative work. Somewhat similar in style and period are the Casa del Duque de Sanlúcar and the 15th-century palace of the dukedom of Alva (Palacio de las Dueñas or de las Pinedas).

The following are the most notable churches in Seville: Santa Maria la Blanca, an old Jewish synagogue; San Pedro, 14th-century Gothic, Santa Maria, with the oldest Christian sculptures in Seville; San Marcos, badly restored, but with a remarkable mudejar portal; Santa Elena el Real with beautiful mudejar work; and the Alcázar de San Carlos. Seville contains six masterpieces by Murillo, and two by Velazquez. The chapel of the convent of Santa Paulina dates from 1745, and has a portal magnificently decorated with azulejos. Other churches, though generally deficient in architectural interest, are enriched by paintings or sculptures of Pacheco, Montañés, Alonso Cano, Valdes Leal, Rocas, Campaña, Morales, Vargas and Zurbarán.

The museum was formerly the church and convent of La Merced. It now contains priceless examples of the Seville school of painting, which flourished during the 16th and 17th centuries. Among the masters represented are Velázquez and Murillo (both natives of Seville), Zurbarán, Ribera, de la Hera, Juan de Zurbarán, Juan del Olmo, Alonso Cano, Cespedes, Bocanegra, Valdes Leal, Goya and Martín de Vos. The school founded in 1256 by Alfonso X. became a university in 1525; its present buildings were originally a Jesuit college built in 1591-1596 by the Jesuit architect, Don de Bustamante, but devoted to their present use in 1767 on the expulsion of the Jesuits. The university has faculties of law, philosophy, medicine, and the sciences. The University Library, in Renaissance style, was begun in 1527 and has a fine staircase and hall and handsome carved doors. The Lonja, or exchange, was designed by Herrera in his severe classical style, and completed in 1598; the brown and red marble staircase which leads to the Archivo de Indias is the best part of the design. The archives contain 30,000 volumes relating to the voyages of Spanish discoverers, many of which are still unexamined.

The archbishop's palace dates from 1607; the most notable feature is the Churrigueresque tower. The palace of San Telmo was formerly the seat of a naval college founded by Ferdinand Columbus. An immense doorway is its principal feature. It is built of red marble and is very fine. The church is also important. Other noteworthy buildings are the Mudéjar palaces of the duke of Osuna and the count of Pacheco; the house occupied by Murillo at the time of his death (1682); the civil hospital built in 1556; the hospital of the tulip, founded in 1537; the seminary of the Jesuits, begun in 1624, and the cathedral, begun in 1402.

Commerce and Industries.—The port of Seville, in 37° 10′ N., and 6° 10′ W., has always been one of the chief outlets of the wealth of Spain. It is the terminus of three railways to Madrid, and of other lines running south to Valencia and the Aljarafe. Three of these lines have branches down to the water-side of the quays. The quay on the left bank, 4,500 ft. long, is provided with powerful cranes, and sheds for merchandise. Navigation up the Guadalquivir and down the Ebro from Seville to the river mouth is more dangerous for steamers than for sailing vessels, but is nevertheless certain. The construction of a ship-canal 4 m. long from

the Punta de los Remedios to the Punta del Verde—two points between which the windings of the river render navigation especially difficult—was first proposed in 1839, and was undertaken in 1907. The work was carried on by a British firm, and the completion of the canal vessels drawing 25 ft. (instead of 16 ft.) could come up to Seville. The principal exports are Manzanilla, Amontillado and other wines, oranges and lemons, iron, copper and lead ores, corn, hemp, silk, wool, and other manufactures, and the local oil, manufactured goods, hemp, flax and colonial produce. There are manufacuturers of machinery, tobacco, chocolate, soap, porcelain, beer, liqueurs, brandies, corks and silk. The royal artiletry works and iron foundries are very important. The porcelain and earthenware factory in the Carthusian convent (Cartuja, founded 1491) employs more than 2,000 hands. Pottery has been the characteristic industry of the Triana, from time immemorial; the pottery of Seville, Justa and Rufina, are said by tradition to have been potters here. Equally important is the great is at once and tobacco factory, where 6,000 women are employed.

History.—Seville appears originally to have been an Iberian town. Under the Romans the city was made the capital of Baetica in the second century B.C., and became a favourite resort for wealthy Romans. It was captured in 45 B.C. by Julius Caesar, who gave it the name of Colonia Julia Romula, and made it one of his colonies.

The emperors Hadrian, Trajan and Theodosius were born in the neighbourhood (near present Sanlúcar la Mayor, now Santiponce), where are the remains of a considerable amphitheatre. The chief existing monument of the Romans in Seville itself is the remains of an aqueduct, on four hundred and ten arches, by which water from Alcalá de Guadaira was supplied to the town. At the beginning of the 15th century the Silingian Vandals made Seville the seat of their empire, until it passed in 531 under the Visigoths, who chose Toledo for their capital. After the defeat of Don Roderick at Guadatea in 712 the Moors took possession of the city after a siege of some months. Under the Moors Seville continued to flourish. Ibn Idrisi speaks in particular of its great export trade in the oil of Aljarfe. The district was in great part occupied by Syrian Arabs from Emesa, part of the troops that entered Spain with Balj in 741 at the time of the revolt of the Berbers. It was a scion of one of these Emesan families, Abu'l-Kaisim Mahommed, cadi of Seville, who on the fall of the Spanish caliphate headed the revolt of his townsman against their Berber masters (1023) and became the founder of the Abbáid dynasty, of which Seville was capital, and which lasted under his son Mo'tadid (1042-1099) and grandson Mo'tamid (1099-1103). The city was taken by the Almoravides. The latter part of the first millennium was very oppressive to the Moslems of Spain; in 1113 the people of Seville were prepared to welcome the victorious arms of Alfonso VII, and eleven years later Andalusia broke out in general rebellion. Almohade troops now passed over into Spain and took Seville in 1147. Under the Almohades Seville was the seat of government and enjoyed great prosperity; the great mosque (now destroyed) was commenced by Yusuf I. and completed by his son Almanzor. In the decline of the dynasty between 1236 and 1425 Seville underwent various revolutions, and ultimately acknowledged the Hafsite prince, but Ferdinand III. restored it to Christendom in 1248. Ferdinand brought temporary ruin on the city, for it is said that 400,000 of the inhabitants went into voluntary exile. But the position of Seville was too favourable for trade for it to fall into permanent decay, and by the 15th century it was again in a position to derive full benefit from the discovery of America. After the reign of Philip II. its prosperity gradually waned with that of the rest of the Peninsula; yet even in 1700 its silk factories gave employment to thousands of workpeople; their numbers, however, of the 16th century had fallen to four hundred. In 1800 an outbreak of epidemic smallpox in the city fell heavily on the inhabitants, and in 1810 the city suffered severely from the French under Soult, who plundered to the extent of six millions sterling. Politically Seville has always had the reputation of peculiar loyalty to the throne from the time when, on the death of Ferdinand III., it was the only city which remained faithful to his son Alphonso the Wise. It was consequently much

1 The interesting 15th-century tombs formerly in the Cartuja are now in the church of the university.
favoured by the monarchs, and frequently a seat of the court. For its loyalty during the revolt of the Comuneros it received from Charles V. the motto Ab Hercul et Casarea nobilitas; a se ipsa fedelitas. In 1729 the treaty between England, France and Spain was signed in the city; in 1808 the central junta was formed here and removed in 1810 to Cadiz; in 1823 the cortes brought the king with them from Madrid; and in 1848 the city was combined with Malaga and Granada against Espartero, who bombarded the city but fled to the return of Queen Maria Christina to Madrid.

See P.de Madrazo, Semberia y Cadenas (Madrid, 1884-1886); R. Contreras, Estudio de los monumentos arcaicos de Sevilla y Cordova (Madrid, 1886); J. Gesto y Perez, Sevilla monumental y artística (3 vols., Seville, 1889-1900); A. F. de la Pez, Sevilla (London, 1907); J. Guichot y Parodi, Historia del Ayuntamiento de Sevilla (Seville, 1896-1898); J. Cascales y Murillo, Sevilla intelectual (Madrid, 1896); W. M. Gallician, The Story of Seville (London, 1903).

SEVRES, a town of northern France, in the department of Seine-et-Oise, on the left bank of the Seine, midway between Paris and Versailles, about 7 m. from the fortifications of the city. Pop. (1866) 7949. The town owes its celebrity to the porcelain manufactory established there in 1756 and taken over by the State three years later. In the museum connected with the works are preserved specimens of the different kinds of ware manufactured in all ages and countries and the whole series of models employed at Sevres from the beginning of the manufacture, for an account of which see Ceramics. A technical school of ceramics is attached to the factory.

SEWARD, William Henry (1861-1872), American statesman, was born at Hulton, near Bishopsgate, Hants, England, on the 28th of March 1802. He was taken to New England in 1806; graduated at Harvard in 1812; studied divinity; and was resident fellow of Harvard in 1817-1818, and keeper of the college library in 1819-1820. In 1813 he was elected to the General Court for Westfield; from 1818 to 1818 he managed the only licensed printing press in Boston; and as a member of the Board of Assistants in 1818 he was appointed the editor of the University of New York. He was a member of the Council in 1811-1823, and in 1812 he was made one of the special commissioners of the university of the United States. He was the author of a tract on the universities of England and of a pamphlet on the preparatory department of the University; and St. Luke's Memorial (1878), the home of the Theological Department; and St Luke's Memorial Chapel (1907). The University is governed by a board of trustees consisting of the bishop, one clergyman and two laymen from each of ten Protestant Episcopal dioceses in the Southern States.

SEWARD, Anna (1747-1809), English writer, often called the "Swan of Lichfield," was the elder daughter of Thomas Seward (1710-1750), prebendary of Lichfield and of Salisbury, and author. Berthy at Eyam in Derbyshire, she passed nearly all her life in Lichfield, beginning at an early age to write poetry, particularly at the instigation of Dr. Erasmus Darwin. Her verses include elegies and sonnets, and she also wrote a poetical novel, Louisa, of which five editions were published. Miss Seward's writings, which include a large number of letters, are decidedly commonplace, and Horace Walpole said she had "no imagination, no novelty."

Sir Walter Scott edited her Poetical Works in three volumes (1820-1840); the first volume prefixed a memoir of the author, adding extracts from her literary correspondence. He refused, however, to edit the bulk of her letters, and these were published in volumes by A. Constable as Letters of Anna Seward, 1783-1807 (Edinburgh, 1841). An edition of Dr. Seward's Letters was published as Dr Darwin (1841). See E. V. Lucas, A Swan and her Friends (1907); and S. Martin, Anna Seward and Classic Lichfield (1909).

SEWARD, William Henry (1861-1872), American statesman, was born on the 16th of May 1801 in the village of Florida, Orange county, New York. He graduated from Union College in 1829, having taught school for a short time at Savannah, Georgia, to help pay his expenses; was admitted to the bar at Utica, N.Y., in 1822, and in the following year began the practice of law at Auburn, N.Y., which was his home for the rest of his life. He was admitted to the bar at Utica, N.Y., in 1822, and in the following year began the practice of law at Auburn, N.Y., which was his home for the rest of his life. He soon attained distinction in his profession, but drifted into politics, for which he had a greater liking, and early became associated with Thurlow Weed. He was at first an adherent of Daniel D. Tompkins in state, and a National Republican in national politics, after 1828 became allied with the Anti-Masonic party, attending the national conventions of 1830 and 1831, and as a member of the organization he served four years (1830-1834) in the state legislature. By 1833 the Anti-Masonic movement had run its course, and Seward allied himself with the other opponents of the Jackson Democrats, becoming a Whig. In 1834 he received the Whig nomination for governor, but was defeated by William L. Marcy. Four years later he was re-nominated, was elected, was re-elected in 1840, and served from January 1835 until January 1843. As governor, Seward favoured
a continuance of works of internal improvement at public expense, although this policy had already plunged the state into financial embarrassment. His administration was disturbed by the anti-rent agitation and by the M'Leod incident growing out of the Canadian rebellion of 1837.\(^1\) During this period he attracted much attention by his liberal and humane policy, promoting prison reform, and proposing to admit Roman Catholic and foreign teachers into the public schools of the state. His refusal soon after his inauguration to honour the requisition of the governor of Virginia for three persons charged with assisting a slave to escape from Norfolk, provoked retaliatory measures by the Virginia legislature, in which M'Leod and South Carolina soon joined. Laws were also passed during his term putting obstacles in the way of recovering fugitive slaves. Seward soon became recognized as the leader of the anti-slavery Whigs. He was one of the earliest political opponents of slavery, as distinguished from the radical Abolitionists, or the followers of William Lloyd Garrison, who eschewed politics and devoted themselves to a moral agitation.

On retiring from office Seward returned to the practice of law. His reputation was made in four great criminal cases—those of Van Buren, H. B. Seward, H. Zant—and the last-named bringing him especially the goodwill of opponents of slavery. Toward the end of his career at the bar, however, he changed from a general practitioner to a patent lawyer, and as such had a lucrative practice.

When the Whigs secured a momentary control of the state legislature in 1840 they sent Seward to the United States Senate. The antagonism between free labour and slave labour became the theme of many of his speeches. In his first set speech in the Senate, on the 11th of March 1850, in opposing the pending compromise measures, he attracted the attention of the whole country by his assertion that "there is a higher law than the constitution" regulating "our authority over the domain" (i.e., the Territories). When the Democrats, however, declared such language incendiary he tried to explain it away, and by so doing offended his friends without appeasing his opponents. In a speech at Rochester, New York, in 1853 he made the famous statement that there was "an irrepressible conflict between opposing and enduring forces, and it means that the United States must and will, sooner or later, become either entirely a slave-holding nation or entirely a free-labour nation." Although this idea had often been expressed by others, and by Seward himself in his speech of 1848, yet he was severely criticized, and four days later he sought to render this statement innocuous also.

In the election of 1852 Seward supported General Winfield Scott, but not his party platform, because it declared the Compromise of 1850 a finality. He naturally opposed the Kansas-Nebraska Bill of 1854, which repealed the Missouri Compromise and established the principle of popular sovereignty in the Territories. Subsequently he actively supported in the Senate the free-state cause in Kansas. In 1854-1855, when it became evident that the Whig party in the North was moribund, Seward helped to lead its scattered remnants into the Republican fold. As the recognized leader of the new party, his nomination by the Republicans for the presidency in 1856 and in 1860 was regarded as certain; but in each instance he was put aside for another. The heterogeneous elements of the new organization could not be made to unite on a man who for so many years had devoted his energies to purely Whig measures, and he was considered less "available" than Fremont in 1856 and than Lincoln in 1860. After Lincoln was nominated in 1860, Seward threw his support to his friend Johnson, and left the contest. In the struggle between the Executive and Congress over the method of reconstructing the Southern States, Seward sided with Johnson and thus shared some of the obloquy bestowed upon that unfortunate president. His greatest work in this period was the purchase of Alaska from Russia, in 1867. He also negotiated treaties for the purchase of the Danish West Indies, the Bay of Samana, and for American control of the isthmus of Panama; but these were not ratified by the Senate. After returning to private life, Seward spent two months in Europe and half in travel and died at Auburn on the 10th of October 1872.

His son, Frederick William Seward, was born in Auburn, New York, on the 8th of July 1830, graduated at Union College in 1849 and was admitted to the bar at Rochester, N.Y., in 1851. From 1851 to 1861 he was one of the editors and owners of the Albany Evening Journal, and during his father's term at the head of the State Department he was assistant secretary of state. He served in the New York Assembly in 1875, and from 1877 to 1881 was again assistant secretary of state. After 1881 he

\(^1\) In 1837 the vessel "Caroline," which had been used by the Canadian insurgents, was seized by the Canadian authorities in American territory and was destroyed. In 1840 one Alexander M'Leod, a British subject then in New York, asserted that he had aided the Caroline. A grand jury in New York indicted him for his secret trial on a charge of murder. The British minister demanded from the national government M'Leod's release, but his case was in the New York court, in which the national government has no jurisdiction. In the trial M'Leod proved an alibi, was acquitted (October 1841), and a serious international complication was thus averted.

SEWELL, WILLIAM (1834–1874), English divine and author, was born at Newport, Isle of Wight, on the 23rd of January 1834, the son of a solicitor. He was educated at Winchester and Merton College, Oxford, was elected a fellow of Exeter College in 1857, and from 1851–1853 was a tutor there. From 1836–1841 he was Whyte's Professor of Moral Philosophy. Sewell, who took holy orders in 1839, was a friend of Pusey, Newman and Keble in the earlier days of the Tractarian movement, but subsequently considered that the Tractarians leaned too much towards Rome, and dissociated himself from them. When, however, in 1849, J. A. Froude published his Nemesis of Faith, Sewell denounced the wickedness of the book to his class, and when one of his pupils confessed to the possession of a copy, seized it, tore it to pieces, and threw it in the fire. In 1843 he, with some friends, founded at Rathfranham, near Dublin, St Columba's College, designed to be a sort of Irish Eton, and in 1847 helped to found Radley College. Sewell's intention was that each of these schools should be conducted on strict High Church principles. He was originally himself one of the managers of St Columba, and sub-warden of Radley, but his business management was not successful in either case, and his personal responsibility for the debts contracted by Radley caused the secession of his Oxford fellowship. In 1852 his financial difficulties compelled him to leave England for Germany, and he did not return till 1870. He died on the 14th of November 1874. His publications include translations of the Agamonmon (1846), Georgics (1846 and 1854) and Odes and Epodes of Horace (1850); An Introduction to the Dialogues of Plato (1841); Christian Politics (1844); The Nation, the Church and the University of Oxford (1849); Christian Vestiges of Creation (1861).

His elder brother, RICHARD CLARKE SEWELL (1803–1864), practised successfully as a barrister in England, and then went to Australia, where he became a leading lawyer. In 1857 he was appointed reader in law to the University of Melbourne. He was the author of a large number of legal works. A younger brother, HENRY SEWELL (1807–1879), who became a solicitor, acted in London as secretary and deputy-chairman of the Canterbury Association for the Colonization of New Zealand, and eventually went out to the colony, and in 1854 was elected to the House of Representatives. In 1856 he became first premier of New Zealand. Subsequently he held the office of attorney-general (1861–1863) and minister of justice (1864–1865 and 1869–1872). In 1876 he returned to England, where he died on the 14th of May 1879.

Another brother, JAMES EDWARDS SEWELL (1810–1903), warden of New College, Oxford, was educated at Winchester and New College. In 1830 he became a fellow of his College, and practically passed the rest of his life there, being elected to the headship in 1856. The first University Commission had just released the colleges from the fetters of their original statutes, and Sewell was called on to determine his attitude towards the strong reforming party in New College. Though himself instinctively conservative, he determined that it was his duty to give effect to the desire of the majority, with the result that New College led the way in the general reform movement, and from being one of the smallest became the second largest college in Oxford. Sewell was vice-chancellor of the university 1874–1878. He died in his ninety-third year on the 29th of January 1903, having been warden for 43 years, and was interred in the College cloisters.

A sister, ELIZABETH MISSING SEWELL (1815–1906), was the author of Amy Herbert and many other High Church novels, and of several devotional books. An edition of her works was published in eleven volumes (1886).

SEWER, a large drain for carrying away by water excreta and other refuse, known therefore collectively as "sewage" (see SEWAGE below); also, in a wider and older sense, the term for conduits such as are used for the draining of the fields, or of the water-courses, sea-defences, &c., over which the local authorities, known as commissioners of sewers, exercise jurisdiction. In English law a "sewer," as distinguished from a "drain," is that which carries away the sewage of more houses or other buildings than one. Many fanciful derivations of the word are given, but there seems no doubt that the word is from O. Fr. sewièr, Med. Lat. servieria, the sluice of a mill-pond, from the Late Lat. ex-aquaria, a means of conducting water out of anything; this is paralleled by Eng. "ewer," a water-jug, which undoubtedly comes from aquaria, through O. Fr. eure, for water, mod. eau.

The old name "sewer," for a table attendant who placed and removed the dishes from the table, acted as waiter, &c., must be distinguished. In the household ordinances of Edward II. the word seems to appear in the form assour, and in those of Edward IV, as asseswer, an officer of the household who superintended the serving of a banquet. Assour represents O. Fr. assiour, to set, set, Lat. adisset, to set; adisset sewer, certainly the same as "waste" or "or sew, sewage," sew; juice, broth, pottage, cognate with suesus, juice.

SEWERAGE, a general term for the process of systematically collecting and removing the fouled water-supply of a community. The matter to be dealt with, may conveniently be classified as made up of three parts: (1) excreta, consisting of urine and faeces; (2) slop-water, or the discharge from sinks, basins, baths, &c., and the waste water of industrial processes; (3) surface water due to rainfall. Before the use of underground conduits became general, the second and third conditions were commonly allowed to sink into the neighbouring ground, or to find their way by surface channels to a watercourse or to the sea. The first constituent was conserved in middens or pits, either together with the dust, ashes, kitchen waste and solid waste generally or separately, and was carried away from time to time to be applied as manure to the land. In more modern times the pits in which excrement was collected took the form of covered tanks called cesspools, and with this modification the primitive system of conservancy, with occasional removal by carts, is still to be found in many towns. Even where the plan of removing excrement by sewers has been adopted, the kitchen waste, ashes and solid refuse is still treated by collecting it in pails or bins, whose contents are removed by carts either daily or at longer intervals, the refuse frequently being burned in destructors (q.v.). It therefore forms no part of the nearly liquid sewage which the other constituents unite to form.

The first constituent is from an agricultural point of view the most valuable, and from a hygienic point of view the most dangerous, element of sewage. Even healthy excreta decompose, if kept for a short time after they are produced, and give rise to noxious gasses; but a more serious danger proceeds from the fact that in certain cases of sickness these products are charged with specific germs of disease. Speedy removal or destruction of excremental sewage is therefore imperative. It may be removed in an unmixed state, either in pits or tanks or (with the aid of pneumatic pressure) by pipes; or it may be defaecated by mixture with dry earth or ashes; or, finally, it may be conveyed away in sewers by gravitation, after the addition of a relatively large volume of water. This last mode of disposal is termed the water-carriage system of sewerage. It is the plan of sewerage which at the present time is most generally adopted, the effluent being carried away in conduits by the help of an adequate water supply, and it is probably the mode which best meets the needs of any large community. The sewers which carry the diluted excreta serve also to take slop-water, and may or may not be used to remove the surface water due to rainfall. The water-carriage system has the disadvantage that much of the agricultural value of sewage is lost by its dilution, while the volume of foul matter to be disposed of is greatly increased.

I. COLLECTION OF SEWAGE.—House drains, that is to say,
those parts of the domestic system of drainage which extend from the soil-pipes and waste-pipes to the sewer, are generally made of glazed stoneware pipes having a diameter of 4 in., 6 in., or sometimes 9 or 12 in., according to the estimated amount of waste to be removed. In ordinary domestic dwellings there is rarely any occasion to use pipes of a greater diameter than 6 in., and this only for the main drain, the branches and single lines of piping being 4 in. in diameter. It is a good rule to have all the channels and breaks, and holes cast into the stoneware pipe, as small in diameter as possible, having due regard to efficient capacity. Such a drain is more cleanly than one too large for its purpose, in that it is more thoroughly flushed when in use, the sewage running at a much faster speed through a full pipe than through one only partially full. For this reason a pipe having too great a capacity for the work it has to do is liable to become corroded by sediment deposited from slowly moving waste.

The pipes are made in 2 ft. lengths and are formed with a socket at one end into which the straight end of the next pipe fits tightly. This is wedged in position with a little gasket and the remaining space then carefully filled with neat Portland cement (fig. 1). Pipes are made also with a bituminous substance in the socket and around the spigot end, and by merely pushing the one into the other the joint is made. The bitumen is curved to allow self-adjustment to any slight settlement, so that damage to the joint is avoided (fig. 2). A composite joint may be used having the bitumen lining reinforced with the ordinary Portland cement filling (fig. 3). This type is somewhat more expensive than the ordinary jointing, but it makes a powerful and effective connexion. The method of connecting two lead pipes by a "wiped solder joint" is shown in fig. 4. Fig. 5 shows the method of connecting a lead pipe into the socket of a stoneware one, a brass sleeve piece or ferrule being used to give the necessary stiffness to the end of the lead pipe. This arrangement is frequently used, for example, at the base of a soil-pipe at its junction with the circumferential drain. In the next figure (fig. 6) the lead pipe has a brass socket in a stoneware pipe. This form of connexion is used between a water-closet and a lead trap. The joint shown in figs. 5 and 6 is similarly made when an iron pipe is substituted for a stoneware one, but instead of the Portland cement filling, molten lead is used and carefully caulked to form a water-tight joint.

In the water-carriage system of drainage each house has its own network of drain-pipes laid under the ground, into which are taken the waste-pipes which lead from the closets, urinals, sinks, lavatory basins, and rain-water and other gullies within and about the house. The many branches are gathered into one or more manholes, and connexion is finally made by means of a single pipe with the main drain, or with the sewer. Gas from entering the house drains by a disconnecting trap fixed in the manhole nearest the entrance to the sewer. The fundamental maxims of house sanitation are first, that there shall be complete disconnexion between the pipes within and without the house, and second, that the drainage shall be so constructed as to allow for the free admission of air in order to secure the thorough ventilation of all parts of the system and avoid the possibility of the accumulation of gas in any of the waste- or drain-pipes. The drains must be planned to conduct the waste material from the premises and gathered up into the main channel in the centre. It will be seen that in case of blockage it would be a simple matter to clear any of the pipes with...
the drain-rod. The cap to the clearing arm has a chain attached by which it can be removed in case of flooding. The channels are beached up at the sides with cement, and the manhole is rendered on the inside with a cement lining. A fresh air inlet is taken out near the top of the chamber and is fitted with a slotted flap valve. The cover is of cast-iron in a cast-iron frame shaped with grooves to afford a double seal, the grooves being filled with a composition of tallow and fine sand. Where there is a danger of a backflow from the sewer due to its becoming flooded, a hinged flap should be placed at the junction of drain and sewer to prevent sewage from entering the house drain. A ball trap designed for this purpose may be used in place of a flap, and is more satisfactory, for the latter is liable to become corroded and work stiffly. In the ball-trap appliance the flowing back of the sewage forces a copper ball to fit tightly against the drain outlet, the ball dropping out of the way of the flow directly the pressure is relaxed.

The water-carriage system of drainage is undoubtedly the most nearly perfect yet devised. At the same time it is a very costly system to install with its network of sewers, pumping stations, and arrangements for depositing the sewage either in the sea or river, or upon the land or "sewage farm." In country districts and small towns and villages, however, excreta are often collected in small vessels and removed in tank carts and deposited upon the land. The dry-earth system introduced by the Rev. Henry Moule (1801–1880), and patented in 1860, takes advantage of the oxidizing effect which a porous substance such as dry earth exerts by bringing any sewage with which it is mixed into intimate contact with the air contained in its pores. The system is of rather limited application from the fact that it leaves other constituents of sewage to be dealt with by other means. But so far as it goes it is excellent, and where there is no general system of water-carriage sewerage an earth-closet will in careful hands give perfect satisfaction. Numerous forms of earth-closet are sold in which a suitable quantity of earth is automatically thrown into the pan at each time of use (fig. 10), but a box filled with dry earth and a hand scoop will answer the purpose nearly as well. A plan much used in towns on the continent of Europe is to collect excrement in air-tight vaults which are emptied at intervals into a tank cart by a suction pump. Another pneumatic system adopted on the continent has the cesspools at individual houses permanently connected with a central reservoir by pipes through which the contents of the former are sucked by exhausting air from the reservoir at the central station.

Newly laid drains should be carefully tested before the trenches are filled in to detect any defects in the pipes or joints. These should be made good and the test again applied until the whole system is in perfect order. Cement joints should be allowed to set for at least forty-eight hours before the test is made.

There are several methods of testing. For the stone-ware drains laid under the ground the water test is generally adopted. After the lower end of the length of drain to be tested has been securely stopped (fig. 11) the drain is filled with water from its upper end until the desired pressure is obtained. To obtain the required head of water extra lengths of pipe are sometimes taken up temporarily at the upper end of the drain or, as an alternative, both ends of the pipe may be plugged and water introduced under pressure by a force pump through a small aperture provided in the pipe. The exact pressure may then be ascertained by a water pressure gauge. An escape of water through some defective portion of the drain is indicated by the subsidence of the level of the water in the upper part of the drain or by a diminution in the pressure shown by the gauge. Then the defect must be located and remedied and the drain re-tested until all weak points are eliminated. This process must be repeated in each section of the drainage system until the whole is found to be sound and tight. It is not necessary to test drains laid with ordinary socket joints made in cement with a greater pressure than is obtained with a 5 ft. or 6 ft. head of water. A foot head of water gives at its base a pressure of 433 lb. per square inch, so that a head of 6 ft. would result in a pressure of just over 25 lb. per square inch. Cast-iron drain-pipes with caulked lead joints will withstand a pressure of nearly 90 lb. per square inch of internal surface, but in actual practice it is sufficient if they are tested with a pressure of 10 lb. or say a head of 20 to 24 ft.

The "smoke test" or one test is sometimes applied instead of the water test. The drain is plugged, as in the latter, and air is then pumped into the pipes until the desired pressure is registered by the gauge attached to the apparatus. This pressure should be maintained without appreciable diminution for a stipulated period before the drains are passed as sound.

The smoke test is generally used for testing vertical shafts such as soil-pipes and ventilators to which the water test cannot be conveniently applied owing to the excessive pressure produced at the lower portion of the pipe by the head of water. It is applied by stopping the ends of the pipes and introducing smoke by a drain-rod or a smoke-producing machine which forces volumes of thick smoke through an aperture in the stopper. The pipes and joints are then carefully inspected for any evidence of leakage.

The "scent test" is occasionally employed for testing soil and ventilating pipes, but the apparatus must be carefully handled to avoid the material being split in the building and thus misleading the operator. The test is made by introducing into the drain some substance possessing a powerful odor such as oil of peppermint, camphor carbide, or other suitable material, and tracing any defect by means of the escaping odour. This is not so effective a method as the smoke test, as there is more difficulty in locating leakages. Gulleys, traps and other similar fittings should be tested by pouring in water and observing whether siphonage or unsealing occurs. This of course will not happen if the appliances are of good design and properly ventilated. A section of a drain plug or stopper is shown in fig. 11. It has a head of india-rubber which expands when the screw is turned and presses tightly against the inside of the drain-pipe. In the centre of the plug is a capped aperture which allows for smoke

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testing and also allows the water gradually to escape after a test by water. 

Existing drains which have become defective and require to be made good must be exposed, taken up and laid in new pipes, unless advantage be taken of a method which, if it is claimed, renders it possible to make them permanently watertight so as to withstand the water test under pressure, and at the same time to disinfect them and the surrounding soil. This end is accomplished with the aid of patent machines which on being passed through the drain-pipe first remove all obstructions and accumulations of foul matter and then thoroughly cleanse and disinfect it, saturating the outside concrete and contaminated soil adjacent to the leak with strong disinfectants. Subsequently, loaded with the best Portland cement, another machine is passed through the drain, and, by powerful evenly-distributed jets of compression, forces the cement into every hole, crack or crevice in the pipes and joints. This work leaves the inner surface of the pipes perfectly clean and smooth. After the usual time has been allowed for the cement to set the air test is applied, and the drain is claimed to be perfect if every joint of a new drain, because the foundation is not disturbed by the process, and the risk of settlement, which is often the cause of leaky drains, is remote.

Every sanitary fitting should be trapped by a bend on the waste-pipe; this is generally made in one piece and fixed up near to the sink, or closet or basin, as the case may be. The traps of small wastes such as those of sinks and lavatories should be fitted with a brass screw cap, exposed, taken up and laid in new pipes. Their object is to hold a quantity of water sufficient to prevent the access of foul air through the waste-pipe into the house. The depth of the water "seal" should not be less than two in., or it may become easily unsealed in hot weather through the evaporation of the water. Unsealing may be caused, too, by "siphonage," when a number of fittings are attached to the same main waste without the branches being properly ventilated just below each trap. The discharge from one fitting in this case would create a partial vacuum in the other branches and probably suck the sealing water from one or more of the traps.

To obviate such an occurrence an "anti-siphonage" pipe is fixed having its upper end open to the air and provided with branches tapping such waste-pipe just below the trap. Then, with this contrivance, a discharge from any fitting, instead of causing air to be sucked in through the trap of another fitting, thereby breaking the seal and allowing foul drain air to enter the house, merely caused a slight disturbance to the necessary air through the anti-siphonage pipe, leaving the other traps with their seals intact (fig. 12). There are many forms of traps for use in different positions, one of the principles and purposes of all are identical. Two forms commonly used are known as the S and the P trap. The bell trap and the D trap are obsolete.

To collect the rain and waste water from areas, yards, laundry and other floors and similar positions an open trapped gulley is used. It is usually of stoneware and fitted with an open iron grate which admits the water (fig. 13). Many of these gullies are made too shallow and specifically get choked if the water they receive is charged with mud or sand. To obviate this difficulty

Great attention has been directed to the design of sanitary fittings, with the object of making them as nearly self-cleansing as possible. In the fixing of closets the wood casings which usually encircle them are removed from around every water-closet are going steadily out of use, their place being taken by a hinged seat supported on metal bracket and arrangement which allows every part of the appliance to be readily cleaned with a cloth. In hospitals and similar institutions a form of closet is made fitted with lugs which are built into the wall; in this way support is obtained without any assistance from the floor, which is left quite clear for sweeping.

Lavatory basins and sinks are also supported on cantilevers in the stoneware, and the waste pipes which were formerly often fixed around these appliances are now generally omitted.

There are several distinct types of water-closets. Each type is made in many different patterns, both good and bad from a sanitary point of view, and, whatever the type decided upon, care is necessary in selecting to obtain one efficient and hygienic in shape and working. The principal kinds of closets now in use are the washdown, siphonic, valve, washout and hopper.

Washdown closets (fig. 16) are most commonly used. They are inexpensive to buy and to fix, and being made in one piece and simple in construction without any mechanical working parts are not liable to get out of order. When properly adapted by brick or concrete work they will stand very rough usage. The objection is sometimes raised with regard to washdown closets that they are noisy in action. This must be allowed with many patterns, but some of the latest designs have been greatly improved in this respect, and when fitted with a silent flushing cistern are not open to this objection.

Siphonic closets (fig. 17) are a type of washdown in which the contents of the pan are removed by siphonic action, an after flushing arrangement providing for the rescaling of the trap. They are practically silent in action and with a flush of three gallons work very satisfactorily. Where the restrictions of the water company require the usual two gallon flush the ordinary washdown pan should be used.

Valve closets (fig. 18) are considered by many authorities on sanitation to be preferable to all other types. For domestic buildings, hotels, and where not subjected to the hardest wear, they are undoubtedly of great value. They should have a three gallon flush, and on this account they cannot be used in many districts owing to the "company's" regulations stipulating that a flush of not more than two gallons may be used.

The washout closet (fig. 19) is a type that never attained much popularity as it has been found by practical experience to be unsanitary and objectionable. The standing water is too shallow, and the receiving basin checks the force of the flush and the trap is therefore frequently imperfectly cleared.

Hopper closets are of two kinds—the long hopper and the short hopper. These are the forecourts of the closet whose shape the short hopper pan resembles, but instead of pan and trap being made in one piece the fitting consists of a freelate or semi-circular, with straight sloping sides and central outlet jointed to a trap of lead or other material. The joint should be placed so as to be always kept under water by
the seal of the trap. The long hopper pan is a most objectionable type of closet which should be rigorously avoided as it easily becomes foul and is most insanitary. In most districts its use is prohibited.

A water-waste preventer. Porter in a small tank fixed usually 4 or 5 ft. above a closed vent is a device by which water to a certain extent is allowed to flow down the piping into the pan of the closet, clearing out its contents and replacing the fouled water with clean. The flushing tank is automatically filled with water by a valve fitted with a copper ball which rises on the surface of the incoming water and shuts off the flow when the tank is full. Fig. 20 is a sectional drawing of one of the latest patterns and clearly shows its construction. The water-supply is shown passing to the top of the regulating ball valve attached. An overflow is provided and a pipe is led from this to an external outlet. The capacity of the ordinary domestic flushing cistern is two gallons, which is the maximum quantity allowed by most water companies. A three gallon flush is much better, however, and where this larger quantity is allowed should be adopted. Larger tanks for ranges of closets or urinals are often made to flush automatically when full, and for these the rate of water supply may be upon galvanized iron cantilever brackets which are built into the wall.

Like closets, urinals have undergone much improvement in design and manufacture. The oldest types are of glazed ware, and have vertical curved backs and sides about 4 ft. high with a flushing rim round the top and terminating in a base discharging into an open glazed channel waste, but in the case of a range of urinals, the discharge from all and conveys it into

![FIG. 21.—Bath, With Standing Waste.](image)

A trapped gully at one end of the range. This is the type usually fixed in street conveniences and similar positions. Plate and iron urinals are often fixed, but there is more difficulty in keeping them clean on account of the sharp angle and the unsuitability of the material. Urinals are seldom fixed in private houses or offices, an ordinary cast-iron or enamelled porcelain closet with a "tip-up" seat serving every purpose. Such seats are often fitted with balance weights to cause them to swing automatically when not in use as a cloak. Unless kept in clean and well flushed with water, urinals are liable to become a nuisance.

In London among other towns the system of drainage is a "combined" one, that is, the storm water and the domestic sewage and waste is all collected in one sewer. For many reasons it is considered satisfactory to have the two drains quite separate. In many districts this is done, but it entails the provision of a double system of drainage for each house, one drain being provided for rain-water, the other for sewage. Where combined drainage is installed an excess of water poured into the sewer during a storm often results in back flow and the flooding of basements and cellars with sewage. Such an occurrence might take place where a separate sewer for the storm water, but in this case the flooding would be with comparatively harmless rain-water and sewage. Figs. 23 and 24 show two ground plans of the same house, a semi-detached suburban residence, one with combined drainage and the other with separate drains for storm water and sewage. In both figures the rain-water drains are shown in a dotted line, and other drains in a full line.

In fig. 23, A is a 4 in. ventilating-pipe taken up to a point above the building. C is a trapped gully such as is shown in fig. 13. D is a gully with channel head (fig. 14) into which are taken the discharges from the scullery sink on the ground floor, and from the bath and lavatory on the first floor. E is an untrapped manhole, with open channel bends and sealed cast-iron cover, from which any branch of the drains can easily be cleared by the use of drain-rods. F is a soil-pipe from a bath and lavatory on the first floor, and is carried up above the roof to serve as a ventilator. G is a trapped gully as fig. 13, taking the discharge from the rain-water-pipe over it and serving also to drain the gully. D and J are similar gulleys. K is a manhole with trap for intercepting the foul gases from the sewer and preventing them from entering the house drains. The manhole is fitted with a sealed cast-iron cover and has an inlet at L with mica flap valve to admit pippet. If piping brought up to the surface of the ground and finished with a cap, which is removed when it is found necessary to clear away any obstruction. A special shaped junction here allows the rods to be pushed down, either branch as required. D and E are trapped gulleys as already described. F is an untrapped gully serving to ventilate the drain. G, H and J the same as for fig. 23. K is a pair of manholes built side by side, one for storm water and the other for sewage. Both are fitted with intercepting traps, and the sewage chamber is ventilated by an air inlet at L as in fig. 23. The cover of the storm water manhole need not be sealed, and if necessary could be fitted with a grating and be used to drain the forecourt.
The London by-laws regulating drainage are very full and are strictly enforced. They include requirements regarding the size, form, gradient and methods of construction and repair of drains, together with regulations affecting the design and fixing of traps, fittings and other apparatus connected with sanitary arrangements. Some of the headings of the different clauses of the by-laws are subjodined—water-closets; earth-closets; drainage of subsoil; drainage of surface water; rain-water pipes; materials, &c., for drains; size of drains; drain to be laid on bed of concrete 6 in. thick; if under buildings to be cemented with 6 in. of concrete; drain to be beched up with concrete to half its diameter; fall of drain; joints of drain; drain to be water-tight; thickness and weight of iron pipes; thickness of sockets and joints of stoneware pipes; drains under buildings; composition of coping; every inlet to drain to be trapped; drain beneath wall to be protected by arch, flagstone, or iron lintel; drain connected with sewer to be trapped and means of access to trap provided; no right-angled junctions to be formed either vertical or horizontal; at least two untrapped openings to be provided for ventilation, each fitted with a grating or cowl with apertures for passage of air equal in area to that made by the Department of Buildings, 1896, and to which there have been several small amendments. Section 141 of the Building Code also requires that plans and specifications of sanitary works vary only a slight degree from those in force under the London authorities. It is in the regulations affecting the execution of the work that we find a great difference, and these in New York are of course more stringent than in any other capital. Thus no sanitary, plumbing or lighting work may be undertaken without first submitting for approval to the Department of Buildings complete and suitable drawings and particulars of the materials to be used. Such a notice is necessary even in the case of repairs and alterations to existing work. As a further guarantee of the work being satisfactory it is ordained that no such work shall be executed except under the superintendence of a registered plumber. Every master plumber in the city of New York or others working therein must obtain a certificate of competency from the Examination Board and be registered afresh every year during the March, as without such certificate or licence no work can be undertaken; any person violating such requirements shall upon conviction be fined for each offence $250 or undergo three months' imprisonment or both, while in the case of any certificated plumber or his employees wilfully breaking with his knowledge, any of the rules and regulations relating to drainage and plumbing, the certificate of the master is to be forfeited in addition to the aforementioned fine.

II. CONVEYANCE OF SEWAGE.—For small sewers, circular pipes of glazed stoneware or of moulded cement are used, from 6 in. to 18 in. and even 20 in. in diameter. The pipes are made in short lengths, and are usually jointed by passing the end or spigot of one into the socket or faucet of the next. Into the space between the spigot and faucet a ring of gasket or tarred hemp should be forced, and the rest of the space filled up with cement. Other methods of joining have already been described and illustrated. The pipes are laid with the spigot ends pointing in the direction of the flow, with a uniform gradient, and, where practicable, in straight lines. In special positions, as under the bed of a stream, cast-iron pipes are used for the conveyance of sewage. Where the capacity of an 18-in. circular pipe would be insufficient, built sewers are used instead of stoneware pipes. These are sometimes circular or oval, but more commonly of an egg-shaped section, the invert or lower side of the sewer being a curve of shorter radius than the arch or upper side. The advantage of this form lies in the fact that great variations in the volume of flow must be expected, and the egg-section presents for the small or dry-weather flow a narrower channel than would be presented by a circular sewer of the same total capacity. Figs. 25 and 26 show two common forms of egg-sections, with dimensions expressed in terms of the diameter of the arch. Fig. 26 is the more modern form, and has the advantage of a sharper invert. The ratio of width to height is 2 to 3.

Built sewers are most commonly made of bricks, moulded to suit the curved surface of which they are to form part. Separate invert blocks of glazed earthenware, terra-cotta or fire-clay are often used in combination with brickwork. The bricks are laid over a template made to the section of the sewer and are grouted with cement. The thickness of brickwork for sewers over 3 ft. in diameter should not be less than 9 in., but for smaller sewers laid in good ground at depths not exceeding 20 ft. from the surface a thickness of 4|1 in. will suffice if well backed up with concrete. The thickness of brickwork for a
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sizer of any size may be determined in feet by the formula \( dr/100 \), where \( d \) = depth of excavation in feet and \( r \) = external radius in feet.

An egg-shaped sewer, made with two thicknesses of brick, an invert block, and a concrete setting, is illustrated in fig. 27. Concrete is largely used in the construction of sewers, either in combination with brickwork or alone. For this purpose the concrete consists of from 5 to 7 parts of sand and gravel or broken stone to 1 of Portland cement. It may be used as a cradle for or as a backing to a brick ring, or as the sole material of construction by running it into position round a mould which is removed when the concrete is sufficiently set, the inner surface of which may be coated with a thin layer of cement. A development in the construction of concrete sewers, whether laid in sectional pipes or constructed and moulded in situ, is the use of iron or steel bars and wires embedded in the material as reinforcement. Such conduits can be constructed of any size and designed to withstand high pressures. Fig. 28 is a section of a concrete sewer having a diameter of more than 9 ft. constructed with round rod reinforcement. With regard to the method for calculating the proportions, generally speaking the thickness of the concrete shell should be no place be less than one-twelfth of the greatest internal diameter of the tube, while the steel reinforcement should be designed to resist the whole of the tensile stress.

Where the safe tensile stress in the steel is \( \frac{8}{3} \) tons per sq. in., \( P \) = the pressure in pounds per sq. in., and \( r \) = the internal radius in inches; the weight of the reinforcement per sq. ft = \( \frac{Pr}{450} \), while its area at each side of the pipe per longitudinal foot, when \( f \) = safe tensile stress in the reinforcement in pounds, is \( \frac{Pf}{120} \).

In determining the dimensions of sewers, the amount of sewage proper may be taken as equal to the water supply (generally about 30 gallons per head per diem), and to this must be added (when the "combined" system is adopted) an allowance for the surface water due to rainfall. The latter, which is generally by far the larger constituent, is to be estimated from the maximum rate of rainfall for the district, and from the area and character of the surface. In the sewerage of Berlin, for example, the maximum rainfall allowed for is \( \frac{1}{6} \) of an inch per hour, of which one-third is supposed to enter the sewers. In any estimate of the size of sewers based on rainfall account must of course be taken of the relief provided by storm-overflows, and also of the capacity of the sewers to become simply charged with water during the short time to which very heavy showers are invariably limited. Rainfall at the rate of 5 or 6 in. per hour has been known to occur in Germany for a few days, but it is unnecessary to provide (even above storm-overflows) sewers capable of discharging any such amount as this; the time taken by sewers of more moderate size to carry off of itself prevents the discharge from them from reaching a condition of overflow which it carries away from this, the risk of damage by such an exceptional fall would not warrant so great an initial expenditure. Engineers differ widely in their estimates of the allowance to be made for the discharge of surface water, and no rule can be laid down which would be of general application.

In order that sewers should be self-cleansing, the mean velocity of flow should be not less than \( \frac{2}{3} \) ft. per second. The gradient necessary to secure this is calculated on principles which are stated in the article HYDRAULICS (q.v.). The velocity of flow, \( V \), is

\[ V = \sqrt{r\cdot m} \]

Velocity of discharge.

where \( i \) is the inclination, or ratio of vertical to horizontal distance; \( m \) is the "hydraulic mean depth," or the ratio of area of section of the stream to the wetted perimeter; and \( c \) is a coefficient depending on the dimensions and the roughness of the channel and the depth of the stream. A table of values of \( V \) per hour for the greatest velocity multiplied by the area of the stream gives the rate of discharge. Tables to facilitate the determination of velocity and discharge in sewers of various dimensions and gradients will be found in Latham's and other practical treatises.

Where the contour of the ground does not admit of a sufficient gradient from the gathering ground to the place of destination, the sewage may be pumped at any or all points in its course. To minimize this necessity, and also for other reasons, it is frequently desirable not to gather sewage from the whole area into a single main, but to carry off of sewage of high levels of the town by separate high-level or interception sewers.

It is undoubtedly necessary to construct overflows for storm water collection with combined systems of sewerage. Storm water overflows. For example, a low-lying area or district, which might be added to take the overflow of a stream, which would thereby suffer contamination. A better plan is to direct the discharge into a dry ditch or depression where the sewage is likely to be carried away by the wind or rain particles by contact with the air may quickly become oxidized. In agricultural districts it might be possible by arrangement with farmers to run the overflow over grass-land, as it has good manorial properties.

Occasionally when a sewer has to cross a stream or other obstruction it is found impossible to bridge or carry the pipe across and ensure proper gradient. In such cases the sewer may be carried under the obstruction by means of an inverted siphon. The exact form that should be given to inverted siphons is disputed, but it is generally agreed that they are expedient to be avoided wherever possible. The major part taken up by the form of the street section, that is, they have two sloping pieces corresponding with the banks with a flat cross-piece under the bed of the stream. The pipes are invariably of iron and should be laid in as large a diameter as possible, the siphon is usually made as a duplication of the sewer pipes, and pulled through from end to end. At either end of the siphon pipes there are manholes into which the pipes are built. Penstock valves also should be provided at each end so that sewage can be shut off out of one or both of the siphons as desired for clearing purposes.

Tumbling bays being prohibited, the usual method of leading a high-level sewer into a low-level sewer is by means of a ramp. This arrangement is in connection with the siphon into which the end of the high-level sewer is taken and finished usually with a flap valve. Some distance back along the sewer a wide-throated junction is placed in the invert of the sewer, and from this junction a ramp-pipe is taken down to the inverted sewer, so that the sewage in the upper sewer instead of having a direct fall runs down the slope of the ramp. The ramp-pipe is usually constructed of iron and is of smaller section than the high-level sewer because of the greater fall and pressure.

In the low-laying parts of towns storage tanks are often constructed to receive the sewage of such districts. They are periodically emptied of their contents, which are pumped up into the main sewers through which the sewage travels to the outfall. This storing of sewage should be avoided whenever possible. It is much better to provide for raising it as it is produced either by an installation of one or more automatic lifts, such as Adams's sewage lifts, or, where a large amount of material is to be dealt with, a centrifugal pump or a centrifugal pump for sewage, by a Shone ejector worked by compressed air.

Sewer gas is a term applied to the air, fouled by mixture with gases which are formed by the decomposition of sewage, and by the oxygen of the air; it may also arise from the decomposition of the sewer in the variable space above the liquid stream. It is universally recognized that sewer gas is a medium to which the inhabitants of towns are occasionally exposed, and systems of sewerage stringent precautions are taken to keep it out of houses. It is equally certain that the dangerous character of sewer gas is reduced, if not entirely removed, by free admixture with the oxygen of fresh air. Sewers should be liberally ventilated, not
only for this reason, but to prevent the air within them from ever having its pressure raised (by sudden influx of water) so considerably as to force the "traps" which separate it from the atmosphere of dwellings. The plan of ventilation now most approved is the very simple one of making openings from the sewers to the surface of the street at short distances—generally shafts built of brick and cement—and covering these with metallic gratings. Under each grating it is usual to hang a wooden tray to catch any stones or other material that fall through from the street, but the passage of air to and from the sewer is left as free as possible. The openings to the street are frequently made large enough to allow a man to go down to examine the clean the sewers, and are then called "manholes." Smaller openings, large enough to allow a lamp to be lowered for purposes of inspection, are called "lampholes," and are often built up of vertical lengths of drain-pipe, 6 in. or 9 in. in diameter, and finished at the surface with a cover similar to that used for a manhole but lighter. A length of 150 ft. of pipe sewer is about the limit that can be sighted through. Lampholes are mostly used in the construction of pipe and other small sewers.

To facilitate inspection and cleaning, sewers are, as far as possible, laid in straight lines of uniform gradient, with a manhole or lamphole at each change of direction or of slope and at each junction of mains with one another or with branches. The sewers may advantageously be stepped here and there at manholes. Sir R. Rawlinson pointed out that a difference of level between the entrance and exit pipes tends to prevent continuous flow of sewer gas towards the higher parts of the system and makes the ventilation of each section more independent and thorough. When the gradient is slight, and the dry-weather flow very small, occasional flushing must be resorted to. Flap valves or penstocks are introduced at manholes; by closing these for a short time (or clean water introduced for the purpose) is dammed up behind the valve either in higher parts of the sewer or in a special flushing chamber, and then released. Many self-acting arrangements for flushing have been devised which act by allowing a continuous stream of comparatively small volume to accumulate in a tank that discharges itself suddenly when full. A valuable contrivance of this kind is Rogers Field's siphon flush tank. When the liquid in the tank accumulates so that it reaches the top of the annular siphon, and begins to flow over the lip, it carries with it enough air to produce a partial vacuum in the tube. The siphon then bursts into action, and a rapid discharge takes place, which continues till the water-level sinks to the foot of the bell-shaped cover. Adams's "Monster Flusher" is constructed on similar principles and is of simple and strong design. Its flushing-power is claimed to be greater than that of the ordinary siphon. By the use of this appliance, which is automatic in action, shallow sewers can be effectively flushed. Fig. 29 is a section of a flushing chamber fitted with this siphon. Such flushing apparatus should be operated by a water-supply from an ordinary tap which must be regulated for a large or small flow. The capacity of flush tanks is a little difficult to determine. As a rule, 

![Fig. 29. - Flushing Chamber for Shallow Sewers.](image)

250 to 400 gallons are allowed for 9-in. sewers, 400 to 600 gallons for 12-in., and 600 to 800 gallons for 15-in. sewers, the amount increasing by 200 gallons for each 3-in. additional diameter.

III. DISPOSAL OF SEWAGE.—The composition of domestic sewage is now fairly well known and is generally reduced for the purpose of making solutions. It is to say, ordinary sewage is that due to a water-supply of about 30 gals. per diem. If the supply is less, and there is no leakage of subsoln water into the drainage system, the sewage will be stronger; conversely, if there is leakage, &c., the sewage will be more dilute, but obviously, the quantity of impurities will, for any given population, be the same in amount. The subjoined table shows the kind of sewage referred to:

<table>
<thead>
<tr>
<th>Total Solids in Solution</th>
<th>Organic Carbon</th>
<th>Organic Nitrogen</th>
<th>Ammonia</th>
<th>Chlorine</th>
<th>Total Combined Nitrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-54</td>
<td>3.287</td>
<td>1.543</td>
<td>4.70</td>
<td>16-92</td>
<td>14.36</td>
</tr>
</tbody>
</table>

For all practical purposes we may say that average sewage contains two tons of suspended matters in each million gallons, one-half of which is mineral matter. When, however, we come to a consideration of trade waste, the question becomes difficult in the extreme, because of the great variety of trades, and the ever varying quantities added to the sewage. Some of the principal trade wastes are from dye-works, print-works, bleach-works, chemical works, tanneries, breweries, paper-makers, woolen-works, silk-works, iron-works and many others. In some cases one only of these trade wastes finds its way to the sewer; in others, several of them may be found. In some instances, again, these trade wastes are of an alkaline nature, in others they are acid; the mixtures may be either, and of greatly varying character. Next the paper waste must be considered. The flow is very variable throughout the entire 24 hours, but in the case of sewers discharging domestic sewage only, such sewage being of the standard strength, it will be a close approximation to the facts to say that about two-thirds is discharged between the hours of 7 A.M. and 7 P.M., one-half during the eight hours of maximum flow, two-fifths during the six hours of maximum flow, and about 7½% per hour during the two hours of maximum flow. These data will be sufficient for the design of the works intended for dealing with the sewage. Separate consideration must be given to the method of removing or of by-passing subsoil water. In very large systems, again, the maxima are rather less because of the time occupied by the sewage in travelling to the outfall from the more remote parts of the district. In cases where one set of sewers is employed for both sewage and rainfall the sewage flow may be increased more than a hundredfold within a few minutes by heavy rainstorms. Of course the sewage disposal works can only deal with a small proportion of such flow, and the balance is discharged into some convenient water-course or other suitable place. Even when the separate system is employed, as in the case of town, the flow may be increased ten to fifteen times by rain, because it is unusual to carry two sets of drains to the backs of the houses. In designing outfall works, therefore, all these circumstances must be carefully considered. Again, when the sewage is pumped, as is frequently the case, the size of the tanks must often be increased, because in the smaller installations the whole of the day's sewage is frequently pumped out in a few hours; this fact must also be remembered when designing filters.

Nearly every town upon the coast turns its sewage into the sea, and the sewage of the sea is obvious. The object to be attained is its dispersion in a large volume of sea-water. As it is lighter than salt water it tends to rise against leaving the sewer; the outfall should, therefore, if practicable, terminate in deep water, so that the two liquids may become well mixed. The currents must be studied by means of floats, and in most cases the sewage must be discharged upon the ebb tide only, and then perhaps not throughout the entire period, the object being to prevent it from being carried towards the shore. That the purification is effected mainly by means of living organisms is well established, and it has been urged by competent authorities that this system is not wasteful, since the organic matter forms the food of the lower organisms, which in turn are devoured by fish. Thus the sea is richer, if the land is the poorer, by the adoption of this cleanly method of disposal. The next step is the partial purification of the sewage by means of a chemical process. When a town lies some distance up an estuary, as for example London, Glasgow, Rochester, and many others, the dilution may be insufficient to prevent a nuisance, or the suspended matters may be deposited upon the foreshore to be uncovered at low water. The first stage of purification is then employed, namely, clarification in tank waste, varies with regard to the practical effect of any particular treatment, it is now recognized that the matters in solution are scarcely touched by any chemical process that can be employed, but the removal of the suspended matter is a great...
Colonel Moore, septic with the Martin, the P. is It extent, frequently Dibden, most
charged to the works and failure, precisely the same remarks apply with aluminium sulphate or with ferrous sulphate, is most frequently employed. When the resulting sewage sludge has to be filter-pressed, lime is almost essential for the primary treatment of the sewage, in order to destroy the glutinous nature of the sludge. In the case of large towns like London, Manchester and Salford, the sludge is shipped in specially designed steamers, of 600 tons to 1000 tons burden, and discharged into the sea at a distance from the coast. The London outfall works have a fleet of six steamers, which convey the sludge out to Barrow Deep, a channel in the North Sea about 10 m. east of the Nore lightship. Each vessel has four oblong tanks having a total capacity of 1000 tons of sludge, which can be discharged in seven minutes when the valves are fully opened. The sludge is discharged about 10 ft. under the water and being agitated by the action of the ship's screws is very completely diffused. The sand and earthy matters soon subside and the organic matter is rapidly consumed by the organic life in the sea-water. A careful microscopical examination and chemical analysis failed to detect more than the merest trace of the mineral portion of the sludge, either as suspended or liquid. But, as has been already stated, the bed could be thoroughly aerated. No doubt a better way would be to distribute the sewage in the form of a shower of liquid, and work the beds continuously, but this involves a good deal of expense for spreading appliances, and a fall is necessary in the works, which is not always obtainable. Probably the most complete installation of the kind last referred to is that at Salford. Iron pipes are led over the surface of the filters, and spraying nozzles are placed at short intervals, so that the sewage is applied in the form of a heavy shower. But whatever form the filters and appliances, it may assume, the final result is the same. If the filters are properly aerated the aërobiotic organism establishes itself in prodigious numbers, and attacks the organic matter, breaking it down into harmless, soluble and gaseous products. It is, of course, assumed that the filters are adequate in area, and are properly managed. With regard to the materials to be employed in making sewage filters, it is now well established that the size of the particles has a more important bearing than their composition. At the same time, it may be remarked that materials with very rough surfaces, as for instance coke breeze, are more effective than those with smooth surfaces. Doubtless the organic impurities have made this difference, but the result is, and no doubt a given quantity of material with rough surfaces will harbour greater numbers than the same amount of smooth. A reference must be made to the Manchester experiments. The experts' report suggested the provision of 60 acres of filters for dealing with the sewage of the city, which is said to average 30 million gallons per day in dry weather. But after inquiry into the merits of the proposal the officials of the Local Government Board recommended that the filters should be 92 acres in extent, and that the effluent should be finished on land. The filters should be provided in a sequence, and at least six times were also recommended, such filters being designed to pass 500 gallons per sq. yd. per diem. In this case clarified sewage was to be dealt with on filters 3 ft. 4 in. in depth, composed of clinkers broken to pass a sieve with meshes of 1½ in., but retained on one with meshes of ½ in. It will be observed, therefore, that the bacterial treatment of sewage has scarcely as yet emerged from the experimental stage, but it will certainly be adopted in many cases where it is impracticable to obtain good land in sufficient quantity for the purification of the sewage. With regard to the disposal of sewage-sluage in inland towns, until it has been fairly established by a long trial that bacteria will dispose of this material, the reduction of its bulk by means of filter-presses will be found to be the most satisfactory method of dealing with it. The practical effect is the conversion of 5 tons of offensive mud into 1 ton of hard cake, which may be readily handled and carted. The cost is usually about 28. 6d. per ton of cake, and a million gallons of average sewage produce about 8 tons.

SEWING 1 MACHINES. The sewing machine, as is the case with most mechanical inventions, is the result of the efforts of many persons, although it would appear that the most meritori- ous of these worked in ignorance of the labours and successes of others in the same field. Many of the early attempts to sew by machinery went on the lines of imitating ordinary hand- sewing, and all such inventions proved failures. The method of hand-sewing is of necessity slow and intermittent, seeing that only a definite length of thread is used, which passes its full extent through the cloth at every stitch, thus causing the working arm of man or otherwise to travel a great length for every stitch made, and demanding frequent renewals of thread.

The foundation of machine-sewing was laid by the invention of a double-pointed needle, with the eye in the centre, patented by Charles F. Weisenthal in 1755, with the object of avoiding the necessity for inverting the needle in sewing or embroidering. Many of the features of the sewing machine are distinctly specified in a patent secured in England by Thomas Saint in 1790, in which he, inter alia, described a machine for stitching, quilting, or sewing. Saint's machine, which appears to have been invented primarily for the purpose of sewing claws, was fitted with an awl which, working vertically, pierced a hole for the thread. A spindle and projection laid the thread over this hole, and a descending forked needle pressed a loop of thread through it. The loop was caught on the under side by a reciprocating hook; a feed moved the work forward the extent of one stitch; and a second loop was formed by the same motions as the first. It, however, descended within the first, which was thrown off by the hook as it caught the second, and being thus secured and tightened up an ordinary tambour or chain stitch was formed. Had Saint hit on the idea of the eye-pointed needle his machine would have been a complete anticipation of the modern chain-stitch machine.

The inventor who first devised a real working machine was a poor tailor, Barthélemy Thimonier, of St Étienne, who obtained letters patent in France in 1830. In Thimonier's apparatus the needle was crocheted, and descending through the cloth it brought up with it a loop of thread which it carried through the previously made loop, and thus it formed a chain on the upper surface of the fabric. Though the machine was rather clumsy, made principally of wood, as many as eighty were being worked in Paris in 1841, making army clothing, when an ignorant and furious crowd wrecked the establishment and nearly murdered the unfortunate inventor. Thimonier, however, was not discouraged, for in 1845 he twice patented improvements on it, and in 1848 he obtained both in England and the United Kingdom patents for further improvements. The machine was then made entirely of metal, and vastly improved on the first model. But the troubles of 1848 blasted the prospects of the resolute inventor. His patent rights for Great Britain were sold; a machine shown in the Great Exhibition of 1851 attracted no attention, and he died in 1857 unfriended and unrewarded.

The most important ideas of an eye-pointed needle and a double thread or lock-stitch are strictly of American origin, and that combination was first conceived by Walter Hunt of New York about 1832-1834. Hunt reaped nothing of the enormous pecuniary reward which has been shared among the inventors of the sewing machine, and it is therefore all the more necessary that his great merit as an inventor should be insisted on. He constructed a machine having a vibrating arm, at the extremity of which he fixed a curved needle with an eye near its point. By this needle a loop of thread was formed under the cloth to be sewn, and through that loop a thread carried in an oscillating shuttle was passed, thus making the lock- stitch of all ordinary two-thread machines. Hunt's invention was purchased by a blacksmith named Arrowsmith, and a good deal was done towards improving its mechanical details, but no patent was sought, nor was any serious attempt made to draw attention to the invention. After the success of machines

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1 "Sew," for stitching with a needle, is a word common to Indo-European languages; cf. Lat. scire, Gr. σαίειν, sarēō, Sansk. svē. base on his two devices was fully established, Hunt in 1853 applied for a patent; but his claim was disallowed on the ground of abandonment. The most important feature in Hunt's invention—the eye-pointed needle—was first patented in the United Kingdom by Newton and Archbold in 1841, in connexion with golve-stitching.

Apparently unconscious of the invention of Walter Hunt, Elias Howe, a native of Spencer, Mass., directed his attention to machine-sewing about the year 1843. In 1844 he completed a simple model, and in 1846 he patented his sewing machine (fig. 1). Howe was thus the first to patent a lock-stitch machine, but his invention had the two essential features—the pointed needle and the frame. Howe's machine was sold in England to William F. Thomas of Cheapside, London, a corset manufacturer, for £350. The patent was secured in December 1846 the English patent in his own name, and engaged Howe on weekly wages to adapt the machine for his manufacturing purposes. The career of the inventor in London was unsuccessful; and, having pawned his American patent rights in England, he returned in April 1849 in poverty to America. There in the meantime the sewing machine was beginning to excite public curiosity, and various persons were making machines which Howe found to trench on his patent rights. The most prominent of the manufacturers, if not of inventors, ultimately appeared in Isaac Merritt Singer (1811- 1875), who in 1851 secured a patent for his machine (fig. 2). Howe now became alert to vindicate his rights, and, after regaining possession of his patented patent, he instituted suits against the infringers.

An enormous amount of litigation ensued, in which Singer figured as a most obstinate defendant, but ultimately all makers became tributary to Elias Howe. It is calculated that Howe received in the form of royalties on machines made up to the period of the expiry of his extended patent (September 1867—he died in the next month) a sum of not less than 12 millions of dollars.

The practicability of machine-sewing being demonstrated, inventions of considerable originality and merit followed in quick succession. One of the most ingenious of all the inventors —who worked also without knowledge of previous efforts—was Mr Allan B. Wilson. In 1849 he devised the rotary hook and bobbin combination, forming the special feature of the Wheeler & Wilson machine. Wilson obtained a patent for his machine, which included the important and effective four-motion feed for moving the work after every stitch, in November 1850. In February 1851 William O. Grover, a tailor, of Boston, patented
his double chain-stitch action, which formed the basis of the Grover & Baker machine. In 1856 James A. E. Gibbs (1829—1902), a Virginia farmer, devised the chain-stitch machine, improved subsequently by J. Willcox and now known as the Willcox & Gibbs. These together—all American inventions—form the types of the various machines now in common use. Thousands of patents have been issued in the United States and Europe, covering improvements in the sewing machine; but, although its efficiency and usefulness have been greatly increased by numerous accessories and attachments, the main principles of the various machines have not been affected thereby.

In machine sewing three varieties of stitch are made: (1) the simple chain or tambour stitch, (2) the double chain stitch and (3) the lock stitch. In the first variety the machine works with a single thread; the other forms use two, an upper and an under thread.

The structure of the chain stitch is shown in fig. 3. The needle first descends through the cloth, then as it begins to ascend the friction of the thread against the fabric is sufficient to form a small loop into which the point of a hook operating under the cloth plate enters, expanding and holding the loop while the needle rises to its full height. The thread length, the hook with its loop is also projected so that when next the needle descends its loop is formed within the previous loop. The hook then releases loop No. 1, seizes and expands loop No. 2, and in so doing advances the sewing line on the fabric, but plain on the upper surface of the fabric. The seam so made is firm and elastic, but easily undone, for if at any point a thread is broken the whole of the sewing can be readily run out backwards by pulling the thread, just as in crochet work. To certain extent this imperfection in the chain-stitch machine is overcome in the Wilcox & Gibbs machine, in which each loop, by means of a rotating hook, is twisted half a revolution after it has passed through its predecessor. The somewhat complicated course of the threads in the double chain stitch of the Grover & Baker machine is shown in fig. 4. The under thread was supplied from an ordinary bobbin and was threaded through a circular needle of peculiar form. The machine was wasteful of thread, and the sewing formed a knotted ridge on the under side of the fabric.

The lock stitch is that made by all ordinary two-thread sewing machines, and is a stitch peculiar to machine sewing. Its structure is, as shown in fig. 5, very simple, and when by proper tension the threads interlock within the work it shows the same on both sides, and is very secure. When, however, the tension on the upper thread is weak, the under thread runs along the surface as at b, held more or less tightly by the upper loops. It will be seen that to make the lock stitch the under thread has to be passed quite through the loop of the upper thread. That is done in two principal ways. By the first plan a small metal shuttle, holding within it a bobbin of thread, is carried backward and forward under the cloth plate, and at each forward movement passes through the upper thread loop formed by each succeeding stroke of the needle. Such is the principle devised by Hunt, introduced by Howe, and improved by Singer and many others. The second principal method of forming the lock stitch consists in seizing the loop of the upper thread by a rotating hook, expanding the loop and passing it around a stationary bobbin within which is wound the under thread. The method is the invention of A. B. Wilson, and is known generally as the Wheeler & Wilson principle. The rotary hook seen at b, fig. 6, is so bevelled and notched that it operates to interlock the needle thread within the bobbin of under thread, after which it throws off the loop and the formed loop is pulled up and tightened either by the underside or the upper loop. To certain extent this principle is adopted in the Lock of under thread, after which it throws on the the machine of under thread, after which it throws off the loop and the so-formed lock stitch is pulled up and tightened either by an independent make-up hook or a set of lock stitches in later machines, or by the expansion of the next loop as in the older forms. The lock, lenticular in form, and its case B, fig. 6, fit easily into a circular depression within the hook, against which they are held by the bobbin holding the under thread within it.

Intermediate between the shuttle and the rotary-hook machines is the oscillating-shuttle machine introduced by the Singer Co. The shuttle is hook-formed, not unlike the Wilson hook, and it carries within it a capacious circular bobbin of thread. fig. 7. This shuttle is driven by an oscillating driver attached to an annular race-way a, and, instead of revolving completely like the Wilson hook, it oscillates only in an arc of 180°, so far as serves to catch and clear the upper thread. The oscillating-shuttle and rotary-hook machines work with great smoothness and rapidity.

Sewing machines are now made in hundreds of varieties for special kinds of work. Some, for example, are capable of performing the most complicated operations in ornamental stitching, a horizontal right and left motion, in addition to the ordinary vertical motions, being for this purpose often imparted to the needle bar; others will sew button-holes at the rate of 8 or 10 a minute; while others again will sew on the buttons, making the required number of stitches, stopping automatically with the needle at its highest point, and cutting the threads off close to the underside of the work. In some cases two or more needles are fitted, producing parallel rows of stitches; with a machine having 12 needles a single operation may make as many as 24,000 stitches a minute. Special forms of machine are designed to meet the requirements of the glove-sewer, the umbrella-maker, &c. In sewing carpets the great weight of the material makes feeding difficult, and therefore machines have been invented that move along the carpet, which itself remains stationary. The earlier forms were hand-worked; the two lengths of carpet were stretched across the room, and the machine travelled along the seam, followed by the operator, who turned it by means of a hand-crank. One of these machine was capable of doing the work of eight or ten hand-sewers. With later forms, operated by electricity or other power and running along a track, the carpet is stretched and sewed so rapidly that one power machine does the work of eight to ten hand machines. The introduction of sewing machines has revolutionized the boot and shoe industry, and boots are sewn by the machine, the Buehner wire-sewing machine and Smyth thread-sewing machine being prominent representatives of this class.

SEX (Lat. sexus; possibly connected with secure, to cut), the character of being either male or female, which can be attributed to the vast majority of animals, but less correctly to the higher plants, where the so-called male and female organs, or flowers, are part of the sexless generation (see REPRODUCTION: Plants). The primary distinction of sex resides in the essential organs of reproduction (genitaria). An organism that contains the germinal tissue or mass of tissue known as the testis, and producing the
SEX

Among fishes, secondary sexual characters are common. Spines are developed on the head and pectoral fins of the males of some species, and are produced by modiﬁcation of the basal cartilages, useful in the prehension of the female. In the male salmon, a cartilaginous projection, developed during the breeding season, is used as a female clasping organ. In the trout, the upper jaw is produced by the development of the upper teeth, and in old males the jaws become hook-like and the teeth are greatly increased in size. In the thornback, the adult male has the teeth sharp-pointed and backwardly-directed, while those of the female are broad and rounded. In some ﬂies, the males are actively parasitic, and those between the sexes in size and general shape are not striking, but there are many instances of the males exhibiting crests, or special processes which may be classed as ornaments, and peculiar patterns are bright colours, during the breeding season.

Secondary sexual differences appear in the vast majority of birds. The shape seldom differs markedly, but differences in size are common, sometimes, as in birds of prey, the females, and sometimes, as in the allies of the domestic fowl, the males being larger. In a large number of instances the males are more pugnacious and are better armed, the bones and musculature being heavier, the beaks and claws stronger, and the males may be larger than the females. It is present only in the males or be relatively small in the females. Special ornaments such as crests and wattles, combs, caruncles, differences of the skin, and elongated or peculiarly shaped feathers are frequently observed. Such characters are produced only during the breeding season, and in the vast majority of cases conﬁned to the males. The voice almost invariably varies with the sex, is associated with the breeding period and is much more highly developed in the male, while structural developments such as modiﬁcations of the trachea, vocal sacs and resonators and differences in the larynx are frequently present and on the whole distinctive of the males. Differences of size and colour are characteristic of many species, and a few of them, such as the rufous tinged (Phalaropus), phalaropes (Phalaropus), and cassowaries, the females exceed the males in size and brilliancy, and it is interesting to notice that in such cases the sexual distinction of habit may be reversed, the females being pugnacious, aggressive, and courtiers of the males, whilst the latter are shy and may attend to the brood. Such exceptions are so rare that they may be called abnormal, for the rule among birds is, that where secondary sexual characters are displayed, ornamentation, voice, brilliant pattern and colour, pugnacity and amorousness are distinctive of the male. Secondary sexual differences of the same nature are abundant among mammals. The males are more robust and larger and are often equipped with weapons such as horns, the tusks, and the weapons of the feline and carnivorous orders. Differences of size and colour are more frequent; in the higher Decapods the males and in the lower Crustacea the females frequently being larger, the disparity being extreme in some of the parasitic copepods and isopods where the males are minute and attached to the females. In reptiles and birds a very large number of invertebrates there are no visible secondary sexual characters.

C. Darwin, in the portion of the Descent of Man devoted to "Selection in relation to Sex," brought together what remains the most valuable and valuable account of the existence and distribution amongst animals of secondary sexual characters, and it would be necessary to describe many of these without the use of the distinction of the groups of facts involved. Among Crustacea the sexes frequently differ, but in most cases the differences concern the primary organs of reproduction, and the examination of the reproductive organs of the female and male, which are often very different in structure and function. Differences of size in females are frequent; in the higher Decapods the males and in the lower Crustacea the females frequently being larger, the disparity being extreme in some of the parasitic copepods and isopods where the males are minute and attached to the females. In reptiles and birds a very large number of invertebrates there are no visible secondary sexual characters. Among Arachnids conspicuous differences in colour and size occur, the males generally being smaller, more active and possessed of relatively longer appendages, and more highly decorated. Amongst Insects, the differences may be very marked and are related to the release of the females. In many cases the males are winged, the females wingless and grub-like. In few insects, the males are highly pugnacious and are furnished with special weapons for fighting with their rivals. Amongst the Hemiptera and Orthoptera there are many instances where the males possess organs capable of producing loud and strident noise, and in the case of Cupid's dart, whilst in other cases, both sexes produce call-notes. Particularly amongst the Coleoptera, the males may differ very greatly from the females, either in the bodily form or in the degree and nature of the extraordinary shape and colour of the males. The most notable sexual differences are in coloration, and whilst there are many instances where both sexes are inconspicuous, and a few where both are brilliantly colored, there are also many instances where the males are displayed by the display of more conspicuous patterns and of brighter colours. It may be said of Insects in general that it is the more common case for secondary sexual characters to exist in that the sexes may be distinguished at a glance.
are the physiological stimulus which awakens the development of the auxiliary and secondary sexual characters.

Auxiliary primary and secondary sexual characters are so many and various that general statements regarding them are difficult and uncertain. In the broadest fashion, however, the following generalizations appear to hold. Amongst vertebrates it is rare. A number of such characters begin to appear at puberty. Young or immature forms resemble the sex in which such characters are least marked, while the young and the undistinguished sex resemble ancestral forms. The sex that is distinguished is usually the male, and the characters are usually hypertrophies or specializations of characters that appear in the females and the young. (It is to be remembered that specialization may be the result of the suppression of characters as well as their acquisition, and there are a remarkable number of cases in which we may, at least tentatively, picture the bright sexual colour of males as due to the suppression of a pigment which masks them in the female.)

**Hermaphroditism** is the condition in which gonads producing ova and gonads producing spermatozoa are contained in the same individual. Its distribution in the animal kingdom is irregular, and apparently independent of natural affinity, and the balance of opinion is in favour of regarding it not as a primitive condition, but as a secondary acquisition. C. Claus has pointed out that it is frequent among sessile animals, as for instance Sponges, Anemones, Corals, Polyzoa, bivalve Molluscs, and Tunicates, and Echinoderms. Amongst the Vermes it is rare. It is extremely common amongst almost every kind of parasitic animal. The obvious suggestion is that if the condition be primitive, it has been preserved, and if not primitive, acquired, because in animals of such habit, the chances of sexual congress would be greater than if the sexes were separate. Against such an interpretation, however, it must be noticed that in most hermaphrodites the sexual maturity of the male and female gonads is not coincident, so that cross-fertilization commonly occurs. Self-fertilization is said to occur in the fish *Serranus*, and it certainly occurs in many parasitic Trematodes in Tape-worms, and a few Nematodes. The real meaning of the occurrence of the condition remains obscure. Both gonads are present in many Sponges, in the Ctenophora, in many Anemones and Corals, and in various Hydroids such as *Hydra*, in most Tubelarians and Trematodes, in all the Tapeworms, in a few Nematodes, in many Chaetopods, in the Leeches, in a few Brachiopods and in many Polyzoa. A few are present in most Echinoderma and Arthropoda, but occurs in Cirripedes and some Isopods. It occurs in some bivalves, such as the common oyster, cockle and clam, and is present in the Euthyneurous Gastropods and in squillaids animals such as many of the worms and annelids. Observers have urged that the vertebrate embryo passes through a hermaphrodite condition. J. T. Cunningham and F. Nansen have stated that a testis is embedded in the ovary of the young hagfish (*Myxine*) and that this ripens before the ovary, but later observers have disputed their interpretation of the facts. In a few fish and some Batrachia, hermaphroditism has been demonstrated, but it is not certain, whether as a normal or aberrant occurrence, whilst in many of the Batrachian cases, the animals are known to be normally sexual. The term hermaphroditism, however, has been applied exceptionally to a sexual condition in various instances where the presence of the essential sexual organs being affected, the appearances relating wholly to the auxiliary primary or the secondary sexual characters. It is most probable that such conditions differ entirely from true hermaphroditism. With regard to the auxiliary primary organs, and especially the genital ducts and external organs of sex, in a majority of cases as in vertebrates, the embryonic or youthful condition is undifferentiated, and so to say, contains the initial material which may be elaborated by specialization in one direction or the other, by the proliferation of certain portions and the suppression of others, into the structures characteristic of the male or of the female. Sometimes, growth takes place without normal differentiation, sometimes the specialization in one direction lags, with the result that a dubious appearance arises. Subsequent dissection or the approach of maturity, however, make it plain that the duality was superficial and that the gonad of only one sex was present. Among mammals, including man, every normal male retains relics of the female side of the undifferentiated condition of the accessory sexual organs, whilst every normal female contains similar if less well-marked relics of that when the male sex is older, more maturely is consistent with a dubious condition of the secondary sexual characters is equally widespread in possible occurrence. Amongst insects which have been much studied, such as the butterflies and moths, many curious conditions have been described; sometimes the pattern and colour of the upper and under sides, sometimes of different parts of the same wing, sometimes of different wings, present the characters of different sexes. Among birds and mammals, the secondary sexual characters of one sex, such as size, pattern or colour, weapons or habits, may appear in animals with the so-called of the other sex, in every degree of development, reaching to an apparently complete reversal. In many cases these abnormal occurrences are associated with arrest of the functional activity of the primary organs of sex, by disease, accident, or decay, and the failure of the necessary stimulus would certainly serve to explain cases where the apparent reversal is no more than the suppression of a specialization in one direction. The facts, however, go further; it appears if the suppression of femaleness allows the development of a latent maleness.

**Determination of Sex.**—Answers to the question why a particular individual becomes a male or a female fall into two groups, in one of which it is supposed that external conditions determine the result, in the other that the sexual cells differ from the first. G. Canestrini suggested that the sex was determined by the number of spermatozoa which entered the ovum, but fuller knowledge of the details of fertilization (see Reproduction) has made it plain that only a single spermatozoon, normally conjugates with the ovum, whilst polyspermy, if it occur, results only in abnormalities which do not proceed to full development. W. Thury in 1863 and C. Dusing in 1853 urged that ova fertilized soon after ovulation may rise to females, whilst those impregnated later produced males. Some evidence exists as to the effect of delay in fertilization; V. Iensen (1851) suggested that females were produced when both ova and spermatozoa were in the most active condition, and H. M. Vernon (1898) has shown that in hybridizing Echinoderms the fresher gamete appears to exert a greater influence, but it cannot be said that there is definite evidence as to the determination of sex on such lines. J. D. Hofacker in 1825 and M. T. Sailer in 1830 collected a large series of statistics from which they drew the conclusion that such an influence does not exist. When the male sex is produced, whilst, many observers have attempted to draw conclusions from the comparative vigour of the parents. Popular belief and some observations with regard to the breeding of domestic animals have led to the inference that the sex of the offspring tends to be that of the least vigorous parent, and such a theory, as it would appear to imply the existence of a natural law for rectifying the proportions of the sexes, has gained more attention than the facts supporting it would justify, and several unbiased observers have interpreted the events in the sense that the vigorous parent produces his or her own sex. It is to be noted that such properties of the parents should not be considered, whilst external conditions determine the sex, for they would apply equally well. It is the case that there was a power of selection amongst gametes of predetermined sex. A large number of investigators have been led to believe that conditions of nutrition are of importance, and this view is specially plausible in the case of vertebrates, if it be accepted that the embryos pass through a hermaphrodite condition. E. Yung found that when tadpoles were reared under normal conditions, the proportion of male to female was about as 43 to 57, but that when a flesh diet was provided the percentage of females was very greatly increased. It has been noted that when Aphides are under the favourable conditions of summer temperature and nutrition, they produce only females, but that the advent of autumn brings with it an equality in sex production. Mrs Treat showed that starred
caterpillars turned into males; E. Maupas, in the case of Rotifers, and other observers in the cases of some Crustacea, have similarly pointed to a relation between abundant nutrition and the excessive production of females. In nearly every case, however, other observers have either obtained conflicting results, or placed another interpretation on similar results, whilst in none of the cases has the factor of selective mortality been sufficiently excluded. Even were it proved that a correlation existed between excessive diet and over-production of females, it might be that the incidence of mortality was differential. Many attempts have been made to derive information by examining the statistics of human births in times of plenty and of hardship, but the results are inconclusive. C. Darwin, reviewing the evidence, was disposed to believe that the proportions of the sexes varied, that the higher the expense of production male and female offspring was inherited, and that by the process of natural selection the sex adjusted to the needs of the species, but he was too cautious to lean to any particular view as to the nature of the determining factors. C. M. Dusén (1883 and 1885) also believed in the existence of such a power of adaptation or adjustment, and attributed it to the action of a large number of external conditions. P. Geddes and J. A. Thomson (1889) similarly came to the conclusion that factors external to the sexual cells had a predominating importance, and these authors linked the determination of sex with their general theory of the nature of sex. They regarded sex as an expression of a difference of character in the katabolism to be observed throughout the living world, and supposed that femaleness was specially associated, was in fact an outcrop of the anabolic or constructive processes of living matter, whilst maleness represented the katabolic, destructive or liberating processes. Their view ranges many diverse facts in apparent harmony, but has to encounter many facts that apparently contradict it. In a later work J. A. Thomson himself (1907) assigns less weight to his own theory, and quotes with approval T. H. Morgan's suggestion that the determination of sex may be brought about in different fashions in different cases.

Theories as to sex being predetermined in the sexual cells have been numerous, but it is only recently that any exact evidence appearing to point to such a conclusion has been adduced. When parthenogenesis (see REPRODUCTION) was first being investigated, it was found that eggs which gave rise to females were different from those which produced males, but when it was demonstrated that at least in many cases there was the further difference as to whether the eggs were fertilized or not, it was assumed that the presence or absence of fertilization determined the sex. Physicists have repeatedly propounded the theory that one ovary produces eggs capable of developing only into females, the other only those capable of giving rise to males. Thus, as Correns has shown, the oviposition of human beings ovulation takes place alternately from the ovaries. From this it would follow that the sex resulting from one fertilization known, the sex of a subsequent fertilization could be predicted, once having chosen the sex of the fertilization, selection in this view, however, rests on no satisfactory evidence and remains uncorrelated with any observations as to the structure of the eggs themselves. On the other hand, more exact workers, using modern cytological methods, have accumulated striking facts as to the existence of different kinds of sexual cells, the differences relating chiefly to the nuclear changes which occur in ovogenesis and spermatogenesis, and have been established with such certainty in the case of the spermatozoa. E. B. Wilson (1906) has given a full summary and discussion of various interpretations of these observations. In over a hundred species of insects, Myriapods and Arachnids, two kinds of spermatocytes are produced. The spermatocytes are formed in pairs, and the mother cell which gives rise to each pair exhibits, in the ordinary fashion of nuclear division, paired chromosomes, one member of each pair passing into each spermatoozoon. The mother cell gives rise to two spermatocytes, one containing the nucleus of a single large chromosome, but sometimes represented by a group of peculiar chromosomes, which, for convenience, Wilson terms the "X" or "female" chromosome. The other contains a "Y" or "male" chromosome. Wilson found that when fertilization takes place, the "X" chromosome is lost, one or other of the spermatoozoa from which it results that spermatoozoa of two kinds are formed in equal numbers, the difference being the presence or absence of the "X" element. Eggs fertilized by "X" spermatoozoa contain the "X" chromosome and remain unfertilized by spermatoozoa without it becomes male. There is evidence that in some cases (e.g. bees) the spermatoozoa devoid of the "X" element degenerate, with the result that any fertilized eggs must be females. E. B. Wilson's suggestion, advanced in the most cautious way, is that the "X" element referred to in the last paragraph is the hereditary factor, or at least the hereditary factor. Wilson's theory, in which the difference between the male and female organism is that the male comes from an egg which, developing either parthenogenetically or after fertilization, contains only a single unit of the "X" element, while the female, in the absence of the "X" element, in the absence of the "Y" element, in the absence of the "Y" element, results from the fusion of two "X" units. The ovum of a sexual egg in the process of maturation discards half of its chromos administrator; if it is fertilized by a spermatoozoon containing an "X" unit it gives rise to a female, and if it is fertilized by one without this it becomes a male. A large number of different forms of nuclear change have been described in the spermatoozoa of different kinds of female. Correns's theory avoids the unlikely supposition that spermatoozoa which are sex-hybrid, the female to be homozygous or pure female, the male character being dominant. Ova were, therefore, different. If spermatoozoa of this kind were fertilized, the female egg was fertilized by a female spermatoozoon the result naturally was a female, but when it was fertilized by a male spermatoozoon the result was a sex-hybrid appearing as a male because of the presence of the "X" and the "Y" elements. Wilson's theory avoids the unlikely supposition that selective fertilization, but breaks down in those cases of parthenogenesis where the unfertilized egg produced by a female fertilized by a male of the same species, and which he supposed that the female is a hybrid with femaleness dominant while the male is pure male. The female in fact contains a factor which makes her female whilst the male is a male because it is without this factor. This view, however, leaves unexplained the existence of two kinds of spermatoozoa and involves a series of elaborate hypotheses to reconcile it with cases of parthenogenesis. L. Doncaster has elaborated the extremely ingenious suggestion that the Mendelian pairs are not male and female, but male and absence of sex and female and absence of sex. The male is a pure male but produces two kinds of spermatoozoa, those with the determinant for sex and those without it. The normal female is a sex-hybrid and produces male and female spermatoozoa in equal numbers. With the absence of fertilization, female eggs being fertilized by male spermatoozoa and giving rise to females, whilst male eggs are fertilized by spermatoozoa of the other sex factor is added. By this factor a process of dominance, by which it is brought about. C. Darwin's theory of sexual selection remains the only comprehensive suggestion. Like his
theory of the Origin of Species, it is not a theory of the origin of variations. He starts from the observed fact that variations occur and are transmitted; he supposes that by natural selection individuals favoured by suitable variations are preserved, and that in such a fashion the divergence which leads to the origin of species has come about; he also supposes that by sexual selection, or preferential mating, the differences between male and female have been brought about. "Courage, pugnacity, perseverance, strength and size of body, weapons of all kinds, musical organs, both vocal and instrumental, bright plumage and markings, and ornamental appendages have all been indirectly gained by the one sex or the other, through the influence of love and jealousy, through the appreciation of the beautiful in sound, colour or form, and through the exertion of a choice; and these powers of the mind manifestly depend on the development of the cerebral system" (Descent of Man, ii. p. 402). The characters to be accounted for are confined to one sex and are in close relation with the breeding season and breeding habits. In those cases where they differ from the females, the males are the most active in courtship, and the best armed, and are rendered the more so because the females probably were the smaller species in size for the possession of the female, or display their attractions before her, and either by conquest or by being preferred have an advantage over less favoured males. Darwin was in some doubt as to how far it could be shown that such favoured individuals had a chance of leaving more progeny, except in cases where males were polygamous or much more numerous than females, but he supposed that on the whole the more vigorous female would be the first to breed and to choose the more attractive males, or be captured by the stronger males. A. R. Wallace was able to accept the theory of sexual selection, except in the most limited way, and in particular laid great stress on the want of evidence, to which Darwin himself has called attention, that females prefer more highly ornamented males. He thought that natural selection was sufficient to explain sexual differences such as the possession of weapons, scents and call-notes. With regard to colour and pattern, he regarded these as natural outcrops of specialized structure, better displayed in more vigorous animals, and therefore likely to increase under natural selection. The inconspicuous patterns and dull colours of females he believed to depend on natural selection, and to be associated with the less vigorous and less athletic habits of the females whilst engaged in their duties to their young. More recent writers have shown that in a large number of cases brilliant colours and patterns are in themselves really protective (see COLOURS OF ANIMALS), so that the facts left to be explained by the theory of sexual selection are still further restricted.


SEXBY, EDWARD (d. 1658), English soldier, "leveller" and conspirator, was a private soldier in Cromwell’s regiment of horse when first heard of about 1643. He opposed the proposal to disband the army in 1647; and as one of the "agitators" he resisted all attempts to come to an arrangement with Charles I., and advocated extreme democratic doctrines. He rose to the rank of colonel, but was deprived of his commission in 1651. When Cromwell assumed the title of lord protector, Sexby became one of his most violent opponents, and in 1655 tried to bring together the levellers and the royalists in a combination to overturn the government. Compelled to fly from England, he intrigued with the Spanish government with a view to restoring Charles II., as the only feasible plan for destroying Cromwell; and he was concerned in several plots to assassinate the protector. About 1668 he was captured in Italy and was beheaded for toryism entitled "Killing No Murder," under the pseudonym William Allen, which was printed in Holland and distributed in England. In July 1657 he was arrested in disguise in England, whither he had come to attempt Cromwell’s assassination, and he died in the Tower of London on the 13th of January 1658.

SEXPARTITE VAULT, in architecture, a name given to the single bay of a vault, which, in addition to the transverse and diagonal ribs, has been divided by a second transverse rib, forming six compartments. The principal examples are those in the Abbey-aux-Hommes and Abbaye-aux-Dames at Caen (1127). These probably were way-sides and other vaults (now looked upon as transitional), Notre Dame, Paris, and the cathedrals of Bourges, Laon, Noyon, Sensi and Sens; from the latter cathedral the sexpartite vault was brought by William of Sens to Canterbury, and it is afterwards found at Lincoln and in St. Faith’s Chapel, Westminster Abbey.

SEXTANT, an instrument for measuring angles on the celestial sphere. The name (indicating that the instrument is furnished with a graduated arc equal to a sixth part of a circle) is now only used to designate an instrument employing reflection to measure an angle; but originally it was introduced by Tychon Brahe, who constructed several sextants with two sights, one on a fixed, the other on a movable radius, which the observer pointed to the two objects of which the angular distance was to be measured.

The imperfections of the astrolabe and cross-staff for taking altitudes (see NAVIGATION) were so evident that the idea of employing reflection to remove them occurred independently to several minds. R. Hooke contrived two reflecting instruments. The first, described in his Posthumous Works (p. 503), had only one mirror, which reflected the light from one object into a telescope which is pointed directly at the other. Hooke’s second instrument: reflections by a mirror eye placed at the side of a quadrant could at the same time see the images formed in two telescopes, the axes of which were radii of the quadrant and which were pointed at the two objects to be measured. This plan is described in Hooke’s Animadversions to the Machina Coelastis of Hevelius, published in 1674, while the first one seems to have been communicated to the Royal Society in 1666. Newton also studied this subject, but nothing was known about his ideas till 1742, when a description in his own handwriting of an instrument devised by him was found among Halley’s papers and printed in the Philosophical Transactions (No. 465). It consists of a sector of brass, the arc of which, though only equal to one-eighth part of a circle, is divided into 90°. A telescope is fixed along a radius of the sector, the object-glass being close to the centre and having outside it a plane mirror inclined 45° to the axis of the telescope, and intercepting half the light which would otherwise fall on the object-glass. One object is seen through the telescope, while a movable radius, carrying a second mirror close to the first, is turned round the centre until the second object by double reflection is seen in the telescope over each with the first. But before Newton’s plan was published the sextant in its present form had come into practical use. On May 13, 1731, John Hadley described an “octant,” employing double reflection, and a fortnight later he exhibited the instrument. On the 20th of May Halley stated to the Royal Society that Newton had invented an instrument founded

1 Hadley described two different constructions: in one the telescope was fixed along a radius as in Newton’s form, in the other it was placed in the way afterwards universally adopted; an octant of the first construction was made in the summer of 1730, according to a statement made to the Royal Society by Hadley’s brother George on Feb. 7, 1734.
SEXTANT

on the same principle, and had communicated an account of it to
the society in 1699, but on searching being made in the minutes
it was only found that Newton had shown a new instrument
for observing the moon and stars for the longitude at sea,
being the old instrument mended of some faults, but nothing
was found in the minutes concerning the principle of the construc-
tion. Halley had evidently only a general conception of the
plan, and at a meeting of the Royal Society on December
16, 1731, he declared himself satisfied that Hadley’s idea was
different from Newton’s. The new instrument was tried in
August 1732 on board the “Chatham” yacht by order of the
Admiralty, and was found satisfactory, but otherwise it does
not seem to have superseded the older instruments for at least
twenty years. Hadley’s instrument could only measure angles
up to 90°; but in 1737 Captain Campbell of the navy, one of
the first to use it assiduously, proposed to enlarge it so as to measure
angles up to 130°, in which form it is now generally employed.

Independently of Hadley and Newton the sextant was
invented by Thomas Godfrey (1704-1740), a poor glazier
in Philadelphia. In May 1732 James Logan wrote to Halley that
Godfrey had about eighteen months previously shown him a
common sea quadrant “to which he had fitted two pieces of
looking-glass in such a manner as brought two stars at any
distance to coincide.” The letter gave a full description
of the instrument; the principle was the same as that of Hadley’s
first octant, which had the telescope along a radius. At the
meeting of the Royal Society on January 37, 1734, Thomas
Campbell, sworn before the mayor of Philadelphia, took the
oath, proving that Godfrey’s quadrant was made about November
1730, that on November 28 it was brought by G. Stewart, mate, on board
a sloop, the “Truman,” John Cox, master, bound for Jamaica,
and that in August 1731 it was used by the same persons on
a voyage to Newfoundland. The statement that a brother of
Godfrey, a captain in the West India trade, sold the quadrant at
Jamaica to a Captain or Lieutenant Hadley of the British navy,
who brought it to London to his brother, an instrument maker
in the Strand, is devoid of foundation.

The figure shows the construction of the sextant. ABC is a light
framework of brass in the shape of a sector of 60°, the limb AB
having a graduated arc of silver (sometimes of gold or platinum) inlaid.
It is held in the hand by a small handle, the back of which is
tactically to measure the altitude of
an object, or in the plane passing through two objects the angular
distance between them which is required.
It may also be mounted on a stand. CD is a radius moviable
round C, where a small plane mirror of silvered plate-glass is
fixed perpendicular to the plane of the sextant and in the line
of the mirror. F is a vernier read through a microscope, also
a clamp and a tangent screw for giving the arm CD a slow motion.
At E is another mirror “the
horizon glass,” also perpendicular to the plane of the sextant and parallel to CB.
A smaller telescope fixed across CD, parallel to the plane CAB and pointed to the mirror E. As
only the lower half of E is used to within the observer’s eye. If CD has been moved so as to make the image of
a star or of the limb of the sun coincide with that of the horizon, it is
seen that the angle SCH (the altitude of the star or solar limb) equals
twice the angle BCD. The limit of error in doing so is chiefly
the necessity of doubling the measured angle, a space marked as a

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1 See Professor Rigaud, Naut. Mag. vol. ii. No. 21. John Hadley
was a country gentleman of independent means, and the fact that he
was the first to bring the construction of reflecting telescopes to any
perfection has made many authors believe that he was a professional
instrument maker. His brother George, who assisted him, was a
barrister.
adjustment is correct; if not, the adjusting screws in the collar of the uppers may be moved until the coincidence is exact.

"Centring error" is very insufficient, but cannot be corrected. In an indifferent instrument it may be sufficient to vitiate the result of any observations on only a few occasions.

The course of the arc is a relative one, and varies with the angle measured, being generally smaller as the angle is greater; but the index arm becoming bent, or any part of the frame reacting, it is possible that its sight should be a little affected from varying temperature, and defective graduation, will all produce errors which it is generally impossible to disentangle, and they are all included in the one correction for centring. This correction is found by taking a number of measures with the sextant (for index error) with the true angle. The most accurate method, because it employs a large number of observations for the same or nearly the same angle, is to determine the mean circle of every star, and the arc at the horizon at various altitudes. Double the difference between the resulting latitude by each star and the mean latitude will be the centring error for an angle equal to the double altitude of that star, that is, the angle actually measured by the sextant, index error being ascertained and applied before working out. Measurement of the angles between stars, compared with their calculated apparent distance, is another method. At Kew Observatory (National Physical Laboratory) the centring error is determined for certain angles by fixed collimators. Including, as it does, errors from so many causes, the correction does not remain perfectly steady, and it should be ascertained from time to time.

In a good sextant the error should not exceed one minute over the whole of the arc.

SEXTON (an early corruption of "sacristan," properly the keeper of sacred vessels and vestments, Med. Lat. sacristus or sacrista), a minor officer of an ecclesiastical parish. In the early church the sexton was identical with the ostiarius, or door-keeper, whose duty it was to open and shut the church at certain hours, guard the church and all it contained, and prevent the heathen and excommunicated from entering. The duties of the modern sexton are practically those of the ancient sacristan. He has the custody of all the church vestments, is responsible for keeping the church clean, for the bell-ringing and lighting, and looks after the vestments and instrumenta of the church, but the duties may vary by custom in different parishes. Where his duties are confined to the care of the vestments and instrumenta the right of appointment of a sexton lies in the churchwardens; if his duties are confined to the churchyard the right of appointment is in the incumbent, and where his duties extend to both the right of appointment is jointly in the churchwardens and the incumbent.

By custom, however, he may be appointed by the parishioners. He usually has a freehold in his office, and in some parishes is entitled to certain customary fees.

SEXTUS EMPIRICUS (2nd and 3rd centuries A.D.), physician and philosopher, lived at Alexandria and at Athens. In his medical work he belonged to the "methodical" school (see Asclepiades), as a philosopher, he is the greatest of the later Greek Sceptics. His claim to eminence rests on the facts that he developed and formulated the doctrines of the older Sceptics, and that he handed down a full and, on the whole, an impartial account of the members of his school. His works are two, the Pyrrhonian Hypotheses and Against the Mathematici (ed. Fabriciis, Paris, 1621, and Beckler, Berlin, 1842).

See Brochard, Les Sceptiques grecs (1887); Pappenheim, Lebensverhältnisse des Sextus Empiricus (Berlin, 1875); Jourdain, Sextus Empiricus (Paris, 1858); Patrick, Sextus Empiricus and the Greek Sceptics (1899), with trans. of Pyrrh. Hyp. I.; also Sceptrum.

SEYCHELLES, an archipelago in the Indian Ocean, consisting of forty-five islands—besides a number of rocks or islets—situated between 3° 38' and 5° 45' S., and 52° 55' and 53° 50' E. Together with the Amirantes, Cosmолод, Aldabra, and other islands they form the British colony of Seychelles. The outlying islands lie south-west of the Seychelles group and between that archipelago and Madagascar.

In all ninety islands there is a total area of over 156 sq. m. are under the Seychelles government. There are in addition 40,000 to 50,000 sq. m. of coral reefs and sand islands.

The Seychelles lie, with two exceptions, towards the centre of a large submarine bank and are all within the 50 fathoms line. Mahé, the largest and most central island, is 934 m. N.N.W. of Mauritius, 970 m. E. by N. of Zanzibar and 690 m. N.E. of the northernmost point of Madagascar. The other chief islands form two principal groups: (i) Praslin, 26 m. N.N.E. of Mahé, and the adjacent smaller islands of La Digue, Félicité, East Silver, West Silver, Curieuse and Aride; (ii) Silhouette, 14 m. W. by N. of the "Groenland" of North Island, and La Digue, the most southerly Platte; on the northern edge of the reef are Bird and Denis islands. The general aspect of the islands is one of great beauty and fertility, and in the opinion of General C. G. Gordon they formed the Garden of Eden.

Mahé is 17 m. long, and from 4 to 7 broad and of highly irregular shape, with an area of about 55 sq. m. There are small areas of lowlands, chiefly at the mouths of the river valleys, but most of the island is mountainous, and in general the hills rise abruptly from the sea. There are ten heights between 200 and 300 ft., and seven over 400 ft. The highest point is Morne Seychellois, 1,674 ft.; next comes Tête d'Ours, 1,657 ft. Both these mountains are in the northern half of the island. The main ridge runs north and south along the line of the greatest diameter, and from the heights descend many torrents, the whole island being well watered. The principal harbour, Port Victoria, is on the north-east coast in 4° 37' S., 55° 27' E. It is approached by a deep channel through the coral reef which fringes the entire eastern side of the island. Of the small islands close to Mahé the chief are St. Anne and Cerf, off the east, and Conception and Thérèse on the west.

The Island is 8 m. long and from 1 to 3 m. broad, has an area of about 27 sq. m. and its highest point is 1260 ft.; La Digue covers 4 sq. m. and its greatest height is 1175 ft.; Silhouette is roughly circular in shape, covers 8 sq. m. and culminates in Mon Plaisir, 2473 ft. None of the other islands exceeds 1 sq. m.

Geology.—Except Bird and Denis islands, which are of coralline limestone, the Seychelles are of granite, with in places fringing reefs of coral based on granite foundations. The granite is of the same origin as the closely related to that of Madagaskar and throughout the islands is closely uniform in its composition, but exhibits different kinds of ores. The rocks are deeply furrowed and cut into ridges, evidence of the long periods during which they have been subjected to tectonic action.

There is no granite in the islands, but there is an average of four-fifths of the islands, which nowhere exhibit any trace of volcanic action, recent or remote. The islands are regarded as a remnant of the continental land which in remote geological ages united North Africa and India. J. Stanley Gardiner supposes that when first cut off the Seychelles were the size of the present bank—about 12,000 sq. m. This cutting off was caused largely by subsidence, though partly by marine action. The subsequent dwindling of the 12,000 sq. m. to 156 divided into many small islands is attributed to marine action which had its chief force in the Eocene and Miocene periods.

Climate.—The climate is healthy and equal, and for a tropical country the temperature is moderate. It varies on the coast from about 68° to 88° F., falling at night in the higher regions to 67° or 68° F. It is only a mean temperature, the days being warm, the south-east monsoon blows from May to October, which is the dry season, and the west-north-west monsoon from December to March. During April and November the winds are variable. The average annual rainfall on the coast is 100-8 in.; it increases to about 1150 at a height of 600 ft. and at heights exceeding 2000 ft. is about 150 in. The Seychelles lie outside the track of the hurricanes which occasionally devastate Réunion and Mauritius and are also immune from earthquakes. The public health is good, and fevers and plague are unknown.

Flora and Fauna.—Both flora and fauna include species and genera peculiar to the Seychelles. Of these the best known is the Lecythis schecellarum, a palm tree indigenous only in Praslin Island—but since introduced into Curieuse—dated for its fruit, the so-called Maldivie double coco-nut or coco de mer. The nut was long known off the islands of South America, but its birthplace is now East Africa, and it has been found on almost all the islands of the East Indian Archipelago and other coasts, was thought to grow on a submarine palm, and, being esteemed a sovereign antidote to poisons (Lusiod, x. 136), commanded proportionate prices in the East. This palm will grow to a height of 100 ft., and shows enormous fern-like leaves. Another tree found only in the islands is the capucin (Northea schecellarum), whose massive dead trunks are a striking feature in the landscape. This tree has abundant branches and is completely covered with them. The seeds, probably introduced from Mauritius. The islands were formerly densely wooded, but only patches of forest remain. The central mountain zone of Mahé was in 1900 acquired by the government for a sugar beet plant. The sugar beet is planted in vacant portions of forest, and the remaining portions of forest are under the government. The forests of the coast belt resembled those of the coral islands of the neighbouring parts of the Indian Ocean, with their typical species, Pandanus and Pandaná. And, a little island, the banyan (Ficus), Pisonia and Hernandia. The coco-nut, now a conspicuous feature of the coast
SEYCHELLES

flora, is probably not indigenous. The forests of the granitic land, of which typical patches remain, had the characteristics of a tropical moist region, palms, shrubs, climbing and tree ferns growing luxuriantly, the trees on the mountain sides, such as the Pandanus sechel- lensis, are usually found higher up than 100 ft. Of timber trees the bois gayac has disappeared, but bois de fer (Stedaminia sidaroxylon) and bois de natte (Mabia seckellarum) still flourish on Silhouette Island. Besides the cutting down for building purposes of the timber trees the jungle was largely cleared for the plantation of vanilla; while a multitude of other tropical plants have been introduced tending to the extermination of the indigenous flora. The most important of the trees introduced by 1900 are various kinds of rubber, including Para (Hvea Brasilensis), which grows well. For other introduced plants see below, Industries.

The indigenous fauna, so far as its limited range affords comparison, remains intact. The 60 species of birds are of Indo-Australian in origin, and the only varieties are the rat and bat. The dagon, which formerly frequented the waters of the islands, does so no longer. The reptiles include the land snakes and crocodiles. A species of crocodile, known as the testudo elephantina, is found only in the Aldabra Islands.

The imports consist chiefly of cotton goods and hardware from Great Britain; rice, flour and cotton from India, sugar and rum from Mauritius, coffee from Aden, wines and spirits and clothing from France. The value of the imports and exports (exclusive of specie) for the six years 1899-1904 was $306,520: exports, $377,613. The increase of trade is indicated by the figures for 1907 (a record year) to 1909. In the three years the value of imports was $253,584, that of exports $355,366. Over 75% of the total trade is with India, primarily with Madras, where the Seychelles dollar is the Indian rupee (=16d.), with the subsidiary coinage of Mauritius.

**Towns and Communications.—**The only town of any size is the capital Victoria (or Mahé), picturesquely situated at the head of an excellent harbour. Many of the houses are built of massive coral, Portes gaimardii, hewn into square blocks which at a distance glisten like white marble. The port is a coaling station of the French navy and is connected by telegraphic cables with Zanzibar, Mauritius, and Madagascar. There is no inland telegraph system. All the islands are well provided with metalled roads. Regular monthly communication with Mauritius is maintained by the Messageries Maritimes steamers. The French and British lines service the South African and Indian ports. The government employ steam vessels for passenger and mail services between the islands, and there are large numbers of sailing craft belonging to the islanders.

**Inhabitants.—**Like Mauritius, Réunion and Rodriguez the Seychelles were uninhabited when first visited by Europeans; though fragments of ruins found on Praslin and Frigate islands may indicate the presence of man in earlier centuries. The islands were colonized by Mauritian and Bourbon creoles; the white element, still predominantly French, has been strengthened by immigration from the French colonies in the Antilles. The first systematic introduction of slaves from Mauritius, and the negro element has been increased by the introduction of freed slaves from East Africa. There has been also an immigration of Chinese and, in larger numbers, of Indians (mainly from the Malabar coast). An official report issued in 1910 stated that the greater part of the valuable town property had passed into the hands of Indians, and that Indians and Chinese had the bulk of the retail trade. Of the coloured population those born in the Seychelles of negro, or negro-Indian blood are known as "enfants des îles." They speak a rude creole patois, based on French but with a large admixture of Indian, Bantu and English words. The Seychellois are of fine physique, and are excellent and fearless sailors.

At the census of 1881 the inhabitants numbered 14,081, in 1891 the figure was 16,603 and in 1901 the population numbered 19,237, of whom 9,805 were males and 9,432 females. The population on December 31st, 1900, was officially estimated at 22,400, or 149·59 persons per sq. m. The pure white population is about 600. About two-thirds of the inhabitants are Roman Catholics.

**Agriculture and Industries.—**Apart from fisheries the wealth of the islands depends upon agriculture, and the industries connected therewith. These are fostered by the government, which in 1901 created an agricultural board and established a botanical station at Victoria. Spices (cloves, cinnamon, nutmegs) were the chief articles of trade in the 18th century, and these with cotton, coffee, tobacco, sugar, maize and rice were the main crops grown until about 1850. Bananas, yams, &c., were also largely cultivated, and there was considerable trade in copra, fish oil and tortoise-shell, whaling being carried on, chiefly by Americans and French, in the neighbouring seas. Subsequently cocoa was cultivated extensively, and from about 1890 sending vanilla largely superseded the other crops; in 1899 the vanilla exported was valued at over $100,000 out of a total export of $450,000, and from 1896 to 1903 the crop represented more than half the total value of the exports. Owing to increased competition, and in consequence of the price of vanilla having fallen to one-third of its highest figure, after 1900, and the Seychellois, though still producing vanilla in large quantities, paid greater attention to the products of the coconuts—copra, soap, coco-nut oil and coco-nuts—to the development of the banana and coffee industries, the preparation of rum and essential oils, the cultivation of rubber trees, the preparation of banana flour, the growing of sugar canes, and the distillation of rum and essential oils. The manufacture of calico and beads, and the export of salt fish are important industries. Minor exports are bird-oil, olive oil, beche-de-mer. From the leaves of the coco-de-mer are made baskets and hats.

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1 The gigantic land tortoise (Testudo elephantina) is found only in the Aldabra Islands.
occupied by the British, to whom they were ceded by the treaty of Paris in 1814. Throughout this period Mons. J. B. Quéau de Quincy (1748–1827) administered the islands. This remarkable man, a Parisian by birth, became governor of the Seychelles in 1780 under the monarchy, continued to serve under the First Republic, and Napoleon I.,—acknowledging the British authority which was recognized by the British, and the British government, who had been his father's colonel. Here he acquired a superb mastery of horsemanship, and many stories are told of his feats, the best known of which was his riding between the sails of a wind-mill in full swing. In 1740 he was commissioned a cornet in the margrave's regiment of Russian cuirassiers. Serving as a subaltern in the first Sianese War, he was taken prisoner in May 1742 after gallant a defence that King Frederick offered to exchange an Austrian capitan for him. In 1743 the king made him a captain in the 4th Hussars, and he brought his squadron to a state of conspicuous efficiency. He served through the second war, and after Hohenfriedberg was promoted major at the age of twenty-four. At the close of the war he had an opportunity of successfully leading 15 squadrons in front of the enemy, and this, with other displays of his capacity of leading cavalry in the searching tests of Frederick's "reviews," secured him promotion in 1752 to the rank of lieutenant-colonel and in 1753 to the command of the 8th cuirassiers. Under his hands this regiment soon became a pattern to the rest of the army. In 1755 he was made colonel. Next year the Seven Years' War, that was to make his name immortal, broke out. In 1757, regardless of the custom of keeping back the heavy cavalry in reserve, he took his regiment to join the advanced guard, at Prague he nearly lost his life in attempting to ride through a marshy pool, and at Kolin, at the head of a cavalry brigade, he distinguished himself in checking the Austrian pursuit by a brilliant charge. Two days later the king made him major-general and gave him the order pour le mérite, which promotion he felt to be no more than his deserts, for to Zieten's congratulations he responded: "It was high time, Excellency, if they wanted more work out of me. I am already thirty-six." Four times in the dismal weeks that followed the disaster of Kolin, Seydlitz asserted his energy and spirit in cavalry encounters, and on the inimical of Rossbach Frederick, superseding two senior generals, placed Seydlitz in command of the whole of his cavalry. The result of the battle was the complete rout and disorganization of the enemy, and in achieving that result only seven battalions of Frederick's army had fired a shot. The rest was the work of Seydlitz and his 38 squadrons. The same night the king gave him the order of the Black Eagle, and promoted him lieutenant-general. But he had received a wound in the mêlée, and for some months he was away from the army. He rejoined the king in 1758, and at the battle of Zorndorf Seydlitz's cavalry again saved the day and won the victory. At Hochkirch he was captured, and in the great disorder of the Prussian retreat, and in the great disaster of Kunersdorf he was severely wounded in a hopeless attempt to storm a hill held by the Russians. During his convalescence he married Countess Albertine Hacke. He rejoined the army in May 1760, but his health was so impaired that Frederick sent him home again. It was not until 1761 that he reappeared at the front. He now commanded a wing of Prince Henry's army, composed of troops of all arms, and many doubts were expressed as to his fitness for this command, as his service had hitherto been with cavalry. In the closing campaigns of the Seven Years' War Seydlitz was a splendid general. He is known as one of the most resourceful generals in the history of the Seven Years' War, and as one of the best tactical generals of his time. He was also a man of great personal courage, and in the battle of the Flemish (October 29, 1762), in which, leading his infantry and his cavalry in turn, he decided the day. After the peace of Hubertusburg he was made inspector-general of the cavalry in Silesia, where eleven regiments were permanently stationed and whither Frederick sent all his most promising officers to be trained by him. In 1767 he was made a general of cavalry. But his later years were clouded by domestic unhappiness. His wife was unfaithful to him, and his two daughters, each several times married, were both divorced, the elder once and the younger twice. His formerly close friendship with the king, was brought to an end by some misunderstanding and it was only in his last illness, and a few weeks before his death, that they met again. Seydlitz died of paralysis at Ohlau on the 27th of August 1773.

See Varnhagen von Ense, Das Leben des Generals von Seydlitz (Berlin, 1834); and Bismarck, Die kgl. preussische Reiterei unter Friedrich dem Grossen (Karlsruhe, 1837).

SEYMOUR, or St Maux, the name of an English family in which several titles of nobility have from time to time been created, and of which the duchy of Somerset is the head. The family was settled in Monmouthshire in the 13th century. The original form of the name, which has been resumed by the current duchy of Somerset since 1863, seems to have been St Maux, of which Camden says that Seymour was a later corruption. It appears

Colonial Reports ..., Seychelles (1907).
that about the year 1340 Gilbert Marshal, earl of Pembroke, assisted William St Maur to wrest a place called Woundy, near Caldecot in Monmouthshire, from the Welsh. Woundy and Penhow, at the latter of which he made his residence, were the property of Sir Richard St Maur at the end of the 13th century, but they passed away from the family through the marriage of Sir Richard's great-great-granddaughter, the only child of John St Maur, who died in 1359. John St Maur's younger brother Roger married Cecily, one of the daughters and co-heiresses of John Beauchamp of Hāče, Baron Beauchamp de Somerset (d. 1361), who brought to the marriage the last of her father's extensive estates in Somersetshire, Devonshire, Wiltshire, and Suffolk. The eldest son of this marriage was Sir William St Maur, or Seymour (for the later form of the name appears to have come into use about this date), who was an attendant on the Black Prince, and who died in his mother's lifetime, leaving a son Roger, who inherited the estates and added to them by his marriage with Maud, daughter of Sir William Esturni of Wolf Hall, Wiltshire. During the next three or four generations the wealth and importance of the Seymours in the western counties increased, until in the reigns of Henry VII. and Henry VIII. the family held the greatest influence in the western part of England, with the exception of the Barons Seymour of Berry, of some note in public affairs. He took an active part in suppressing the Cornish rebellion in 1497; and afterwards attended Henry at the Field of the Cloth of Gold, and on the occasion of the emperor Charles V.'s visit to England in 1522. The eldest of his ten children was Edward Seymour, 1st duke of Somerset (q.v.), the famous Protector in the reign of Edward VI.; his third son was Thomas Seymour, Baron Seymour of Sudeley (q.v.); and his eldest daughter Jane was third wife of King Henry VIII., and mother of Edward VI. The Protector was twice married; and, probably owing to the infamy of his first wife whom he repudiated about 1535, his titles and estates were entailed first on the issue of his second marriage with Anne, daughter of Sir Edward Stanhope. (See SOMERSET, EARLS AND DUKES OF.)

The Protector's eldest surviving son by his first marriage, Sir Edward Seymour (d. 1593), knight, of Berry Pomeroy, Devon, was father of Sir Edward Seymour (d. 1613) who was created a baronet in 1611; and the baronetcy then descended for six generations from father to son, all of whom were named Edward, until in 1750, on the failure of heirs of the Protector by his second marriage, Sir Edward Seymour, 6th baronet of Berry Pomeroy, succeeded to the dukedom of, and lordship of, Westenhanger, in whose time the family seat at Berry Pomeroy was plundered and burnt by the Roundheads, had a younger brother Henry (1621-1686), who was a close personal attendant of Prince Charles during the Civil War, and bore the prince's last message to his father, Charles I., before the latter's execution. Henry Seymour continued his service to Charles II. in exile, and at the Restoration he received several valuable offices from the king. In 1660 he bought the estate of Langley in Buckinghamshire, where he lived till his death in 1686. In 1685 his son Henry, at the age of seven years, was created a baronet.

Sir Edward Seymour, 4th baronet (1633-1708), speaker of the House of Commons, was elected member of parliament for Gloucester in 1661, and his influence at Court together with his natural abilities procured for him a position of weight in the House of Commons. He was appointed to the lucrative post of treasurer of the navy; and in 1667 he moved the impeachment of Lord Clarendon, which he carried to the House of Lords. In 1672 he was elected speaker, an office which he filled with distinction until 1679, when, having been unanimously re-elected to the Court, the king refused to confirm the choice of the Commons. On the accession of James II., Seymour courageously opposed the arbitrary measures of the Crown; and at the revolution he adhered to the Prince of Orange. In 1691 he became a lord of the treasury, but losing his place three years later he took an active part in the Tory opposition to William's whig ministers; and in later years he was not less hostile to those of Queen Anne, but owing to the ascendency of Marlborough he lost all influence for some time before his death, which took place in 1708. Seymour was not less arrogant than his relative the "Proud Duke" of Somerset; but he was described by Burnet as "the ablest man of his party, the first speaker of the House of Commons that was not bred to the law; a graceful man, bold and quick, and of high birth." Sir Edward Seymour was twice married. By his first wife he had two sons, Edward, 5th baronet, whose son Edward became the 8th duke of Somerset, and William, who became a lieutenant-general; by his second wife, a daughter of Alexander Popham of Littlecote, he had six sons, the eldest of whom, Popham, on succeeding to the estates of his mother's cousin, Edward, earl of Conway, assumed the name of Conway in addition to that of Seymour. Popham was killed in an engagement near Wiltshire in 1660, and his estate was involved on his next brother, Francis, who likewise assumed the name of Conway, and having been created Baron Conway in 1703 was the father of Francis Seymour Conway (1719-1794), created marquess of Hertford in 1793, and of field-marshal Henry Seymour Conway (q.v.). (See HERTFORD, EARLS AND MARQUESSES OF.)

The eldest son of the Protector's second marriage, Edward Seymour (1537-1621), was relieved by act of parliament in the reign of Queen Mary from the attainder passed on his father in 1551, and was created Baron Beauchamp and earl of Hertford in 1560. In 1600, when his eldest son Henry had obtained a patent declaring that after his father's death he should become earl of Hertford, He, however, died before his father, leaving three sons, one of whom, William, became 2nd duke of Somerset; and another, Francis, was created Baron Seymour of Trowbridge in 1641. The latter had at first taken an active part in the opposition in the House of Commons to the government of Charles I., having been elected member for Wiltshire in 1626. He represented the same constituency in both the Short and the Long Parliaments; and he refused to pay ship money in 1639. When, however, the popular party in the Commons proceeded to extreme measures, Francis Seymour refused his support, and was removed from his seat in the peereage; he voted in the House of Lords against the attaint of Strafford, and in 1642 he joined Charles at York and fought on the royalist side throughout the Great Rebellion. He died in 1664. His grandson Francis, 3rd baron, succeeded to the dukedom of Somerset in 1675; and on the death of his nephew Algernon, 7th duke of Somerset, in 1750, the male line of the Protector by his second marriage became extinct, and the dukedom reverted to the elder line, the 6th baronet of Berry Pomeroy becoming 8th duke of Somerset.

Henry Seymour (1729-1805), a son of the 8th duke of Somerset's brother Francis, was elected to the House of Commons in 1763; in 1778 he went to France, attending his residence at Prunay, near Versailles, he became the lover of Madame du Barry, many of whose letters to him are preserved in Paris. He was twice married, and in addition to children by both wives he had an illegitimate daughter, Henriette Félicité, who married Sir James Doughty-Tichborne, by whom she was the mother of Sir Roger Tichborne, impersonated in 1871 by the famous impostor Arthur Oulton.

Hugh Seymour (1639-1806), a younger son of Francis Seymour-Conway, marquess of Hertford, was a distinguished naval officer who saw much active service especially under Lord Howe, in whose ship he acted as first lieutenant on the 1st June 1794, was given a conspicuous part. His son George Francis Seymour (1787-1870), admiral of the fleet, began his naval career by serving under Nelson; in 1818 he became Sergeant-at-arms in the House of Lords, a post which he retained till 1841, when he was promoted to the rank of rear-admiral and appointed a lord of the admiralty; his eldest son, Francis George Hugh Seymour (1812-1884), succeeded his cousin Richard Seymour-Conway as 4th marquess of Hertford in 1870. Lord Hugh Seymour's youngest son, Sir Horace Beauchamp Seymour, was the father of Frederick Beauchamp Paget Seymour, Baron Alcester (q.v.).

A younger branch of the great house of Seymour is said to have
SEYMOUR, H.—SEYMOUR OF SUDELEY

settled in Ireland in the reign of Elizabeth, from which Sir Michael Seymour (1766-1834) claimed descent. Sir Michael, like so many of his predecessors, was an admiral. He rendered distinguished service in the last decade of the 18th century. He lost an arm in Howe's action on the 1st of June 1794 and between 1796 and 1810 was commander of the "Spitfire," and afterwards of the "Amethyst," he carried the charge of the green eagle into the Channel. Seymour became a rear-admiral in 1832, and died two years later while in chief command on the South American station. On the 16th of February 1842 he entered the navy in 1813, and attained the rank of rear-admiral in 1854, in which year he served under Sir Charles Napier in the Baltic during the war with Russia. In 1836 he was in command of the China station, and conducted the operations against the English language of the opium pirates from the lorch, "Arrow"; he destroyed the Chinese fleet in June 1837, took Canton in December, and in 1838 he captured the forts on the Pei-ho, compelled the Chinese government to consent to the treaty of Tien-tsing. In 1836, he was made a rear-admiral.


SEYMOUR, HORATIO (1810-1886), American statesman, was born at Pompey, Onondaga county, New York, on the 31st of May 1810. His ancestor, Richard Seymour, a Protestant Episcopal clergyman, was an early settler at Hartford, Connecticut, and his father, Henry Seymour, who removed from Connecticut to New York, was prominent in the Democratic party in the state, being a member of the "Albany Regency" and serving as state senator in 1815, 1819 and in 1823, and as canal commissioner in 1820-1822. The younger Seymour studied in 1824-1825 at Geneva Academy (afterwards Hobart College), and then at a military school in Middletown, Conn., and was admitted to the bar in 1832. He was military secretary to Governor W. L. Marcy in 1833-1839, was a member of the New York Assembly in 1842, in 1844 and in 1845, being speaker in 1845; mayor of Utica in 1843, and in 1852 was elected governor of the state over Washington Hunt (1811-1867), the Whig candidate, who had defeated him in 1850. He voted in 1854 a bill prohibiting the sale of intoxicating liquors (which was declared unconstitutional almost immediately after its re-enactment in 1855), and in consequence he was defeated in 1854 for re-election as governor by Myron Holley Clark (1866-1892), the Whig and temperament candidate. Seymour was a conservative on national issues and supported the administrations of Pierce and Buchanan; he advocated compromise to avoid secession in 1860-1861; but when war broke out he supported the maintenance of the Union. In 1863-1865 he was again governor of New York state. His opposition to President Lincoln's policy was mainly in respect to emancipation, military administration, and the peace of the Union. The president tried to win him over early in 1863, but Seymour disapproved of the measures of C. S. Vandalbe in May, and, although he responded immediately to the call for militia in June, he thought the Conscription Act unnecessary and unconstitutional and urged the president to postpone the draft until its legality could be tested. During the draft riots in July he proclaimed the city and county of New York in a state of insurrection, but in a speech to the rioters adopted a tone of conciliation—a political error which injured his career. He was defeated as Democratic candidate for governor in 1868, but in 1869 he was nominated presidential candidate by the National Democratic Convention. He ran with P. Blair, Jr., being nominated for the vice-presidency, but Seymour and Blair carried only eight states (including New York, New Jersey and Oregon), and received only 80 electoral votes to 214 for Grant and Colfax. Seymour did not re-enter political life, refusing to be considered for the United States senatorship from New York in 1876. He died on the 12th of February 1886 in Utica, at the home of his sister, who was the wife of Roscoe Conkling.

The Public Record of Horatio Seymour (New York, 1868) includes his official papers between 1856 and 1868.

SEYMOUR, THOMAS DAY (1848-1907), American educator, was born in Hudson, Ohio, on the 1st of April 1848. He graduated in 1870 at Western Reserve College, where his father, Nathan Perkins Seymour, was long professor of Greek and Latin. Here, after studying in Berlin and Leipzig, the son was professor of Greek in 1872-1880; and he became professor of Greek at Yale University in 1880, holding his position until his death in New Haven on the 31st of December 1907. He was from 1887 to 1901 chairman of the managing committee of the American School of Classical Studies at Athens, and was president of the Archaeological Institute of America from 1903. Except for his Selected Odes of Pindar (1882), his published work was practically confined to the study of the Homeric poems: An Introduction to the Language and Verse of Homer (1885); Homer's Iliad, i.-iv. (1887-1890); Homeric Vocabulary (1889); Introduction and Vocabulary to School Odyssey (1897); and Life in the Homeric Age (1907). He edited, with Lewis R. Packard and John W. White, the "College Series of Greek Authors."

SEYFURB, a city of Jackson county, Indiana, U.S.A., about 59 m. S. by E. of Indianapolis. Pop. (1900) 532; (1910) 321 foreign-born; (1910) 6505. It is served by the Baltimore & Ohio, South-Western (which has repair shops here), the Pittsburg, Cincinnati, Chicago & St. Louis, and the Southern Indiana railways, and by the Indianapolis, Columbus & Southern and the Indianapolis & Louisville interurban electric lines. The city has a considerable trade in produce, and has various manufactures, including woollen-goods, furniture, carriages and automobiles. Seymour was settled in 1854, incorporated as a town in 1864, and chartered as a city in 1887.

SEYMOUR OF SUDELEY, THOMAS SEYMOUR, BARON (c. 1505-1540), lord high admiral of England, was fourth son of Sir John Seymour of Wolf Hall, Wiltshire, and younger brother of the Protector Edward Seymour, 1st duke of Somerset. His sister Jane Seymour became the third wife of Henry VIII in 1536, and another sister, Elizabeth, married Thomas Cromwell's son. Seymour's connexions thus ensured his promotion, and he quickly won the favour of the king, who gave him many grants of land and employed him in the royal household and on diplomatic missions abroad. From 1540 to 1542 he was at Vienna, and in 1543 in the Netherlands, where he served with distinction in the war against France, holding for a short time the supreme command of the English army. In 1544 he was rewarded with the post of master of the ordnance for life, becoming admiral of the fleet a few months later, in which capacity he was charged with guarding the Channel against French invasion. Henry VIII. left Seymour a legacy by his will, and is said to have directed that he should be raised to the peerage. In February 1547 he was accordingly created Baron Seymour of Sudeley and appointed lord high admiral. From this time forward he was mainly occupied in intrigue against his brother the Protector, of whose power he was jealous; and he aimed at procuring for himself the position of guardian of the young king, Edward VI. Several matrimonial projects entered into Seymour's schemes for gratifying his ambitions. No sooner was Henry VIII. dead than the lord high admiral tried to secure the princess (afterwards queen) Elizabeth in marriage; and when this project was frustrated he secretly married the late king's widow, Catherine Parr, whose hand he had vainly sought as early as 1543. He also took steps to ingratiate himself with Edward, and proposed a marriage between the king and the Lady Jane Grey. He entered into relations with pirates on the western coast, by whom it was his duty as lord high admiral to suppress, with a view to securing their support; and when the Protector invaded Scotland in the summer of 1547 Seymour fomented opposition to his authority in his absence. On the death of his wife in September of the next year he made renewed attempts to marry the princess Elizabeth. Somerset strove ineffectually to save his brother from ruin, and in January 1549 Seymour was arrested and sent to the Tower; he was convicted of treason, and executed on the 20th of March 1549.

SEYNE SUR MER—SFORZA, CATERINA

(187?; Mary A. F. Green, Letters of Royal and Illustrious Ladies of Greece, the Crimea, and the Court of the Reign of Mary [3 vols., London, 1860]). See also SOMERSET, EDWARD SEYMOUR, 1st Duke of, and the authorities there cited.

SEYNE SUR MER, or LA SEYNE, an industrial suburb of Toulon, S.W. of that port, and connected with it by rail and steamer. Pop. (1901) 21,002. It owes its importance to the shipbuilding trade, the Société des Forges et Chantiers de la Méditerranée having here one of the finest shipbuilding yards in Europe (it is a branch of the greater establishment at Marseilles), which gives employment to about 3000 workmen.

SFAX (Arabic Asfakis or Sefus), a city of Tunisia, second in importance only to the capital, 78 m. due S. of Sousse, on the Gulf of Gabes (Syrtis Minor) opposite the Kerkena Islands, in 36° 43' N., 10° 46' E. It occupies the site of the ancient Taphrunt, of which few vestiges remain. The town consists of a European quarter, with streets regularly laid out and fine houses, and the Arab town, with its kasbah or citadel, and tower-flanked walls pierced by three gates. Many of the private houses, mosques and zawias are good specimens of native art of the 17th and 18th centuries. North-east of the native town is a camp for the European garrison. Sfax was formerly the starting-point of a caravan route to Central Africa, but its inland trade now extends only to the phosphate region beyond Gabes, which town, while in the 13th century and the 16th onwards from Sfax to Mahares, runs inland past Gafsa. With Sfax there is regular communication by steamer and motor car. Olive oil is manufactured, and the fisheries are important, notably those of sardines and of octopuses (exported to Greece).

The prosperity of the town is largely due to the export trade in phosphates, esparto grass, oil, almonds, pistachio nuts, sponges, wool, &c. There is in the Gulf of Gabes a rise and fall of 5 ft. at spring tides, which is rare in the Mediterranean. Formerly the only anchorage at Sfax was 2 m. from shore; but a harbour, completed in 1900 and entered by a channel 11 m. long and 241 ft. deep, which extends some miles from the coast, was opened in 1903. The two harbours of Sfax to Mahares run inland past Gafsa.

Round the town for 5 or 6 m. to the north and west stretch orchards, gardens and country houses. Dates, almonds, grapes, figs, peaches, apricots, olives, and in rainy years melons and cucumbers grow there without irrigation. Two enormous cisterns, maintained by public charitable trusts, supply the town with water in dry seasons.

Sfax is on the site of a Roman settlement. Many of its Arab inhabitants claim descent from Mahomet. The Sicilians under Roger the Norman took it in 1091, and during the 13th century it was an independent state. There were separate basins for fishing boats and a dock for torpedo-boat flotilla. Round the town for 5 or 6 m. to the north and west stretch orchards, gardens and country houses. Dates, almonds, grapes, figs, peaches, apricots, olives, and in rainy years melons and cucumbers grow there without irrigation. Two enormous cisterns, maintained by public charitable trusts, supply the town with water in dry seasons.

The town of Sfax was once a major center of commerce in the Mediterranean, dealing in a wide range of products such as phosphates, sardines, and octopuses. The town's prosperity was largely due to its trade with Central Africa, which continued until the 16th century when it shifted to the phosphate region beyond Gabes. Today, Sfax remains an important port and city in Tunisia, known for its historical significance and its contributions to the local economy.

SFORZA, the name of a famous Italian family. They were descended from a peasant contadine, Giacomo or Muzio (sometimes abbreviated into Giacomuzzo) Attendolo, who was born at Colignola in the Romagna on the 10th of June 1369, and in command of a band of adventurers by whom he had been kidnapped, took the name of Sforza in the field, became constable of Naples under Joanna II., fought bravely against the Spaniards, served Pope Martin V., by whom he was created a Roman count, and was drowned on the 4th of January 1424 in the Pescara near Aquila while engaged in a military expedition. His natural son Francesco (1401-1466) succeeded in command of the condottieri, and showed military genius and political acumen. He served the Visconti against the Venetians and then the Venetians against the Visconti; he attacked the pope, deprived him of the Romagna, and later defended him; he married in 1441 Bianca, the only daughter of Filippo Maria Visconti, duke of Milan, and received Pontremoli and Cremona as dowry and the promise of succession to the duchy of Milan. The short-lived Ambrosian republic, which was established by the Milanese on the death of Visconti (1447), was overthrown by Francesco, who made his triumphal entry as duke of Milan on the 25th of March 1450. He suppressed a revolt at Piacenza, formed close alliances with Cosmo de' Medici and with Louis XI. of France, and exercised authority over Lombardy, several districts south of the Po and even Genoa. He rebuilt the fortress of Porto Givoia and constructed the Great Hospital and the canal of the Martesana, which connects Milan with the Adda; and his court, filled with Italian scholars and Greek exiles, speedily became one of the most splendid in Italy. His daughter Ippolita was renowned for her Latin discourses.

Francesco left several sons, among whom were Galeazzo Maria, Lodovico, surnamed the Moor, and Ascagno, who became a cardinal.

Galeazzo Maria, who succeeded to the duchy, was born in 1441. He was a lover of art, eloquent in speech and of absolute and cruel. He was assassinated at the porch of the cathedral on the 26th of December 1476 by three young Milanese noblemen desirous of imitating Brutus and Cassius. His daughter Caterina is separately noticed. Gian Galeazzo (1469-1494), son of Galeazzo, succeeded to the duchy under the regency of his mother, Bona of Savoy, who was supplanted in her power (1481) by the boy's uncle, Lodovico the Moor. Gian Galeazzo married Isabella of Aragon, granddaughter of the king of Naples, and his sudden death was attributed by some to poison administered by the regent. His daughter, Bona Sforza (1493-1555), married the son of Poland, H. H. Czestochowa. She displayed remarkable ability in government, built castles, schools and hospitals, but increased corruption and intrigue at the Polish court. She was accused of having killed her daughter-in-law, the wife of Sigismund Augustus. On the death of her husband she returned to Italy and was poisoned (1557) by her paramour Pappacoda.

Lodovico the Moor [Lodovico il Moro] (1451-1508), who is famed as patron of Leonardo da Vinci and other artists, had summoned Charles VIII. of France to his aid (1494) and received the Duchy of Milan under a formal capitulation from the French king. In the same year, but finding his own position endangered by the French policy, he joined the league against Charles VIII., giving his niece Bianca in marriage to Maximilian I. and receiving in return imperial investiture of the duchy. Lodovico was driven from Milan by Louis XII. in 1499, and although reinstated for a short time by the Swiss he was eventually delivered over by them to the French (April 1500) and died a prisoner in the castle of Loches. Francesco, the son of Gian Galeazzo, was also taken to France by Louis XII., became abbot of Marmoutiers, and died in 1511.

The two sons of Lodovico, Massimiliano and Francesco Maria, took refuge in Germany; the former was restored to the duchy of Milan by the Swiss in 1512, but after the overwhelming defeat of his allies at Marignano (1515) he abandoned his rights to Francis I. for a pension of 30,000 ducats, and died at Paris in 1530; the latter was put in possession of Milan after the defeat of the French at La Bochica in 1522, subsequently entered the Italian League against the emperor Charles V., was unpopular on account of oppressive taxation, and his death (24th of October 1535) marked the extinction of the direct male line of the Sforza dynasty.

The dukedoms of Sforza-Casarini and the counties of Santa Fiora are descended from collateral branches of the Sforza family.

entry into Imola in 1477 Caterina Sforza went to Rome with her husband, who, with the help of the pope, wrested the lordship of Forlì from the Ordelaffi. Riario, by means of many crimes, for which his wife seems to have blamed him, succeeded in accumulating great wealth, and on the death of Sixtus in August 1484, he sent Caterina to Rome to occupy the castle of St Angelo, where she was held in safety and took strenuous measures for the defence. She surrendered it by his order to the Sacred College. They then returned to their fiefs of Imola and Forlì, where they tried to win the favour of the people by erecting magnificent public buildings and churches and by abolishing taxes; but want of money obliged them to levy the taxes once more, which caused dissatisfaction. Riario's enemies conspired against him with a view to making Francescheto Cybò, nephew of Pope Innocent VIII., lord of Imola and Forlì in his stead. Riario thereupon instituted a system of persecution, in which Caterina was implicated, against all whom he suspected of making a conspiracy against him. In 1488 he was murdered by three conspirators, his palace was sacked, and his wife and children were taken prisoners. The castle of Forlì, however, held out in Caterina's interest, and every inducement and threat to make its order its surrender proved useless; having managed to escape from her captors she penetrated into the castle, whence she threatened to bombaby the city, refusing to come to terms even when the besiegers threatened to murder her children. With the assistance of Lodovico il Moro she was able to defeat her enemies and to regain possession of all her dominions; she wreaked vengeance on those who had opposed her, and the forces of the Venetians. Alexander VI., however, angered at her refusal to agree to a union between his daughter Lucrezia Borgia and her son Ottaviano, and coveting her territories as well as the rest of Romagna for his son Cesare, issued a bull on the 9th of March 1499, declaring that the house of Riario had forfeited the lordship of Imola and Forlì and conferring those fiefs on Cesare Borgia. The latter began his campaign of conquest with Caterina Sforza's dominions and attacked her with his whole army, reinforced by 14,000 French troops and by Louis XII. Caterina placed her children in safety, and took command of her forces. The castle of Imola was held by her henchman Dionigi Naldi of Brighella, until resistance being no longer possible he surrendered (December 1499) with the honours of war. Caterina absolved the citizens of Forlì from their oath of fealty, and defended herself in the citadel. She repeatedly beat back the Borgia's onslaughts and refused all his offers of peace. Finally when the situation had become untenable and having in vain given orders for the magazine to be blown up, she surrendered, after a battle in which large numbers were killed on both sides, to Alexander VI. and Bessy, batti di Dijon, entrusting herself to the honour of France (January 1500) and the council of Forlì. Her life was spared, but she was not saved from the outrages of the treacherous Cesare; she was afterwards taken to Rome and held a prisoner for a year in the castle of St Angelo, whence she was liberated by the same batti di Dijon to whom she had surrendered at Forlì. She took refuge in Florence to escape from persecution from the Borgia, and the power of that sinister family having collapsed on the death of Alexander VI. in 1503, she attempted to regain possession of her dominions. In this she failed owing to the hostility of her brothers-in-law, Pierfrancesco and Lorenzo de Medici, and as they wished to get her son Giovanni de Medici (afterwards Giovanni dalle Bande Nere) into their hands, she took refuge with him in the convent of Annalena, where she died on the 20th of May 1500.

See Buriel, Vita di Caterina Sforza-Riario (Bologna, 1783); F. Oliva, Vita di C. Sforza, signora di Forlì (Forlì, 1921); Pietro Posillipo Dall'Onda, Caterina Sforza (Rome, 1893); English translation by F. Sylvester (1898). This is the best and most complete work on the subject; E. M. de Vogüé, Histoire et poésie (Paris, 1898) and Ermanno Minzi, "C. Sforza," in the Nuova Antologia for May 1 and May 15, 1893.

**SGAMBATI—SHAD**

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**SGAMBATI, GIOVANNI** (1843— ), Italian composer, was born in Rome on the 28th of May 1843, of an Italian father and an English mother. His early education took place at Trevi, in Umbria, and there he wrote some church music, and obtained experience as a singer and conductor. In 1860 he settled in Rome, and definitely took up the work of winning acceptance for the best German music, which was at that time neglected in Italy. The influence and support of Liszt, who was in Rome from 1861, was naturally of the greatest advantage to him, and concerts were given in which Sgambati conducted works which he played on the piano. His composition of this period (1864-1865) included a quartet, two piano quintets, an octet, and an overture. He conducted Liszt's *Dante* symphony in 1866, and made the acquaintance of Wagner's music for the first time at Munich, whither he travelled in Liszt's company. His first album of songs appeared in 1870, and his first symphony was played at the Quirinal in 1881; this, as well as a piano concerto, was performed in the course of his first visit to England in 1882; and at his second visit, in 1891, his *Sinfonia epitalamica* was given at the Philharmonic. His most extensivive work, a Requiem Mass, was performed in Rome 1901. His many plans for forte works have won permanent success, but his influence on Italian musical taste has been perhaps greater than the merits of his compositions, which, though often poetical and generally effective, are often slight in style.

**SHABATS** (also written *Shabatos* and *Saboc*), a town in Servia, capital of the Drina department, on the right bank of the river Save. Pop. (1900) 12,072. It has a medieval castle, built in 1470 by Sultan Mahammed II., to facilitate the incursion of the Turks into Slavonia, which lies on the left bank of the river. It is the principal commercial town of north-western Servia, exporting cereals, wines, cattle, and pigs to Hungary. It is well known for the excellent white honey which comes from its neighbourhood. The district is rich in lime-trees. Shabats is the seat of a bishop, of the district prefecture, and of a tribunal. It has a college and a library, and a garrison occupies the old fort. The people of Shabats have the reputation of being the wondest in Servia.

**SHAD**, the name given to certain migratory species of herrings (*Clupea*), which are distinguished from the herrings proper by the total absence of teeth in the jaws. Two species occur in Europe, and are distinguished from each other and from all others called allis shad (*Clupea alosa* or *Alosa vulgaris*), and the other known as twaite shad (*Clupea fonta* or *Alosa fonta*). Both, like the majority of herrings, are greenish on the back and silvery on the sides, but they are distinguished from the other European species *Clupea* by the presence of a large blackish blotch behind the gill-opening, which is succeeded by a series of several other similar spots along the middle of the side of the body. So closely allied are these two fishes that their distinctness can be proved only by an examination of the gill-apparatus, the allis shad having from sixty to eighty very fine and long gill-rakers along the concave edge of the first branchial arch, whilst the twaite shad possesses from twenty-one to twenty-seven stout and stiff gill-rakers only. In their habits and geographical distribution also the two shads are similar. They inhabit the coasts of temperate Europe, the twaite shad being more numerous in the Mediterranean. While they are in salt water they live singly or in very small companies, but during May (the twaite shad some weeks later) they congregate, and in great numbers ascend large rivers, such as the Severn (and formerly the Thames), the Seine, the Rhine, the Nile, &c., in order to deposit their spawn. A few weeks after they drop down the river, lean and exhausted, numbers floating dead on the water; but only a small proportion seem to regain the sea. At Elbeuf on the Seine above Rouen there was formerly a hatchery for the artificial
propagation of shad. The eggs are spawned in May and June, and are similar in the two species; they are heavier than the fresh water in which they develop, but unlike the herring’s eggs they are not adhesive. They remain free and separate at the bottom of the river, cast leeward by the current or up by the tide. In the Elbe the twain shad spawns below Hambourg, the allis shad above Dresden. In November the fry have reached 3 to 5 in. in length, but very few specimens in their second year have been found in rivers. The majority seem to descend to the sea before their first winter, to return when mature. On rivers in which these fishes make their periodical appearance they have become the object of a regular fishery. They are much esteemed on the middle Rhine, where they are generally known as “Malisch.” The allis shad is caught at a size from 15 to 24 in., and is better flavoured than the twain shad, which is generally smaller.

Other, but closely allied species, occur on the Atlantic coasts of North America, all surpassing the European species in importance as food-fishes and economic animals. The shad, for instance, viz., the American shad (Clupea sapidissima), the gaspareau or ale-wife (C. malionocca or vermiculata), and the menhaden (C. menhaden).

**SHADDOCK (Citrus decumiana),** a tree allied to the orange and the lemon, presumably native to the Malay and Polynesian islands, but generally cultivated throughout the tropics. The leaves are like those of the orange, but downy on the under surface, and the young shoots are covered with white down. The flowers are large and white, and are succeeded by very large globose fruits like oranges, but paler in colour, and with a more pungent flavour. The name Shaddock is asserted to be that of a captain who introduced the tree to the West Indies. The fruit is also known under the name of grape-fruits, pommeles, and “forbidden fruit.” Varieties occur with yellow and reddish pulp; and there are also pear-shaped varieties.

**SHADOOF (Arab. shadif),** an apparatus for drawing water, used in the East generally, and particularly on the Nile for the purpose of irrigation. It consists of an upright frame on which is suspended a long pole at a distance of about one-fifth of its length from one end; to the other end is attached a bucket or skin bag, while at the short end a weight is suspended serving as the counterpoise of a lever. The vessel containing the water is then swung round and emptied into the runnel, which conveys the water in the direction required.

**SHADOW (O. Eng. Schadewe, secedu; a form of “shade”; connected with Gr. σκοτεινός, darkness).** When an opaque body is placed between a screen and a luminous source, it casts a “shadow” on the screen. If the source be a point, such as the instantaneous point of a small pole, as in the case of the sun, it will cast a shadow which is a circle. If the source be a line close to a bright flame, the outline of the shadow is to be found by drawing straight lines from the luminous point to the edge of the opaque body. These lines form a cone. The points of contact form a line on the opaque body separating the illuminated from the non-illuminated portion of its surface. Similarly, when these lines are produced to meet the screen, their points of intersection with it form a line which separates the illuminated from the non-illuminated parts of the screen. This line is called the boundary of the geometrical shadow, and its construction is based on the assumption that light travels in straight lines (in homogeneous media) and suffers no deviation on meeting an obstacle. But a deviation, termed diffraction, does occur, and consequently the complete theory of shadows involves considerations based on the nature of the rays themselves; this aspect is treated in Diffraktion of Light. An instance of the geometrical shadow is seen when a very small gas-jet is burning in a ground-glass shade near a wall. In this case the cone, above mentioned, is usually a right cone with its axis vertical. Thus the boundary of the geometrical shadow is a portion of a circle on the roof, but a portion of an hyperbola on the vertical wall. If the roof be not horizontal, we may obtain in this way any form of conic section. Hints in projection may be obtained by observing the shadows of bodies of various forms cast in this way by rays which virtually diverge from one point: e.g. how to place a plane quadrilateral of given form so that its geometrical shadow may be a square; how to place an elliptic disk, with a small hole in it, so that the shadow may be circular with a bright spot at its centre, &c.

When there are more luminous points than one, we have only to draw separately the geometrical shadows due to each of the sources, and then superpose them. A new consideration now comes in. There will be, in general, portions of all the separate geometrical shadows which overlap one another in some particular regions of the screen. In such regions we still have full shadow; but around them there will be other regions, some illuminated by one of the sources alone, some by two, &c., until finally we come to the parts of the screen which are illuminated directly by all the sources. There will evidently be still a definite boundary of the parts wholly unilluminated, i.e. the true shadow or umbra, and also a definite boundary of the parts wholly illuminated. The region between these boundaries—i.e. the partially illuminated portion—is called the penumbra.

Fig. 1 represents the shadow of a circular disk cast by four equal luminous points arranged as the corners of a square—

![Fig. 1](image_url)

the disk being large enough to admit of a free overlapping of the separate shadows. The amount of want of illumination in each portion of the penumbra is roughly indicated by the shading. The separate shadows are circular, if the disk is parallel to the screen. If we suppose the number of sources to increase indefinitely, so as finally to give the appearance of a luminous surface as the source of light, it is obvious that the degrees of darkness at different portions of the penumbra will also increase indefinitely; i.e. there will be a gradual increase of brightness in the penumbra from total darkness at the edge next the geometrical shadow to full illumination at the outer edge.

Thus we see at once why the shadows cast by the sun or moon are in general so much less sharp than those cast by the electric arc. For, practically, at moderate distances the arc appears as a mere luminous point. But if we place a body at a distance of a foot or two only from the arc, the shadow cast will have as much of penumbra as if the sun had been the source. The breadth of the penumbra when the source and screen are nearly equidistant from the opaque body is equal to the diameter of the luminous source. The notions of the penumbra and umbra are important in considering eclipses (q.v.). When the eclipse is total, there is a real geometrical shadow—very small compared with the penumbra (for the apparent diameters of the sun and moon are nearly equal, but their distances are as 370:1); when the eclipse is annular, the shadow is all penumbra. In a lunar eclipse, on the other hand, the earth is the shadow-casting body, and the moon is the screen, and we observe things according to our first point of view.

Suppose, next, that the body which casts the shadow is a large one, such as a wall, with a hole in it. If we were to plug the hole, the whole screen would be in geometrical shadow. Hence the illumination of the screen by the light passing through
the hole is precisely what would be cut off by a disk which fits the hole, and the complement of fig. 1, in which the light and shade of interchanged, would give therefore the effect of four equal sources of light shining on a wall through a circular hole. The umbra in the former case becomes the fully illuminated portion, and vice versa.

Thus we see how, when a small hole is cut in the window-shutter of a dark room, a picture of the sun, and bright clouds about it, is formed on the opposite wall. This picture is obviously inverted, and also perverted, for not only are objects depicted lower the higher they are, but also objects seen to the right are depicted to the left, &c. But it will be seen unperverted (though still inverted) if it be received on a sheet of ground glass and looked at from behind. The smaller the hole (so far at least as geometrical optics is concerned) the less confused will the picture be. As the hole is made larger the illuminated portions from different sources gradually overlap; and when the hole becomes a window we have no indications of such a picture except from a body (like the sun) much brighter than the other external objects. Here the picture has ceased to be one of the sun, it is now a picture of the window. But if the wall could be placed room off, the picture would be one of the sun. To prevent this overlapping of images, and yet to admit a good deal of light, is one main object of the lens which usually forms part of the camera obscura (q.v.).

The bars or images of the sun in this way is well seen on a calm sunny day under trees, where the sunlight penetrating through small chinks forms elliptical spots on the ground. When detached clouds are drifting rapidly across the sun, we often see the shadows of the bars of the window on the walls or floor suddenly shifted by an inch or two, and for a moment very much more sharply defined. They are, in fact, shadows cast by a small aperture in a piece of note paper. Place this close to the eye, and an inch or so behind it place another piece of paper with a fine needle-hole in it. The light of the sky passing through the needle-hole forms a bright picture of the T on the retina. The eye perceives this picture, which gives the impression of the T much magnified, but turned upside down.

Another curious phenomenon may fitly be referred to in this connexion, viz. the phantoms which are seen when we look at two parallel sets of palisades or railings, one behind the other, or look through two parallel sides of a meat-safe formed of perforated zinc. The appearance presented is that of a magnified set of bars or opacities which appear to move rapidly as we walk past. Their origin is the fact that where the bars appear nearly to coincide the apparent gaps bear the greatest ratio to the dark spaces; i.e. these parts of the field are the most highly illuminated. The exact determination of the appearances in any given case is a mere problem of convergents to a continued fraction. But the fact that the apparent rapidity of motion of this phantom may exceed in any ratio that of the spectator is of importance—enabling us to see how velocities, apparently of impossible magnitude, may be accounted for by the mere running along of the condition of visibility among a group of objects no one of which is capable of an extravagant rate.

SHADWELL, THOMAS (c. 1642–1692), English playwright and miscellaneous writer, was born about 1642, at Santon Hall, Norfolk, according to his son's account. He was educated at Bury St Edmund's School, and at Caix College, Cambridge, where he entered in 1666. He left the university without a degree, and joined the Middle Temple. In 1668 he produced a prose comedy, The Sullen Lovers, or the Imperfects, based on Les Fâcheux of Molière, and written in avowed imitation of Ben Jonson. His best plays are Epsom Wells (1672), for which Sir Charles Sedley wrote a prologue, and the Square of Alsatia (1688). Alsatia was the cant name for Whitefriars, then a kind of sanctuary for persons liable to arrest, and the play represents, in dialogue full of the argot of the place, the adventures of a young heir who falls into the hand of the sharper there. For fourteen years from the production of his first comedy to his memorable encounter with Dryden, Shadwell produced a play nearly every year. These productions display a genuine hatred of shams, and a rough but honest moral purpose. They are disfigured by indecencies, but present a vivid picture of contemporary manners.

Shadwell is chiefly known for the unfortunate Mac Flecknoe of Dryden's satire, the "last great prophet of tautology," and the literary son and heir of Richard Flecknoe—"The rest to some faint meaning make pretence; But Shadwell never deviates into sense."

Dryden had furnished Shadwell with a prologue to his True Widow (1679), and in spite of momentary differences, the two had been apparently on friendly terms. But when Dryden joined the court party, and produced Absalom and Achitophel and The Medal, Shadwell became the champion of the true-blue Protestants, and made a scurrilous attack on the poet in The Medal of John Boyes: a Satire against Folly and Knavery (1682). Dryden immediately retorted in Mac Flecknoe, or a Satire on the True Blue Protestant Poet, T.S. (1682), in which Shadwell's personalities were returned with interest. A month later he contributed to Nahum Tate's continuation of Absalom and Achitophel satirical portraits of Elkanah Settle as Doeg and of Shadwell as Og. In 1687 Shadwell attempted to answer these attacks in a version of the tenth satire of Juvenal. At the Whig triumph in 1688 he superseded his enemy as poet laureate andlished the Office of Steward royal. He died at Chelsea on the 19th of November 1692.

His son, CHARLES SHADWELL, was the author of The Fair Quaker of Deal and other plays, collected and published in 1720. A complete edition of Shadwell's works was published by his son Sir John Shadwell in 1720. His other dramatic works are—The Royal Shepherds (1676, in which John Fountain's Rewards of Virtue; The Humorist (1671); The Miser (1672), adapted from Molière; Psyche; The Libertine (1676); The Virtuoso (1676); The history of Timon of Athens the Man-hater (1780),—on the Shakespearean adaptation see O. Beher, Shakespeare i. 1672. Timon of Athens (Rostock, 1897); A True Widow (1679); The Woman Captian (1680), revived in 1744 as The Prodigal; The Lancashire Witches and Tague O'Dwyer, the Irish Priest (1682); Bury Fair (1682); The Amorous Beggar, with the second part of Tague O'Dwyer (1690); The Scourers (1691); and The Volunteers, or Stockjobbers, published posthumously (1693).

SHÀFI'I [Mahmammad ibn Idrîs ash-Shàfî'î] (677–820), the founder of the Shafiite school of canon law, was born in A.H. 150 (A.D. 767) of a Koreshitbe (Quraishite) family at Gaza or Ascalon, and was brought up by his mother in poor circumstances at Mecca. There, and especially in intercourse with the desert tribe of Hudail, he gained a knowledge of classical Arabic and old Arabian poetry for which he was afterwards famous. About 170 he went to Medina and studied canon law (fikr) under Malik ibn Anas. After the death of Malik in 179 legend takes him to Yemen, where he is involved in an 'Ahd conspiracy, carried prisoner to Bagdad, but pardoned by Harîm al-Kashid. He was certainly pursuing his studies, and he seems to have come to Bagdad in some such way as this and then to have studied under Hanifite teachers. He had not yet formulated his own system. After a journey to Egypt, however, we find him in Bagdad again, as a teacher, between 193 and 198. There he had great success and turned the tide against the Hanifite school. His method was to restore the sources of canon law which Abû Hâna'îl, had destroyed by inclining too much to speculative deduction. Instead, he laid equal emphasis upon the four—Koran, tradition, analogy, and agreement. See further, under MAHOMMEDAN LAW. In 198 he went to Egypt and the Shafiite law then became perhaps the most prosperous in the Arab world. He was received as the leading orthodox authority in law of his time. There he developed and somewhat changed the details of his system, and died in 204 (A.D. 820). He was buried to the south-east of what is now Cairo, and a great dome (erected c. A.D. 1240) is conspicuous over his tomb.

SHAPIRO—SHAFTESBURY, 1ST EARL OF

SHAPIRO, PETER PAVLOVICH, BARON (1670–1739), Russian statesman, one of the ablest coadjutors of Peter the Great, was of obscure, and in all probability of Jewish, extraction. He first made himself useful by his extraordinary knowledge of languages, and soon afterwards had the appointment of clerk in the Russian Foreign Office for many years, subsequently accompanying Peter on his travels. Made a baron and raised to the rank of vice-chancellor, he displayed diplomatic talents of the highest order. During the unlucky campaign of 1711, he succeeded against all expectations in concluding the peace of the Pruth (see Turkey: History). Peter left him in the hands of the Turks as a hostage, and on the rupture of the peace he was imprisoned in the Seven Towers. Finally, however, with the aid of the British and Dutch ambassadors, he defeated the diplomacy of Charles XII. of Sweden and his agents, and confirmed the good relations between Russia and Turkey by the treaty of Adrianople (June 5th, 1713). On the institution of the colleges or department of state in 1718, Shafirov was appointed vice-president of the department of Foreign Affairs, and a senator. In 1723, however, he was deprived of all his offices and sentenced to death. The capital sentence was commuted on the scaffold to banishment, first to Siberia and then to Novgorod. Peculations and disorderly conduct in the senate were the offences charged against Shafirov, and with some justice. On the death of Peter, Shafirov was warned of the approach of the new general, in the person of his late master. He had previously (1717), in an historical tract on the war with Charles XII, in which Peter himself collaborated, epitomized, in a high panegyric style, some of the greatest exploits of the tsar-regenerator. The successful rivalry of his supplancer, Andrei Osterman, prevented Shafirov from holding any high office during the last fourteen years of his life.

See B. M. Solovev, History of Russia, vols. xii.–xvi. (Russ.) (Petersburg, 1895).

(R. N. B.)

SHAFT (O. Eng., seeafi, from scæfian, to shave; the word is common to Teutonic languages, and signifies, smoothed rod or blade.) Originally a name, also a term for a staff or handle. Here used as an adjective, as in shafting. Hitherto the head is attached; hence the word is applied to the handle of a tool, and to the pair of bars between which a horse is harnessed to a vehicle, and in machinery to connecting bars or rods conveying power from one part of a machine to another. It is also applied to an opening sunk in the ground for mining or other purposes (see Shaft-Sinking). This use is probably due to the use of Ger. Schacht, a variant of schaft. In architecture the term "shaft" is applied to the body of a column between the capital and the base. In Romanesque work shafts are occasionally seen with a pedestal on each side of the capital. In the chevron, or flattened vertically or in spirals; the most beautiful examples of the latter being found in the cloisters of St. Peter lateran and at St. Paul's outside the walls at Rome, where they are enriched with mosaics. Perhaps the earliest ornamented shafts are those of the Parthian palace, now the mosque, at Diarbekr in Mesopotamia.

SHAFTESBURY, ANTHONY ASHLEY COOPER, 1ST EARL OF (1621–1663), son of Sir John Cooper of Rockbourne in Hampshire, and of Anne, the only child of Sir Anthony Ashley, Bart., and was born at Wimpborne St. Giles, Dorset, on the 22nd of July, 1621. His parents were extremely good friends of ages, and he inherited extensive estates in Hampshire, Wiltshire, Dorsetshire and Somersetshire, much reduced, however, by litigation in Chancery. He lived for some time with Sir Daniel Norton, one of his trustees, at Southwick, and upon his death in 1655 with Mr. Tooker, an uncle by marriage, at Salisbury. In 1657 he went as a gentleman-commoner to Exeter College, Oxford, where he remained about a year. No record of his studies is to be found, but he has left an amusing account of his part in the wilder doings of the university life of those days, in which, in spite of his small stature, he was recognized by his fellows as their leader. At the age of eighteen, on the 29th of February 1639, he married Margaret, daughter of Lord Coventry, with whom he and his wife lived at Durham House in the Strand, and at Canary House in Islington. In March 1640, though still a minor, he was elected for Tewkesbury, and sat in the parlia-

dment which met on the 13th of April, but appears to have taken no active part in its proceedings. In 1640 Lord Coventry died, and Cooper then lived with his brother-in-law at Dorchester House in Covent Garden. For the Long Parliament, which met on the 3rd of November 1640, he was elected for Down in Wiltshire, but the return was disputed, and he did not take his seat—his election not being declared valid until the last days of the Rump. He was present as a spectator at the setting up of the king's standard at Nottingham on the 25th of August 1642; and in 1643 he appeared openly on Charles's side in Dorsetshire, where he raised at his own expense a regiment of foot and a troop of horse, of both of which he took the command. He was also appointed governor of Weymouth, sheriff of Dorsetshire for the king and president of the king's council of war in the county. In the beginning of January 1644, however, for reasons which are variously reported by himself and Clarendon, he resigned his governorship and commissions and went over to the parliament. He appeared on the 6th of March before the standing committee of the two Houses to explain his conduct, when he stated that he had come over because he saw danger to the Protestant religion in the king's service, and expressed his willingness to take the Covenant. In July 1644 he went to Dorsetshire on military service, and on the 3rd of August received a commission as field-marshall general. He assisted at the taking of Oxford, and was afterwards appointed by the Army to the office of governor of the fortress there, which he held for the last years of the war, and afterwards relieved by Cromwell. On the 25th of October he was made commander-in-chief in Dorsetshire, and in November he took by storm Abbotbury, the house of Sir John Strangways—an affair in which he appears to have shown considerable personal gallantry. In December he relieved Taunton. His military service terminated at the time of the Self-denying Ordinance in 1645; he had associated himself with the Presbyterian faction, and naturally enough was not included in the New Model. For the next seven or eight years he lived in comparative retirement, and was frequently in the house of commons. He was distinguished for the number of pamphlets which he wrote on civil and ecclesiastical affairs, and was rewarded by being made a peer. He sat for Wiltshire in the Barebones parliament, of which he was a leading member, and where he supported Cromwell's views against the extreme section. He was at once appointed on the council of thirty. On the resignation of this parliament he became a member of the council of state named in the "Instrument." In the first parliament elected under this "Instrument" he sat for Wiltshire, having been elected also for Poole and Tewkesbury, and was one of the commissioners for the election of unworthy ministers. After the 25th of December 1654, he had left the privy council, and henceforward is found with the Presbyterians and Republicans in opposition to Cromwell. His second wife had died during this year; in 1656 he married a third, who survived him, Margaret, daughter of Lord Spencer, niece of the earl of Southampton, and sister of the earl of Sunderland, who died at Newbury. By his three marriages he was thus connected with many of the leading politicians of Charles II.'s reign.

Cooper was again elected for Wiltshire for the parliament of 1657, but Cromwell refused to allow him, with many others of his opponents, to sit. He signed a letter of complaint, with sixty-five excluded members, to the speaker, as also a "Remonstrance" addressed to the people. In the parliament which met on the 20th of January 1658, he took his seat, and was active in opposition to the new constitution of the two Houses. He was also a leader of the opposition in Richard Cromwell's
parliament, especially on the matter of the limitation of the power of the protector, and against the House of Lords. He was throughout these debates celebrated for the "nervous and subtle oratory" which made him so formidable in after days.

Upon the replacing of the Rump by the army, after the breaking up of Richard's parliament, Cooper endeavoured unsuccessfully to take his seat on the ground of his former disputed election for Downton. He was, however, elected on the council of state, and was chosen one of the President. He recommended Scott, along with Whitelocke, of corresponding with Hyde. This he solemnly denied. After the rising in Cheshire Cooper was arrested in Dorsetshire on a charge of corresponding with its leader Booth, but on the matter being investigated by the council he was unanioumously acquitted. In the disputes between Lambert at the head of the military party and the Rump in union with the council of state, he supported the latter, and upon the temporary supremacy of Lambert's party worked indefatigably to restore the Rump. With Monk's commissioners he, with Haseldig, had a fruitless conference on the subject of the co-operation, and joined with eight others of the overthrown council of state in naming him commander-in-chief of the forces of England and Scotland. He was instrumental in securing the Tower for the parliament, and in obtaining the adhesion of Admiral Lawson and the fleet. Upon the restoration of the parliament on the 26th of December Cooper was one of the commissioners to command the army, and on the 2nd of January was made one of the new council of state. On the 7th of January he took his seat on his election for Downton in 1649, and was made colonel of Fleetwood's regiment of horse. He speedily secured the admission of the displaced members staying means while in continual communication with Monk, was again one of the fresh council of state, consisting entirely of friends of the Restoration, and accepted from Monk a commission to be governor of the Isle of Wight and captain of a company of foot. He now steadily pursued the design of the Restoration, but without holding any private correspondence with the king, and only on terms similar to those proposed in 1648 to Charles I., at the Isle of Wight. In the Convention parliament he sat for Wiltshire. Monk cut short these deliberations and forced on the Restoration without condition. Cooper was one of the twelve commissioners who went to Charles at Breda to invite him to return. On his journey he was upset from his carriage, and the accident caused an internal abscess which was never cured.

Cooper was at once placed on the privy council, receiving also a formal pardon for former delinquencies. His first duty was to examine the Anabaptist prisoners in the Tower. In the prolonged discussions regarding the Bill of Indemnity he was instrumental in saving the life of Haseldig, and opposed the clause compelling all officers who had served under Cromwell to refund their salaries, he himself never having had any. He showed indeed none of the avowed temper so common among the politicians of the time. He was one of the commissioners for conducting the trials of the regicides, but was himself vehemently "fallen upon" by Pryme for having acted with Cromwell. He was named on the council of plantations and on that of trade. In the debate abolishing the court of wards he spoke, like most landed proprietors, in favour of laying the burden on the excise instead of on the land, and on the question of the restoration of the bishops carried in the interests of the court an adjournment of the debate for three months. At the coronation in April 1660 Cooper had been made a peer, as Baron Ashley of Wimborne St Giles, in express recognition of his services to the Crown. The Declaration of Indulgence, he concurred. He was nominated by being made earl of Shaftesbury and Baron Cooper of Pavett by a patent dated the 23rd of April 1672. It is stated too that he was offered, but refused, the lord treasurership. On the 17th of November 1672, however, he became lord chancellor, Bridgman having been compelled to resign the seat. As chancellor he issued writs for the election of thirty-six new members to fill vacancies caused during the long recess; this, though grounded upon precedent, was open to suspicion as an attempt to fortify Charles, and was attacked by an angry House of Commons himself the author of a treatise on tolerance. He was now recognized as one of the chief opponents of Clarendon and the High Anglican policy. On the breaking out of the Dutch War in 1664 he was made treasurer of the prizes, being accountable to the king alone for all sums received or spent. He was also one of the grantees of the province of Carolina and took a leading part in its management; it was at his request that Locke in 1669 drew up a constitution for the new colony. In September 1665 the king unexpectedly paid him a visit at Wimborne. He opposed unsuccessfully the appropriation proviso introduced into the supply bill as hindering the due administration of finance, and this opposition seems to have brought about a reconciliation with Clarendon. In 1668, however, he supported a bill to appoint commissioners to examine the accounts of the Dutch War, though in the previous year he had opposed it. In accordance with his former action on all questions of religious toleration he opposed the shameful Five Mile Act of 1665. In 1667 he supported the bill for prohibiting the importation of Irish cattle, on the ground that it would lead to a great fall of rents in England. Ashley was himself a large landlord, and, moreover, was opposed to Ormonde, who would have benefited by the importation. In all other questions of this kind he shows himself far in advance of the economic fallacies of the day. His action led to an altercation with Ossory, the son of Ormonde, in which Ossory used language for which he was compelled to apologize. On the death of Southampton, Ashley was placed on the commission of the treasury, Clifford and William Coventry being his principal colleagues. He appears to have taken no part in the attempt to impeach Clarendon on a general charge of treason. His attention to all trade questions was close and constant; he was a member of the council of trade and plantations appointed in 1670, and was its president from 1672 to 1676. The difficulty of the succession also occupied him, and he co-operated thus early in the design of legitimizing Monmouth as a rival to James. In the intrigues which led to the infamous treaty to Dover he had no part. The treaty contained a clause by which Charles was bound to declare himself a Catholic, and with the knowledge of this Ashley, as a staunch Protestant, could not be trusted. In order to blind him and the other Protestant members of the Cabal a sham treaty was arranged in which this clause did not appear, and it was not until a considerable while afterwards that he found out that he had been duped. Under this misunderstanding he signed the sham Dover treaty on the 31st of December 1670. This treaty, however, was kept from public knowledge, and Ashley helped Charles to hoodwink parliament by signing a similar treaty on the 2nd of February 1672, which was laid before them as the only one in existence. His approval of the attempt of the Lords to alter a money bill led to the loss of the supply to Charles and to the consequent displeasure of the king. His support to the Lord Roos Act, ascribed generally to his desire to ingratiate himself with Charles, was no doubt due in part to the fact that his son had married Lord Roos's sister. So far from advising the "Stop of the Exchequer," he opposed this bad measure; the reasons which he left with the king for his opposition are extant. The responsibility rests with Clifford and Macclesfield. It is stated that the Earl of Shaftesbury, Charles's Declaration of Indulgence, he concurred. He was nominated by being made earl of Shaftesbury and Baron Cooper of Pavett by a patent dated the 23rd of April 1672. It is stated too that he was offered, but refused, the lord treasurership. On the 17th of November 1672, however, he became lord chancellor, Bridgman having been compelled to resign the seat. As chancellor he issued writs for the election of thirty-six new members to fill vacancies caused during the long recess; this, though grounded upon precedent, was open to suspicion as an attempt to fortify Charles, and was attacked by an angry House of Commons
which met on the 4th of February 1673. The writs were cancelled, and the principle was established that the issuing of writs rested with the House itself. It was at the opening of parliament that Shaftesbury made his celebrated "defesa est Carthago" speech against Holland, in which he urged the Second Dutch War, on the ground of the necessity of destroying so formidable a commercial rival to England, excused the Stop of the Exchequer which he had opposed, and vindicated the Declaration of Indulgence. On the 8th of March he announced to parliament that the declaration had been cancelled, though he did his best to induce Charles to remain firm. For affixing the great seal to this declaration he was threatened with impeachment by the Commons. The Test Act was now brought forward, and Shaftesbury, who appears to have heard how he had been duped in 1670, supported it, with the object probably of thereby getting rid of Clifford. He now began to be regarded as the chief upholder of Protestantism in the ministry; he lost favour with Charles, and on Sunday, the 9th of September 1673, was dismissed from the chancellorship. Among the reasons for this dismissal is probably the fact that he opposed grants to the king's mistresses. He had been accused of vanity and ostentation in his office, but his reputation for ability and integrity as a judge was high even with his enemies.

Charles soon regretted the loss of Shaftesbury, and endeavoured, as did also Louis, to induce him to return, but in vain. He preferred now to become the great popular leader against all the measures of the court, and may be regarded as the intellectual chief of the opposition. At the meeting of parliament on the 25th April 1674, he carried a motion for a proclamation banishing Catholics to a distance of 10 m. from London. During the whole session he organized and directed the opposition in their attacks on the king's ministers. On the 15th of May he was dismissed the privy council and ordered to leave London. He retired to Wimborne and urged upon his parliamentary followers the necessity of securing a new parliament. He was in the House of Lords, however, in 1675, when Danby brought forward his famous Non-resisting Test Bill, and headed the opposition which was carried on for seventeen days, distinguishing himself, says Burnet, more in this session than ever before. The bill was shelved, a prorogation having taken place in consequence of a quarrel between the two Houses, supposed to have been purposely got up by Shaftesbury, in which he supported the right of the Lords to hear appeal cases, even where the defendant was a member of the Lower House. Parliament was prorogued for fifteen months until the 1st of February 1677, and it was determined by the opposition to attack its existence on the ground that a prorogation for more than a year was illegal. In this matter the opposition were in the wrong, and by attacking the parliament carried a motion for a prorogation, of which the result was that Shaftesbury, Buckingham, Shafton and Salisbury were sent to the Tower. In June Shaftesbury applied for a writ of habeas corpus, but could get no release until the 26th of February 1678, after his letter and three petitions to the king. Being brought before the bar of the House of Lords he made submission as to his conduct in declaring parliament dissolved by the prorogation, and in violating the Lords' privileges by bringing a habeas corpus in the King's Bench.

The breaking out of the Popish Terror in 1678 marks the worst part of Shaftesbury's career. That so clear-headed a man could have espoused any part of this policy shows that the puritans was beyond belief; and the manner in which he excited baseless alarms, and encouraged fanatic cruelty, for nothing but party advantage, is without excuse. On the 2nd of November he opened the great attack by proposing an address declaring the necessity for the king's dismissing James from his council. Under his advice the opposition now made an alliance with Louis whereby the French king promised to help them to ruin Danby on condition that they would compel Charles, by stopping the supplies, to make peace with France, doing thus a grave injury to Protestantism and for the sake of a temporary party advantage at home. Upon the refusal in November of the Lords to concur in the address of the Commons requesting the removal of the queen from court, he joined in a protest against the refusal, and was foremost in all the violent acts of the session. He urged on the bill by which Catholics were prohibited from sitting in either House of Parliament, and was bitter in his expressions of disappointment when the Commons passed a proviso excepting James, against whom the bill was especially aimed, from its operation. A new parliament met on the 6th of March 1679. Shaftesbury had meanwhile ineffectually warned the king that unless he followed this advice there would be no peace with the people. On the 25th of March he made a striking speech upon the state of the nation, especially upon the dangers to Protestantism and the misgovernments of Scotland and Ireland. He was suspected, too, of doing all in his power to bring about a revolt in Scotland. By the advice of Temple, Charles now tried the experiment of forming a new privy council in which the chief members of the opposition were included, and Shaftesbury was made president, with a salary of £4000, being also a member of the committee for foreign affairs. He did not, however, in any way change either his opinions or his action. He opposed the compelling of Protestant Nonconformists to take the oath required of Roman Catholics. That indeed, as Ranke says, which makes him memorable in English history is that he opposed the establishment of an Anglican and Royalist organization with success. The question of the succession was now again prominent, and Shaftesbury, in opposition to Halifax, committed the error, which really brought about his fall, of putting forward Monmouth as his nominee, thus alienating a large number of his supporters; he encouraged, too, the belief that this was agreeable to the king. He pressed on the Exclusion Bill with all his power, and, when that and the new issue into the payments for secret service and the trial of the five peers, for which too he had been eager, were brought to an end by a sudden prorogation, he is reported to have declared aloud that he would have the heads of those who were the king's advisers to this course. Before the prorogation, however, he saw the invaluable Act of Habens Corpus, which he had carried through parliament, receive the royal assent. In pursuance of his patronage of Monmouth, Shaftesbury now secured for him the command of the army sent to suppress the insurrection in Scotland, which he is supposed to have fomented. In October 1679, the circumstances which led Charles to desire to conciliate the opposition having ceased, Shaftesbury was dismissed from his presidency and from the privy council; when applied to by Sunderland to return to office he made as conditions the divorce of the queen and the exclusion of James. With nine other peers he presented a petition to the king in November, praying for the meeting of parliament, of which Charles took no notice. In April, upon the king's declaration that he was resolved to send for James from Scotland, Shaftesbury advised the popular leaders to make a petition to the king in order to get him to dismiss James. And in March we find him unscrupulously eager in the prosecution of the alleged Irish Catholic plot. Upon the king's illness in May he held frequent meetings of Monmouth's friends at his house to consider how best to act for the security of the Protestant religion. On the 26th of June, accompanied by fourteen others, he presented to the grand jury of Westminster an indictment of the duke of York as a Popish recusant. In the middle of September he was seriously ill. On the 15th of November the Exclusion Bill, having passed the Commons, was brought up to the Lords, and an historic debate took place, in which Halifax and Shaftesbury were the leaders on opposite sides. The bill was thrown out, and Shaftesbury signed the protest against its rejection. The next day he urged upon the House the divorce of the queen. On the 7th of December, to his lasting dishonour, he voted for the condemnation of Lord Stafford. On the 23rd he again spoke vehemently for exclusion, and his speech was immediately printed. All opposition was, however, checked by the dissolution on the 18th of January. A new parliament was called to meet at Oxford, to avoid the influences of the city of London, where Shaftesbury had taken the greatest pains to make himself popular. Shaftesbury, with fifteen other peers, petitioned the king that it might as usual be held in the capital. He prepared instructions to be handed by constituencies to their
members upon election, in which exclusion, disbanding, the limitation of the prerogative in proroguing and dissolving parliament, and security against popery and arbitrary power were insisted on. At this parliament, which lasted but a few days, he again made a personal appeal to Charles, which was curtly rejected, to permit the legitimizing of Monmouth. The king's advisers now urged him to arrest Shaftesbury; he was seized on the 2nd of July 1681, and committed to the Tower, the judges being of opinion that he was not a fugitive after sentence of death. This refusal was twice repeated in September and October, the court hoping to obtain evidence sufficient to ensure his ruin. In October he wrote offering to retire to Carolina if he were released. On the 24th of November he was indicted for high treason at the Old Bailey, the chief ground being a paper of association for the defence of the Protestant religion, which, though among his papers, was not in his handwriting; but the grand jury ignored the bill. He was released on bail on the 1st of December. In 1682, however, Charles secured the appointment of Tory sheriffs for London; and the jury, with some misgivings on the part of the sheriffs, Shaftesbury felt that he was no longer safe from the vengeance of the court. Failing health and the disappointment of his political plans led him into violent courses. He appears to have entered into consultation of a treasonable kind with Monmouth and others; he himself had, he declared, ten thousand brisk boys in London ready to rise at his bidding. For some weeks he was concealed in the city and in Wapping; but, finding the schemes for a rising hang fire, he went to Harwich, disguised as a Presbyterian minister, and after a week's delay, during which he was in imminent risk of discovery, if indeed, as is probable, his escape was not wined by the government, he sailed to Holland on the 28th of November 1681, and reached Amsterdam in the beginning of December. Here he was welcomed with the jest, referring to his famous speech against the Dutch, “nondum deleta Carthago.” He was made a citizen of Amsterdam, but died there of gout in the stomach on the 21st of January 1683. His body was sent in February to Poole, in Dorset, and was buried at Wimborne St Giles.

Few politicians have been of the mark of such abuse as Shaftesbury. Dryden, while compelled to honour him as an upright judge, overwhemed his memory with scathing. If Dryden's satire has been accepted as truth by later historians. Macaulay in especial exerted all his art, though in contradiction of probability and fact. He was not a man that could further enrich his reputation. Christie, on the other hand, in possession of later sources of information, and with more honest purpose, did much to rehabilitate him. Occasionally, however, he appears to hold a brief for the defender of the true cause. Of all the political writers of his time (1871) should be read with caution. Finally, in his monograph (1860) in the series of "English Worthies," H. D. Traill professes to hold the book in esteem, and to regard it as the contribution of Shaftesbury's place in English politics, by insisting on his position as the first great party leader in the modern sense, and as the founder of modern parliamentary oratory. In other respects his book is derived almost entirely from Christie. See also the present writer's article in the Dict. Nat. Bio. Much of Shaftesbury's career, increasingly as it came near its close, is incapable of defence; but it was escaped most of his critics that his life up to the Restoration, apparently full of inconsistencies, was evidently guided by one leading principle, the determination to uphold the supremacy of parliament, a principle which, however obscured by self-interest, appears also to have been a guide alike to his political career. He was too, even the friend of religious freedom and of an enlightened policy in all trade questions. And, above all, it should not be forgotten, in justice to Shaftesbury's memory, that "during his long political career, he was ever incorrupt, and never grasped either money or land."

SHAFTESBURY, ANTHONY ASHLEY COOPER, 3rd Earl of (1667–1713), was born at Exeter House in London on the 26th of February 1670/1. He was grandson of the first and son of the second earl. His mother was Lady Dorothy Manners, daughter of John, earl of Rutland. According to a curious story, told by the third earl himself, the marriage between his father and mother was negotiated by John Locke, who was a trusted friend of the first earl. The second Lord Shaftesbury appears to have been a poor creature, both physically and mentally. At the age of three his son was sent to the formal guardianship of his grandfather. Locke, who in his capacity of medical attendant to the Ashley household had already assisted in bringing the boy into the world, though not his instructor, was entrusted with the superintendence of his education. This was conducted according to the principles enunciated in Locke's Thoughts concerning Education, and the method of teaching Latin and Greek conversationally was pursued with such success by his instructress, Mrs Elizabeth Birch, that at the age of eleven, it is said, Ashley could read in Latin and Greek with understanding. In November 1685, a month after the death of the first earl, his father entered him at Winchester as a warden's boarder. Being shy and constantly taunted with the opinions and fate of his grandfather, he appears to have been rendered miserable by his schoolfellows, and to have left Winchester in 1686 for a course of foreign travel. He was brought thus into contact with those artistic and classical associations which exercised so marked an influence on his character and opinions. On his travels he did not, we are told by the fourth earl, "greatly seek the conversation of other political people. He had too much from others, but rather that of their tutors, with whom he could converse on congenial topics."

In 1689, the year after the Revolution, Lord Ashley returned to England, and for nearly five years he appears to have led a quiet and studious life. There can be no doubt that the greater part of his attention was directed to the perusal of classical authors, and to the attempt to realize the true spirit of classical antiquity. He had no intention, however, of becoming a recluse, or of permanently holding himself aloof from public life. Accordingly he became a candidate for the borough of Poole, and was returned as a Whig, November 1700. He soon distinguished himself by a speech in support of the Bill for Regulating Trials in Cases of Treason, one provision of which was that a person indicated for treason or misprision of treason should be allowed the assistance of counsel. But, though a Whig, alike by descent, by education and by conviction, Ashley could by no means be depended on to give a party vote; he was always ready to support any propositions, from whatever quarter they came, that appeared to him to promote the liberty of the subject and the independence of parliament. Unfortunately, his health was so treacherous that, on the dissolution of July 1703, he was obliged to retire from parliamentary life. He spent much from this time to be had in Holland with less danger than in any other country in the world. To the period of this sojourn in Holland must probably be referred the surreptitious impression or publication of an imperfect edition of the Inquiry concerning Virtue, from a rough draught, sketched when he was only twenty years of age. This liberty was taken, during his absence, by Toland. After an absence of over a twelvemonth, Ashley returned to England, and soon succeeded his father as earl of Shaftesbury. He took an active part, on the Whig side, in the general election of 1701, and again with more success, in that of the autumn of 1702. It is said that William III. showed his appreciation of Shaftesbury's services on this latter occasion by offering him a secretariaship of state, which, however, his declining health compelled him to decline. Had the king's life continued, Shaftesbury's influence at court would probably have been considerable. After the first few weeks of Anne's reign, Shaftesbury, who had been deprived of the vice-admiralty of Dorset, returned to his retired life, but his letters to Furlong show that he retained a keen interest in politics. In August 1703 he again settled in Holland, in the air of which he seems, like Locke, to have had great faith. At Rotterdam he lived, he says in a letter to
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His steward Wheelock, at the rate of less than £200 a year, and yet had much "to dispose of and spend beyond convenient living." He returned to England, much improved in health, in August 1704. But, though he had received immediate benefit from his stay abroad, symptoms of consumption were constantly alarming him, and the trade which had involved him in commerce was now almost exclusively literary, and from this time forward he was probably engaged in writing, completing or revising the treatises which were afterwards included in the Characteristics. He continued, however, to take a warm interest in politics, both home and foreign, and especially in the war against France, of which he was an enthusiastic supporter.

Shaftesbury was nearly forty before he married, and then he appears to have taken this step at the urgent instigation of his friends, mainly to supply a successor to the title. The object of his choice (or rather of his second choice, for an earlier project of marriage had shortly before fallen through) was a Miss Jane Ewer, the daughter of a gentleman in Hertfordshire. The marriage took place in the autumn of 1709, and on February 9, 1710/1, was born at his house at Reigate, in Surrey, his only child and heir, the fourth earl, to whose manuscript accounts we are in great part indebted for the details of his father's life. The match appears to have been happy, though Shaftesbury had little sentiment on the subject of marriage.

He wrote the Preface to the life of Lord Bolingbroke, the final draft of which, in Dr Whitchurch, one of the Cambridge Platonists or Libertarians, published in 1698, Shaftesbury appears to have printed nothing himself till 1708. About this time the French prophets, Camisards (q.v.), as they were called, attracted much attention by their extravagances and follies. Various repressive remedies were proposed, but Shaftesbury maintained that fanaticism was best encountered by "raillery" and "good-humour." In support of this view he wrote a letter Concerning Enthusiasm to Lord Somers, dated September 1707, which was published anonymously in the same year, and provoked several replies. In May 1709 he returned to the subject, and printed another letter, entitled Sensus Communis, an Essay on the Freedom of Wit and Humour. In the same year he also published The Moralists, a Philosophical Rachypody, and in the following year Solaioy, or Advice to an Author. None of these pieces seems to have been printed either with his name or its initials. In 1711 appeared the Characteristics of Men, Manners, Opinions, Times, in three volumes, also without any name or initials on the title-page, and without even the name of a printer. These volumes contain in addition to the four treatises already mentioned, Miscellaneous Reflections, now first printed, and the Inquiry concerning Virtue or Merit, described as "formerly printed from an imperfect copy, now corrected and published intire," and as "printed first in the year 1699."

The declining state of Shaftesbury's health rendered it necessary for him to seek a warmer climate, and in July 1711 he set out for Italy. He settled at Naples in November, and lived there considerably over a year. His principal occupation at this time must have consisted in preparing for the press a second edition of the Characteristics, which appeared in 1713, soon after his death. The early part of 1713 was spent in writing, as is shown in a letter, written in February: "The greatest part of the book is preserved in the British Museum. He was also engaged, during his stay at Naples, in writing the little treatise (afterwards included in the Characteristics) entitled A Notion of the Historical Draught or Tablature of the Judgment of Hercules, and the letter concerning Design. A little before his death he had also formed a scheme of writing a Discourse on the Arts of Painting, Sculpture, Etching, &c., but when he died he had made but little progress with it. "Medals, and pictures, and antiquities," he writes to Purlie, "are my chief entertainments here. His conversation was with men of art and science, "the virtuosi of this place."

The events preceding the peace of Utrecht, which he regarded as preparing the way for a base desertion of our allies, greatly troubled the last months of Shaftesbury's life. He did not, however, live to see the actual conclusion of the treaty (March 31, 1713), as he died the month before, February 4, 1712/3.

He had not completed his forty-second year. His body was brought back by sea to England and buried at St Giles's, the family seat in Dorsetshire. His only son, Anthony Ashley, succeeded him as 4th earl, and his great-grandson was the famous philanthropist, the 7th earl. Shaftesbury's amiable character seems to have been one of his principal characteristics. Like Locke he had a peculiar pleasure in bringing forward young men. Among these may be especially mentioned Michael Ainsworth, a native of Wimborne St Giles, the young man who was the recipient of the Letters addressed to a student at the university, and was maintained by Shaftesbury at University College, Oxford. The interest which Shaftesbury took in his studies, and the desire that he should be specially fitted for the profession which he had selected, that of a clergyman of the Church of England, are markedfeatures of Lockes letters. Old and young Furlus and Harry Wilkinson, a boy who was sent into Furly's office at Rotterdam, and to whom several of the letters still extant in the Record Office are addressed.

In the popular mind, Shaftesbury is generally regarded as a writer hostile to religion. But, however short his orthodoxy might fail if tried by the standards of any particular church, his temperance was pre-eminently religious. This fact is shown in his letters. The belief in a God, all-wise, all-just and all-merciful, governing the world providentially for the best, pervades all his works, and one of the most characteristic things he had he any wish to undermine established beliefs, except where he conceived that they conflicted with a truer religion and a purer morality.

To the public ordinances of the church he scrupulously conformed. But, unfortunately, there were many things both in the teaching and the practice of the ecclesiastics of that day which were calculated to repel men of sober judgment and high principle. These evil tendencies in the popular presentation of Christianity undoubtedly begot in Shaftesbury's mind a reaction in his attitude towards the claims of the doctrines of Christianity itself; and, cultivating, almost for set purpose, his sense of the ridiculous, he was too apt to assume towards such doctrines and their teachers a tone of raillery.

But, whatever might be Shaftesbury's speculative opinions or his mode of expressing them, all witnesses bear testimony to the elevation and purity of his life and aims. As an earnest student, and ardent lover of liberty, an enthusiast in the cause of virtue, and a man of unblemished life and untiring beneficence, Shaftesbury probably had no superior in his generation. His character and pursuits are the more remarkable, considering the prejudices and obstacles which still stood in the way of a life of such communion with the world under which he was brought up. In many respects he reminds us of the imperial philosopher Marcus Aurelius, whose works he studied with avidity, and whose influence is stamped upon his own productions.

Most of Shaftesbury's writings have already been mentioned. In addition to these there have been published fourteen letters from Shaftesbury to Molesworth, edited by Toland in 1721; some letters to Benjamin Furly, his sons, and his clerk Harry Wilkinson, included in a volumemitled Original Letters of Locke, Sidney and Shaftesbury, which was published by Mr T. Craster in 1830, and again in an expanded form in 1859. Of Locke's writings the principal are the Letters to Lord Godolphin, which appeared, for the first time, in the General Dictionary; and lastly a letter to Le Clerc, in his collections of Locke, first published in Notes and Queries, Feb. 8, 1851. The Letters to a Young Man at the University (Michael Ainsworth), already mentioned, were first published in 1716. The Letter on Design was first published in the edition of the Characteristics issued in 1732. Besides the published writings, there are several memoranda, letters, rough drafts, &c., in the Shaftesbury papers in the Record Office.

Shaftesbury took great pains in the elaboration of his style, and he succeeded so far as to make his meaning transparent. The thought is always clear. But, on the other hand, he did not equally succeed in attaining elegance, an object at which he seems equally to have aimed. It is a characteristic of his style—a false note—which, notwithstanding all his efforts to please, is often irritat- ing to the reader. Its main characteristic is perhaps best hit off by Charles Lamb when he calls it "gentle." He poses too much as a figure of speech, and is enuresed of the vulgar scholastic kind that he falls into the hardly more attractive
pedantry of the aesthetic and virtue ... He is as easily ... he reached 1874. He is not ... the French translation of the whole of Shaftesbury's works, including the ... Letters, was published at Geneva. Translations of separate ... him mainly from the theological side by Dr. Gideon Spicker (Freiburg in Baden, 1872), the other dealing with him mainly from the philosophical side by Dr. Georg von Gizycki (Leipzig, 1876).

(T.F.; J. M. M.)

AUTHOR—In Dr. Thomas Spicer's monograph on Shaftesbury and Hutcheson in the series of "English philosophers" (1882) he was able largely to supplement the printed materials for the Life extracted from the Shaftesbury papers in the Record Office. These were supplemented by the speeches and resolutions of Shaftesbury, and his correspondence with his friends, notably the Countess of Huntingdon, and his diary, the papers of which were presented before the Society of Antiquaries in 1885. In regard to Shaftesbury's moral philosophy, his work was translated into German by E. Mackintosh's Progress of Ethical Philosophy, W. Whewell's History of Moral Philosophy in England, J. P. Joubert's Introduction à la Philosophie desUNK; J. A. W. Stepping's English Thought in the Eighteenth Century, Martinis's "The Ethics of Shaftesbury", Windelband's History of Philosophy (Eng. trans., 1895); W. M. Hatch's unfinished edition with appendices of the Characters (1881). Also J. R. Robertson's The Characteristics (1900); B. Rand's Life (1900). For his relations to the religious and theological controversies of his day, see, in addition to some of the above works, J. Leland, View of the Principal Desistical Writers, V. Leecher, Geschichte des Englischen Philosophus, J. Hunt, Religious Thought in England, C. J. Abbey and J. H. Overton, English Church in the Eighteenth Century and A. S. Farrar's Bampton Lectures; G. Zett, Ethik,Epochen der Philosophia, Die deutsche Philosophie des 18ten Jahrhunderts (Berlin, 1881).

SHAFTESBURY, ANTHONY ASHLEY COOPER, 7TH EARL OF (1801-1885), son of Copley, 6th earl (a younger brother of the 5th-earl; succeeded 1811), and Anne, daughter of the 3rd duke of Marlborough, was born on the 28th of April 1801. He was educated at Harrow and Christ Church, Oxford, where he obtained a first class in classics in 1822, and graduated M.A. in 1832. In 1841 he received from his university the degree of D.C.L. He entered parliament as member for the pocket borough of Woodstock in 1826; in 1830 he was returned for Dorchester; from 1831 till February 1846 he represented the county of Dorset; and he was member for Bath from 1847 till (having previously borne the courtesy title Lord Ashley) he succeeded his father as earl in 1851. Although giving a general support to the Conservatives, his parliamentary conduct was greatly modified by his intense interest in the improvement of the social condition of the working classes, his efforts in behalf of whom he made his name a household word. He opposed the Reform Bill of 1832, but was a supporter of Catholic emancipation, and his objection to the continuance of resistance to the abolition of the Corn Laws led him to resign his seat for Dorset in 1846. In parliament his name, more than any other, is associated with the new factory legislation. He was a lord of the admiralty under Sir Robert Peel (1834-1835), but on being invited to join Peel's administration in 1841 refused, having been unable to obtain Peel's support for the Ten Hours' Bill. Chiefly by his persistent efforts a Ten Hours' Bill was carried in 1847, but its operation was impeded by legal difficulties, which were only removed by successive Acts, instigated chiefly by him, until legislation reached a final stage in the Factory Act of 1874. The part which he took in the legislation bearing on coal mines was equally prominent. His efforts in behalf of the welfare of the working classes were guided by personal knowledge. Thus in 1846, after the resignation of his seat for Dorset, he explored the slums of the metropolis, and not only gave a new
SHAFTESBURY—SHAFT-SINKING

impulse to the movement for the establishment of ragged schools, but was able to make it more widely beneficial. For forty years he was president of the Ragged School Union. He was also one of the journal's chief reformatories to fifteen schools, young men's Christian associations and working men's institutes. He took an active interest in foreign missions, and was president of several of the most important philanthropic and religious societies of London. He died on the 1st of October 1889. By his marriage (1830) to Lady Emily (d. 1872), daughter of the 5th earl Cowper, he left a large family, and was succeeded by his eldest son Anthony, who committed suicide in 1886, his son (b. 1869) becoming 9th earl.

See also Holkirt’s Life (1820).

SHAFTS.—Shaftesbury is a town and municipal borough in the northern parliamentary division of Dorsetshire, England, 103 m. W.S.W. from London by the London and South-Western Railway (Semley station). Pop. (1901) 2027. It lies high on a hill above a rich agricultural district. The church of St Peter is Perpendicular; those of Holy Trinity and St James are in the main modern reconstructions. The borough is under a mayor, 4 aldermen and 12 councillors. Area 175 acres.

Although there are traces of both British and Roman occupation in the immediate neighbourhood, the site of Shaftesbury (which is not to be confused with the iron shafts at Sceafstesbyrig, Dorsetshire) was probably first occupied in Saxon times. Matthew Paris speaks of its foundation by the mythical king Ruludhibras, while Asser ascribes it to Alfred, who made his daughter Ethelfgeu the first abbess. It is probable that a small religious house had existed here before the time of Alfred, and that it and the town were destroyed by the Danes, being both rebuilt about 888. In 980 Dunstan brought St Edward's body here from Wareham for burial, and here Canute died in 1035. Shaftesbury was a borough containing 104 houses in the king's demesne during the reign of Edward the Confessor; in 1086, 35 houses had been added, but it was still the seat of a mint with three mint-masters. In the manor of the abbess of Shaftesbury there were 111 houses and 152 burgesses; here 42 houses had been totally destroyed since St Edward's reign. In 1280 the abbess obtained the royal manor at an annual fee-farm rent of £12 and remained the sole mistress of the borough until it passed at the dissolution of the monasteries to Sir Thomas Arundel, after whose execution it was granted about 1532 to William Herbert, earl of Pembroke. In 1352 the burgesses received their first charter from Henry III. This granted that in all eves the burgesses might meet in a public place in Shaftesbury; if they should not answer for the payment of the common, they should not answer for aught without the town and might choose for themselves two coroners annually. The recce of the borough is mentioned in 1313-1317. The office of mayor was created between the years 1350-1352, and an inquisition of 1392 records that the mayor held a court of pie-power and governed the town in the absence of the steward. The seal of the commonalty is extant for 1350, and that of the mayoralty first occurs in 1428. By 1471 a general assembly of burgesses had acquired power to take part in elections. There is no evidence that Elizabeth granted Shaftesbury a charter, as has been asserted, but she confiscated the common lands in 1565, the town only recovering them by purchase. This probably led to a charter of incorporation being obtained from James I. in 1604. A new charter was granted to the town in 1684, but without the surrender of the old charter confirmed by Charles II. in 1665. Shaftesbury returned two members to parliament from 1294 to 1832, when the representation was reduced to one, and it was lost in 1858.

Leland speaks of Shaftesbury as a great market town, and it possessed a market in the time of Edward I. The Martimmas fair was granted in 1604. In the 17th century worsted and trousers were manufactured, but these industries have disappeared.


SHAFT-SINKING, an important operation in mining for reaching and working mineral deposits situated at a depth below the surface, whenever the topography does not admit of driving adits or tunnels. Shafts are often sunk also in connexion with certain civil engineering works, e.g. at intervals along the line of a railway tunnel, for starting intermediate headings, thus securing more points of attack than if the entire work were carried on from the end headings only. Sundry modifications of shaft-sinking are adopted in excavating for deep foundations of heavy buildings, bridge piers and other engineering structures.

If in solid rock, carrying but little water, shaft-sinking is a comparatively simple operation. But when much water is encountered or the formation penetrated comprises unstable, watery strata, special forms of lining become necessary and the work is slow and expensive. Mine shafts are often very deep; but the Witwatersrand, South Africa; the Michigan copper district; at Bendigo, Australia; and in certain parts of Europe. Many vertical shafts exceed 4000 ft. in depth, and at least two—the Whiting shaft, of the Calumet and Hecla mine and shaft No. 3 of the Tamarack mine (both in Michigan)—are over 5000 ft. deep. The last named at the beginning of 1907 was about 5200 ft., and was then the deepest in the world. Several inclined shafts, in the same district, approximate 6000 ft. in length.

Shape of Shafts.—In Europe shafts are generally cylindrical, sometimes of elliptical cross-section, and are lined with masonry, concrete, or steel; in South Africa, the Witwatersrand, and in certain parts of Europe, the working of mining regions of the world, rectangular cross-sections are the rule for sinking in rock, the shaft walls being supported by timbering, occasionally by steel lining. For sinking in loose, water-bearing soils, the cross-section is almost invariably cylindrical, as this form best resists pressure tending to cause crushing or caving of the shaft walls. The European practice of sinking cylindrical shafts even in rock is based mainly on four considerations:—(1) custom; (2) high cost of timber; (3) apart from questions of first cost, a cylindrical shaft, lined with masonry or iron, is strong and permanent, and its cost of maintenance is low; (4) more shafts in difficult formations have been sunk in Europe than elsewhere. The cheaper timber-lined, rectangular shaft, however, is generally appropriate under normal conditions in rocky strata, in view of the temporary character of mining operations. Vertical shafts may be either rectangular or cylindrical; wheninclined they are always rectangular.

The prime purpose of mine shafts is to act as hoisting and travelling-ways; incidentally they serve for ventilation, for pumping and for transmitting power underground by steam, compressed air or other means. Rectangular shafts are usually provided for this end, cast longitudinally into compartments, of which these are for the cages or skips, which run in guides bolted to the shaft timbering (see MINING). Another is generally provided for a ladder- and pipe-way and ventilation. When much water is encountered a separate pump compartment is desirable. Cylindrical shafts may be similarly divided by subsidiary timbering, though in many timbering is omitted and the hoisting cages are guided by wire ropes stretched from top to bottom.

Dimensions.—The cross-sectional area of shafts depends mainly on the size of the cages or skips—i.e. on the hoisting load. Small rectangular shafts of one or two compartments measure inside of timber, say 4 by 6 ft. up to 12 ft.; larger shafts of three compartments, from 5 by 12 ft. up to 8 or 10 ft. by 20 ft. For four- or five-compartment shafts, sometimes required for large scale work, as in the deep-level mines of the Witwatersrand, the inside dimensions range from 6 by 20 ft. to 6 or 8 by 30 ft., and for some of the Pennsylvania colliery shafts, up to 13 by 52 ft. Cylindrical shafts rarely have more than two hoisting compartments and are commonly from 10 to 16 ft., sometimes 20 or 21 ft. diameter, the segmental areas surrounding the hoisting ways being utilized for ventilation, piping, &c.

Sinking in Rock.—If the rock be overlaid by loose soil carrying little water, excavation is begun by pick and shovel, and when the rock is reached it is continued by drilling and blasting (see BLASTING). The sinking plant, usually temporary, comprises a small hoist and boiler, several buckets or sometimes a skip, one or more sinking pumps, according to the quantity of water,
ocasionally a small ventilating fan, and a timber derrick or head-frame over the shaft mouth, with appliances for dumping the buckets, handling the rock and safe-guarding the men in the shaft against falling objects. In some circumstances a portion of the permanent mine plant is erected for sinking. The choice between hand and machine drilling depends chiefly on the kind of rock and the size and depth of shaft. For very hard rock or when rapid work is desired, machine drilling is advisable, a compressor and additional boiler capacity being then required. Remarkable speeds, however, have been made by hand-sinking in some of the deep vertical shafts on the Rand, the world’s record being that of the Howard shaft, sunk by hand labour 203 ft. in one month. But such speeds are attainable only in dry, or nearly dry, ground, at a high cost per foot and by crowding as many men into the shaft as possible, both for drilling and loading away the blasted rock. The conditions being the same, inclined shafts closely approaching the vertical can be put down about as fast as vertical shafts; but for inclinations between say 25° and 30° to the horizontal, inclines are generally slower on account of the greater inconvenience of carrying on the work, both of excavation and timbering. Very flat shafts, on the other hand, can be sunk at speeds little less than for driving tunnels, unless there is much water. The highest speed on record for a very flat incline (10°) is 207 ft. in one month.

As a rule, the speed attained in sinking depends less on the drilling time per round of holes than on the time required to handle and hoist out the rock; hence the speed generally diminishes with increase of depth. Furthermore, omitting shafts of small area, the cost per foot of depth does not increase greatly with the cross-sectional dimensions. For the same rock the rate of advance in wet formations is always much slower than in dry and the cost greater.

The work of sinking in rock is carried on as follows. A round of holes is drilled, usually from 3 to 4 ft. deep if by hand, or from 5 to 8 or 9 ft. if by machine-drilling (see BLASTING). A common mode of arranging machine drill holes is shown in plan and section in fig. 1. The holes are charged with dynamite and fired by fuse or electricity—in deep shafts preferably by electricity, as the men may have to be hoisted a long distance to reach a place of safety. After the smoke has cleared away (which may be hastened by sprays or by turning on the compressed air if machine drills are used), the work of hoisting out the broken rock is begun and drilling resumed as soon as possible. For shafts not over 6 or 8 ft. wide, machine drills are usually mounted on horizontal bars stretching across from wall to wall, or, in wider or cylindrical shafts, on tripods or special sinking-frames. In shafts of small area, or deep shafts which are timbered during sinking, the hoisting buckets must be guided to prevent them from striking against the sides. Small quantities of water are bailed out of the buckets; when the inflow is too great to be so disposed of, a sinking pump is employed (see MINING).

Shaft Timbering.—In sinking rectangular vertical shafts under normal conditions the excavation through the surface soil is commonly lined with cribbing, inside of which a concrete curb is sometimes built to dam out the surface water. After reaching rock the lining is generally composed of horizontal sets of 8 by 8 in. to 12 by 12 in. squared timber wedged against the walls, with smaller pieces, or "planks," called "lugging," placed behind them, to prevent portions of the walls from falling away. In firm rock lugging may be omitted. Each set consists of (fig. 2) two long timbers (wall-plates) W, W, two shorter pieces (end plates) E, E, and usually one or more cross pieces (dividers or buttons) D, D, to form the compartments, strengthen the sets and support the cage guides, G.G. The sets are from 4 to 6 ft. apart, with vertical posts (studdles) S, S, between them. At intervals of say 80 to 120 ft., longer timbers ("beams") are notched into the walls, under a set, to prevent displacement of the lining as a whole. A series of shaft sets, with their timbers and cribbing, from the bearing-set, or suspended from the latter by hanger-bolts. When the rock is firm, a considerable depth of shaft may be sunk and then timbered; generally, however, it is safer to put in a few sets at a time as sinking advances, the lowestmost being removed by some means far enough from the bottom to prevent it from being injured by the blasting. Inclined shafts in solid ground are often timbered as described above, though sometimes merely by setting the shaft into compartments.

Lining for Cylindrical Shafts in Rock.—Wooden linings are occasionally put in small shafts, or for temporary support, before the sinking of the mine shaft is begun, but a cylindrical shaft of any importance is lined with masonry or iron. Masonry linings are generally built in sections, as the sinking advances, each section being based on a walling-crib (AB, CD, fig. 3). Specially moulded tamped bricks or concrete, shaped to fit, are placed in the radius of the shaft. Concrete may be similarly moulded into large blocks, often weighing 1200 to 1600 lb. each. The thickness of the walling depends on the depth of shaft and pressure anticipated; it is usually from 13 in. to 2 ft., laid in cement mortar. Such linings, while not entirely water-tight, will shut out much of the water present in the surrounding rock.

Irregularities, or "tubbing," is employed when the inflow of water is rather large. It is usually composed of shafts lined with iron, or pipes riveted to them. The irregular annular space between the tubbing and rock-walls is afterwards filled with concrete or cement grouting. The lowestmost tubbing is generally made of solid cast iron, composed of segments bolted together, and set on a projecting shelf of rock, carefully dressed down. The space behind the crib is driven full of wooden wedges, which expand on becoming water-soaked and thus make a tight joint at the bottom of the tubbing with the rock just above the mineral deposit. By this means most of the water may be permanently shut out of the shaft, and the cost of pumping materially reduced.

Kind-Chandler System of Sinking.—This ingenious method, introduced in 1852, has thus far been confined to Europe. Up to 1904, 79 shafts had been sunk by its use, some to a depth of 1000 ft. or more, without a single instance of failure. It is applicable only to firm rock and was devised to deal with cases where the quantity of water is too great to be pumped out while excavation is in progress; that is, for infilows greater than 1000 or 1200 gallons per minute, and it is not suitable for the sinking of deep shafts. The advance is achieved by the use of special tools resembling a long pipe or drill, driven in a central shaft and acting like a borings. Instead of ordinary drills, massive tools called "trepanns" are employed, consisting of a heavy steel frame, in the lower edge of which are set a number of sepa-rate cutters (fig. 4). Shafts not exceeding 8 ft. dia. may be bored in one operation; for larger diameters an advanced core is usually made with a small trepan and afterwards enlarged to full size. The advance bore may be completed to the required depth of shaft before beginning enlargement, or the small and large trepanns used alternately, the advance being kept 30 to 40 ft. ahead of the core (fig. 5), and brought up to 12 tons, those of 14 or 15 ft. 25 to 30 tons. The trepan is attached to a heavy rod, suspended from a walking-beam operated by an engine on the surface, as in ordinary boring. A derrick is erected over the

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**Fig. 1.** Plan, Longitudinal Section, and Elevation of a typical Shaft-Sinking Plant.

**Fig. 2.** Plan, Longitudinal Section, and Elevation of a typical Shaft-Sinking Plant.

**Fig. 3.** Section of a typical Shaft-Sinking Plant.

**Fig. 4.** Large and Small Trepanns for shaft sinking, Haniel & Lüdow, Düsseldorf, makers.
shaft, with a hoisting engine for raising and lowering the tools. Average rock is bored at a speed of about 12 ft. per 24 hours. The advance bore is cleaned of debris at intervals by a bailer similar to that used for bore-holes. The enlarging trepan is so shaped that the bottom of the enlarged apertures to the centre underneath the cuttings, assisted by the agitation of the water, run into the advance bore and are bailed out. Owing to the difficulty of this latter procedure the advance bore is sometimes omitted for the shaft, and the under-drilling being removed by a special dredger (Coll. Guardian., Dec. 22, 1899, p. 1184). For rather loose rock another somewhat similar system of drilling, the Parberry, has been satisfactorily employed.

When the shaft has passed through the watery strata the lining is installed. This is composed of cast iron rings, like tubing (cc, dd), bolted together at the shaft mouth and gradually lowered through the water (fig. 5). The first two rings, called the “moss-box” (aa, bb), are designed to telescope together and have a quantity of dry moss packed between their outer flanges. When the lowermost ring rests at the bottom, the weight of the lining compresses the moss and forces it against the surrounding rock, making a tight joint. The lining is suspended from the surface by threaded rods, and to regulate and reduce its weight while it is being lowered the bottom is closed by a diaphragm (ee) from the centre of which rises an open pipe (g). This pipe is provided with cocks for admitting inside the lining from time to time enough water to overcome bore-pressure. Finally, concrete is filled behind the lining, the diaphragm removed and the completed shaft pumped out. In some formations the moss-box is omitted, the concreting being relied on to make the lining watertight. The cost of this method of sinking and lining (generally £15 to 60 per foot), as well as the speed, compares favourably with results obtained under the same conditions by other means; in many cases it is the only practicable method.

Inclined sinking, watery soils, which often cause serious engineering difficulties, is accomplished by: (1) spilling, vertical or inclined; (2) drop-shafts; (3) caisson and compressed air; (4) the freezing process.

Vertical sinking consists in driving one or more series of spiles around the sides of the excavation, supported by horizontal timber cribs. When the first spiles have been driven, and the enclosed soil removed, a second set follows inside, and so on, inapplicable to depths much greater than say 75 ft. Inclined sinking is also limited to small depths. Crips are put in every few feet and around them, driven ahead as the excavation moves forward, heavy, short planks, sharpened to a chisel edge. The spiles are driven outward, being driven inside of one crip and outside of that next (fig. 6). The shod bottom also is usually sheathed with planking, braced against the sides and advanced to new positions as sinking proceeds.

Drop-shafts.—This important method has been used for depths of nearly 500 ft. At a heavy timber, iron or masonry lining (usually cylindrical), is sunk through the soil, new sections being successively added at the summit, while the excavation goes on inside. Vertical sinking is applicable to depths much greater than say 75 ft.Supported by a framework on the surface. The rods are lengthened as required for lowering the lining. For deep shafts the lining must be of iron or steel, as wood is too weak and masonry too heavy. When frozen, with a few hours of pumping, the material is evacuated by hand; otherwise, the water is allowed to stand at its natural level and the excavation carried on by dredging. This saves the cost of pumping during sinking, and the expense of removing material from the bottom of the shaft, as sometimes possible at the lowermost stage (see page 164). The dredging appliance commonly employed is the "sackborer." This consists of an iron or wooden rod, suspended vertically in the shaft, at the lower end of which on each side is attached a large drum of leather, opening in opposite directions. By rotating the rod by machinery at the surface, the sacks are swept round horizontally like the cutting edges of an auger, and partly filling after a calcium chloride solution is poured into them. The rod may be stopped in several ways, e.g., by concreting the shaft bottom, then pumping out the water and sinking through the concreted shaft by drilling and blasting; by unwatering the shaft and building below the shaft; or by inserting a wedging crib. There are various modifications of the drop-shaft which cannot here be detailed.

Sinking with caisson and compressed air is rarely adopted except in the construction of foundations for deep foundations of bridge piers, &c. (see Caisson.)

Freezing Process.—This useful process was introduced in Germany in 1887 by H. Poetsch. The soil is frozen and the rock artificially frozen and then excavated. A number of drive-pipes are put down (see Boring), usually 4 to 6 in. diameter and about 3 ft. apart, in a circle whose radius is, say, 3 ft. greater than that of the shaft to be excavated. The pipes are then plugged at the lower end and iced over. The outer ring is plugged at the lower end and within it is placed an open pipe, 1¼ in. in diameter, extending nearly to the bottom. Or, preferably, after the drive-pipes are down, a slightly smaller pipe, closed at its lower end, is introduced in each drive-pipe, the latter being afterwards pulled out. The inner 1¼ in. open pipes are then put in place. At the surface, the outer and inner pipes are connected respectively to two horizontal distributing rings, which in turn are connected with a pump and ice-machine. A circulatory system is thus established. The freezing fluid, a nearly saturated solution of calcium or magnesium chloride (freezing point about —20 F.), is pumped through the ice-making ring and allowed to run off through the inner pipes, into the freezing pipes. It passes down the inner pipes, up through the outer pipes, and returns to the ice-machine. The cold solution rising in the shaft absorbs latent heat from the surrounding watery soil, which freezes concentrically around each pipe. As the process goes on the frozen masses finally join (in from 3 to 4 weeks), forming an unbroken wall. The enclosed soft soil may then be excavated by dredging; or the freezing may be continued (total time usually from 3 to 10 weeks according to the depth), until the solidification reaches the centre and to some distance beyond the circle of pipes, after which the ground is drilled and blasted. This process has been successfully employed at depths of 100 ft. It is applicable not only to most unstable soils but also to heavily water-bearing rocks. It is questionable whether it will prove to be practicable for great depths, largely owing to the expansion of the water, e.g., in the case of the 'great drop-pipe' (in 1756) for the Liffey tunnel, the ice was allowed, which on vaporizing in the freezing pipes produces a temperature of —25 F., Sixty-four shafts had been sunk by the freezing process by 1904.

Another method proposed for dealing with quicksand or similar watery ground is to inject through pipes a mixture of cement and water. The entire mass of soil would be solidified by the setting of the granite sunk by drilling and blasting, with no trouble from water.

Bibliography.—The following partial list of references may be useful:


SHAGIA—SHAHJAHANPUR

(Nov. 1904), p. 188; Trans. Amer. Inst. M.E., xx. 188; Glickau (14th June 1902); School of Mines Quart. 111. 277; Rev. univ. des mines (July 1902); Bull. Soc. de l'Ind. Min. (1903), No. 1; Ann. des mines de Belgique, x. pt. 1; Mining Jour. (21st April 1906).


SHAGIA (SHAGIA, SHAIKHYEH), a tribe of Africans of Semitic origin, living on both banks of the Nile from Korti to the Third Cataract, and in portions of the Bayuda Desert. The Shagia are partly a nomad, partly an agricultural people. They claim descent from one Shayig Ibn Hamadion of the Beni Abbas, and declare that they came from Arabia at the time of the conquest of Egypt in the 7th century. They must have disemboged and largely intermarried with a people of Nuba origin. They appear from a statement by James Bruce to have settled originally south of their present country and to have moved northward since 1772. Formerly subject to the Funj kings of Semnar, they became independent on the decline of that state in the 18th century. They were overthrown c. 1811 at Dongola by the Mamelukes, but continued to dominate a considerable part of Nubia. To the Egyptians in 1820 they offered a stout resistance, but finally submitted and served in the Egyptian ranks during the suppression of the Ja'ilim revolt (1822). For their services they obtained lands of these latter between Shendi and Khartum. At that time they were far more civilized than the neighbouring tribes. Freedom-loving, brave, enlightened and hospitable, they had schools in which all Moslem science was taught, and were rich in corn and cattle. Their fighting men, mounted on horses of the famous Dongola breed, were feared throughout the eastern Sudan. Their chiefs wore coats of mail and carried shields of hippopotamus or crocodile skin. Their arms were lance, sword or javelin. The Shagia are divided into twelve clans. Their country is the most fertile along the Nile between Egypt and Khartum. Many of their villages are well built; some of the houses are fortified. They speak Arabic and Arabic-African. They possess a Semitic type, though they are obviously of very mixed blood. The typical Shagia has a sloping forehead, aquiline nose and receding chin. They have adopted the African custom of gashing the chests of their children. In the wars of 1884-85 General Gordon's first flight was to rescue a few Shagia besieged in a fort at Halfaya. In April 1884 Saleh Bey (Saleh Wad el Mek) led the head of the tribe, and 1400 men surrendered to the mahdi's forces. Numbers of Shagia continued in the service of General Gordon and this led to the outlay of the tribe by the mahdi. When Khartum fell Saleh's sons were sought out and executed by the dervishes. On the reconquest of the Sudan by the Anglo-Egyptian army (1896-98) it was found that the Shagia were reduced to a few hundred families.

SHAGREEN, a species of untanned leather with a roughened, granular surface. The word is the English form; cf. Ger. Schagrin, of Fr. chagrin, Ital. sagrino; these are usually referred to Turkish and Persian sagghi, lit. the back of a horse, and so applied to leather made from this part. The skin of the wild ass was especially used. The method of preparing the skins to secure the rough, granular surface is as follows. The skins of a place usually some species of Chinchipodium, are embroidered in fine. When soft, the surface is then shaved down and soaked in water, when the edges of the indentations swell up. The leather is then dyed, green being a favourite colour. Shagreen is now commonly made of the skins of sharks and rays; the placoid scales of the shark skin giving the necessary roughened surface. Shagreen is used as an ornamental leather for making pocket-books, small cases and the like, and for the handles of swords, daggers, &c.

The figurative use in French of 'chagrin,' for anxiety, annoyance, was adopted in English in the 17th century. This application of the word is due to the rasping surface of the leather.

SHAH, the title of the kings of Persia, the full title being padshah, i.e. "lord king," Pers. pātī, lord, and shah, king (see Padisah, the Turkish form of the word). The word shah is a much shortened form of the O. Pers. kshatrya, probably formed from kshaya, might, power, khsai, to rule. The Sanskrit kshatran, dominion, is allied, cf. also "satrap." From the Mh. Shāh, the king is dead, is ultimately derived, through the Arab. promonunteshāgh, "check-mate," then "check," "chess," "exchequer," &c.

SHAHABAD, a district of British India, in the Patna division of Bengal, with an area of 4373 sq. m. About three-fourths of the area to the north is an alluvial flat, planted with mangoes, bamboos and other trees; while the southern portion is occupied by the Kaimur hills, a branch of the great Vindyan range, and is a densely wooded tract. The chief rivers are the Ganges and the Sone, which unite in the north-eastern corner of Shahabad. In the southern portion large game abounds. The annual rainfall averages 43 in. In 1901 the population was 1,962,666, showing a decrease of 4.7% in the decade. The chief crops are rice, millets, wheat, pulses, oilseeds, poppy and sugarcanes. Shahabad is protected against drought by a system of canals from the Sone, some of which are navigable. The district is traversed by the East Indian railway near the Ganges, and by a branch from Mogul Serai to Gaya, which crosses the Sone at Dehri-on-Sone, where are the workshops of the canal. The administrative headquarters are at Arrah. Among other historic sites, it includes the hill-fort of Rohats, the tomb of Shere Shah at Sasseram and the battlefield of Buxar.

See Shahabad District Gazetteer (Calcutta, 1906).

SHAH ALAM (1728-1806), Mogul emperor of Delhi, son of Alamgir II, was born on the 15th of June 1728, and was originally known as the Shahzada Ali Gohar. Being proclaimed a rebel by his father, he fled to Shuja-ud-Dowlah, wazir of Oudh, and on the death of his father in 1759 assumed the name of Shah Alam. He joined Shuja-ud-Dowlah against the British, but after his defeat at the battle of Buxar, he sought British protection. In 1765 he granted the diwani (superintendence of the revenue) of Bengal to Lord Clive for the East India Company in return for a payment of 26 lakhs a year. In 1771 he fell into the hands of the Mahratta maharajah at Peshawar, when he lost the British subsidy. In 1788 the Rohilla chief Ghulam Kadir seized Delhi and put out Shah Alam's eyes. Sindhis restored him to the throne, and after the Mahratta war of 1803 he was again taken under British protection. He died on the 10th of November 1806.


SHAH JAHAN (1627-1658), Mogul emperor of Delhi, the fifth of the dynasty. After revolting against his father Jahangir, as the latter had revolted against Akbar, he succeeded to the throne on his father's death in 1627. It was during his reign that the Mogul power attained its greatest prosperity. The chief events of his reign were the destruction of the kingdom of Ahmadnagar (1646), the loss of Kandahar to the Persians (1653), and a second war against the Deccan princes (1655). In 1658 he fell ill, and was confined by his son Aurangzeb in the citadel of Agra until his death in 1666. The period of his reign was the golden age of Indian architecture. Shah Jahan erected many splendid monuments, the most famous of which is the Taj Mahal at Agra, built as a tomb for his wife Mumtaz Mahal; while the Pearl Mosque at Agra and the palace and great mosque at Delhi also commemorate him. The celebrated "Peacock Throne," said to have been worth £6,000,000 also dates from his reign; and he was the founder of the modern city of Delhi, the native name of which is Shahjanahanad.

SHAHJAHANPUR, a city and district of British India, in the Bareilly division of the United Provinces. The city is on the left bank of the river Deoha or Garra, 507 ft. above the sea-level, with a station on the Oudh and Rohilkhand railway, 768 m. N.W. of Calcutta, and a military cantonment. Pop.
SHAHPUR—SHAIRP

(1901) 75,128. It was founded in 1647 during the reign of Shah Jahan, whose name it bears, by Nawab Bahadur Khan, a Pathan. His mosque is the only building of antiquarian interest. There is a manufacture of sugar, but no great trade.

The District of Shaahjahanpur has an area of 1,727 sq. m. It is bounded on the north by the Ganges and on the south by the Himalayas, and is for the most part level and without any hills. The principal rivers are the Gumi, Khanaut, Garai, and Ramganga. To the north-east the country resembles the tarai in the preponderance of waste and forest over cultivated land, in the sparseness of population and in general unhealthiness. Between the Gumi and the Khanaut the country varies from a rather wild and unhealthy northern region to a densely inhabited tract in the south, with a productive soil cultivated with sugar-cane and other remunerative crops. The section between the Dehna and Garai comprises much marshy land; but south of the Garai, and between it and the Ramganga, the soil is mostly of a sandy nature. From the Ramganga to the Ganges in the south is a continuous low country of marshy patches, alternating with a hard clayey soil that requires much irrigation in parts. Shaahjahanpur contains a number of jhils or lakes, which afford irrigation for the spring crops. The climate is very similar to that of most parts of Oudh and Rohilkhand, but moister than that of the Doab. The annual rainfall averages about 37 in. In 1901 the population was 921,535. The principal crops are wheat, rice, pulse, millets, sugar-cane and poppy. The district suffered very severely from the famine of 1877-1879. It is traversed by the Lucknow-Bareilly section of the Oudh and Rohilkhand railway, with a branch northwards from Shaahjahanpur city. At Rossa is a large sugar refinery and rum distillery.

Shahjahanpur was ceded to the English by the nawab of Oudh in 1801. During the Mutiny of 1858 it became the scene of open rebellion. The Europeans were attacked and killed in church; three were shot down, but the remainder, aided by a hundred faithful sepoys, escaped. The force under Lord Clyde put a stop to the anarchy in April 1858, and shortly afterwards peace and authority were restored.

SHAHPUR, a town and district of British India, in Rawalpindi division of the Punjab. The town is near the left bank of the river Jhelum. Pop. (1901) 9386. The district of Shaahpur has an area of 4,840 sq. m. Its most important physical subdivisions are the Salt range in the north, the valleys of the Chenab and Jhelum, and the plains between those rivers and between the Jhelum and the Salt range. The characteristics of these two plains are widely different: the desert portion of the southern plain is termed the bar; the corresponding tract north of the Jhelum is known as the thal. The climate of the plains is hot and dry, but in the Salt range it is much cooler; the annual rainfall averages about 15 in. Tigers, leopards and wolves are found in the Salt range, while small game and antelope abound among the thick jungle of the bar. In 1901 the population was 524,259, showing an increase of 6% in the decade. The principal crops are wheat, millets, pulses and cotton. Irrigation is effected from government canals, and also from wells. The largest town and chief commercial centre is Bhera. The district is traversed by two branches of the North-Western railway.

Shaahpur passed into the hands of the English along with the rest of the Punjab in 1849. During the Mutiny of 1857 the district remained tranquil, and though the villages of the bar gave cause for alarm no outbreak of sepoys occurred. Since annexation the limits and constitution of the district have undergone much change.

SHAHRASTANI [Ab'l-Fath Majommed ibn 'Abdalikairm ub-sh-Shahrastani] (1076 or 1086-1153) Arabian theologian and jurist, was born at Shaahrastani in Khorasan and studied at Jurjaniyah and Nishapur, devoting his attention chiefly to Ash'arite theology. He made the pilgrimage in 1116, on his way back stayed at Bagdad for three years, then returned to his native place. His chief work is the Kitab ud Milad wan-Nikal, an account of religious sects and philosophical schools, published by W. Cureton (2 vols., London, 1846) and translated into German by T. Haarbrucker (2 vols., Halle, 1859-1891). After a preface of five chapters dealing with the division of the human race, an enumeration of the sects of Islam, the objections of Satan in detail, (2) the possessors of a written revelation (Jews and Christians) or something resembling it (the Magi), (3) the men who follow their own reason, i.e. the philosophers of Greece and their followers-among the Moslems; the pre-Islamic Arabs, the Indians and the heathen. Among Shahrastani's other works still in manuscript only are a history of philosophers, a dogmatic text-book and a treatment of seven metaphysical questions.

A brief account of him is given on the authority of his pupil, the historian Sam'ani, in Ibn Khallikan, vol. ii., pp. 675 ff. (G. W. T.)

SHAHRUD, the capital of the Shahrud-Bostam province of Persia, situated about 258 m. E. of Teheran, on the highroad to Meshed, at an altitude of 4,460 ft., in 36° 25' N., 54° 59' E. It has a population of about 10,000, post and telegraph offices, and a transit trade between western Khorsan and Astrahan. Although capital of the province, it is not the residence of the governor, who prefers the more healthy Bostam, a small city with fine gardens and a mosque of the 14th century, lying 3 m. to the north-east.

SHAH SHUJA (1782-1842), king of Afghanistan, was the son of Timur Shah, and grandson of Ahmad Shah, founder of the Durani dynasty. After conspiracies that caused the dethronement of two brothers, Taman Shah and Mahmud Shah, he became king in 1803. He was, however, in his turn driven out of Afghanistan in 1809 by Mahmoud Shah, and found refuge and a pension in British territory. Distrusting the attitude of the Amir Dost Mohammad towards Russia, Lord Auckland in 1839 attempted to restore Shah Shuja to the throne against the wishes of the Afghan people. This policy led to the disastrous first Afghan War. After the retreat of the British troops from Kabul, Shah Shuja shut himself up in the Bala Hisar. He left this retreat on the 5th of April 1842, and was immediately killed by the adherents of Dost Mohammad and his son Akbar Khan.

SHAIRP, JOHN CAMPBELL (1810-1885), Scottish critic and man of letters, was born at Houston House, Linlithgowshire, on the 30th of July 1810. He was the third son of Major Norman Shairp of Houston, and in 1837 was elected professor of Greek at the University of Glasgow. He gained the Snell exhibition, and entered at Balliol College, Oxford, in 1830. In 1842 he gained the Newdigate prize for a poem on Charles XII., and took his degree in 1844. During these years the "Oxford movement" was at its height. Shairp was stirred by Newman's sermons, and he had a great admiration for the poetry of Keble, on whose character and work he wrote an enthusiastic essay; but he remained faithful to his Presbyterian upbringing. After leaving Oxford he took a mastership at Rugby under Taft. In 1857 he became assistant to the professor of humanity in the university of St. Andrews, and in 1861 he was appointed to that chair. In 1864 he published Kilmahoe, a Highland Pastoral, and in 1868 he republished some articles under the name of Studies in Poetry and Philosophy. In 1868 he was presented to the principality of the United College, St. Andrews, and lectured from time to time on literary and ethical subjects. A course of the lectures was published in 1870 as Culture and Religion. In 1873 Principal Shairp helped to edit the life of his predecessor J. D. Forbes, and in 1874 he edited Dorothy Wordsworth's charming Recollections of the Newgate Scotch and the History of Scotland. Shairp was elected fellow of the British Academy of Poetry at Oxford in succession to Sir F. H. Doyle. Of his lectures from this chair the best were published in 1883 as Aspects of Poetry. In 1877 he had published The Poetic Interpretation of Nature, in which he enters fully into the "old quarrel," as Plato called it, between science and poetry, and traces with great clearness the ideas of nature in all the chief Hebrew, classical and English poets. In 1879 he contributed a life of Robert Burns to the "English Men of Letters" series. He was re-elected to the chair of
poetry in 1882, and discharged his duties there and at St Andrews till the end of 1884. He died at Ormsary, Argyllshire, on the 18th of September 1885. In 1888 appeared Glen Dessary, and other poems, edited by F. T. Palgrave.

See W. A. Knight’s Principal Shairg and his Friends (1888).

SHAKERS, an American celibate and communalistic sect, officially called "The United Society of Believers in Christ’s Second Appearing" or "The Millennial Church." The early Quakers were sometimes called Shakers, and the name, or its variant, Shaking Quakers, was applied in the early 18th century to a Manchester offshoot of the English Quakers, who, led by James and Ann Wardley, accepted the peculiar doctrines of the French Prophets, or Camisards, of Vivaraïs and Dauphiné. The Wardleys were succeeded by the real founder of Shakerism, Ann Lee (1736-1784), the daughter of a Manchester blacksmith. Although a believer in celibacy, she had at her parents’ urging married one Abraham Stanley (Standley, or Standerin); had borne him four children, who died in infancy; had joined the Wardleys in 1778; and had influenced their preachers to preach more publicly the imminent second coming and to attack sin more boldly and unconventionally. She was frequently imprisoned for breaking the Sabbath by dancing and shouting, and for blasphemy; had many “miraculous” escapes from death; and once, according to her story, being examined by four clergymen of the Established Church, spoke to them for four hours in seventy-two tongues. While in prison in Manchester for fourteen days, she said she had a revelation that “a complete cross against the lusts of men” (added to a full and explicit confession, before witnesses, of all the sins committed under its influence, was the only possible remedy and means of salvation.” After this, probably in 1770, she was chosen by the society as “Mother in spiritual things” and called herself “Ann, the Word.” In 1774 a revelation bade her take a select band to America. Accompanied by her husband, who soon afterward deserted her; her brother, William Lee (1740-1784); Nancy Lee, her niece; James Whittaker (1751-1757), who had been brought up by Mother Ann and was probably related to her; John Hocknell (1753-1799), who provided the funds for the trip; his son, Richard; and James Shepherd and Mary Partington, Mother Ann arrived on the 6th of August 1774 in New York City. Here they stayed for nearly two years. In 1776 Hocknell bought land at Niskayuna, in the township of Watervliet, near Albany, and the Shakers settled there. A spiritualistic revival in the neighboring town of New Lebanon sent many penitents to Watervliet, who accepted Mother Ann’s teachings and organized in 1787 (before any formal organization in Watervliet) the New Lebanon Society, the first Shaker Society, at New Lebanon (since 1861 called Averillton), Columbia Co., New York. The Society at Watervliet, organized immediately afterwards, and the New Lebanon Society formed a bishopric. The Watervliet members, as non-residents and non-jurors, had got into trouble during the War of Independence; in 1780 the Board of Elders were imprisoned, but all except Mother Ann were speedily set free, and she was released in 1781.

In 1781-1783 the Mother with chosen elders visited her followers in New York, Massachusetts and Connecticut. She died in Watervliet on the 8th of September 1784. James Whittaker was her successor for his life. He was succeeded by Joseph Meacham (1742-1796), who had been a Baptist minister in Enfield, Connecticut, and had, second only to Mother Ann, the spiritual gift of revelation. Under his rule and that of Lucy Wright (1760-1821), who shared the headship with him during his lifetime and then for twenty-five years ruled alone, the organization of the Shakers and, particularly, a rigid communism, began. By 1793 property had been made a “consecrated whole” in the different communities, but a “non-communal order” also had been established, in which sympathizers with the principles of the Believers lived in families. The Shakers never forbade marriage, but refused to recognize it as a Christian institution since the second coming in the person of Mother Ann, and considered it less perfect than the celibate state. Shaker communities in this period were established in 1790 at Hancock, West Pittsfield, Mass.; in 1792 at Harvard, Mass.; in 1792 at East Canterbury (or Shaker Village), New Hampshire; and in 1793 at Shirley, Mass.; at Enfield (or Shaker Station), Connecticut; at Tyringham, Mass., where the Society was afterwards abandoned, its members joining the communities in Hancock and Enfield; at Gloucester (since 1890, Sabbath-day Lake), Maine; and at Alfred, Maine, where, more than anywhere else among the Shakers, spiritualistic healing of the sick was practised. In Kentucky and Ohio Shakerism entered after the Kentucky revival of 1800-1801, and in 1805-1807 Shaker societies were founded at South Union, Logan county, and Pleasant Hill, Mercer county, Kentucky. In 1811 a community settled at Busro on the Wabash in Indiana; but it was soon abandoned and its members went to Ohio and to Kentucky. In Ohio later communities were formed at Watervliet, Hamilton county, and at Whittaker, Dayton county. In 1828 the communal property at Sodus Bay, New York, was sold and the community removed to Groveland, or Senea; their land here was sold to the state and the few remaining members went to Watervliet. A short-lived community at Canton, O., was merged in the Mount Lebanon (New York) and Enfield (Connecticut) communities. The numerical strength of the sect decreased rapidly, probably from 4000 to 1000 in 1887-1908; and there has been little effort made to plant new communities. The Mt. Lebanon Society in 1894 established a colony at Narcoossee, Florida; the attempt of the Union Village Society in 1898 to plant a settlement at White Oak, Camden county, Georgia, was unsuccessful. In 1910 the Union Village Society went into the hands of a receiver.

The period of spiritual manifestations among the Believers lasted from 1837 to 1847; first, children told of visits to cities in the spirit realm and gave “visions” to Shaker societies from 1837; in 1838 the gift of tongues was manifested and sacred places were set aside in each community, with names like Holy Mount; but in 1847 the spirits, after warning, left the Believers. The theology of the denomination is based on the idea of the first and second Christian Church; and of Mother Ann as the daughter of the first Christian Church and the second Christ Church—she was the bride ready for the Bridegroom, and in her the promises of the Second Commandment were fulfilled. In 1837 the separation of the sexes is done away with in the body of the Believers in the Second Appearance, must pattern after the Kingdom in which there is no marriage or giving in marriage. The four virtues are virgin purity; Christian communism; confession of sin, without which none can become Believers; and separation from the world. The Shakers do not believe in the divinity or deity of Jesus, or in the resurrection of the body. Their insistence on the bi-sexuality of God and their reverence for Mother Ann have made them advocates of sex equality. Their spiritual directors are elders and “eldresses,” and their temporal guides are deacons and deaconesses in equal numbers. They provide for under the half of each unit’s neckerchief and cap, and the custom of men wearing their hair long on the neck and cut in a straight bang on the forehead, still persist; but the women were different colours. The communism of the Believers was an economic necessity, but was held as a principle, which brought them the highest praise. They made leather in New York for several years, but in selling herbs and garden seeds, in making “apple-sauce” (at 9 cents a quart) and for the production of the United Village Society’s own newspaper, “The Sabbath-Day Lake Advocate” (1882-1883). See also Shakers, in America; Shakerism; Shaker Church; and Shaker Village.

1 A prominent part in this revival had been taken by Richard McNemar, a Presbyterian, who had broken with his Church because of his Arminian tendencies and had established the quasi-independent Turtle Creek Church. McNemar was won by Shaker missionaries, her brother-in-law and friar, received the formation of the Union Village Community on the site of the old Turtle Creek, 4 m. W. of Lebanon, Warren county, Ohio. McNemar was a kinsman of Lucy Wright, the first female lead; he came to be elected Ezra Wright; he wrote The Kentucky Revival (Cincinnati, 1807), probably the earliest defence of Shakerism, and a poem, entitled A Concise Answer to the General Inquiry Who or What are the Shakers (1808).
SHAKESPEARE

Shakespeare, in weaving linen (at Alfred), and in knitting underwear they did not overlook.

See John P. Mac Lean, A Bibliography of Shaker Literature, with an Introduction to the Studies of the Writings and Publications Pertaining to Ohio Believers, called Shakers (East-Canterbury, N.H., 1893); Anna White and Leila S. Taylor, Life, Letters, and Labors of Richard McNemer (Franklin, Ohio, 1905); Charles Edson Robinson, A Concise History of the United Society of Believers, called Shakers (East-Canterbury, N.H., 1923); and his Sketch of the Shakers, Second American Edition (Albion, 1888; and often elsewhere under other titles): M. Catherine Allen, A Century of Communion (Pittsfield, 1902); and the works of Nordhoff, Hoyes, Hinds, &c., on American communism.

SHAKESPEARE, WILLIAM (1564-1616), English poet, playwright, and actor. He was born in the parish church of Stratford-upon-Avon in Warwickshire on the 23rd of April 1564. The exact date of his birth is not known. Two 18th-century antiquaries, William Oldys and Joseph Greene, gave it as April 23, but without quoting authority for their statements, and the fact that April 23 was the day of Shakespeare's death in 1616 suggests a possible source of error. In any case his birthday cannot have been later than April 23, since the inscription upon his monument is dated the 23rd of April 1616. It is also certain that Shakespeare, who was a burgess of Stroud, was one of the two families of the town that contributed annually to the spiritual and moral instruction of the children of the town. He was a member of a family that had been in Stratford since 1529. It is possible that John Shakespeare, a bailiff in Stratford at the time of his father's death, and that by 1570 he had also acquired a small holding called Ingon in Hampton Lucy, the next village to Stratford. But both of these seem to have passed subsequently to his brother Henry, who was buried at Snitterfield in 1596. There was also at Snitterfield a Thomas Shakespeare and an Anthony Shakespeare, who afterwards moved to Hampton Corley; and these may have been of the same family. A John Shakespeare, who dwelt at Clifford Chambers, another village close to Stratford, is clearly distinct. Strenuous efforts have been made to trace Shakespeare's genealogy beyond Richard of Snitterfield, but so far without success. Certain drafts of heraldic exemplifications of the Shakespeare arms speak, in one case of John Shakespeare's grandfather, in another of his great-grandfather, as having been rewarded with lands and tenements in Warwickshire for service to Henry VII. No such grants, however, have been traced, and even in the 16th-century statements as to "antiquity and service" in heraldic preambles were looked upon with suspicion.

The name Shakespeare is extremely widespread, and is spelt in an astonishing variety of ways. That of John Shakespeare occurs 166 times in the Council Book of the Stratford corporation, and appears to take 16 different forms. The verdict, not altogether unanimous, of competent palaeographers is to the effect that Shakespeare himself, in the extant examples of his signature, always wrote "Shakespeare." In the printed signatures to the dedications of his poems, on the title-pages of nearly all the contemporary editions of his plays that bear his name, and in many formal documents it appears as Shakespeare.

This may be in part due to the maternal derivation which the poet's literary contemporaries were fond of assigning to his name, and which is acknowledged in the arms that he bore. The forms in use at Stratford, however, such as Shaxpeare, by far the commonest, suggest a short pronunciation of the first syllable, and thus tend to support Dr Henry Bradley's derivation from the Anglo-Saxon personal name, Seaxberht. It is interesting, and even amusing, to record that in 1487 Hugh Shaskpe of Merton College, Oxford, changed his name to Sawndawe, because his former name "vile reputatiun eas." The earliest record of a Shakespeare that has yet been traced is in 1487 at Clapton in Gloucestershire, a Richard Shakespeare of the same name, and in 1592 at the parish of Kendon, in Lancashire; and on the inscription of the memorial stone of Richard Shakespeare at Stratford, 1575, there is written the name Willam, in common use as a personal name, and Williams from more than one other family have from time to time been confounded with the dramatist. Many Shakespeares are upon the register of the gild of St Anne at Knowle from about 1547 to about 1562. Amongst these were Isabella Shakespeare, prioress of the Benedictine convent of Wroxall, and Jane Shakespeare, a nun of the same convent. Shakespeare is also found as tenants on the Manor belonging to the convent, and at the time of the Dissolution in 1534 one Richard Shakespeare was its bailiff and collector of rents. Convictual attempts have been made on the one hand to connect the ancestors of this Richard Shakespeare with a family of the same name who held land by military tenure at Baddesley Clinton in the 14th and 15th centuries, and on the other to identify him with the poet's grandfather, Richard Shakespeare of Snitterfield. But Shakespeares are to be traced at Wroxall nearly as far back as at Baddesley Clinton, and there is no reason to suppose that Richard the bailiff, who was certainly a tenant of Wroxall in 1536, had also since 1529 been farming land ten miles off at Snitterfield. With the production of this trail, the hope of giving Shakespeare anything more than a grandfather on the father's side must be quite abandoned. The present on the mother's side was connected with a family of some distinction. Part at least of Richard Shakespeare's land at Snitterfield was held from Robert Arden of Wilmcote in the adjoining parish of Aston Cantlow, a cadet of the Arden of Parkhall, who counted amongst the leading gentry of Warwickshire. Robert Arden married his second wife, Agnes Hill, formerly Webbe, in 1548, and had then no less than eight daughters by his first wife. To the youngest of these, Mary Arden, he left in 1556 a freehold in Aston Cantlow consisting of a farm of about fifty or sixty acres in extent, known as Asbies. At some date later than November 1556, and probably before the end of 1557, Mary Arden became the wife of John Shakespeare. In October 1556 John Shakespeare had bought two freehold houses, one in Greenhill Street, the other in Henley Street. The latter, known as the wool shop, was the easternmost of the two tenements now combined in the so-called Shakespeare's birthplace. The western tenement, the birthplace proper, was probably already in John Shakespeare's hands, as he seems to have been living there at the time of his marriage. This living has been thought to have been one of two houses which formed a later purchase in 1575, but there is no evidence that these were in Henley Street at all.

William Shakespeare was not the first child. A Joan was baptized in 1558 and a Margaret in 1562. The latter was buried in 1563 and the former must also have died young, although her burial is not recorded, as a second Joan was baptized in 1569. A Gilbert was baptized in 1566, an Anne in 1571, a Richard in 1574 and an Edmund in 1580. Anne died in 1579; Edmund,
who like his brother became an actor, in 1607; Richard in 1613. Tradition has it that one of Shakespeare’s brothers used to visit London in the 17th century as quite an old man. If so, this can only have been Gilbert.

During the years that followed his marriage, John Shakespeare became prominent in Stratford life. In 1565 he was chosen as an alderman, and in 1568 he held the chief municipal office, that of bailiff. This carried with it the dignity of justice of the peace. John Shakespeare seems to have assumed arms, and thenceforward was always entered in corporation documents as “Mr” Shakespeare, whereby he may be distinguished from another John Shakespeare, a “corviser” or shoemaker, who dwelt in Stratford about 1584-1592. In 1571 as an ex-bailiff he began another year of office as chief alderman.

One may think, therefore, of Shakespeare in his boyhood as the son of one of the leading citizens of a not unimportant provincial market-town, with a vigorous life of its own, which in spite of the duellings was probably not much unlike the life of a similar town to-day, and with constant reminders of its past in the shape of the stately buildings formerly belonging to its college and guild, both of which had been suppressed at the Reformation. Stratford stands on the Avon, in the midst of an agricultural country, throughout which in those days enclosed orchards and meadows alternated with open fields for tillage, and not far from the wilder and wooded district known as the Forest of Arden. The middle ages had left it an heritage in the shape of a free grammar-school, and here it is natural to suppose that William Shakespeare obtained a sound enough education,1 with a working knowledge of “Mantuan” and Ovid in the original, even though to such a thorough scholar as Ben Jonson it might seem no more than “small Latin and less Greek.” In 1577, when Shakespeare was about thirteen, his father’s fortunes began to take a turn for the worse. He became irregular in his contributions to levies, and had to give a mortgage on his wife’s property of Ashby as security for a loan from her brother-in-law, Edmund Lambert. Money was raised to pay this off, partly by the sale of a small interest in land at Snitterfield which had come to Mary Shakespeare from her sisters, partly perhaps by that of the Greenhill Street house and other property in Stratford outside Henley Street, none of which seems to have ever come into William Shakespeare’s hands. In 1584 he married Ann Hathaway, from whom he got the mortgage on the plea of older debts, and an attempt to recover Ashby by litigation proved ineffectual. John Shakespeare’s difficulties increased. An action for debt was sustained against him in the local court, but no personal property could be found on which to distrain. He had long ceased to attend the meetings of the corporation, and as a consequence he was removed in 1586 from the list of aldermen. In this state of domestic affairs it is not likely that Shakespeare’s school life was unduly prolonged. The chances are that he was apprenticed to some local trade. Aubrey says that he killed calves for his father, and “would do it in a high style, and make a speech.”

Whatever his circumstances, they did not deter him at the early age of eighteen from the adventure of marriage. Rowe recorded the name of Shakespeare’s wife as Hathaway, and Joseph Greene succeeded in tracing her to a family of that name dwelling in Shottery, one of the hamlets of Stratford. Her monument gives her first name as Anne, and her age as sixty-seven in 1623. She must, therefore, have been about eight years older than Shakespeare. Various small traits of evidence point to her identification with the daughter Agnes mentioned in the will of Christopher Hathaway, of Stratford, who died in 1581, being then in possession of the farm-house now known as “Anne Hathaway’s Cottage.” Agnes was legally a distinct name from Anne, but there can be no doubt that ordinary custom treated them as identical. The principal record of the marriage is a bond dated on November 28, 1582, and executed by Fulke Sandells and John Richardson, two yeomen of Stratford who also figure in Richard Hathaway’s will, as a security to the bishop for the issue of a licence for the marriage of William Shakespeare and “Anne Hathway of Stratford,” upon the consent of her friends, with one asking of the banns. There is no reason to suppose, as has been suggested, that the procedure adopted was due to dislike of the marriage on the part of John Shakespeare, since, the bridegroom being a minor, it would not have been in accordance with the practice of the bishop’s officials to license a marriage unless the banns were first read. The explanation probably lies in the fact that Anne was already with child, and in the near neighbourhood of Advent within which marriages were prohibited, so that the ordinary procedure by banns would have entailed a delay until after Christmas. A kindly sentiment has suggested that some form of civil marriage, or at least contract of espousals, had already taken place, so that a canonical marriage was really only required in order to enable Anne to secure the legacy left her by her father “at the day of her marriage.” But such a theory is not rigidly required by the facts. It is singular that, upon the day that on which the bond was executed, an entry was made in the bishop’s register of the issue of a licence for a marriage between William Shakespeare and “Annam Whateley de Temple Grafton.” Of this it can only be said that the bond, as an original document, is infinitely the better authority, and that a scrivinal error of “Whateley” for “Hathaway” is quite a possible solution. Temple Grafton may have been the nominal place of marriage indicated in the licence, which was not always the actual place of residence of either bride or bridegroom. There are no contemporary registers for Temple Grafton, and there is no entry of the marriage in the Grafton-upon-Avon. There is a tradition that such a record was seen during the 19th century in the registers for Luddington, a chapelry within the parish, which are now destroyed. Shakespeare’s first child, Susanna, was baptized on the 26th of May 1583, and was followed on the 2nd of February 1585 by twins, Hamnet and Judith.

In or after 1584 Shakespeare’s career in Stratford seems to have come to a tempestuous close. An 18th-century story of a drinking-bout in a neighbouring village is of no account as mere school tale, but it is singular that, upon the day that on which the bond was executed, an entry was made in the bishop’s register of the issue of a licence for a marriage between William Shakespeare and “Annam Whateley de Temple Grafton.” Of this it can only be said that the bond, as an original document, is infinitely the better authority, and that a scrivinal error of “Whateley” for “Hathaway” is quite a possible solution. Temple Grafton may have been the nominal place of marriage indicated in the licence, which was not always the actual place of residence of either bride or bridegroom. There are no contemporary registers for Temple Grafton, and there is no entry of the marriage in the Grafton-upon-Avon. There is a tradition that such a record was seen during the 19th century in the registers for Luddington, a chapelry within the parish, which are now destroyed. Shakespeare’s first child, Susanna, was baptized on the 26th of May 1583, and was followed on the 2nd of February 1585 by twins, Hamnet and Judith.

Obscure years: 1586-1592.

1 It is worth noting that Walter Rudge, who in 1558 became fellow of Corpus Christi College, Oxford, was master of the school in 1570-1572, so that its standard must have been good.

2 Baptista Mantuanus (1442-1516), whose Latin Elogues were translated by Turliberg in 1507.
Stratford with one of the travelling companies of players which from time to time visited the town. Later biographers have fixed upon Leicester's men, who were at Stratford in 1587, and have held that Shakespeare remained to the end in the same company, passing with it on Leicester's death in 1588 under the patronage of Ferdinando, Lord Strange and afterwards earl of Derby, and on Derby's death in 1594 under that of the lord chamberlain, Henry Carey, Lord Hunsdon. This theory perhaps hardly makes sufficient account more conveniently taken up at a time and recombinations of actors, especially during the disasurous plague years of 1592 to 1594. The continuity of Strange's company with Leicester's is very disputable, and while the names of many members of Strange's company in and about 1593 are on record, Shakespeare's is not amongst them. It is at least possible, as will be seen later, that he had about this time relations with the earl of Pembroke's men, or with the earl of Sussex's men, or with both of these organizations.

What is clear is that by the summer of 1592, when he was twenty-eight, he had begun to emerge as playwright, and had evoked the jealousy of one at least of the group of scholar poets who in recent years had claimed a monopoly of the stage. This was Robert Greene, who, in an invective on behalf of the play-makers against the play-actors which forms part of his Groat's-worth of Wit, speaks of "an uppstart Crow, beautified with our feathers, that with his Tygers heart wrapt in a Players hide, supposes he is as well able to bumbast out a blanke verse as the best of you: and being an absolute Johannes fac totum, is in his owne conceit the onely Shake-scene in a country." The play upon Shakspere's name and the parody of a line from Henry VI. make the reference unmistakable.1 The London theatres were closed, first through riots and then through plague, from June 1592 to April 1594, with the exception of about a month at each Christmas during that period; and the companies were dissolved or driven to the provinces. Even if Shakespeare had been connected with Strange's men during their London seasons of 1592 and 1593, it does not seem that he travelled with them. Other activities may have been sufficient to occupy the interval. The most important of these was probably an attempt to win a reputation in the world of non-dramatic poetry. Venus and Adonis was published about April 1593, and Lucrece about May 1594. The poems were printed by Richard Field, in whom Shakespeare would have found an old Stratford acquaintance; and each has a dedication to Henry Wrothlesley, earl of Southamton, a brilliant and accomplished favourite of the court, still in his nage. A possibly super-subtle criticism discerns an increased warmth in the tone of the later dedication, which is supposed to argue a marked growth of intimacy. The fact that this intimacy is vouched for by the story handed down from Sir William Davenant to Rowe (who published in 1670 the first regular biography of Shakespeare) that Southampton gave Shakespeare a thousand pounds "to enable him to go through with a purchase which he heard he had a mind to." The date of this generosity is not specified, and there is no known purchase by Shakespeare which can have cost anything like the sum named. The mention of Southampton leads naturally to the most difficult problem for the biographer to handle, that of the Sonnets. But this will be more presently taken up, as the later point, and it is only necessary here to put on record the probability that the earliest of the sonnets belong to the period now under discussion. There is a surmise, which is not in itself other than plausible, and which has certainly been supported with a good deal of ingenious argument, that Shakespeare's enforced leisure enabled him to make of 1593 a Wandering, and in particular that the traces of a visit to northern Italy may clearly be seen in the local colouring of Lucrece as compared with Venus and Adonis and in that of the group of plays which may be dated in or about 1594 and 1595 as containing elements of the later that preceded. It must, however, be borne in mind that, while Shakespeare may perfectly well, at this or at some earlier time, have voyaged to Italy, and possibly Denmark and even Germany as well, there is no direct evidence to rely upon, and that inference from internal evidence is a dangerous guide when a writer of so assimilative a temperament as that of Shakespeare is concerned.

From the reopening of the theatres in the summer of 1594 onwards Shakespeare's status is in many ways clearer. He had certainly become a leading member of the Chamberlain's company by the following winter, when his name appears for the first and only time in the treasurer of the chamber's accounts as one of the recipients of payment for their performances at court; and there is every reason to suppose that he continued to act with and write for the same associates to the close of his career. The history of the company may be briefly told. At the death of the lord chamberlain on the 22nd of July 1596, it passed under the protection of his successor, George, and lord Hunsdon, and once more took the name of "the Chamberlain's men" when it was appointed to that office on the 17th of March 1597. James I. on his accession took this company under his patronage as grooms of the chamber, and during the remainder of Shakespeare's connexion with the stage they were "the King's men." The records of performances at court show that they were by far the most favoured of the companies, their nearest rivals being the company known during the reign of Elizabeth as "the Admiral's," and afterwards as "Prince Henry's men." From the summer of 1594 to March 1603 they appear to have played almost continuously in London, as the only provincial performances by them which are upon record were during the autumn of 1597, when the London theatres were for a short time closed owing to the interference of some of the players in politics. They travelled again during 1603 when the plague was in London, and during at any rate portions of the summers or autumns of most years thereafter. In 1594 they were playing at Newington Butts, and probably also at the Rose on Bankside, and at the Cross Keys in the city. It is natural to suppose that in later years they used the Theatre in Shoreditch, since this was the property of James Burbage, the father of their principal actor, Richard Burbage. The Theatre was pulled down in 1595, and after a short interval during which the company may have played at the Curtain, also in Shoreditch, Richard Burbage and his brother Cuthbert rehoused them in the Globe on Bankside, built in part out of the materials of the Theatre. Here the profits of the enterprise were divided between the members of the company as such and the owners of the building as "housekeepers," and shares in the "house" were held in joint tenancy by Shakespeare and some of his leading fellows. About 1608 another playhouse became available for the company in the "private or winter house" of Edward Alleyn in Blackfriars. The property was also the property of the Burbages, but had previously been leased to a company of boy players. A somewhat similar arrangement as to profits was made.

Shakespeare is reported by Aubrey to have been a good actor, but Adam in As You Like It, and the Ghost in Hamlet indicate the type of part which he played. As a dramatist, however, he was the mainstay of the company for at least some fifteen years, during which Ben Jonson, Dekker, Beaumont and Fletcher, and Tourneur also contributed to their repertory. On an average they were most frequently taken up in 1594 and 1595 as compared for the two years or more in the opening years of the period. There was also no doubt a good deal of rewriting of his own earlier work, and also perhaps, at the beginning, of that of others. Occasionally he may have entered into collaboration, as, for example, at the end of his career, with Fletcher.

In a worldly sense he clearly flourished, and about 1596, if not earlier, he was able to resume relations as a moneyed man with Stratford-on-Avon. There is no evidence to show whether he had visited the town in the interval, or whether he had bought a house and family to London. His son Hamnet died and was buried at Stratford in 1596. During the last ten years John Shakespeare's affairs had remained unprosperous. He incurred fresh debt, partly through becoming surety for

1 It is most improbable, however, that the apologetic reference in Chettle's Kind-hart's Dream (December 1592) refers to Shakespeare.
his brother Henry; and in 1592 his name was included in a list of recusants dwelling at or near Stratford-on-Avon, with a note by the commissioners that in his case the cause was believed to be the fear of process for debt. There is no reason to doubt this explanation, or to seek a religious motive in John Shakespeare’s abstinence from church. William Shakespeare’s purse must have made a considerable difference. The prosecutions for debt ceased, and in 1597 a fresh action was brought in Chancery for the recovery of Asbies from the Lamberts. Like the last, it seems to have been without result. Another step was taken to secure the dignity of the poet and to obtain a habitation. In 1598 Shakespeare was granted to John Shakespeare while he was bailiff of Stratford. The hearings were on a bond sable a spear or steeld argent, the crest a falcon his wings displayed argent supporting a spear or steeld argent, and the motto Non sans droict. The grant was duly made, and in 1599 there was a further application for leave to impale the arms of Arden, in right of Shakespeare’s mother. No use, however, of the Arden arms by the Shakespeares can be traced. In 1597 Shakespeare made an important purchase for London. In 1598 he bought the famous site of New Place in Stratford. This was one of the largest houses in Stratford, and its acquisition an obvious triumph for the ex-poacher. Presumably John Shakespeare ended his days in peace. A visitor to his shop remembered him as “a merry-cheek’d old man” always ready to crack a jest with his son. He died in 1601, and his wife in 1608, and the Henley Street houses passed to Shakespeare. Aubrey records that he paid annual visits to Stratford, and there is evidence that he kept in touch with the life of the place. The correspondence of his neighbours, the Quineys, in 1598 contains an application to him for a loan to Richard Quiney upon a visit to London, and a disposition of his investments for the benefit of his children in the neighbourhood of Stratford. In 1602 he took, at a rent of 25. 6d. a year, a copyhold cottage in Chapel Lane, perhaps for the use of his gardener. In the same year he invested £320 in the purchase of an estate consisting of 107 acres in the open fields of Old Stratford, together with a farm-house, garden and orchard, 20 acres of pasture and common rights; and in 1605 he spent another £440 in the outstanding term of a lease of certain great tithes in Stratford parish, which brought in an income of about £60 a year.

Meanwhile Shakespeare remained his headquarters. Here Malone thought that he had evidence, now lost, of his residence in Southwark as early as 1596, and as late as 1608. It is known that payments of subsidy were due from him for 1597 and 1598 in the parish of St Helen’s, Bishops-gate, and that an arraignment was ultimately collected in the liberty of the Clink. He had no doubt migrated from Bishopsgate when the Globe upon Bankside was opened by the Chamberlain’s men. There is evidence that in 1604 he “laid,” temporarily or permanently, in the house of Christopher Mountjoy, a tanner’s family of French extraction, at the corner of Silver Street and Monkwell Street in Cripplegate. A recently recovered note by Aubrey, if it really refers to Shakespeare (which is not quite certain), is of value as throwing light not only upon his abode, but upon his personality. Aubrey seems to have derived it from William Beeston the actor, and through him from John Lacy, an actor of the king’s company. It is as follows: “The more to be admired quod he not a company-keeper, lived in Shoreditch, would not be debauched, & if invited to court, he was in paine.” Against this testimony to the correctness of Shakespeare’s morals are to be placed an anecdote of a green-room amour picked up by a Middle Temple student in 1602 and a Restormel scandal which made him the father by the hostess of the Crown Inn at Oxford, where he baited on his visits to Stratford, of Sir William Davenant, who was born in February 1606. His credit at court is implied by Ben Jonson’s references to his flights “that so did take Eliza and our James,” and by stories of the courtesies which passed between him and Elizabeth while he was playing a kindly part in her presence, of the origin of the The Merry Wives of Windsor in her desire to see Falstaff in love, and of an autograph letter written to honour him by King James. It was noticed with some surprise by Henry Chettle that his “honyed muse ” dropped no “sable tear” to celebrate the death of the queen. Southampton’s patronage may have introduced him to the brilliant circle that gathered round the earl of Essex, but there is no reason to suppose that he or his company were held personally responsible for the performance of Richard II. at the command of some of the followers of Essex as a prelude to the disastrous rising of February 1601. The editors of the First Folio speak also of favours received by the author in his lifetime from Walsingham, earl of Pembroke, and his brother Philip Herbert, earl of Montgomery.

He appears to have been on cordial terms with his fellows of the stage. One of them, Augustine Phillips, left him a small legacy in 1605, and in his own will he paid a similar compliment to Richard Burbage, and to John Heminge and Henry Condell, who afterwards edited his plays. His relations with Ben Jonson, whom he is said by Rowe to have introduced to the world as a playwright, have been much canvassed. Jests are preserved which, even if apocryphal, are interesting as evidence of an intimate and constant friendship inconsistent with occasional passages of arms. The anonymous author of The Return from Parnassus (2nd part; 1602), for example, makes Kempe, the actor, allude to a “purge” which Shakespeare gave Jonson, in return for his attack on some of his rivals in The Poetaster.1 It has been conjectured that this purge was the description of Ajax and his humours in Troilus and Cressida. Jonson, on the other hand, who was criticism incarnate, did not spare Shakespeare either in his prologues or in his private conversation. He told Drummond of Hawthorn that “Shakespeare wanted arte.” But the verses which he contributed to the First Folio are generous enough to make all amends, and in his Discoveries (pubd. 1641; written c. 1624 and later), while regretting Shakespeare’s excessive facility and the fact that he often “fell into those things, could not escape laughter,” he declares him to have been “honest and of an open and free nature,” and says that, for his own part, “I lov’d the man and do honour his memory (on this side idolatry) as much as any.” According to the memoranda-book (1661–1663) of the Rev. John Ward (who became vicar of Stratford in 1662), Jonson and Michael Drayton, himself a Warwickshire poet, had “the privilege of not eating with the rest, the wise men of which he died; and Thomas Fuller (1608–1661), whose Worthies was published in 1662, gives an imaginative description of the wit combats, of which many took place between the two mighty contemporaries.

Of Shakespeare’s literary reputation during his lifetime there is ample evidence. He is probably neither the “Willy” of Spenser’s Tears of the Muses, nor the “Action” of his Colin Clout’s Come Home Again. But from the time of the publication of Venus and Adonis and Lucrece honorific allusions to his work both as poet and dramatist, and often to himself by name, come thick and fast from writers of every kind and degree. Perhaps the most interesting of these from the biographical point of view are those contained in the Palladis Tamia, a kind of literary handbook published by Francis Meres in 1598; for Meres not only extols him as “the most excellent in both kinds [i.e. comedy and tragedy] for the stage,” and one of “the most passionate among us to bewail and bemoan the perplexities of Love,” but also takes the trouble to give a list of twelve plays already written, which serves as a starting-point for all modern attempts at a chronological arrangement of his work. It is moreover from Meres that we first hear of “his sugred Sonnets among his private friends.” Two of these sonnets were printed in 1599.

1 Kempe (speaking to Burbage), “Few of the university pen plays well. They smell too much of that writer Ovid and that writer (sic) Metamorphosis, and talk too much of Proserpine and Jupiter. Why here’s our fellow Shakespeare puts them all down; ay, and Ben Jonson too. O that Ben Jonson is a pestilent fellow. He brought up Homece giving the Poets a pill, but our fellow Shakespeare hath given him a purge that made him beray his credit.”
the grave has been assigned by local tradition to his own pen. A more elaborate monument, with a bust by the sculptor Gerard Johnson, was in due course set up on the chancel wall.

Anne Shakespeare followed her husband on the 6th of August 1613. The family was never founded. Shakespeare's grand-daughter, Elizabeth Hall, made two childless marriages, the first with Thomas Nash of Stratford, the second with John, afterwards Sir John, Barnard of Abington Manor, Northants. His daughter Judith Quiney had three sons, all of whom had died unmarried by 1639. There were, therefore, no male descendants of Shakespeare. His youngest daughter, Lady Barnard's death in 1670. Those of his sister, Joan Hart, could however still be traced in 1864. On Lady Barnard's death the Henley Street houses passed to the Harts, in whose family they remained until 1806. They were then sold, and in 1846 were bought for the public. They are now held with Anne Hathaway's Cottage at Shottery as the Birthplace Trust. Lady Barnard had disposed of the Blackfriars house. The rest of the property was sold under the terms of her will, and New Place passed, firstly to the Claptons who rebuilt it, and then to the Rev. Francis Gastrell, who pulled it down in 1759. The site now forms a public square round and hard by is a memorial building with a theatre in which performances of Shakespeare's plays are given annually in April. Both the Memorial and the Birthplace contain museums, in which books, documents and portraits of Shakespearian interest, together with relics of greater or less authenticity, are stored.

No letter or other writing in Shakespeare's hand can be proved to exist, with the exception of three signatures upon his will, one upon a deposition (May 11, 1612) in a lawsuit with which he was remotely concerned, and two upon deeds (March 10 and May 1614) in connexion with his house of the Blackfriars and with Lady Barnard. A copy of Florio's translation of Montaigne's "De Greciens et Romains" in the Bodleian, and a copy of the 1612 edition of Sir Thomas North's translation of Plutarch's "Lives of the Noble, Gentle and Illustrious Men" in the Greenock Library, have all been put forward with some plausibility as being his autograph name or initials, and, in the third case, a marginal note by him. A passage in the manuscript of the play of "Sir Thomas More" has been ascribed to him ("ride infra"); and, if the play is his, might be in his handwriting. Aubrey records that he was "a hand-some, well-shap man," and the lameness attributed to him by some writers has its origin only in a too literal interpretation of certain references to physical disabilities in the Sonnets.

A collection of Mr William Shakespeare's Comedies, Histories and Tragedies was printed at the press of William and Isaac Jaggard, and issued by a group of booksellers in 1623. This volume is known as the First Folio. It has dedications to the ears of Pembroke and Montgomery, and to "the great Variety of Readers," both of which are signed by two of Shakespeare's "fellows." At the Globe, John Heminge and Henry Condell, and commentators verses by Ben Jonson, Hugh Holland, Leonard Digges and an unidentified I. M. The Durossh in engraving forms part of the title-page. The contents include, with the exception of Pericles, all of the thirty-seven plays now ordinarily printed in editions of Shakespeare's works. Of these eighteen were here published for the first time. The other eighteen had already appeared in one or more separate editions, known as the Quarto.

The following list gives the date of the First Quarto of each such play, and also of any later Quarto which differs materially from the First.

The Quarto Editions.

Titus Andronicus (1594).
2 Henry VI. (1594).
3 Henry VI. (1595).
2 Henry VIII. (1597-1608).
Richard III. (1597).
Roméo et Juliet (1597, 1599).
Locrine's Lost (1598).
1 Henry IV. (1598).
2 Henry IV. (1600).
3 Henry IV. (1600).
4 Henry IV. (1600).
A Midsummer Night's Dream (1600).
The Tempest of Venice (1600).
Much Ado About Nothing (1600).
The Merry Wives of Windsor (1602).
Hamlet (1603, 1604).
King Lear (1608).
Troilus and Cressida (1609).
Othello (1622).
Entries in the Register of copyrights kept by the Company of Stationers indicate that editions of *As You Like It* and *Antony and Cleopatra* were contemplated but not published in 1600 and 1608 respectively.

The Quartos differ very much in character. Some of them contain texts which are practically identical with those of the First Folio; others show variations so material as to suggest that some revision, either by rewriting or by shortening for stage purposes, took place. Amongst the latter are 2, 3, Henry VI., Richard III., Romeo and Juliet, *The Merry Wives of Windsor*, Hamlet and King Lear. Many scholars doubt whether the Quarto versions of 2, 3 Henry VI., which appear after the Folio, but all of them are marked by a looseness of language; in between the two famous Histories of York and Lancaster and The True Tragedy of Richard Duke of York, are Shakespeare's work at all. It seems clear that the Quartos of The Troublesome Reign of John King of England (1591) and The Taming of a Shrew (1594), although treated for copyright purposes as identical with the plays of King John and The Taming of the Shrew, which he founded upon them, are not his. The First Quartos of Romeo and Juliet, Henry V., *The Merry Wives of Windsor*, and *Hamlet* seem to be mainly based, not upon written texts of the plays, but upon versions largely made up out of such tracts as had in other times been composed for the actors by the agents of a piratical bookseller. A similar desire to exploit the commercial value of Shakespeare's reputation probably led to the appearance of his name or initials upon the title-pages of *Locrine* (1595), Sir John Oldcastle (1600), Thomas Lord Cromwell (1601), *The London Prodigal* (1605), The Parian (1607), *A Yorkshire Tragedy* (1608), and *Pericles* (1609). It is not likely that, with the exception of the last three acts of *Pericles*, he wrote any part of these plays, some of which were not even produced by his company. They were not included in the First Folio of 1623, nor in a reprint of it in 1632, known as the Second Folio: but all seven were appended to the second issue (1664) of the Third Folio (1663), and to the Fourth Folio of 1685. Shakespeare is named as joint author with John Fletcher on the title-page of *The Two Noble Kinsmen* (1634), and with William Rowley on that of *The Birth of Merlin* (1606); there is no reason for rejecting the former ascription or for accepting the latter. Late entries in the Stationers' Register assign to him Cardenio (with Fletcher), Henry I. and Henry II. (both with Robert Davenport), King Stephen, Duke Humphrey, and Iphic and Ionba; but none of these plays is now extant. Modern conjecture has attempted to trace his hand in other plays, of which *Arden of Feversham* (ascribed to William Shakespeare as early as 1592), Edward III. (1596), *Mucedorus* (1598), and *The Merry Devil of Edmonton* (1608) are the most important; it is quite possible that he may have had a share in Edward III. A play on Sir Thomas More, which has been handed down in manuscript, contains a number of passages, interpolated in various handwritings, to meet requirements of the censor; and there are those who assign one of these (ii. 4, 1-172) to Shakespeare.

Unfortunately the First Folio does not give the dates at which the plays contained in it were written or produced; and the endeavour to supply this deficiency has been one of the main preoccupations of more than a century of Shakespearean scholarship, since the pioneer essay of Edmund Malone in his *An Attempt to Ascerlain the Order in which the Plays of Shakespeare were Written* (1778). The investigation is not a mere piece of barren antiquarianism, for on it depends the possibility of appreciating the work of the world's greatest poet, not as if it were an articulated whole like a philosophical system, but in its true aspect as the reflex of a vital and constantly developing personality. A starting-point is afforded by the dates of the Quartos and the entries in the Stationers' Register which refer to them, and by the list of plays already in existence in 1598 which is inserted by Francis Meres in his *Palladis Tamia* of that year, and which, while not necessarily exhaustive of Shakespeare's pre-1598 writing, includes *The Two Gentlemen of Verona, The Comedy of Errors, Love's Labour's Lost, A Midsummer Night's Dream, The Merchant of Venice, Richard II., Richard III., Henry IV., King John, Titus Andronicus and Romeo and Juliet*, as well as a mysterious *Love's Labour's Won*, which has been conjecturally identified with several plays, but most plausibly with *The Taming of the Shrew*. There is a mass of supplementary evidence, drawn partly from definite notices in other writings or in diaries, letters, account-books, and similar records, partly from allusions to contemporary persons and events in the plays themselves, partly from parodies of thought and expression between each play and those near to it in point of time, and partly from considerations of style, including the so-called metrical tests, which depend upon an analysis of Shakespeare's varying feeling for rhythm at different stages of his career. The total result is certainly not a demonstration, but in the logical sense an hypothesis which serves to collate the facts and is consistent with itself and with the known events of Shakespeare's external life.

The following table, which is an attempt to arrange the original dates of production of the plays without regard to possible revisions, may be taken as fairly representing the common results of recent scholarship. It is framed on the assumption that, as indeed John Ward tells us was the case, Shakespeare ordinarily wrote two plays a year; but it will be understood that neither the order in which the plays are given nor the distribution of them over the years lays claim to more than approximtate accuracy.

### Chronology of the Plays

**1591.**
2. *Hamlet.*

**1592.**
2. *As You Like It.*

**1593.**
1. *Richard III.*
2. *Edward III.* (part only).
3. *The Comedy of Errors.*

**1594.**
1. *Titus Andronicus.*

**1595.**
1. *A Midsummer Night's Dream.*
2. *The Two Gentlemen of Verona.*
3. *King John.*
4. *Richard II.*
5. *The Merchant of Venice.*

**1597.**
2. *The Comedy of Errors.*
4. *Romeo and Juliet.*

**1598.**
3. *Henry V.*
4. *Caesar.*
5. *Lear.*

**1600.**
1. *As You Like II.*
2. *The Taming of the Shrew.*

**1601.**
1. *Hamlet.*

**1602.**
1. *Troilus and Cressida.*
2. *All's Well that Ends Well.*

**1603.**
2. *Coriolanus.*

**1604.**
1. *Measure for Measure.*
2. *Othello.*

**1605.**
1. *Macbeth.*
2. *King Lear.*

**1606.**
1. *Antony and Cleopatra.*
2. *Coriolanus.*

**1607.**
2. *Pericles* (part only).
3. *Cymbeline.*

**1609.**
2. *The Tempest.*

**1611.**
1. *The Two Noble Kinsmen* (part only).
2. *Henry VIII.* (part only).

A more detailed account of the individual plays may now be attempted. The figures here prefixed correspond to those in the table above.

1. *The Contention of York and Lancaster* to 2, 3 *Henry VI.* and the extent of Shakespeare's responsibility for either or both works have long been subjects of controversy. The extremes of critical opinion are to be found in a theory which regards Shakespeare as the sole author of 2, 3 *Henry VI.* and *The Contention* as a shortened and piratical version of the original plays, and in a theory which regards *The Contention* as written in collaboration by Marlowe, Greene and possibly Peele, and 2, 3 *Henry VI.* as a revision of
The Contention written, also in collaboration, by Marlowe and Shakespeare. A comparison of the two texts leaves it hardly possible to doubt that the differences between them are to be explained by revision rather than by piracy; but the question of authorship is more difficult. Greene's parody, in the "Shakespeare scene" passage of his Greats-worth of Wit (1592), of a line which occurs both in The Contention and in 3 Henry VI., while it clearly suggests Shakespeare's connexion with the play, is evidence neither for nor against the participation of other men, and no sufficient criterion exists for distinguishing between Shakespeare's earliest writing and that of possible collaborators on grounds of style. But there is nothing inconsistent between the reviser's work in 2, 3 Henry VI., and on the one hand Richard III. or on the other the original matter of The Contention, which the reviser follows and elaborates scene by scene. It is difficult to assign to any one except Shakespeare the humour of the Jack Cade scenes, the whole substance of which is in The Contention as well as in Henry VI. Views which exclude Shakespeare altogether may be left out of account. Henry VI. is not in Meres's list of his plays, but its inclusion in the First Folio is almost certain ground for assigning to him some share, if only as reviser, in the completed work.

3. A very similar problem is afforded by 1 Henry VI., and here also it is natural, in the absence of tangible evidence to the contrary, to hold by Shakespeare's substantial responsibility for the play as it stands. It is quite possible that it also may be a revised version, although in this case no earlier version exists; and if so the Talbot scenes (iv. 2-7) and perhaps also the Temple Gardens scene (ii. 4), which are distinguished by certain qualities of style from the rest of the play, may date from the period of revision. Thomas Nash refers to the representation of Talbot on the stage in his Pierce Penniless, his Supplication to the Divell (1592), and it is probable that 1 Henry VI. is to be identified with the "Harey the vi." recorded in Henslowe's Diary to have been acted as a new play by Lord Strange's men, probably at the Rose, on the 3rd of March 1592. If so, it is a reasonable conjecture that the two parts of The Contention were originally written at some date before the beginning of Henslowe's record in the previous February, and were revised so as to fall into a series with 1 Henry VI. in the latter end of 1592.

4. The series as revised can only be intended to lead directly up to Richard III., and this relationship, together with its style as compared with that of the plays belonging to the autumn of 1594, suggest the short winter season of 1592-1593 as the most likely time for the production of Richard III. There is a difficulty in that it is not included in Henslowe's list of the plays acted by Lord Strange's men during that season. But it may quite well have been produced by the only other company which appeared at that time, and the Chamberlain's men may be identified. The mere fact that Shakespeare wrote a play, or more than one play, for Lord Strange's men during 1592-1593 does not prove that he never wrote for any other company during the same period; and indeed there is plenty of room for guess-work as to the relations between Strange's and Pembroke's men. The latter are not known to have existed before 1592, and many difficulties would be solved by the assumption that they originated out of a division of Strange's, whose numbers, since their amalgamation with the Admiral's, may have been too much inflated to enable them to undertake as a whole the summer tour of that year. If so, Pembroke's probably took over the Henry VI. series of plays, since The Contention, or at least The True Tragedy, was published as performed by them, and completed it with Richard III. on their return to London at Christmas. It will be necessary to return to this theory in connexion with the discussion of Titus Andronicus and The Taming of the Shrew. The principal historical source for Henry VI. was Edward Hall's The Union of the Noble and Illustre Families of Lancaster and York (1542), and for Richard III. Hall's Shakespeare's later historical plays, the second edition (1587) of Raphael Holinshed's Chronicles of England, Scotland and Ireland (1577). An earlier play, The True Tragedy of Richard the Third (1594), seems to have contributed little if anything to Richard III.

5. Many scholars think that at any rate the greater part of the first two acts of Edward III., containing the story of Edward's wooing of the countess of Salisbury, are by Shakespeare; and, if so, it is to about the time of Richard III. that the style of his contribution seems to belong. The play was entered in the Stationers' Register on December 1, 1593. The Shakespearean scenes are based on the 46th Novel in William Paynter's Palace of Pleasure (1588), and it probably does not transfer to Pembroke's company, "far better prose than verse...than woods" (ii. r. 451), is repeated verbatim in the 94th sonnet.

6. To the winter season of 1592-1593 may also be assigned with fair probability Shakespeare's first experimental comedy, The Comedy of Errors, and if his writing at one and the same time for Pembroke's and for another company is not regarded as beyond the bounds of conjecture, it becomes tempting to identify this with "the gelyous comedy" produced, probably by Strange's men, for Henslowe as a new play on January 5, 1593. The play contains a reference to the wars of succession in France which would fit any date from 1589 to 1594. The plot is taken from the Menacechi, and to a smaller extent from the Amphitritus of Plautus. William Warner's translation of the Menacechi was entered in the Stationers' Register on June 10, 1594. A performance of The Comedy of Errors by "a company of base and common fellows" (including Shakespeare?) is recorded in the Gesta Grayorum as taking place in Gray's Inn Hall on December 28, 1594.

7. Titus Andronicus is another play in which many scholars have refused to see the hand of Shakespeare, but the double testimony of Henry VI. and its appearance in the First Folio makes it unreasonable to deny him some part in it. This may, however, only have been the part of a reviser, working like the reviser of The Contention, upon the dialogue rather than the structure of a crude tragedy of the school of Kyd. In fact a stage tradition is reported by Edward Ravenscroft, a late 17th-century adapter of the play, to the effect that Shakespeare did no more than give a few "master-touches" to the work of a "private author." The play was entered in the Stationers' Register on February 6, 1594, and was published in the same year with a title-page setting out that it had been acted by the companies of Lord's Derby (i.e. Strange, who had succeeded to his father's title on September 25, 1593), Pembroke and Sussex. It is natural to take this list as indicating the order in which the three companies named had to do with it, but it is probable that only Sussex's had played Shakespeare's version. Henslowe records the production by this company of Titus Andronicus as a new play on January 23, 1594, only a few days before the theatres were closed by plague. For the purposes of Henslowe's financial arrangements with the company a rewritten play may have been classed as new. Two years earlier he had recorded an action by the same company of the same play, which may be identified with the play produced by Strange's men on April 11, 1592. At first sight the title suggests a piece founded on the lives of the emperor Titus and Vespasian, but the identification of the play with an early version of Titus Andronicus is justified by the existence of a rough German adaptation, which follows the general outlines of Shakespeare's play, but in which one of the sons of Titus is named Vespasian instead of Lucius. The ultimate source of the plot is unknown. It cannot be traced in any of the Byzantine chronicles. Strange's men seem to have been still playing Titus in January 1593, and it was probably not transferred to Pembroke's until the companies were driven from London by the plague of that year. Pembroke's are known from a letter of Henslowe's to have been ruined by August, and it is to be suspected that Sussex's, which appeared in London for the first time at the Christmas of 1593, acquired their stock of plays and transferred these to the Chamberlain's men, when the companies were again reconstituted in the summer of 1594. The revision of Titus and Vespasian into Titus Andronicus by Shakespeare may have been accomplished in the interval between these two transactions. The Chamberlain's men were apparently playing Andronicus in June. The stock of Pembroke's men probably included, as well as Titus and Vespasian, both Henry VI. and Richard III., which also thus passed to the Chamberlain's company.
8. In the same way was probably also acquired an old play of *The Taming of A Shrew*. This, which can be traced back as far as 1589, was published as acted by Pembroke's men in 1594. In June of that year, it was acting by the Chamberlain's, but more probably in the revised version by Shakespeare, which bears the slightly altered title of *The Taming of The Shrew*. This is a much more free adaptation of its original than had been attempted in the case of *Henry VI*, and the Warwickshire allusion to the scenes around Stratford-on-Avon is doubted whether Shakespeare was the sole author of *The Shrew*, and others have assigned him a share in *A Shrew*, but neither theory has any very substantial foundation. The origins of the play, which is to be classed as a farce rather than a comedy, are to be found ultimately in widely distributed folk-tales, and more immediately in Ariosto's *I Supposi* (1590) as translated in George Gascoigne's *The Supposes* (1566). It may have been Shakespeare's first task for the newly established Chamberlain's company of 1594 to furnish up the old farce. Thenceforward there is no reason to think that he ever wrote for any other company.

9. *Love's Labour's Lost* has often been regarded as the first of Shakespeare's plays, and has sometimes been placed as early as 1589. There is, however, no proof that Shakespeare was writing before 1592 or thereabouts. The characters of *Love's Labour's Lost* are evidently suggested by Henry of Navarre, his followers Biron and Longaville, and the Catholic League leader, the duc de Maine. These personages would have been familiar at any time from 1583 onwards. The absence of the play from the lists in Henslowe's diary does not leave it impossible that it should have preceded the formation of the Chamberlain's company, but certainly renders this less likely; and its lyric character perhaps justifies its being grouped with the series of plays that began in the autumn of 1594. No entry of the play is found in the Stationers' Register, and it is quite possible that the present First Quarto of 1598 was not really the first edition. The title-page professes to give the play as it was "corrected and augmented" for the Christmas either of 1597 or of 1598. It was again revived for that of 1604. No other literary source is known for its incidents.

10. *Romeo and Juliet*, which was published in 1597 as played by Lord Hunsdon's men, was probably produced somewhat before *A Midsummer Night's Dream*, as its incidents seem to have suggested the parody of the Pyramus and Thisbe interlude. An attempt to date it in 1591 is hardly justified by the Nurse's references to an earthquake eleven years before and the fact that there was a real earthquake in London in 1580. The text seems to have been partly revised before the issue of the Second Quarto in 1599. There had been an earlier play on the subject, but the immediate source used by Shakespeare was Arthur Brooke's narrative poem *Romeus and Juliet* (1562).

11. *A Midsummer Night's Dream*, with its masque-like scenes of fairydom and the epithalamium at its close, has all the air of having been written less for the public stage than for some courtly wedding; and the compliment paid by Oberon to the "fair vestal throned by the west" makes it probable that it was a wedding at which Elizabeth was present. Two fairly plausible occasions have been suggested. The wedding of Mary countess of Southampton with Sir Thomas Heneage on the 2nd of May 1594 would fit the May-day setting of the plot; but a widowed countess hardly answers to the "little western flower of the allegory, and there are allusions to events later in 1594 and in particular to the rainy weather of June and July, which indicate a somewhat later date. The wedding of William Stanley, earl of Derby, brother of the lord Strange for whose players Shakespeare had written, and Elizabeth Vere, daughter of the earl of Oxford, which took place at Greenwich on the 26th of January 1595, perhaps fits the conditions best. It has been fancied that Shakespeare was present when "certain stars shot madly from their spheres" in the Kenilworth fireworks of 1575, but if he had any such entertainment in mind it is more likely to have been the more recent one given to Elizabeth by the earl of Hertford at Elvetham in 1591. There appears to be no special source for the play beyond Chaucer's *Knight's Tale* and the widespread fairy lore of western Europe.

12. No very definite evidence exists for the date of *The Two Gentlemen of Verona*, other than the mention of it in *Palatins Tame*. It is evidently a more rudimentary essay in the genre of romantic comedy than *The Merchant of Venice*, with which it has other affinities in its Italian colouring and its use of the inter-relations of love and friendship as a theme; and it may therefore be assigned to the neighbourhood of 1595. The plot is drawn from various examples of contemporary fiction, especially from the story of the shepherdess Filismensa in *De Montemayor's Diana* (1559). A play of *Felix and Philomena* had already been given at court in 1585.

13. *King John* is another play for which 1595 seems a likely date, partly on account of its style, and partly from the improbability of a play on an independent subject drawn from English history being interpolated in the middle either of the Yorkist or of the Lancastrian series. It would seem that Shakespeare had before him an old play of the Queen's men, called *The Troublesome Reign of King John*. This was published in 1595, and again, with "W. Sh." on the title-page, in 1611. For copyright purposes *King John* appears to have been regarded as a revision of *The Troublesome Reign*, and in fact the succession of incidents in the two plays is much the same. Shakespeare's dialogue, however, owes little or nothing to that of his predecessor.

14. *Richard II.* can be dated with some accuracy by a comparison of the two editions of Samuel Daniel's narrative poem on *The Civil Wars Between the Two Houses of Lancaster and York*, both of which bear the date of 1595 and were therefore published between March 25, 1595 and March 24, 1596 of the modern reckoning. The second of these editions, but not the first, contains some close parallels to the play. From the first two quartos of *Richard II.*, published in 1597 and 1598, the deposition scene was omitted, although it was clearly part of the original structure of the play, and its removal leaves an obvious mutilation in the text. There is some reason to suppose that this was due to a popular tendency to draw seditious parallels between Richard and Elizabeth; and it became one of the charges against the earl of Essex and his fellow-conspirators in the abortive *attempte* of February 1601, that they had procured a performance of a play on Richard's fate in order to stimulate their followers. As the actors were the Lord Chamberlain's men, this play can hardly have been any other than Shakespeare's. The deposition scene was not printed until after Elizabeth's death, in the Third Quarto of 1608.

15. *The Merchant of Venice*, certainly earlier than July 22, 1598, on which date it was entered in the Stationers' Register, and possibly inspired by the machinations of the Jew poisoner Roderigo Lopez, (who was executed in June 1594, shows a considerable advance in comic and melodramatic power over any of the earlier plays, and is assigned by a majority of scholars to about 1596. The various stories of which its plot is compounded are based upon common themes of folk-tales and Italian novelle. It is possible that Shakespeare may have had before him a play called *The Jew*, of which there are traces as early as 1579, and in which motives illustrating "the greediness of worldly usurers" and the "bloody minds of usurers" appear to have been already combined. Something may also be owing to Marlowe's play of *The Jew of Malta*.

16. *The existence of Richard II.* is assumed throughout *Henry IV.*. It is probably safe to infer that it followed it with some interval. The first part was published in 1598, the second not until 1600, but both parts must have been in existence before the entry of the first part in the Stationers' Register on February 24th 1598, since Falstaff is named in this entry, and a slip in a speech-prefix of the second part, which was not entered in the Register until August 23rd 1600, betrays that it was written when the character still bore the name of Sir John Oldcastle. Richard James, in his dedication to *The Legend of Sir John Oldcastle* about 1625, and Rowe in 1709 both bear witness to the substitution of the one personage for the other, which Rowe
19. The completion of the Lancastrian series of histories by Henry V. can be safely placed in or about 1599, since there is an allusion in one of the choruses to the military operations in Ireland of the earl of Essex, who crossed on March 27 and returned on September 28, 1599. The First Quarto, which was first "stayed" with Much Ado About Nothing and then published in 1600, is a piratical text, and does not include the choruses. A genuine and perhaps slightly revised version was first published in the First Folio.

20. The Chamberlain's company could have performed a play called The Famous Victories of Henry the Fifth, which had been acted by Tarlton and the Queen's men at least as far back as 1588, and of which an edition was printed in 1598. Falstaff himself is a somewhat libellous presentment of the 15th century leader, Sir John Fastolf, who had already figured in Henry VI.; but presumably Fastolf has no titled descendants alive in 1598.

21. In 1613 it was revived before James I. under the alternative title of Benedick and Beatrice. Dogberry is said by Aubrey to have been taken from a constable at Grendon in Buckinghamshire. There is no very definite literary source for the play, although some of its incidents are to be found in Ariosto's Orlando Furioso and Bandello's novelle, and attempts have been made to establish relationships between it and two early German plays, Jacob Ayrer's Die Schöne Phasmia and the Vincenzius Lodziolius of Duke Henry Julius of Brunswick.

22. As You Like It was one of the plays "stayed" from publication in 1600, and cannot therefore be later than that year. Some trifling bits of evidence suggest that it is not earlier than 1599. The plot is based upon Thomas Lodge's romance of Rosalynde (1590), and this in part upon the pseudo-Chaucerian Tale of Gamelyn.

23. A play of Hamlet was performed, probably by the Chamberlain's men, for Henslowe at Newington Butts on the 9th of June 1594. There are other references to it as a revenge-play, and it seems to have been in existence in some shape or as early as 1599. It was doubtless on the basis of this that Shakespeare constructed his tragedy. Some fragment of the so-called Ur-Hamlet may perhaps be traceable in the German play of Der besstrata Brudernech. There is an allusion in Hamlet to the rivalry between the ordinary stages and the private plays given by boy actors, which points to a date during the vogue of the children of the Chapel, whose performance began late in 1600, and another to an inhibition of plays on account of a "late innovation," by which the Essex rising of February 1601 may be meant. The play was entered in the Stationers' Register on July 26, 1602. The First Quarto was printed in 1603 and the Second Quarto in 1604. These editions contain text passages from each other and from that of the First Folio are so considerable as to suggest, even when allowance has been made for the fact that the First Quarto is probably a piratical venture, that the play underwent an exceptional amount of rewriting at Shakespeare's hands. The title-page of the First Quarto indicates that the earliest version was acted in the universities of Oxford and Cambridge and elsewhere, as well as in London. The ultimate source of the plot is to be found in Scandinavian legends preserved in the Historia Danica of Saxo Grammaticus, and transmitted to Shakespeare or his predecessor through the Historiae tragi-comicae et tragicorum Fabularum Libri duo of Jacobo Amore.
no allusion to Shakespeare is really intended. The material for Tragedies and Cressida was taken by Shakespeare from Chaucer's Troilus and Criseyde, Caxton's Recuyell of the Historyes of Troye, and Chapman's Homer.

26. It is almost wholly on grounds of style that All's Well that Ends Well is placed by most critics in or about 1602, and, as in the case of Troilus and Cressida, it has been argued, though with little justification, that parts of the play are of considerably earlier date, and perhaps represent the Love's Labour's Won referred to by Meres. The story is derived from Boccaccio's Decameron through the medium of William Painter's Palace of Pleasure (1566).

27. Measure for Measure is believed to have been played at court on the 26th of December 1604. The evidence for this is to be found, partly in an extract made for Malone from official records now lost, and partly in a forged document which has been thoroughly worked out. The extraordinary incoherencies of its action and inequalities of its style have prevented modern scholars from accepting it as a finished production of Shakespeare, but there agreement ceases. It is sometimes regarded as an incomplete draft for an intended play; sometimes as a Shakespearian fragment worked over by a second hand either for the stage or for printing in the First Folio; sometimes, but not very plausibly, as an old play by an inferior writer which Shakespeare had partly remodelled. It does not seem to have had any relations to an extant academic play of Timon which remained in manuscript until 1618. Sources are also found, partly in Plutarch's Life of Marcus Antonius, partly in Lucian's dialogue of Timon or Misanthropos, and partly in William Painter's Palace of Pleasure (1566).

28. There is no external evidence as to the date of Timon of Athens, but it may safely be grouped on the strength of its internal characteristics with the plays just named, and there is a clear gulf between it and those that follow. It may be provisionally in 1607. The critical problems which it presents are the subject of a separate, and to Shakespeare's later works is also found, partly in Plutarch's Life of Marcus Antonius, partly in Lucian's dialogue of Timon or Misanthropos, and partly in William Painter's Palace of Pleasure (1566).

30. The entry of King Lear in the Stationers' Register on November 16, 1607, is the first performance of the play at court on December 26, 1606. This suggests 1605 or 1606 as the date of production, and this is confirmed by the publication in 1605 of the older play, The True Chronicle History of King Lear, which Shakespeare used as his source. Two quartos of King Lear were published in 1608, and contain a text rather longer, but in other respects less accurate, than that of the First Folio. The material of the play consists of fragments of Celtic myth, which found their way into history through Geoffrey of Monmouth. It was accessible to Shakespeare in Holinshed and in Spenser's Faerie Queene, as well as in the old play.

31. It is not quite clear whether Antony and Cleopatra was the play of that name entered in the Stationers' Register on May 26, 1608, for no Quarto is extant, and a fresh entry was made in the Register before the issue of the First Folio. Apart from this entry, there is little external evidence to fix the date of the play, but it is in Shakespeare's later, although not his last, manner, and may very well belong to 1606.
conjecturally to 1609. The mask-like dream in act v. sc. 4 must be an interpolation by another hand. This play also is based upon a wide-spread story, probably known to Shakespeare in his youth (day nine). 39. The Winter's Tale was seen by Forman on May 15, 1611, and as it clearly belongs to the latest group of plays it may well have been produced in the preceding year. A document amongst the Revels Accounts, which is forged, but may rest on some authentic basis, gives November 5, 1611 as the date of a performance at court. The play is recorded to have been licensed by Sir George Buck, who began to license plays in 1607. The plot is from Robert Greene's Pandosto, the Triumph of Time, or Dorastus and Fawnia (1588).

37. The wedding-mask in act iv. of The Tempest has suggested the possibility that it may have been composed to celebrate the marriage of the princess Elizabeth and Frederick V., the elector palatine, on February 14, 1613. But Malone appears to have had evidence, now lost, that the play was performed at court as early as 1611, and the forged document amongst the Revels Accounts gives the precise date of November 1, 1611. Sylvester Jourdain's history of the English stage contains an account of the shipwreck of Sir George Somers in 1609, which was published about October 1610, and this or some other contemporary narrative of Virginian colonization probably furnished the hint of the plot.

38. The tale of Shakespeare's independent dramas is now complete, but an analysis of the Two Noble Kinsmen leaves no reason to doubt the accuracy of its ascription on the title-page of the First Quarto of 1634 to Shakespeare and John Fletcher. This appears to have been a case of ordinary collaboration. There is sufficient resemblance between the styles of the two writers to render the division of the play between them a matter of some difficulty; but the parts that may probably be assigned to Shakespeare are acts i. sc. 1-4; ii. 1; iii. 1, 2; v. i, 3, 4. Fletcher's morris-dance in act iii. sc. 5 is borrowed from that in Beaumont's Mask of the Inner Temple and Gray's Inn, given on February 20, 1613, and the play may perhaps be dated in 1613. It is based on Chaucer's Knight's Tale.

39. It may now be accepted as a settled result of scholarship that Henry VIII. is also the result of collaboration, and that one of the collaborators was Fletcher. There is no good reason to doubt that the other was Shakespeare, although attempts have been made to substitute Philip Massinger. The inclusion, however, of the play in the First Folio must be regarded as conclusive against this theory. There is some ground for suspicion that the collaborators may have had an earlier work of Shakespeare before them, and this would explain the reversion to the "history" type of play which Shakespeare had long abandoned. His share appears to consist of act i. sc. 1, 2; act ii. sc. 3, 4; act iii. sc. 2, ll. 1-203; act v. sc. 1. The play was probably produced in 1613, and originally bore the alternative title of All is True. It was being performed in the Globe on June 29, 1613, when the thatch caught fire and the theatre was burnt. The principal source was Holinshed, but Hall's Union of Lancaster and York, Foxe's Acts and Monuments of the Church, and perhaps Samuel Rowley's play of When You See Me, You Know Me (1605), appear also to have contributed.

Shakespeare's non-dramatic writings are not numerous. The narrative poems of Venus and Adonis was entered in the Stationers' Register on April 18, 1593, and thirteen editions, dating from 1593 to 1636, are known. The Rape of Lucrece was entered in the Register on May 9, 1594, and the six exact editions range from 1594 to 1624. Each poem is prefaced by a dedicatory epistle from the author to Henry Wriothesley, earl of Southampton. The subjects, taken respectively from the Metamorphoses and the Fasti of Ovid, were frequent in Renaissance literature. It was once supposed that Shakespeare came from Stratford-on-Avon with Venus and Adonis in his pocket; but it is more likely that both poems owe their origin to the comparative leisure afforded to playwrights and actors by the plague-period of 1592-1594. In 1599 the stationer William Jaggard published a volume of miscellaneous verse which he called The Passionate Pilgrim, and placed Shakespeare's name on the title-page. Only two of the pieces included herein are certainly Shakespeare's, and although others may quite possibly be his, the authority of the volume is destroyed by the fact that some of its contents are without doubt the work of Marlowe, Sir Walter Raleigh, Richard Barnfield and Bartholomew Griffin. In 1601 Shakespeare contributed The Phoenix and the Turtle, an elegy on an unknown pair of wedded lovers, to a volume called Love's Martyr, or Rosalind's Complaint, which was collected and mainly written by Robert Gore, but it sinks into insignificance beside that of one remaining volume. The Sonnets were entered in the Register on May 20, 1609, by the stationer Thomas Thorpe, and published by him under the title Shakespeare's Sonnets, never before Imprinted, in the same year. In addition to a hundred and fifty-four sonnets, the volume contains the elegiac poem, probably dating from the Venus and Adonis period, of A Lover's Complaint. In 1610 the sonnets, together with other poems from The Passionate Pilgrim and elsewhere, many of which were afterwards included in the Poems Written by W J Shakespeare, Gent. Here the sonnets are arranged in an altogether different order from that of 1609 and are declared by the publisher to "appear of the same purity, the Author himselfe then living avouched." No Shakespearian controversy has received so much attention, especially during recent years, as that which concerns itself with the date, character, and literary history of the Sonnets. This is intelligible enough, since upon the issues raised depends the question whether these poems do or do not give a glimpse into the intimate depths of a personality which otherwise is at the most only imperfectly revealed through the plays. On the whole, the balance of authority is now in favour of regarding them as in a very considerable measure autobiographical. This view has undergone the fires of much destructive argument. The authenticity of the order in which the sonnets were printed in 1609 has been doubted; and their subject-matter has been variously explained as being of the nature of a philosophical allegory, of an effort of the dramatic imagination, or of a heartless exercise in the forms of the Petrarchan convention. This last theory has been recently and strenuously maintained, and may be regarded as the one which was field in opposition to the autobiographical interpretation. But it rests upon the false psychological assumption, which is disproved by the whole history of poetry and in particular of Petrarchan poetry, that the use of conventions is inconsistent with the expression of unfeigned emotions; and it is hardly to be set against the direct conviction which the sonnets carry to the most finely critical minds of the strength and sincerity of the spiritual experience out of which they were wrought. This conviction makes due allowance for the inevitable heightening of emotion itself in the act of poetic composition; and it certainly does not carry with it a belief that all the external events which underlie the emotional development are capable at this distance of time of inferential reconstruction. But it does accept the sonnets as an actual record of a part of Shakespeare's life during the years in which they were written, and as revealing at least the outlines of a drama which played itself out for once, not in his imagination but in his actual conduct in the world of men and women.

There is no advantage to be gained by rearranging the order of the 1611 volume, even if there were any basis other than that of individual whim on which to do so. Many of the sonnets are obviously linked to those which follow or precede them; and altogether a few may conceivably be misplaced, the order as a whole does not jar against the sense of emotional continuity, which is the only possible test that can be applied. The last two sonnets, however, are merely alternative versions of a Greek epigram, and the rest fall into two series, which are more probably parallel than successive. The shorter of these two series (cxviii.-clii.) appears to be the record of the poet's relations with a mistress, a dark woman with raven brows and mourning eyes. 39. Shakespeare and Jonson, and from the latter to The Works of Ben Jonson, first published in 1616. The latter volume was republished in 1619. The bulk of the included sonnets is generally supposed to be Shakespeare's.
In the earlier sonnets he undertakes the half-playful deformance of black beauty against the blonde Elizabethan ideal; but the greater number are in a more serious vein, and are filled with a deep consciousness of the bitterness of lustful passion and of the slavery of the soul to the body. The woman is a wanton. She has broken her bed-void for Shakespeare, who on his side is forsworn in loving her; and she is doubly forsworn in proving faithless to him with other men. His reason condemns her, but his heart has not the power to throw off her tyranny. Her particular offence is that she, “a woman coloured ill,” has cast her snare not only upon him, but upon his friend, “a man right fair,” who is his “better angel,” and that thus his loss is double, in love and friendship. The longer series (l.-cxxxvi.) is written to a man, appears to extend over a considerable period of time, and covers a wide range of sentiment. The person addressed is younger than Shakespeare, and of higher rank. He is Thompson, the son of a lovely mother, and has hair like the aurum buds of marjoram. The series falls into a number of groups, which are rarely separated by any sharp lines of demarcation. Perhaps the first group (i.-xviii.) is the most distinct of all. These sonnets are a prolonged exhortation by Shakespeare to his friend to marry and beget children. The friend is now on the top of happy hours, and should make haste, before the rose of beauty diès, to secure himself in his descendant against devouring time. In the next group (xviii.-xxxv.) a more personal note is struck, and the writer assumes the attitudes, of the poet who has been devoted to extolling the beauty and the honour of his patron, and of the friend whose absorbing affection is always on the point of assuming an emotional colour indistinguishable from that of love. The consciousness of advancing years and that of a fortune which bars the triumph of public honour alike find their consolation in this affection. A period of absence (xxxvi.-xlix.) follows, in which the thought of friendship comes to remedy the daily labour of travel and the sorrows of a life that is “in disagrace with fortune and men’s eyes” and filled with melancholy broodings over the immortality which this world will find in the poet’s verse are especially dwelt upon. Once more there is a parting (lxxi.-lxxii.) and the poet waits as patiently as may be his friend’s return to him. Again (lxiii.-lxv.) he looks to his verse to give the friend immortality. He is tired of the world, but his friend redeems it (lxvi.-lxviii.). Then rumours of some scandal against his friend (lxix.-lxx.) reach him, and he falls (lxxi.-lxxx.) into gloomy thoughts of coming death. The friend; however, is still (lxvii.-lxxv.) his argument; and he is perturbed (lxxviii.-lxxxvii.) by the appearance of a rival poet, who claims to be taught by the bard above a mortal pitch,” and with “the profound full sail of his great vessel” has already won the courtship of Shakespeare’s patron. There is another estrangement (lxxxviii.-xc.), and the poet, already crossed with the spite of fortune, is ready not only to acquiesce in the loss of friendship, but to find the fault in himself. The friend returns to him, but the relation is still clouded by doubts of his fidelity (xci.-xciii.) and by public rumours of his wantonness (xciv.-xcvii.). For a third time the poet is absent (xcviii.-cxcii.) in summer and spring. Then comes an apparent interval, after which a love already three years old is renewed (c.-xiv.), with even richer praises (cv.-cviii.). It is now the poet’s turn to offer apologies (cix.-cxii.) for offences against friendship and for some brand upon his name apparently due to the conditions of his profession. He is again absent (cxiii.) and again renews his protestsations of the imperishability of love (cixv.-cxivii.) and of his own unworthiness (cxiv.-cxxxii.), for which his only excuse is in the fact that the friend was once unkind. If the friend has suffered as Shakespeare suffered, he has “passed a hell of time.” The series closes with a group (cxxxiii.-cxl.) in which love is pitied against time; and an envoi, not in sonnet form, warns the “lovely boy” that in the end nature must render up her treasure.

Such an analysis can give no adequate idea of the qualities in these sonnets, whereby the appeal of universal poetry is built up on a basis of intimate self-revelation. The human document is so legible, and at the same time so incomplete, that it is easy to understand the strenuous efforts which have been made to throw further light upon it by tracing the identities of those other personalities, the man and the woman, through his relations to whom the poet was brought to so fiery an ordeal of soul, and even to the border of self-abasement. It must be remembered that the search has, as a rule, been conducted with more ingenuity than judgment. It has generally started from the terms of a somewhat mysterious dedication prefixed by the publisher Thomas Thorpe to the volume of 1609. This runs as follows:—

"To the onlie begetter of these insuing sonnets Mr W. H. all hapinesse and that eternitie promised by our ever-living poet whoh the well-wishing adventurer in setting forth T. T."

The natural interpretation of this is that the inscriber or "begetter" of the sonnets bore the initials W. H.; and the contemporaries of Shakespeare have accordingly been racked to find a W. H. whose age and circumstances might conceivably fit the conditions of the problem which the sonnets present. It is perhaps a want of historical perspective which has led to the centring of controversy around two names belonging to the highest ranks of the Elizabethan nobility, those of Henry Wriothesley, earl of Southampton, and William Herbert, earl of Pembroke. There is some evidence to connect Shakespeare with both of these. To Southampton he dedicated Venus and Adonis in 1593 and The Rape of Lucrece in 1594, and the story that he received a gift of no less than £1000 from them, in which he accompanied his gift of the Lucrece, can only be inferred from the statement of Heminge and Condell in their preface to the First Folio of the plays, that Pembroke and his brother Montgomery had "prosecuted both them and their Author living, with so much favour." The personal beauty of the rival claimants and of their mothers, their amours and the attempts of their families to persuade them to marry, their relations to poets and actors, and all other points in their biographies which do or do not fit in with the indications of the sonnets, have been canvassed with great spirit and some erudition, but with no very conclusive result. It is in Pembroke’s favour that his initials were in fact W. H., whereas Southampton can only be turned into W. H. by a process of metathesis; and his champions have certainly been more successful than Southampton’s in producing a dark woman, a certain Mary Fitton, who was a mistress of Pembroke’s, and was in consequence dismissed in disgrace from her post of maid of honour to Elizabeth.

Unfortunately, the balance of evidence is in favour of her having been blonde, and not "black." Moreover, a careful investigation of the sonnets, as regards their style and their relation to the plays, renders it almost impossible on chronological grounds that Pembroke can have been their subject. He was born on 19th October 1564, and was therefore much younger than Southampton, who was born on the 6th of October 1573. The earliest sonnets postulate a marriageable youth, certainly not younger than eighteen, an age which Southampton reached in the autumn of 1591 and Pembroke in the spring of 1598. The writing of the sonnets may have extended over several years, but it is impossible to doubt that as a whole it is to the years 1593–1598 rather than to the years 1595–1603 that they belong. There is, not indeed, much external evidence available. Francis Meres in his Palladis Tamia of 1598 mentions Shakespeare’s “sugred sonnets among his private friends,” but this allusion might come as well at
the poem to connect Shakespeare with a family of Willoughbys or with the neighbourhood of West Knole. Various other identifications of W. H. have been suggested, which rarely rest upon anything except a similarity of initials. There is little plausibility in a theory broached by Mr Sidney Lee, that W. H. was not the friend of the sonnets at all, but a certain William Hall, who was himself a printer, and might, it is conjectured, have obtained the "copy" of the sonnets for Thorpe. It is, of course, just possible that the "begetter" of the title-page might mean, not the "inspirer," but the "procure for the publication of the sonnets; but this interpretation is shipwrecked on the obvious identity of the person to whom Thorpe "wishes" eternity with the person to whom the poet, "promised" that eternity. The external history of the Sonnets must still be regarded as an unsolved problem; the most that can be said is that their subject may just possibly be Southampton, and cannot possibly be Pembroke.

In order to obtain a glimmering of the man that was Shakespeare, it is necessary to consult all the records and to read the evidence of his life-work in the plays, alike in the light of the simple facts of his external career and in the inner light of his art. To this end it is desirable to begin the search with the sonnets, for it is clear that the sonnets are the one document in which Shakespeare himself profitably speaks for himself.
which the dramatic spirit is capable; the conventional and melodramatic endings, the inconsistencies of action and even of character, the emotional confusions of tragicomedy, the complications of plot and subplot, the marring of the give-and-take of dialogue by superfluities of description and of argument, the verse and the blank verse violently thrust in to suit the taste of the groundlings, all the fecks that to an instructed modern criticism are only too apparent upon the Shakespearian sun. It perhaps follows from this that the most fruitful way of approaching Shakespeare is by an analysis of his work rather as a process than as a completed whole. His outstanding positive quality is a vast comprehensiveness, a capacity for growth and assimilation, which leaves no aspect of life unexplored, and allows of no finality in the nature of his judgments upon life. It is the real and sufficient explanation and justification of his power to take him to his finality in the chronological order of his plays, that the secret of his genius lies in its power of development and that only by the study of its development can he be known. He was nearly thirty when, so far as we can tell, his career as a dramatist began; and already there lay behind him those six or seven unaccounted-for years since his marriage, passed no one knows where, and filled no one knows with what experience, but assuredly in that strenuous Elizabethan life with some experience kindling to his intellect and formative of his character. To the wooster and the familiarity with country sights and sounds which he brought with him from Stratford, which furnished his plays with a purely imaginary and euphuistic natural history, and to the book-learning of a provincial grammar-school boy, and perhaps, if Aubrey is right, also of a provincial schoolmaster, he had somehow added, as he continued to add throughout his life, that curious store of acquaintance with the details of the most diverse occupations which has so often perplexed and so often misled his commentators. It was the same faculty of acquisition that gave him his enormous vocabulary, so far exceeding in range and variety that of any other English writer.

His first group of plays is largely a group of adventures, and perhaps one of the best of these is the Comedy of Errors which properly belongs to Marlowe. But in Richard III, he begins to come to his own with the subtle study of the actor's temperament which betrays the working of a profound interest in the technique of his medium. The episodes of the earliest plays is essentially rhetorical; the blank verse is still and little varied in rhythm; and the periods are built up of parallel and antithetic sentences, and punctuated with devices of iterations, plays upon words, and other methods of securing emphasis, that derive from the bad tradition of a popular stage, upon which the players are bound to rant and force the note in order to hold the attention of a dull-witted audience. During the plague-vacations of 1592 to 1594, Shakespeare tried his hand at the ornate descriptive poetry of Venus and Adonis and Lucrece; and the influence of this exercise is felt also of Italian travel, is apparent in the next group of plays, with their lyric notes, their tendency to warm southern colouring, their wealth of decorative imagery, and their elaborate and not rarely frigid conceits. Rhymed couples make their appearance, side by side with blank verse, as a medium of dramatic dialogue. It is a period of experiment, in farce with The Taming of the Shrew, in satirical comedy with Love's Labour's Lost, in lyrical comedy with A Midsummer Night's Dream, in lyrical tragedy with Romeo and Juliet, in lyrical history with Richard II., and finally in romantic tragicomedy with The Two Gentlemen of Verona and the masterpiece of this singular genre, The Merchant of Venice. It is also the period of the sonnets, which have their echoes both in the phrasing and in the themes of the plays; in the black-browed Rosaline of Love's Labour's Lost, and in the issue between friendship and love which is variously set in The Two Gentlemen of Verona and in The Merchant of Venice. But in the latter the play the sentiment is already one of retrospection; the tempest of spirit has given way to the tender melancholy of renunciation. The sonnets seem to bear witness, not only to the personal upheaval of passion, but also to some despondency at the spirit of fate and the diagonal of the actor's calling. This mood too may have cleared away in the sunshine of growing popularity, of financial success, and of the possibly long-delayed return to Stratford. Certainly the series of plays written next after the travels of 1597 are light-hearted plays, less occupied with profound or vexatious searchings of spirit than with the delightful externalities of things. The histories from King John to Henry V. form a continuous study of the conditions of kingship, carrying on the political speculations begun in Richard II., and culminating in the brilliant picture of triumphant efficiency, the Henry of Agincourt. Meanwhile Shakespeare develops the astonishing faculty of humorous delineation of which he had given foretastes in Jack Cade, in Bottom the weaver, and in Julius's nurse; sets the creation of Falstaff in front of his vivid pictures of contemporaneous England; and passes through the half-comedy, half melodrama, of Much Ado About Nothing to the joyous farce of The Merry Wives of Windsor, and to his two perfectly sunny comedies the sylvan comedy of As You Like It and the urban comedy of Twelfth Night.

Then there comes a change of mood, already heralded by Julius Caesar, which stands beside Henry V. as a reminder that efficiency has its seamy as well as its brilliant side. The tragedy of political idealism in Brutus is followed by the tragedy of intellectual idealism in Hamlet; and this in its turn by the three bitter and cynical pseudo-comedies, All's Well That Ends Well, in which the creator of Portia, Beatrice, Rosalind and Viola drags the honour of womanhood in the dust—Troilus and Cressida, in which the ideals of heroism and of romance are confounded in the portraits of a wanion and a poltroon—and Measure for Measure, in which the searchlight of irony is thrown upon the paths of Prodigal sinners. Meanwhile in the soul of Shakespeare it is perhaps idle to speculate. The evidence of his profound disillusion and discouragement of spirit is plain enough; and for some years the tide of his pessimistic thought advances, swelling through the pathetic tragedy of Othello to the cosmic tragedies of Macbeth and King Lear, with their Titan-like indictments not of man alone, but of the heavens by whom man was made. Meanwhile Shakespeare's style undergoes changes no less notable than those of his subject-matter. The ease and lucidity characteristic of the histories is lessened, the language is handled more daintily, and the thought tends to become less elliptic and obscure, as if the thoughts were hurrying faster than speech can give them utterance. The period closes with Antony and Cleopatra and Coriolanus, in which the ideals of the love of woman and the honour of man are once more stripped bare to display the skeletons of lust and egotism, and in the latter of which signs of exhaustion are already perceptible; and with Timon of Athens, in which the dramatist-whips himself to an almost incoherent expression of a general loathing and detestation of humanity. Then the stretched cord suddenly snaps. Timon is a shattered soul with nothing left but power. Pericles, which is entirely different vein, and is apparently finished but not begun. At this point only in the whole course of Shakespeare's development there is a complete breach of continuity. One can only conjecture the occurrence of some spiritual crisis, an illness perhaps, or some process akin to what in the language of religion is called conversion, which left him a new man, with the fever of pessimism behind him, and at peace once more with Heaven and the world.

The final group of plays, the Shakespearian part of Pericles, Cymbeline, The Winter's Tale, The Tempest, all belong to the class of what may be called idyllic romances. They are happy dreams, in which all troubles and sorrows are ultimately resolved into fortunate endings, and which stand therefore as so many symbols of an optimistic faith in the beneficent dispositions of an ordering

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PROVIDENCE. In harmony with this change of temper the style has likewise undergone another change, and the tense structure and marmoreal phrasing of Antony and Cleopatra have given way to relaxed cadences and a more natural diction. It is probable that the plays, Shakespeare’s last plays, with the unimportant exceptions of his contributions to Fletcher’s Henry VIII. and The Two Noble Kinsmen, were written in retirement at Stratford. At any rate the call of the country is sounding through them; and it is with no regret that in the last pages of The Tempest the weary magician drowses his book, and buries his staff certain fathoms deep in the earth.

(E. C.)

The Shakespeare-Bacon Theory.

In view of the continued promulgation of the sensational theory that the plays, and presumably the poems also, so long associated with the name of Shakespeare, by whose biography is sketched above, but by somebody else who used this pseudonym—and especially that the writer was Lord Chancellor Francis Bacon (1561-1626)—it appears desirable to deal here briefly with this question. No such ideas seem to have occurred to anybody till the middle of the 19th century (see Bibliography below), but having once been started it has been elaborated, in works associated with both Mr. Donnelly and Mr. Murnau, by his biographers, and has been asserted, as disclosed by the knowledge displayed in Shakespeare’s works and by their vocabulary and style, and to external evidence as represented by the problem of authorship, must have been known to Shakespeare’s contemporaries. To what may be called ingenious inferences from data of this sort have even been attempted to show that a secret confession exists which may be revealed by an examination of our own libraries. It must suffice here to say that the contents of the Americans, Mr. Donnelly and Mrs. Gallup, on this score are not only opposed to the opinion of authoritative biographers, who deny the existence of any such cipher, but have carried their supporters to lengths which are obviously absurd and impossible. Lord Penzance, a great lawyer whose support of the Baconian theory may be found in his The True Original of Shakespeare (1869), makes it appear that his derivation of Shakespeare’s plays from the works of John Donnellius, B. C. 1901. The study of the so-called “long word” cited in Love’s Labour’s Lost, “honificra, bilisitidinatitus,” is an anagram for “hi ludii F. Baconis nati tuiti orb.” (These plays of Shakespeare’s offspring preserved for the world,) and he juggles very curiously with the numbers of the words and lines in the page of the First Folio containing this alleged anagram. He also cites the evidence of (more or less) contemporary illustrations to books, which he explains as cryptographic, in confirmation. These interpretations are in the highest degree speculative. But perhaps his argument is exposed in its full depth of incredibility when he counts up the letters in the letters in the monogram proposed as evidence of Shakespeare’s authorship of the First Folio, and, finding them to be 287 (taking each "w" as two "v's"), concludes (by adding 287 to 1623, i.e. the date of the First Folio) that Bacon intended to reveal the secret of his authorship. For the sake of argument makes the plain man’s head reel. On similar principles anything might prove anything. What may be considered the more reasonable way of approaching the question is found in Mr. G. Greenwood’s Shakespeare Problem Restated (1907), in which the alleged difficulties of the Shakespearean authorship are competently presented without recourse to any such extravagances.

The plausibility of many of the arguments used by Mr. Greenwood and those whom he follows depends a good deal upon the real obscurity which, for lack of positive evidence, shrouds the biography of Shakespeare and our knowledge of the precise facts as to the publication of the works associated with him. And it has been asserted, by the dogmatism of some modern biographers, or the differences of opinion between them, when they attempt to interpret the known facts of Shakespeare’s life so as to account for his authorship. But it must be remembered that it is impossible to construct a convincing career of Shakespeare’s works, it is only possible to reconcile our view of his biography with our knowledge of the works by giving some interpretation to the known facts or accepting some explanation of what may have occurred in the obscure parts of his life which will be consistent with such an identification. That different hypotheses are favoured by different orthodox critics is therefore no real objection, nor that some of them are more highly probable than others. If the same positive evidence is irrecoverable and that speculation—consistent with what is possible—is the only resource. In so far as evidence is to be twisted and both, at all, it is right, in view of the long tradition and the prima facie presence of evidence, to strain it in any possible direction which can reasonably make the Shakespearean authorship intelligible. As a matter of fact the evidence is strained alien to any one of the hypotheses, but it is not to be remembered that the onus lies on the opponent of the Shakespearean authorship to show, first that there is no possible explanation which would justify the tradition, and secondly that there is positive evidence which can upset it and which will saddle the authorship of Shakespeare’s works on Bacon or some one else. The contempt indiscriminately thrown on supporters of the Baconian theory by those who are wedded to the Shakespeare theory is unwarranted. But even if we leave out of account the lunatics and fabricators who have been so prominently connected with it, the adventitious emendations and the spreading of the chief of everyday affairs—may easily be too ingenious in his endeavours to solve a literary problem in which judgment largely depends on a highly trained and subtle sense of literary style and a knowledge of the problems of the early drama. In the early drama. In such an exposition of what may be called the "anti-Shaksperian" case as Mr. Greenwood’s, many points appear to make for his conclusion and it is really remarkable that Bacon’s knowledge of evidence; and though these interpretations may be derived from orthodox Shakespearians—orthodox, that is to say, so far at all events as their view of Shakespearean authorship is concerned—yet it is far from certain that Bacon has outworn their knowledge.

The fact remains that the most competent special students of Shakespeare, however, they may differ as to details, and also the most authoritative special students of Bacon, are unanimous in upholding the traditional view. The Baconian theory simply stands as a curious illustration of the dangers which, even in the hands of fair judges of ordinary evidence, attend certain inferences from a small body of evidence; and the same reason for this: in order to establish even a prima facie case against the identification of the man Shakespeare (however the name be spelt) with the author of Shakespeare’s works, it is quite impossible to establish by any purely internal evidence in its favour, and this cannot well be done; it is highly significant that it was not attempted or thought of for centuries. It is comparatively easy to point to certain difficulties, which are due to the modern Baconian, of the Shakesperian, or of the Greek, or to the modern Greek, or to the modern Baconian, armed with the results of accurate scholarship and profound historical research, attempts to reconstruct the life of the man Shakespeare, and to show the impossibility of any of the many different solutions of these difficulties. But he does so backed by the unshaken tradition and the positive contemporary evidence that the Stratford boy and man, the London actor, the author of Venus and Adonis and Lucrece, and the dramatist (so far at least as criticism uphold the canon of the plays ascribed to Shakespeare), were one and the same.

It may be useful here to add to what has been written in the preceding article some of the positive contemporary allusions to Shakespeare in Bacon’s works, which are the subject of this article. The evidence of Francis Meres in Pallads Talmia (1598) has already been referred to. It is incredible that Ben Jonson, who knew both Shakespeare and Bacon intimately, who himself dubbed Shakespeare the "swan of Avon," and who survived Bacon for fourteen years, could have died without revealing the alleged secret, at a time when there was no reason for concealing it. Much has been made of Jonson’s references to Shakespeare, and of certain incongruities in his references to both Shakespeare and Bacon; but these can be twisted in more than one direction and their explanation is purely speculative. His positive contemporary allusions indicate the Baconian theory of his identification of the man and his works. Richard Barnfield (1578) speaks of Shakespeare as "honey-flowing," and says that his Venus and Lucrece have placed his name in immortal glory. The name of "honey-tongued Shakespeare," admired for "rose-cheeked Adonis," and "Romeo, Richard, more whose names I know not." John Davies of Hereford (1610) calls him "our English Terence, Mr Will Shakespeare." Thomas Freeman (1614) writes "to Master W. Shakes%

... Who loves chaste life, there’s Lucrece for a teacher | Who list read lust there’s Venus and Adonis | ... | Besides in plays thy wit winds like Meander.” Other contemporary allusions, all treating Shakespeare as a great poet and tragedian, are also on record.

Finally, it may be remarked that although many problems in connexion with the attribution of Shakespeare’s works are open, and as a result the question of his identity and the question of his authorship depend in a large measure upon evidence which must always remain conjectural, the theory of his identity entirely depends on surrendering every assumption in favour of Shakespeare’s not having had any opportunity to acquire knowledge of the works of Shakespeare and the Baconian theory of his authorship is entirely opposed to the legitimate procedure in approaching the undoubted difficulties. Isolated phrases, such as Ben Jonson’s dictum as to his small knowledge of modern Greek, as "Greek, Greek, Greek," the usage of a competent exposition of a university scholar for one who had no academic training, can easily be made too much of. The extreme
inferences as to his illiteracy, drawn from his handwriting, depend on the most meagre data. The preface to the First Folio says that "he thought no man could discover what he received from his bosom in his papers"; whereas Ben Jonson, in his *Discoveries*, says, "I remember the players often mentioned it as an honour to Shakespeare that in his writing, whatsoever he penned, he never blotted a line: nor, as he said, would he be "a thousand"—which they thought a malvoilent speech." Reams have been written about these two sayings, but we do not know the real circumstances which prompted either, and the non-existence of any effaced pages is as much a matter of fancy as the operations of the wildest conjectures. That there were such manuscripts (unless Ben Jonson and the editors of the First Folio were liars) is certain enough; but whether he ever really wrote them nor how they survived, though persons unacquainted with the history of the manuscripts of printed works of the period sometimes seem to think so.

We know so little of the composition of Shakespeare's works, and the process by which they came to be written and printed, that we cannot be certain, and through the medium of one or other of others, of whether his speaking, painting, poetic, or any other kind of work, was the writing of a genius; that, so far as technical knowledge is concerned (especially the legal knowledge, which has given so much colour to the Baconian theory), various speculations are possible concerning the means which a dramatic genius may have had to inform his mind or acquire his vocabulary. The theatrical and social milieu of those days was small and close; the influence of culture was immediate and mainly oral. We have no positive knowledge indeed of any relations between Shakespeare and Bacon; but, after all, Bacon was a great contemporary, personally interested in the drama, and one would expect the contents of his mind and the same sort of literary expression which we know he used and which would make the curtain-rises and the interests of his patrons. In the purific of the Temple and in literary circles so closely connected with the lawyers and the court, it is to be expected that something of the courtier's was to turn into the lawyer's, and that something which could be turned to account, and whose works, especially plays, the vocabulary of which was open to emprise as well as to the lawyers and the court, in the different stages of composition, rehearsal, production and revision, would show the imagination of a poet working upon ideas culled from the brains of others. Resemblances between phrases used by Shakespeare and by Bacon, therefore, carry one no farther than the fact that they were contemporaries. We cannot even say which was the more influence the other, as we cannot be certain, in every age, it is the writer whose record remains and who by degrees becomes its representative; the truth as to the extent to which the intellectual milieu contributed to the education of the writer, or his genius was assisted by association with others, is hard to recover in after years, and only possible in proportion to our knowledge of the period and of the individual factors in operation.

(See also H. Ci.)

THE PORTRAITS OF SHAKESPEARE

The mystery that surrounds much in the life and work of Shakespeare extends also to his portraiture. The fact that the only likenesses of the poet that can be regarded as carrying the authority of his co-workers, his friends, and relations—yet neither of them a life-portrait—differs in certain essential points, has opened the door to controversy and encouraged the advance and acceptance of numerous wholly different types. The result has been a swarm of portraits which may be classed as follows: (1) the genuine portraits of persons not Shakespeare but not unlike the various conceptions of him; (2) memorial portraits often based on one or other of accepted originals, whether those originals are worthy of acceptance or not; (3) portraits of persons known or unknown, which have been fraudulently "faked" into a resemblance of Shakespeare; and (4) spurious fabrications especially manufactured for imposition upon the public, whether with or without mercenary motive. It is curious that some of the crudest and most easily demonstrable frauds have been among those which have from time to time been, and still are, most eagerly accepted and most ardently championed. There are few subjects which have so imposed upon the credulous, especially those whose intelligence might be supposed proof against the chicanery practised upon them. Thus, in the past, a president of the Royal Academy in England, and many of the leading artists and Shakespearian students of the time, were found to support the genuineness, as a contemporary portrait of the poet, of a picture which, in its faked Shakespeare state, a few months before was not even in existence. This, at least, proves the intense interest taken by the world in the personality of Shakespeare, and the almost passionate desire to know his features. It is desirable, therefore, to describe those portraits which have chief claim to recollection by reason either of their inherent interest or of the notoriety which they have at some time enjoyed; it is to be remarked that such notoriety once achieved never entirely dies away, if only because the art of the engraver, which has usually perpetuated them either as large plates, or as illustrations to reputable editions of the works, or to commentaries or biographies, sustains their undeserved credit as likenesses much more than the date of their execution.

Exhaustive study of the subject, extended over a series of years, has brought the present writer to the conclusion—identical with that entertained by leading Shakespearian authorities—that two portraits only can be accepted without question as authentic likenesses: the bust (really a half-length statue) with its structural wall-monument in the choir of Holy Trinity Church, Stratford-on-Avon, and the copper-plate engraved by Martin Droseshut as frontispiece to the First Folio of Shakespeare's works (and used for three subsequent issues) published in 1623, although first printed in the previous year. The solid surface represents the teeth of the open mouth; the brush was evoked to supply effect and detail. To the colour, as reapplied after the removal of the white paint with which Malone had the bust covered in 1793, must be attributed a good deal of the wooden appearance which is now a shock to many. The bust is of soft stone (not alabaster, as incorrectly stated by the "accurate Dugdale"), but a careful examination of the work reveals no sign of the alleged breakage and restoration or repARATION to which some writers have attributed the apparently inordinate length of the upper lip. As a matter of fact the lip is not long; it is less than seven-eighths of an inch: the appearance is to a great extent an optical illusion, the result partly of the smallness of the nose and, especially, of the thinness of the moustache that shows the flesh above and below. Some repair was made to the monument in 1649, and again in 1748, but there is no mention in the church records of any meddling with the bust itself. Owing, however, to the characteristic inaccuracy of the print by one of Hollars' assistants in the illustration of Dugdale's *Antiquities of Warwickshire* (p. 688), the first edition of which was published in 1656, certain writers have been misled into the belief that the whole monument and bust were not merely restored but replaced by those which we see to-day. As other prints in the volume depart grossly from the objects represented, and as Dugdale, like Vertue (whose meticulous accuracy has also been baselessly extolled by Walpole), was at times demonstrably loose in his descriptions and presentations, there is no reason to believe that the bust and the figures above it are other than those originally placed in position. Other engravers, following the Dugdale print, have further stylified the original, but as they (Vertue, Grignon, Fournier, and others) differ among themselves, little importance need be attached to the circumstance. A
warning should be uttered against many of the so-called "casts" of the busts. George Bullock took a cast in 1814 and Signor A. Michele another about forty years after, but those attributed to W. R. Kite, W. Scouler, and others, are really copies, departing from the original in important details as well as in general effect. It is evident that many persons derive incorrect impressions of the bust itself.

Mention should here be made of the "Kesselstadt Death Mask," now at Darmstadt, as that has been claimed as the true death-mask of Shakespeare, and by it the authenticity of other portraits has been gauged. It is not in fact a death-mask at all, but a cast from one and probably not even a direct cast. In three places on the back of it is the inscription—AD 1616; and this is the sole actual link with Shakespeare. Among the many rapturous adherents of the theory was William Page, the American painter, who made many measurements of the mask and found that nearly half of them agreed with those of the Stratford bust; the greater number which do not are conveniently attributed to error in the sculptor. The cast first came to light in 1849, having been searched for by Dr. Ludwig Becker, the owner of a miniature in oil or parchement representing a corpse crowned with a wreath, lying in bed, while on the background, next to a burning candle, is the date—A0 1637. This little picture was by tradition asserted to be Shakespeare, although the likeness, the death-date, and the wreath are all points unmistakably to the poet-laureate Ben Jonson. Dr. Becker had purchased it at the death-sale at Mainz of Count Kesselstadt in 1847, in which also "a plaster of Paris cast" (with no suggestion of Shakespeare then attached to it) had appeared. This he found in a broker's rag-shop, assumed it to be the same, recognized in it a resemblance to the picture (which most persons cannot see) and so came to attribute to it the enormous historical value which it would, were his hypothesis correct, unquestionably possess. In searching for the link of evidence necessary to be established, through the Kesselstadt line to England and Shakespeare, a theory has been elaborated, but nothing has been proved or carried beyond the point of bare conjecture. The arguments against the authenticity of the cast are strong and cogent—the chief of which is the fact that the skull reproduced is fundamentally of a different form and type from that shown in the Droushout print—the forehead is receding instead of upright. Other important divergencies occur. The handsome, refined, and pleasing aspect of the mask accounts for much of the favor in which it has been held. It was believed in by Richard Owen, and was long on view in the British Museum, and was shown in the Stratford Centenary Exhibition in 1864. The "Droushout print" derives its importance from its having been executed at the order of Heminge and Condell to represent, as a frontispiece to the Plays, and put forth as his portrait, the man and friend to whose memory they paid the homage of their risky enterprise. The volume was to be his real monument, and the work was regarded by them as a memorial erected in a spirit of love, piety, and veneration. Mrs Shakespeare must have seen the print; Ben Jonson extolled it. His dedicatory verses, however, must be regarded in the light of conventional approval as commonly expressed in that age of the performances of portrait-engravers and habitually inscribed beneath them. It is obvious, therefore, that in the circumstances an authentic portrait must necessarily have been the basis of the engraving; and Sir George Scharf, judging from the contradictory lights and shadows in the head, concluded that the original must have been a limning—more or less an outline drawing—which the youthful engraver was required to put into characteristic, though the Kesselstadt line to partial success. That this is the case is proved by the so-called "unrecorded" discovered by Halliwell-Phillips, and now in America. Another copy of it, also an early proof but not in quite the same "state," is in the Bodleian Library. No other example is known. In this plate the head is far more human. The nose is here longer than in the bust, but the bony structure corresponds. In the proof, moreover, there is a thin, wiry moustache, much widened in the print as used; and in several other details there are important divergencies. In this engraving by Droushout the head is far too large for the body, and the dress—the costume of well-to-do persons of the time—is absurdly out of perspective: a traditional argument that the unpractised engraver had only a drawing of a head to work from, while for the head shows the individuality of portraiture the body is as clearly done of chic. The first proof is conclusive evidence against the contention that the "Flower Portrait" at the Shakespeare Memorial Museum, Stratford-on-Avon—the gift of Mrs Charles Flower (1895) and boldly entitled the "Droushout original"—is the original painting from which the engraving was made, and is therefore the actual life-portrait for which Shakespeare sat. This view was entertained by many connoisseurs of repute until it was pointed out that in the engraving it had been engraved from it, would have resembled it in all particulars, for the engraver would have merely copied the picture before him. Instead of that, we find that several details in the proof—the incorrect illumination, the small moustache, the shape of the eyebrow and of the deformed ear, &c.—have been corrected in the painting, in which further improvements are also imported. The conclusion is therefore irresistible. At the same time the picture may possibly be the earliest painted portrait in existence of the poet, for so far as we can judge of it in its present condition (it must have undergone some modification) it was probably executed in the earlier half of the 17th century. The inscription—"Wihl Shakespeare, 1609"—is suspect on account of being written in cursive script, the only known example at the date to which it professes to belong. If it were authentic it might be taken as showing us Shakespeare's appearance seven years before his death, and fourteen years before the publication of the Droushout print. The former attribution of it to Cornells Janssen's brush has been abandoned—it is the work of a comparatively unskilful craftsman. The picture's pedestal cannot definitely be traced back, but that is of little importance, as plausible pedigree have often been manufactured to bolster up the most obvious impostures. The most interesting of this copies or adaptations of this portrait is perhaps that by William Blake now in the Manchester Corporation Art Gallery. One of the cleverest imitations, if such it be, of an old picture is the "Buttery" or "Ellis portrait," acquired by an American collector in 1902. This small picture, on panel, is very poor judged as a work of art, but it has all the appearance of age. In this case the picture is in existence of the dress has been altered, and Shakespeare's shield is shown not the background. The head is that of a middle-aged man; the moustache, conformity to the loyal type, is drooping. It is curious that the "Thurston miniature" from the Droushout print gives the moustache of the "proof." Two other portraits of the same character of head and arrangement are the "Ely Palace portrait," and the "Fenton portrait," both of which in their time have had, and still have, convinced believers. The "Ely Palace portrait" was discovered in 1845 in a broker's shop, and was bought by Thomas Turton, bishop of Ely, who died in 1864, when it was bought by Henry Graves and by him presented to the Birthplace. An unsatisfactory statement of its history, similar to that of many other portraits, was put forth; the picture must be judged on its merits. It bears the inscription "E 30 + 1603," and it shows a moustache and a right eyebrow identical with those in the Droushout "proof." It was therefore hailed by many competent judges as the original of the print; by others it was dismissed as a "make-up"; at the same time it is very far from being a proved fraud. Supposing both it and the "Flower portrait" to be genuine, this picture, which came to light long before the latter, antedates it by six years. Judged by the test of the Droushout "proof" it must have preceded it, not the other way. The "Fenton portrait," which made its first appearance in 1702, had the valiant accomplishment of the astute and cynical Steevens, of Britton, Drake, and other authorities, as the original of the Droushout print, while a few—who believed in the "Chandos portrait"—denounced it as a "rank forgery." On the back of the panel was boldly traced in a florid hand "Gul. Shakespear 1597 R.B." (by other reads "R.N.").
THE STRATFORD BUST AND MONUMENT IN HOLY TRINITY CHURCH, STRATFORD-ON-AVON. Erected before 1623.

THE ENGRAVING BY MARTIN DROESHOUT. In the First Folio Edition, 1623.

THE CHANDOS PORTRAIT. In the National Portrait Gallery.

THE FLOWER PORTRAIT. (The "Droeshout Original"). In the Shakespeare Memorial Gallery.
PLATE II.

SHAKESPEARE

PORTRAITS OF SHAKESPEARE

1. THE JANSSEN.
2. THE FELTON.
3. THE ELY PALACE.
4. THE HUNT OR STRATFORD.

5. THE LUMLEY.
6. THE ASHBOURNE.
7. THE HAMPTON COURT.
8. THE SOEST.

9. THE HILLIARD MINIATURE.
10. THE AURIOL MINIATURE.
11. THE DUNFORD.
12. THE STACE.

13. THE DEATH-MASK.
14. THE ROUBILIAC STATUE.
15. THE SCHEEMAKERS STATUE.
16. THE DAVENANT BUST.

Photo, W. A. Evans.
Photo, W. A. Evans.
R.B. is correct, it is contended the initials indicate Richard Burbage, Shakespeare's fellow-actor. Traces of the writing may still be detected. Boarden's copy, made in 1792, repeating the inscription on the back, has "Gull Shakespeare 1597 R.N." The spelling of Shakespeare's name—which in succeeding ages has been governed by contemporary fashion—has a distinct bearing on the authenticity of the panel. At the first appearance of the "Felton portrait," in a London sale-room it was bought by Samuel Felton of Drayton, Shropshire, for five pounds, along with a pedigree which carried its refutation along with it. Nevertheless, it bears evidence of being an honest painting done from life, and is probably not a make-up in the sense that most of the others are. It fell into the hands of Richardson the printseller, who inserted it among engravings of it by Trotter and others (by which it is best known), causing the characteristic lines of the shoulders to be altered, so that it is set upon a body attired in the Droeshout costume, which does not appear in the picture; and then, arguing from this falsely-introduced costume, the publisher maintained that the work was the original of the Droeshout print and therefore a life-portrait of Shakespeare. Thus foisted on the public it enjoyed for years a great reputation, and no one seems to have recognized that with its down-turned moustache it agrees with the inaccurate print after the Droeshout engraving which is published in all editions of Shakespeare in 1790, i.e., two years before the discovery of the Felton portrait! The "Napier portrait," as the excellent copy by John Boarden is known, has recently been presented to the Shakespeare Memorial. Josiah Boydell also made a copy of the picture for George Steevens in 1797. Quite a number of capital miniatures from it are in existence. With these should be mentioned a picture of a similar type discovered by Mr. M. H. Spielmann in 1905. Finding a wretched copy of the Chandos portrait executed on a panel about three hundred years old, he had the century-old paint cleaned off in order to ascertain the metal of the forge. Of course, supporting the Chandos likeness under the action of the spirit another portrait of Shakespeare was found beneath, irretrievably damaged but obviously painted in the 17th century. At the time of the "fake" only portraits of the Chandos type were salable, and this would account for the wanton destruction of an interesting work which was probably executed for a publisher—likely enough for Jacob Tonson—but not used. Early as it is in date it can make no claim to be a life-portrait.

The "Janssen portrait," "Somerset Collection," is in many respects the most interesting published likeness of Shakespeare, and undoubtedly the finest of all the paintings in the series. It is certainly a genuine as well as a very beautiful picture of the period, and bears the inscription "1610, but doubt has been expressed whether the 6 of 16 has not been tampered with, and whether it was not originally an 0 and altered to fit Shakespeare's age. It was made known through Earlam's rare mezzotint of it, but the public knowledge of it has been mainly founded on Cooper's and Turner's beautiful but misleading mezzotint plates until a photograph of the original was published for the first time in 1900 (in The Connoisseur) by permission of the owner, the Lady Guendolen Ramsden, daughter of the duke of Somerset, the former owner of the picture. The resemblance to the main forms of the death-mask is undoubted; but that is of little consequence as confirmation unless the mask itself is supported by something beyond vague conjectures. Charles Jennens, the wealthy and eccentric amateur editor of the poor edition of King Lear issued in 1770, was the first known owner, but vouchsafed no information of its source and shrank from the challenge put to his reputation. Of its excellence and originality of this portrait there is no question; it is more than likely that Jennens was the author of it; but that it was intended to represent Shakespeare is still to be proved. A number of good copies of it exist, all but one (which enjoys a longer pedigree) made in the 18th century: the "Croker Janssen," now lost, unless it be that of Lord Darnley's; the "Staunton Janssen," the "Buckton Janssen," the "Marsden Janssen," and the copy in the possession of the duke of Anhalt. These are all above the average merit of such work.

The portrait which has made the most popular appeal is that called the "Chandos," formerly known as the "D'Avenant," the "Stowe," and the "Ellesmere," according as it passed from hand to hand; it is now in the National Portrait Gallery. Tradition, tainted at the outset, attributes the authorship of it to Richard Burbage, although it is impossible that the painter of the head in the Dulwich Gallery could have produced a work so good in technique; and Burbage is alleged to have given it to his fellow-actor Joseph Taylor, who bequeathed it to Sir William d'Avenant, Shakespeare's godson. As a matter of fact, Taylor died intestate. Thenceforward, whether or not it belonged to d'Avenant, its history is clear. At the great Stowe sale of the effects of the duke of Buckingham and Chandos (who had inherited it) the earl of Ellesmere bought it and then presented it to the nation. Many serious inquirers have refused to accept this romantic, swarthy, Italian-looking head here depicted as a likeness of Shakespeare of the Midlands, if only because in every important physiognomical particular, and in face-measurement, it is contradicted by the Stratford bust and the Droeshout print. It is to be noted, however, that judged by the earlier copies of it—which agree in the main points—this Chandos likeness of Shakespeare complained of may be due to the restorer. As Chauncey, the "burden of trust," the Chandos portrait was sold at the sale-room of the Fortnum and Mason (by whom it had been purchased) and subsequently to W. C. Brunton by the fine copy painted by Sir Godfrey Kneller, and by him presented to John Dryden. The poet acknowledged the gift in his celebrated Fourteenth Epistle, written after 1691 and published in 1694, and containing the passage beginning, "Shakespeare, thy gift, I place before my sight; With awe I ask his blessing ere I write." D'Avenant had died in 1668, and so could not, as tradition contends was the case, have been the donor. In Malone's time the picture was already in the possession of the earl Fitzwilliam. This at least proves the esterine that the Chandos portrait was held so far back as the end of the 17th century, three quinquennia after Shakespeare's death.

From among the innumerable copies and adaptations of the Chandos portrait a few emerge as having a certain importance of their own. That which Sir Joshua Reynolds is traditionally said to have made for the use of Roubillac, then engaged in his statue of Shakespeare for David Garrick (now in the British Museum), and another alleged to have been done for Bishop Newton, are now lost. That by Ranelagh Barrett was presented in 1799 to Trinity College Library, Cambridge, by the Shake-
adhering to his modified type, executed three beautiful but inaccurate miniatures from the picture, one of which is in the Garrick Club, and the others in private hands.

The "Lumley portrait" is in type a curious blend of the faces in the Chandos portrait and the Droschout print, with a dash of the "Auriol miniature" (see later). It represents a heavy-jowled man with pursed-up lips, and with something of the expression but little of the virility of the Chandos. It is, however, to be indicated though not actually mentioned in the Lumley sale catalogues of 1785 and 1807, it was only when it came into the possession of George Rippon, presumably about the year 1848, that it was brought to the notice of the world, and additional attention was secured by the owner's contention that it was the original of the Chandos. It is claimed that the picture originally belonged to the portrait collector John, Lord Lumley, of Lumley castle, Durham, who died in 1600, and descended to Richard, the 4th earl of Scarborough, and George Augustus, the 5th earl, at whose respective sales at the dates mentioned it was put up to auction. On the first occasion it was bought in, and on the second it was acquired by George Warters. It is to be observed, however, that it does not appear by name in the early inventory, and it is unconvincingly claimed that it was mistakenly entered as Chaucer, a portrait of whom is mentioned. When in the possession of George Rippon the picture was so superbly chrome-lithographed by Vincent Brooks that copies of it, mounted on old panel or canvas, and varnished, have often changed hands as original paintings. This phenomenon was indeed in possession of John, Lord Lumley, we have here a contemporary portrait of Shakespeare, and the fact that it is an amateur performance would in no way invalidate the claim. It is thinly painted and scarcely looks the age that is claimed for it; but it is an interesting work, which, in 1875, entered the collection of the late Baroness Burdett-Coutts.

To Frederigo Zuccaro are attributed three of the more important portraits now to be mentioned; upon him also have been foisted several of the more impudent fabrications herein named. The "Bath" or "Archer portrait"—it has long been the possession of the Bath Librarian, Archer, when attention was first drawn to it in 1859—is worthy of Zuccaro's brush. It is Italian in feeling, with an inscription ("W. Shakespear") in an Italian but apparently more modern hand. The type of head, too, is Italian, and it is curious that in certain respects it bears some resemblance not only to the Chandos, and to the Droschout and Janssens portraits, but also to the "death-mask"; yet it differs in essentials from all. Certain writers have affirmed that Reynolds in one of his Discourses expressed his faith in the picture; but the alleged passage cannot be identified. This opinion was indeed in possession of John, Lord Lumley, it is an amateur contemporary portrait of Shakespeare, and the fact that it is an amateur performance would in no way invalidate the claim. It is thinly painted and scarcely looks the age that is claimed for it; but it is an interesting work, which, in 1875, entered the collection of the late Baroness Burdett-Coutts.

The "Cosway Zuccaro portrait" is now in America; but the reproduction of it exists in England in the miniature of it by Cosway's pupil, Charlotte Jones, as well as in the rare mezzotint by Hana Greene. The picture is alleged to have disappeared from the possession of Richard Cosway; it was sold in his sale, however, and passed through the hands of Lionel Booth and of Augustus Daly. No time anciently imagined that it is intended for a portrait of the poet. It is far more like Shelley (somewhat caricatured, especially as to the cat-like eyes and the Mephistophelian eyebrows) or Torquato Tasso. The attribution to Zuccaro is absurd, yet Cosway and Sir Charles Eastlake believed in it. The inscription on the back, "Guglielm: Shakespear," with its mixture of Italian and English, resembles in wording and spelling that adopted in several of the case admitted "fakes." No attempt at discovering the history of the picture was ever made, but there is no doubt that at the beginning of the 19th century it was widely credited; Wittell and others attributed it to Lucas Franchois. It is said to be well painted, but the copies show that it is ill drawn. The miniature by Charlotte Jones, a fashionable artist in her day, is pretty and weak, but well executed; it was painted in 1833.

Of the "Burdett-Coutts portrait" (the fourth interesting portrait of Shakespeare in the possession of Mr Burdett-Coutts) there is no history whatever to record. No name has been suggested for the artist, but the hands and accessories of dress strongly resemble those in the portrait of Elizabeth Hardwick, courteous and tasteful in design, but not so refined, and the ruff, painted with extreme care, reveals a pentimento. The picture is admirably executed, but the face is weak and is the least satisfactory part of it; especially feeble is the ear with the ring. Shakespeare's shield, crest, with red mantling, which appear co-temporary with the rest, and the figures "37" beneath it, appear on the background, in the manner adopted in 17th-century portraits. From this picture the "Craven portrait" seems to have been "faked."

Equally striking is the "Ashbourne portrait," well known through G. F. Storm's engraving of it. It is sometimes called the "Kingston portrait" as the first known owner of it was the Rev. Clement U. Kingston, who issued the engraving in 1847. It is an important three-quarter length, representing a figure in black standing beside a table at the corner of which is a skull whose figure rests his right forearm. It is an acceptable likeness of Shakespeare, in the manner of Paul van Somer, apparently pure except in the ruff. The inscription "STATAS VÆAE. 47, AÆ 1611," and the decoration of cross spears on a book held by the right hand, are also raised from the ground, so that it would be injudicious to decide that these are not of a later date. The same is true of the supposed signature of Zuccaro—"signavit," if we disregard the inadmissible "Hampton Court portrait"—in which Shakespeare is shown wearing a sword-belt and a thumb-ring, and holding a gauntleted glove. The type is that of a refined, fresh-coloured, fair-haired English gentleman. There is no record of the picture before Mr Kingston bought it from a London dealer.

More famous, but less reputable, is the "Stratford" or "Hunt portrait," amusingly exhibited in an iron safe in the Birthplace at Stratford, to which it was presented by W. O. Hunt. The paper work, it is said, has not been ascribed to the Hunt family for many years and represented a black-bearded man. Simon Collins, the picture cleaner and restorer who had cleansed the Stratford bust of Malone's white paint and restored its colours, declaring that another picture was beneath it, was engaged to exercise himself upon it. He removed the top figure from the dilapidated canvas with spirit and found beneath it the painted version of the Stratford bust. At that time Mr Rabone's copy, now at Birmingham, was made; it is valuable as evidence. Then Collins, always a suspect in this matter, proceeded with the restoration, and by treatment of the hair made the portrait more than ever like the bust; and the owner, and not a few others, proclaimed the picture to be the original from which the bust was made. No judge of painting, however, accepts the picture as dating further back than the latter half of the 18th
century—when it was probably executed, among a score of others, about the time of the bicentenary of Shakespeare's birth, an event which gave rise to much celebration. The ingenious but entirely unconvincing explanations offered to account for the state in which the picture was found need not be recounted here.

The "Duke of Leopold portrait," now at Bost Castle, has been for many years in the family, but the circumstances of its provenance are unknown. It has been thought possible that this is the lost portrait of which John Evelyn speaks as having been in the collection of Lord Chancellor Clarendon, the companion picture to that of Chaucer; but no evidence has been adduced to support the conjecture. It represents a handsome, fair man, with auburn beard, with an expression recalling the Jansen portrait; the nose, however, is quite different. He wears a standing "wired band," as in the Droeshout print. It is a workmanlike piece of painting, but there is nothing in the picture to connect it with Shakespeare. The same may be said of the "Welcome portrait," which was bought by Mark Philips of Welcombe and descended to Sir George Trevelyan. It is a fairly good picture, having some resemblance to the "Boston Zuccaro" with something of the Chandos. The figure, a half-length, wears a falling spiked collar edged with lace, and from the ear a love-lace, the traces of which only are left. Two other portraits at the Shakespeare Memorial should be named. The "Venice portrait," which was bought in Paris and is said to have come from Venice, bears an Italian undercircumstance of the existence of the picture, which at that time belonged to a nobleman artist with Shakespeare an oval. It is manifestly meant for Shakespeare, but the head as nearly resembles the head of Christ at Lille by Charles Delafosse (1636–1716) who also painted pictures in England. Gerard Soest was not born until 1637, and according to Granger the picture was painted in Charles II.'s reign. It is a pleasing but weak head, possibly based on the Chandos. The whereabouts of the picture is unknown, unless it is that in the possession of the Earl of Craven. A number of copies exist, two of which are at the Shakespeare Memorial. Simon's print was the first announcement of the existence of the picture, which at that time belonged to an obscure painter, F. Wright of Covent Garden.

The "Charlecote portrait," which was exhibited publicly at Stratford in 1866, represents a burly, bull-necked man, whose chief resemblance to Shakespeare lies in his baldness and hair, and in the wired band he wears. The former possession of the picture by the Rev. John Lucy has lent it a sort of reputation; but that gentleman bought it as recently as 1853.

Similarly, the "Hampton Court portrait" derives such authority as it possesses from the dignity of its owner and its habitat. William IV. bought it as a portrait of Shakespeare, but without evidence. It is suggested, from the clothing of a gorgeously attired officer in an elaborate tunic of green and gold, with red bombasted trunks, with fine worked sword and dagger pendant from the embroidered belt, and with a falling ruff and laces from his ear, bears some distant resemblance to the Chandos portrait. Above is inscribed, "Ætat. suae. 34." It appears to be the likeness of a blue-eyed soldier; but it has been suggested that the portrait represents Shakespeare in stage-dress—a frequent explanation for the strange attire of quaintly alleged portraits of the poet. A copy of this picture was made by H. Duke about 1850. Similarly unacceptable is the "H. Dukinby Seymour portrait" which has disappeared since it lent to the National Portrait Exhibition of 1866. This is a fine three-quarter length in the Miervelt manner. The dignified bald-headed man has a light beard, brown hair, and blue eyes, and wears white lace-edged falling collars and cuffs over a doublet gold-embroidered with points; and in the left hand holds a black hat. The "Lytton portrait," a royal gift made to Lord Lytton from Windsor Castle, is mainly interesting as having been copied by Mr. G. R. Evans in his original profile engraving of Shakespeare. The "Remnant portrait," and other portraits which belong to the category of capital paintings representing some one other than Shakespeare; and the same may be hazarded, of the "Grafton" or "Winston" portrait, the "Sanders portrait," the "Gillian portrait" (an old man's head impudently advanced), the striking "Thorne Court portrait," the "Aston Cantlow portrait," the "Burn portrait," the "Gwennett portrait," the "Wilson portrait" and others of the class.

Miniature-painting has assumed a certain importance in relation to the subject. The "Welbeck Abbey" and "Harleian miniature" is that which Walpole caused to be engraved by Vertue for Pope's edition of Shakespeare (1723–1725), but which Oldys declared, incorrectly, to be a juvenile portrait of James I. According to Scharf, it belonged to Robert Harley, 1st earl of Oxford, but it is more likely that it was bought by his son Edward Harley in the father's lifetime. It already was in his collection in 1710, but whereto it came is not clear. There has been another small miniature. Pope consented to adopt this very beautiful but entirely unauthenticated portrait, which bears little resemblance to any other accepted likeness (more, however, to the Chandos than to the rest) simply in the hope of uniting Pope and Shakespeare. The miniature measures 2 in. high; Vertue's exquisite engraving, executed in 1721, enlarged it to 5½, and became the "authority" for numerous copies, British and foreign. The "Somerville" or "Hilliard miniature," which has been described as "found in Lord arnald's collection," is claimed to be from Shakespeare's friend, Somerville of Edistone, grandfather of the poet William Somerville. It was first publicly spoken of in 1818 when Sir Walter Scott exhibited it in the National Portrait Gallery, and was taken to be certainly by Hilliard, but although Sir Thomas Lawrence and many distinguished painters and others agreed that it was an original life-portrait of the poet, few will be disposed to give adherence to the theory that the view of it is increased in size. It represents a pale man with flaxen hair and beady eyes; yet in it Burges found "a general resemblance to the best busts (sic) of Shakespeare," and an attempt was made to prove a relationship between Shakespeare and the poet Arden of Trerice (1500–1578), who was born in the same year. The miniature has frequently been exhibited and has figured in important collections on its own merits. The well-known "Auriol miniature," now in America, is one of the least sympathetic and the least acceptable of the Shakespeare miniatures, excellent though it is in technique. It has the forehead and hair of the Chandos, but is utterly devoid of the Shakespeare expression. In the background is an ancient shield, inscribed "1826." It is signed "J. Mackey," and is ascribed to J. Mackey of Edinburgh, who died in 1832. The miniature has for over forty years been in the collection of the Duke of Argyll. Several painted portraits have disappeared, other than those already mentioned; these include the "Earl of Oxford portrait" and the "Challis portrait." The "Countess of Zetland's portrait," which has been well known, is now in the possession of the Earl of Zetland. Not a few of the existent representations of Shakespeare, unauthoritative as they are, were honestly produced as memorial pictures. There is another class, the earnest attempts made to suggest that the figures were worked up from the drawings of the best and most characteristic features of the earliest portraits. The most successful, perhaps, is that by Ford Maddox Brown. In the "William Shakespeare" Corporation of Birmingham, the National Portrait Gallery, and Henry Howard, R.A., take a lower rank. It is to be regretted that Gainsborough did not execute the portrait for Garrick, for which he made serious preparations. The "Booker portrait," which gained great notice in Sir Joshua Reynolds' exhibition of 1768, is now in the possession of Mr. R. C. Shafteley. It is said to have been purchased by Richard Brinsley Sheridan; it has dignity, but the pigment forbids us to allow the age claimed for it. The portraits by P. Krämer and Rumpf are among the best recently executed in Germany. The remarkable pen-and-ink drawings by Minasini and Phillip H. Newman deserve to be remembered.
The "faked" portraits have been at times as ardently accepted as those with some solid claim to consideration. The "Shakespeare Memorial Museum" (a poet's glut, of course) can be repeated, twenty times, as an inscription, was discovered in 1872. It is a genuine Dutch picture of man and wife weighing out money in the foreground—a frequent subject—while through the open door Shakespeare and Prospero are seen as handfasting. And the Shakespeare and the Speed portrait (probably the whole group) are fakes. The "Rawson portrait," inscribed with the name "Shakespeare," is also disputed, and it is generally attributed to Lord Keeper Coventry by Jansen. The "Matthews Alexander portrait" shows a modern head on an old body. The "Bolmont Hall portrait" with its pseudo-Garrick MS. inscription on the back, is the best known in writer's opinion, not the genuine one which it claims to be. It represents the poet looking up from his literary work. In the early part of the 19th century two clever "restorers," Holder and Zuckke, made a fake lucrative hit by fabricating supposed portraits of Shakespeare (as of Oliver Cromwell, and Nell Gwynn) and the clumsiness of most of them did not impede a ready sale. The way in which they imposed upon scholars as well as on that hand. As many of these impudent impostures won wide acceptance, sometimes by the help of the fine engravings which were made of them. Such are the "Stace" and the "Dundorf portraits"—so named after the unscrupulous dealers who put them forward and promulgated them. They have both disappeared, but of the latter a copy is still in existence known as the "Dr. Clay portrait." The former is based upon the portrait of Robert Carr, Earl of Somerset, and is a bad imitation; and the name may be given to our "Bishop Newton," the "Cygnus Avonius," the "Norwich" or "Boardman," the "Bellows" or "Talma" portraits—most of them, as well as others, traceable to one or other or both of the enterprising fakers. Holbein, which is the oldest of the reproduction evidence, with verses supposed to issue from the pen of Ben Jonson. These are all to be attributed to one ready pseudo-Elizabethan writer whose identity is known. With these pictures a critic should be armed with a copy of William Blake, and an article by Mr. Willson, purporting to represent Shakespeare and Ben Jonson playing chess.

The three portraits "are not less numerous. The 18th-century small full-length "Willett portrait" is at the Shakespeare Memorial. It is a charmingly touched-in little figure. There are many representations of the poet in his study in the act of composition—they include those by Faed, R.A., Sir George Harvey, R.S.A., C. Bestland, B. J. N. Geiger, and the painter of the Warwick Castle picture, &c.; others have for subject Shakespeare reading, either to the Court or to his family, as by John Wood, E. Ender, W. Westall, &c.; and for the infancy and childhood of Shakespeare, by George Romney (three pictures); T. Stockard, R.A., John Wood, James Sant, R.A.; Shakespeare before Sir Thomas Lucy, by Sir G. Harvey, R.S.A.; Thomas Brooks, A. Chisholme, &c.; These, and kindred subjects such as "Shakespeare's Courtship," have provided infinite material for the industry and ingenuity of Shakespeare-loving painters.

The less important records of work and wood are numerous—amounting to many hundreds—that it is impossible to deal with them here; but one or two must be referred to, as they have genuine importance. The best known is the figure of Shakespeare in a portrait by John Payne (fl. 1620, the pupil of Simon Pass and one of the first English engravers who achieved distinction); but no such print has even been found and its existence is doubted. Walpole produced a copy of the portrait, and there is a group of woodcuts, an reduced version of the Droueshout, which was published as frontispiece to the spurious edition of Shakespeare's poems (1640). It is great in the portrait an expert eyes unrecognizable as a copy, was made from it in 1815, and another later. William Faithorne (d. 1691) is credited with the frontispiece to Quarto's edition of "The Rape of Lucrece," by William Shakespeare, 1634 (1655). It was copied from R. Sawyer and republished in 1819. It represents the tragic scene between Tarquin and Lucrece, and above is an oval medallion, being a rendering of the Droueshout portrait reversed. The earliest engravings from the Chansons pale, however, upon the firmness of the portrait of Shakespeare, and that by M. (father of G.) van der Gucht are introduced into a pleasing composition. The same elaborate design was adopted by L. van der Gucht. These, with Vivere's earliest prints, look to the left; subsequent versions are reversed. Perhaps the most celebrated, partly because it was the most important and technically the finest, up to that time, is the large engraving (to the right) by John Martin (1786). The "Persons of Great Britain," published by T. and J. Knapton (1747-1752). This free rendering of the Chansons portrait is the parent of the famous copy known as the "Houbraken type." Since that date, many plates of a high order, from the Houbraken type, have been issued, many of them extremely inaccurate.

Numerous portraits in stained glass have been inserted in the windows of Shakespeare memorials. They are characteristic of the Chansons windows by Franz Mayer (Mayer & Co.) at Stationers' Hall, and in St Helens, BishopsGate (Professor Blain); and that of the Droueshout type in the great hall of the City of London school. Ford Madox Brown's design is one of the best ever executed.

We now come to the sculptured memorials. After Gerard Johnson's bust no statuary portrait was executed until 1746, when Byrd made the bust for Mr. Fourth's 'to diversity' subscription, mainly through the enthusiastic activity of the earl of Burlington, Dr Richard Mead, and the poet Pope. It was designed or "invented" by William Kent and modelled and carried out by Peter Scheemakers, a pupil of Houdon, the sculptor of John and his wife. "Many people claimed that 

the bead and the head with its inconspicuous head—may be credited to the former, and what is excellent to the latter. It is of note the bust (London, in the London, in the Statue), is signed by the sculptor, and the head by Peter Scheemakers, pupil, the London Museum, and is, by J. G. Stradon, on the pedestal, and the latter was set up in the City of London. The bust and the head, in the portrait of Shakespeare, is, by Fontana, a gift to London by Baron Albert Grant. Busts were executed by Scheemakers, founded on the same portrait. One is still at Stowe in the "Temple of British Worthies," and in Lord Colham's possession is that presented by Pope to Lord Lyttleton. Some very fine engravings of the monument have been produced, the most important that in Boydell's Shakespeare (larger edition). By L. F. Roubiliac, Cheere's portrait, is the statue which in 1768 David Garrick commissioned him to carve and which he bequeathed to the British Museum. It is also based upon the Shakespeare portrait. The terra-cotta model for the statue is in the Victoria and Albert Museum. A second portrait, the bust, to Roubiliac also must be credited the"D'Avnent Bust" of blackened terra-cotta in the possession of the Garrick Club. This fine work of art derives its name from having been found blackened in the attic of the old club. The bust of Shakespeare, which 180 years before was d'Avnent's, but which afterwards passed through various vicissitudes. It was again adapted for theatrical purposes by Gifford, for whom this bust, together with one of Jonson which was set up at the moment of discovery must have been modelled by the sculptor, who at the same time was engaged on Garrick's commission. The model for the British Museum statue is still in the possession of the Shakespeare Memorial, now in the National Portrait Gallery. Another portrait of Shakespeare is in Westminster Abbey—a medallion based on the Chansons picture, introduced into Webber's rather fantastic monument to David Garrick in Coventry Church. Another portrait of Shakespeare, by J. Banks, R.A., between the Genii of Painting and the Drama, is now in the garden of New Place, Stratford-on-Avon. It was executed for Mr. Holte Bracebridge, by the sculptor in Pall Mall, and was presented to the British Institution which which occupied the premises; on the dissolution of that body it was given to Stratford by Mr Holte Bracebridge. It is a fine thing, but the likeness adheres to no clearly specified type. It has been excellently engraved in line by James Stow, B. Smith, and others, and was reproduced on the admirable medal by Kitcher, preserved by Boydell to every subscriber to his great illustrated edition of Shakespeare. The model of Shakespeare's tomb, executed by Banke's, was the first British hand to model a portrait of the poet.

In more recent times numerous attempts have been made to re-construct the Shakespearean memorial group. The most ambitious of these is the elaborate memorial group modelled and presented by Lord Ronald Sutherland Gower to Stratford and set up outside the Memorial Theatre in 1888. The large seated figure of Shakespeare is to be seen today in the art critic's opinion. A group of recumbent figures of Hamlet, Lady Macbeth, Prince Henry, and Falstaff, in 1864 J. E. Thomas modelled the colossal group of Shakespeare with attendant figures of Comedy and Tragedy that was erected in the gardens of the Crystal Palace, and in the same year Charles Bacon produced his colossal Centenary Bust, a reproduction of which forms the frontispiece to John H. Routh's "Shakespeare: His Inner Life" (1865). The chief statues, single or in a group, in London still to be mentioned are the following: that by H. H. Armstead, R.A., in marble, on the southern podium of the Albert Memorial; by Hamo Thornycroft, R.A. (1871), on the Poets' Fountain in Park Lane; by Messrs C. and G. C. A. M. (1895), on the Royal Institute of Art, London; and by F. E. Schenck, a seated figure, on the façade of the Hammersmith Public Library. The Droueshout portrait is the basis of the head in the bronze memorial by Professor Landon, erected in two parts in the city of London. The life-size statue of Sir Henry Raymond (1909) and of the excellent bust by Mr C. J. Allen in the churchyard of St Mary the Virgin, Aldermarbury, in memory of Hensme and Carrington. A. Revell, the sculptor. This statue was in preparation in 1910 for erection in the south aisle of Southwark Cathedral. Among statues erected in the provinces are those by Mr H. Pegram, A.R.A., in the building of Birmingham University (1884), by M. G. Cheere, on the Crimean Memorial at the New University building. Several statues of importance have been erected in other countries. The statue by M. Paul Fournier in Paris (presented by an English resident) is in the garden of the Hotel de Ville, Avenue de Messine (1888). The seated marble statue by Professor O. Lessing was set up in Weimar by the German Shakespeare Society; the sculptor has also modelled a couple of busts of a very personal
and, it may be said, un-English type. A seated statue in stone roughly hewn with characteristic breadth by the Danish sculptor, Louis Hesselriis, has for some years been placed in the apse of the Castle of Kronborg, in which, according to the Danish tradition, Shakspeare is said to have resided as a youth with his master, the Lord of Denmark. America possesses some well-known statues. That by J. Q. A. Ward is in Central Park, New York (1872). In 1886 William Ordway Edwards made a marble statue of the bard and placed it in the Lincoln Park, Chicago; and later, Frederic MacMonnies produced his very original statue for the Library of Congress, Washington, D.C. This is in some measure based on the 'Droeshout engraving.' William R. Bruce, in 1864, cast a bronze portrait bust of 'Shakspeare' at the instigation of the Wisconsin Historical Society, and the bust was purchased from him by the Library of Congress. Great consideration is given by some to the bust made by William Page of New York in preparation for a picture of the poet he was about to paint. He founded it with pathetic faith and care and ambition, but it was never completed (1870); it is described as 'a little resembles; as he was no sculptor the bust is no more successful than the picture. The bust by R. S. Greenough, already mentioned as based in part on the 'Boston Zuccaro' portrait, must be included here, as well as the romantic, dreamy, marble bust by Augusto Possagno of Florence (presented to the Garrick Club by Salvinii in 1876); the imaginative work by Altni (Duke of Northumberland, Albick Castle); and the busts by F. M. Miller, E. G. Puller, Albert Toft, J. E. Carew (Mr Muspratt, Liverpool) and P. J. Char digny of Paris. The last named was a study made in 1850, for a proposed statue, 100 ft. high, which the sculptor hoped to be commissioned to produce. A cast of one of any of those busts and the statue and statuettes have also been produced. Some attention has been accorded for several years past to the great pottery bust attributed to John Dwight's Fulham Pottery (c. 1675). The present writer, however, has been informed that it is by Lippombe, in the latter portion of the 19th century.

The wood carvings are numerous. The most interesting among them are the series of famous men carved from walnut and mulberry-tree; and those which are the most attractive are the arcadia carvings by Selb (1761). One statuette of a primitive order of art was sold in 1900 in London for a fantastic sum; it was absurdly claimed to be the original of Scheekensha's statue, but without the slightest attempt at proof or justification.

The Medals and Coins of Shakespeare offer material for a separate number of the series, but they are by no means numerous. The best of them are as follows: Jean Dassier (Swiss; in the "Series of Famous Men," c. 1730); J. J. Barre (French; in the "Series numismatica universalis," 1818); Westwood (Garrick Jubilee, 1766); J. G. Hamond's fine short-lived series, reprinted in the Hogarth, and inset in the back of the "Shakespeare chair" presented by the artist to David Garrick (in the possession of Mr W. Burdett-Coutts). The statuettes alluded to be carved from the wood of the mulberry-tree by artist W. H. Pyne, and there is a medallion of Shakespeare executed, which is the most attractive are the arcadia carvings by Selb (1761). One statuette of a primitive order of art was sold in 1900 in London for a fantastic sum; it was absurdly claimed to be the original of Scheekensha's statue, but without the slightest attempt at proof or justification.

The 18th-century tradesmen's Tokens, which passed current as money during the period, are of great utility for the collector, needs, constitute another branch for collectors. About thirty-of these, including variations, bear the head of Shakespeare. With one exception (a farthing, 1719), issued much later than the bust of Shakespeare, these are all minted in London. There are the "Warwickshire" series, the "London and Middlesex," and the "Stratford Promissory" series. Many of these have edge with a word or a tail piece on the special places in which they are payable. In addition to these may be mentioned the 24 "imitation regal" tokens which bear Shakespeare's name, around (except in one or two cases) the head of the king. They belong to the last quarter of the 18th century.

The many more important kilns have produced portraits of Shakespeare in porcelain and pottery, in statuettes, busts, in low relief, and as plates and medallions. Thomas Seigneur, of Berkeley, Derby; Chedsey-Derby; old Staffordshire (salt-glaze), frequently reproducing, as often as not with fantastic archaism, Scheekensha statue; and on flat surfaces by transfer of printed designs—both 18th- and 19th-century productions; also French-Dresden and Wedgwood. In the last-named ware is the fine bust, half-life-size, in black basalt, as well as several "cameos" in various sizes, in blue and white jasper, or yellow ground, and in black basalt. The busts were also produced in different sizes. Worcester produced the well-known "Benjamin Webster" service, with the portrait, Chandos type, en cameleaf, as well as the mag in "jet enamel," which was the fifth of the set of thirteen. Several of the portraits have also been produced commercially in biscuit china.

Gems with intaglio portraits of Shakespeare have been copiously produced since the middle of the 19th century, nearly all of them based upon earlier portraits of Shakespeare who were masters of their still-living craft. The principal of these latter are as follows: Edward Burch, A.R.A., exhibited in 1765; Nathaniel Marchant, R.A., exhibited 1773 (Garrick turning to a bust of Shakespeare); Thomas W. Read (1776); and James E. Stirling and W. Wyon (the Elder: Shakespeare and Garrick); W. B. Wray (a beautiful drawing for this in the Print Room of the British Museum); and Yeo. In the same class may be reckoned the Cameos, variously sardonyx, chalcedony, and shell, some excellent examples of which have been executed, and the Ivories, both in the round and in relief. The Waxes form a class by themselves; in the latter portion of the 18th century a few small busts and reliefs were put forth, very good of their kind. These have been imitated within recent years and attempts made to pass them off as originals, but only the novice is deceived by them. Similarly the old Shakespeare brass pipe-stoppers have latterly been widely reproduced, and the modern specimens are not inferior to those produced from the original. So voracious is the public appetite for portraits of the poet that the old embroi deries in hair and more recently in woven silk found in black silver, bronze, iron, and lead are eagerly snapped up, and postage stamps with Shakespeare's head have been issued with success. The acquisitiveness of the collector paralyses his powers of selection. The vast number of objects serves daily use by bearing the portrait of Shakespeare call for no notice here.

(M. H. S.)

**BIBLIOGRAPHY**

The following is an attempt to supply the want of a select classified bibliography of the literature connected with Shakespeare (hereafter called M. H. S., arranged chronologically under each heading in order to give the literary history of the special subject. Articles in periodicals not issued separately, and modern critical editions of single plays, are not included; and only those of the plays usually contained in the collective editions are noticed.

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**I. PERSONAL COLLECTIVE EDITIONS**

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<th>Year</th>
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<td>1623</td>
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J. C. Harty, Shakespeare and the Drama, 1790, 8vo.

XXVII. Shakespeare and the Drama

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SHALLOT, *Allium ascalonicum*, a hardy bulbous perennial, which has not been certainly found wild and is regarded by A. de Candolle as probably a modification of *A. Cepa*, dating from about the beginning of the Christian era (Origin of Cultivated Plants, p. 71). It is extensively cultivated and is much used in cookery, besides which it is excellent when pickled. It is propagated by being planted in March or October, but the principal crop should not be got in earlier than February or the beginning of March. In planting, the tops of the bulbs should be kept a little above ground, and it is a commendable plan to draw away the soil surrounding the bulbs when they have got root-hold. They should not be planted on ground recently manured. They come to maturity about July or August. There are two sorts—the common, and the Jersey or Russian, the latter being much larger and less pungent.

SHALMANESER [Ass. Šulmanu-yašar, "the god Sulman (Solomon) is chief"], the name of three Assyrian princes. Shalmaneser I., son of Hadad-nirari I., succeeded his father as king of Assyria about 1310 B.C. He carried on a series of campaigns against the Aramaeans in northern Mesopotamia, annexed a portion of Cilicia to the Assyrian empire, and established Assyrian colonies on the borders of Cappadocia. According to his annals, discovered at Assur, in his first year he conquered eight countries in the north-west and destroyed the fortress of Arinu, the dust of which he brought to Assur. In his second year he defeated Sattuwa, king of Malatia, and his Hitrite allies, and conquered the whole country as far south as Carchemish. He built palaces at Assur and Nineveh, restored "the world-temple" at Assur, and founded the city of Calah.

Shalmaneser II. succeeded his father Assur-nazir-pal III. 858 B.C. His long reign was a constant series of campaigns against the eastern tribes, the Babylonians, the nations of Mesopotamia and Syria, as well as Cilicia and Ararat. His armies penetrated to Lake Van and Tarsus, the Hitrites of Carchemish were compelled to pay tribute, and Hamath (Hamah) and Damascus were subdued. In 854 B.C. a league formed by Hamath, Arvad, Ammon, "Ahab of Israel" and other neighbouring princes, under the leadership of Damascus, fought an indecisive battle against him at Karkar (Qarqar), and other battles followed in 849 and 846 (see JESUS §10). In 842 Hazael was compelled to take refuge within the walls of his capital. The territory of Damascus was devastated, and Jehu of Samaria (whose ambassadors are represented on the Black Obelisk now in the British Museum) sent tribute along with the Phoenician cities. Babylonia had already been conquered as far as the marshes of the Chaldeanans in the south, and the Babylonian king put to death. In 836 Shalmaneser made an expedition against the Tibareni (Tabal) which was followed by one against Cappadocia, and in 832 came the campaign in Cilicia. In the following year the old king found it needful to hand over the command of his armies to the Tartan (commander-in-chief), and six years later Nineveh and other cities revolted against him under his rebel son Assur-dan-in-pal. Civil war continued for two years; but the rebellion was at last crushed by Samas-Rimmon or Samsi-Hadad, another son of Shalmaneser. Shalmaneser died soon afterwards in 823 B.C. He had built a palace at Calah, and the annals of his reign are engraved on an obelisk of black marble which he erected there.

See V. Scheil in Records of the Past, new series, iv. 36-79.

Shalmaneser III. (or IV.) appears as governor of Zimrirra in Phoenicia in the reign of Tiglath-pileser IV. (or III.) and is summoned by Habiru, who are often planted in September. At all events, on the death of Tiglath-pileser, he succeeded to the throne the 25th of Tebet 728 B.C., and changed his original name of Ululu to that of Shalmaneser. The revolt of Samaria took place during his reign (see JEWES §15), and while he was besieging the rebel city he died on the 12th of Tebet 722 B.C. and the crown was seized by Sargon.

For all these rulers see BABYLONIA AND ASSYRIA, Sections V. and VIII., and works quoted.

(A. H. S.)

SHAMANISM, the name commonly given to the religion of the Ural-Altaic peoples. Properly speaking, however, there is nothing to distinguish Shamanism from the religions of other peoples in a similar stage of culture. On the other hand, the shaman or priest (Tungus saman, Altan Turk kama, cf. Russian domovoe) performs the embodiment of the idea of justice. Several of those of the ordinary magician; one of his main functions is to protect individuals from hostile supernatural influence. He deals both with good and bad spirits; he also performs sacrifices and procures oracles. The drum (tungur) is an important instrument in his ceremonies; it may be assumed that in many cases the effect of the preliminary performances is to induce autohypnotic phenomena. The shaman's office is held to be hereditary and his chief assistants are ancestral spirits.


SHAMASH, or Šamaš, the common name of the sun-god in Babylonia and Assyria. The name signifies perhaps "servitor," and would thus point to a secondary position occupied at one time by this deity. Both in early and in late inscriptions Shamash is designated as the "offspring of Nannar," i.e. of the moon-god, and since, in an enumeration of the pantheon, Sin generally takes precedence of Shamash, it is in relationship, presumably to the sun-god that the sun-god appears as the "chief" god. Such a supposition would accord with the prominence acquired by the moon in the calendar and in astrological calculations, as well as with the fact pointed out (see SITS) that the moon-cult belongs to the nomadic and therefore earlier, stage of civilization, whereas the sun-god rises to full importance only after the agricultural stage has been reached. The two chief centres of sun-worship in Babylonia were Sippara (Sippar), represented by the mounds at Abu Habba, and Larsa, represented by the modern Senkerah. At both places the chief temple bore the name E-barra (or E-balbara) "the shining house"—a direct allusion to the brilliancy of the sun-god. Of the two temples, that at Sippara was the more famous, but temples to Shamash were erected in all large centres—as Babylon, Ur, Nippur and Nineveh.

The attribute most commonly associated with Shamash is justice. Just as the sun disperses darkness, so Shamash brings wrong and injustice to light. Khammurabi attributes to Shamash the inspiration that led him to gather the existing laws and legal procedures into a code, and in the design accompanying the code the king represents himself in an attitude of adoration before Shamash as the sun-god. In the middle centuries before Khammurabi, Ur-Engur of the Ur dynasty (c. 2600 B.C.) declared that he rendered decisions "according to the just laws of Shamash." It was a logical consequence of this conception of the sun-god that he was regarded also as the one who released the sufferer from the grasp of the demons. The sick man, therefore, appeals to Shamash as the god who can be depended upon to help those who are suffering unjustly. This aspect of the sun-god is vividly brought out in the hymns addressed to him, which are, therefore, among the finest produc- tions of the entire realm of Babylonian literature.

It is evident from the material at our disposal that the Shamash cults at Sippara and Larsa so overshadowed local sun-deities elsewhere as to lead to an absorption of the minor deities by the predominating one. In the systematized pantheon these minor sun-gods become attendants that do his service. Such are Bunene, spoken of as his chariot driver, whose consort is Atgimakh, Kettu ("justice") and Mesharu ("right"), who are introduced as servitors of Shamash. Other sun-deities, as Ninib (Gr.) and Nergal (Gr.), the patron deities of important centres, retained their independent existence as certain phases of the sun, Ninib becoming the sun-god of the morning and of the spring time, and Nergal the sun-god of the noon and of the summer solstice, while Shamash was viewed as the sun-god in general.

Together with Sin and Ishtar, Shamash forms a second triad
SHAMBLES—SHANGHAI

by the side of Anu, Bel and Ea. The three powers, Sin, Shamash and Ishtar (q.v.), symbolized the three great forces of nature, the sun, the moon and the life-giving force of the earth. At times, instead of Ishtar, we find Adad (q.v.), the storm-god, associated with Sin and Shamash, and it may be that these two sets of triads represent the doctrines of two different schools of theological thought in Babylonia which were subsequently harmonized by the recognition of a group consisting of all four deities.

The consort of Shamash was known as A. She, however, is rarely mentioned in the inscriptions except in combination with Shamash.

(M. Ja.)

SHAMBLES, a slaughter-house, a place where butchers kill animals for domestic food, an "abattoir." The word in the singular means properly a bench or stall, which butchers display their meat for sale in a market, and appears in O. Eng. fiô-scœmœl, foot-stool. It represents the L. scœmulum, diminutive of scœmum, step, bench; the root is seen in Gr. σκέπτε. to prop, cf. " sceptre." The distinct word "shambles," meaning to walk awkwardly, is to be traced to the O. Du. schampelen, to stumble, an adaptation of O. Fr. escamper, to decamp (Lat. ex, out of, and campus, field). The same French word has given the English "scamp," a worthless rascal, a rogue, vagabond.

SHAMMAI, a Jewish scribe of the time of King Herod, whom tradition almost invariably couples with Hillel (q.v.), with whom he was possibly associated in a rich library. Shammai took part in decisions and discussions, but also in character and temperament. His motto (Aboth i. 15) reads: "Make thy study of the Thora a firmly established duty; say little and do much; and receive every man with friendly countenance." The last advertisement is characteristic, as Shammai was choleric and brusque. The opposition between Shammai and Hillel was perpetuated by their respective schools, till, under Gamaliel II., the strife was decided at Jabneh in favour of the school of Hillel. (W. B.)

SHAMOKIN, a borough of Northumberland county, Pennsylvania, on the Sunbury Creek, W. of River, E. N. of E. of Harrisburg. Pop. (1890) 18,322, of whom 2793 were foreign-born; (1910 U.S. census) 19,588. Shamokin is served by the Philadelphia & Reading, the Northern Central, and two interurban railways. There are two parks. The mining and shipping of anthracite coal and the manufacture of silk goods and of hosiers and knit goods are the borough's principal industries, but it has, also, foundries and machine shops, and manufactory of powder, powder-kgs., shirts, overalls, hooks and eyes, brick, flour and dressed lumber. The total value of its factory product in 1905 was $1,443,915. The borough was named in honor of the Creek (aca) Shamokin, the name of a Delaware Indian word meaning "full of eels." The Indian village named Shamokin was on the site of the present Sunbury, Pa. Shamokin was formed in 1852 by the union of two villages, Groveville and Mary Ann. It was incorporated as a borough in 1864.

SHAMPOO, a word now principally used as a hair-dresser's term for washing the head and hair with soap and water or some special preparation. It is properly the Hindustani word (champia, to thrust, press; imperative champ) for the kneading and rubbing of the body, &c., which is 45 cm. (the principal features of the various forms of hot bath as practised in the East.

SHAMYL (c. 1797–1871), the leader of the tribes of the Caucasus in the war against Russia. He was born about 1797, and educated by the Mullah Djemaleddin, soon took a leading part in preaching a holy war against the Russians. He was both the spiritual and military leader of the tribes, who maintained the struggle for twenty-five years (1834–1859). This perpetual guerrilla was a severe strain upon the resources of the great power, and Shamyli's romantic fight for independence, making his home in the north of Russia, and his main headquarters on the Caspian Sea, and being occasionally seen, the summer months are excessively hot. Cholera occurs in the native city every summer, malarial fever exists and dysentery is apt to become chronic in spring and autumn, on account of the sudden changes of temperature—a fall from 20° to 5° in a few hours—and the moisture-laden atmosphere. Smallpox is endemic in the Chinese city during the autumn and winter. All the opium smokers of the city, in the European and native settlements, owing to sanitary enactments, cholera is rare, and Europeans who adopt ordinary precautions "have nothing to fear from the climate of Shanhsai." (China Sea Directory, vol. iii., col. 133.)

At first merchants appeared disinclined to take advantage of the opportunities offered them at Shanghai. "At the end of the first year of its history as an open port Shanghai could count only 23 foreign residents and families, 1 consular flag, 11 merchants' houses, and 2 Protestant missionaries. Only
forty-four foreign vessels had arrived during the same period."

By degrees, however, the manifold advantages as a port of trade possessed by Shanghai attracted merchants of all nationalities; and from the banks of the Hwang-pu arose handsome dwellings-houses, which have converted a reed-covered swamp into one of the greatest cities in the East.

The number of foreigners, other than British, who took up their abode in the British settlement at Shanghai made it soon necessary to adopt some more catholic form of government than that supplied by a British consul who had control only over British subjects, and by common agreement a committee of residents, consisting of a chairman and six members, was elected by the renters of land for the purposes of general municipal administration. It was expected when the council was formed that the three settlements—the British, French and American—would have been incorporated into one municipality, but international jealousy prevented the fulfilment of the scheme, and it was not until 1863 that the Americans threw in their lot with the British.

In 1834 the prosperity of the settlements received a severe check in consequence of the capture of the native city by the T'ai-p'ing rebels, who held possession of the walls from September in that year to February 1835. This incident, though in many ways disastrous, was the cause of the establishment of the foreign customs service, which has proved of such inestimable advantage to the Chinese government. The confusion into which the customs system was thrown by the city being held by the rebels induced the Chinese authorities to request the consuls of Great Britain, France and the United States to nominate three officers to superintend the collection of the revenue. This arrangement was found to work so well that on the reoccupation of the city the native authorities proposed that it should be made permanent, and H. N. Lay, of the British consular service, was in consequence appointed inspector of the Shanghai customs. The results of Mr Lay's administration proved so successful that when arranging the terms of the treaty of 1858 the Chinese willingly assented to the continuance of the arrangement.

The treaty of 1858 had also secured to the British a place in the treaty ports, and Mr Lay was thereupon appointed inspector-general of maritime customs. On the retirement of Mr Lay in 1862 Sir Robert Hart was appointed to the post.

From 1856 to 1864 the trade of Shanghai vastly increased, and its prosperity culminated between 1860 and 1864, when the influx of Chinese into the foreign settlement in consequence of the advance of the T’ai-p’ing rebels added enormously to the value of land. But the period was brought to a close by the withdrawal of the British, who were driven back by the British troops and volunteers, aided by the naval forces of England and France. It was in consequence of this occupation of the city that the British and American army, which under his direction gave a reality to the boastful title of "ever-victorious army" it had assumed under the two American adventurers Ward and Burgevin, to Shanghai the successful occupation of which was the reward of temporary residence. With the disappearance of the T’ai-p’ings the refugees returned to their homes, leaving whole quarters deserted. The loss thus inflicted on the municipality was considerable, and was intensified by a commercial crisis in cotton and ten, in both of which there had been a great deal of over-speculation. But, though the abnormal prosperity was thus suddenly brought to an end, the genuine trade of the port has steadily advanced, subject of course to occasional fluctuations. For example, in 1880 the value of trade was £8,223,017, and in 1908 it was £40,000,000. The total burden of foreign steamers which entered and cleared at Shanghai during 1884 was 5,145,242 tons, while in 1898 it was over 10,000,000 tons. The principal items of import are cotton yarns, metals, sugar, petroleum, and coal; of export, silk, representing in value 34% of the total exports, cotton, tea, rice, hides and skins, wool, wheat and beans. Great Britain and the British colonies supply nearly 31% of the imports, Japan 12%, and the United States 12%; and of the exports Great Britain and the British colonies take 18%, the United States 4% and Japan 3%. The supplanting of China by other countries in the foreign trade, but is rapidly becoming a large manufacturing and industrial centre. In this category the first place must be given to cotton manufactures; though not very numerous, give promise of considerable development. The demand in China for foreign cotton is chiefly the produce of the Bombay mills, has been steadily on the increase. On the other hand, China produces raw cotton in infinite quantity, and is the largest source of supply for the Japanese mills. Cloth weaving has been tried in two or three places, but abandoned in favour of spinning. Next in importance is the reeling of silk cocoons by machinery. This is gradually supplanting the hand-winding; it is, however, a more laborious process, and consequently more valuable article. Shanghai also contains three large establishments for docking, repairing and building ships. Among minor industries are match factories, rice and paper mills, ice, cigarette, piano, carriage and furniture factories, wood carving, &c.

The vastness of British interests in China and the large British population in Shanghai (1864) were sufficient to induce the British supreme court for China at Shanghai, Sir Edmund Hornby, then judge of the British court at Constantinople, being the first judge appointed to the new office. Now, by virtue of extra-terri- torial powers given by the treaty of 1858, in all cases in which the British, because of their possession of the British subjects, are exempted from the jurisdiction of the Chinese authorities, and made justiciable only before their own officials. As there are now fourteen treaty powers represented at Shanghai, there are consequently fourteen courts, each administering the law of its own nationality. In addition, there is also a Chinese court, commonly called the Mixed Court, though it is no more mixed than any of the others in an international sense, except that a foreign assistor sits with the Chinese judge in cases where any of his own nationality are interested as plaintiffs. At first sight this arrangement seems somewhat complicated, but the proper simple enough, viz., that a defendant must always be sued in the court of his own nationality. In criminal cases there is, of course, no difficulty. For the British, English law alone prevails, and they can only be tried and punished in the British court; and so on in other nationalities. In the case of suits in which the parties of the same nationality, there is also no difficulty, e.g., for British subjects the British court is the forum, for German subjects it is the German court. In cases, however, in which a British subject is sued by an American, the court is a tribunal between an Englishman and a German, if the German constitutes himself plaintiff he must sue his opponent before the British court, and vice versa. The greatest anomaly, however, in respect of the courts of Shanghai, is that of the Chinese, who, although their own laws are exercised by the foreign community as a whole without regard to nationality, and is a share of the power which properly belonged to the Chinese local authorities, but which by convention of usage they have allowed to fall into foreign hands. It is extended only within the area termed the foreign settlements, which were originally nothing more than the "area set apart for the residence of foreign merchants. Of these, three—the British, acquired in 1845, the French, acquired in 1850, and the American, acquired in 1862. At an early date, as a foreign town began to spring up, the necessity of having some authority to look after the public welfare, to make provision for the comfort, benefit, became evident, and as the Chinese authorities shirked the work and expense, the foreigners resolved to tax themselves voluntarily, and appointed a committee of works to see the money properly laid out. In 1854 the consuls of Great Britain, France, and the United States drew up a joint code of regulations applicable to both the then settlements, British and French, which being ratified by all the powers, gave a law to the foreigners resident in their respective subjects. The two areas thus became an international settlement, and the subjects of all three—nationalities—the only powers then interested—acquired the same privileges and became liable to the same obligations. This, however, was not without some difficulty; the Chinese authorities and by other nationalities as they came in, and it conferred on the foreign community local self-government, practically free from official control of any description. In 1863 the area covered by these regulations was extended to the American settlement, which meanwhile had been obtained by that government from the Chinese. But about the same time, 1862, the French decided to withdraw from the joint arrangement, and pro-

† The Treaty Ports of China and Japan, by W. F. Mayer.
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The executive is entrusted to a municipal council of nine, elected annually from among the general body of foreign residents. The council alone has the power to appoint and remove the mayor and to make law, as the French legislation by all ratepayers possessing a certain pecuniary qualification in public meeting assembled. Proxies for absentee landlords are allowed. One date each public meeting must be held annually to pass the budget and fix the taxation for the year. No official sanction is required, and no veto is allowed for such money votes. Special meetings may be held at any time for special purposes. New York, in the kind method, the city may be governed by treaty powers in order to be binding on their several nationalities, but within certain limits the ratepayers can pass by-laws which do not require such sanction. The French municipal council works on similar lines, except that every vote and every disbursement of money is subject to the approval of the French consul-general. The executive council consists of eight members, four of whom must be native born and four may be foreigners. The French consul-general is chairman ex officio, so that the control in any case is French and practically official.

Both settlements were originally intended for the residence of foreign merchants only, but as the advantages of living under foreign protection became evident by reason of the security it gave from arbitrary taxation and arrest, Chinese began to flock in. This movement has continued, and is now particularly noticeable in the cases of retired officials, many of whom have made Shanghai their home. The total native population in the settlement was by the census of 1895 was 286,753, and the estimated population of the tow of Shanghai, including the suburbs, was 411,753. The census of the foreign population in 1905 showed 3713 British, 2157 Japanese, 1329 Portuguese, 991 Americans, 785 Germans and 568 Indians, out of a total of 11,407. The magnitude of the foreign community in Shanghai may be gathered from the following rough summary: Assessed value of land in settlements registered as foreign-owned £5,500,000; docks, wharves and warehouses £1,500,000; public concessions £2,500,000; private property estimated £1,500,000 — total £19,250,000. This is exclusive of banks, shipping and insurance companies, and other institutions which draw profits from other places besides Shanghai.

SHANHAI-KWAN, a garrison town in the extreme east of the province of Chih-li, China. Pop. about 30,000. It is situated at the point where the ranges of hills carrying the Great Wall of China dips to the sea, leaving a kau or pass of limited extent between China proper and Manchuria. It is thus an important military station, and the thoroughfare of trade between Manchuria and the great plain of China. The Imperial Northern railway from Tientsin and Taku, 174 m. from the former, runs through the pass, and skirts the shore of the Gulf of Liao-tung as far as the treaty port of Niu-chwang, where it connects with the railways leading from Port Arthur to the Siberian main line.

The pass formed the southern limit of the Russian sphere of influence as defined in the convention between Great Britain and Russia of the 28th of April 1858.

SHANKARSET (1800-1862), the recognized leader of the Hindu community of Bombay for more than forty years, was born in 1800 into a family of goldsmiths of the Daividnya caste. Unlike his forefathers, he engaged in commerce, and soon acquired what was in those days a large fortune, a great part of which he devoted to the good of the public. So high was his credit that Arabs, Afghans and other foreign merchants chose to place their treasures in his custody rather than with the banks. Foreseeing the need of better methods of education, he became one of the founders of the School Society and the Native School of Bombay, the first of its kind in Western India. He established the Indian Council of Education, and again in 1840 into the Board of Education which preceded the Elphinestone Educational Institution founded in 1856. When the Students' Literary and Scientific Society first opened their girls' schools, in spite of strong opposition of the Hindu community, he set the good example of providing another girls' school entirely at his private cost. His zeal for progress was also shown in his starting the English School, the Sanskrit Seminary and the Sanskrit Library, all in Girgaum. To Jagannath Shankarsett and his public-spirited friends, Sir George Birdwood and Dr Bhau Daji, Bombay is also indebted for the contraction which, beginning in 1857, gradually changed a close network of lanes and streets into a spacious and airy city, adorned with fine avenues and splendid buildings. He was the first Indian to be nominated to the legislative council of Bombay under the Act of 1861. While his influence was used by Sir John Malcolm to induce the Hindus to acquiesce in the suppression of suttee or widow-burning, his own community remember gratefully that to him they owe the cremation ground at Sonapur. He died at Bombay on the 3rd of July 1865, regretted by all classes of society, who, about a year before his death, in a public meeting assembled at the Town Hall, voted a marble statue to perpetuate his memory.

SHANKLIN, a watering-place in the Isle of Wight, England, 8½ m. S. of Ryde by rail. Pop. of urban district (1901) 4533. It is beautifully situated on the cliffs bordering the S.E. coast, and is sheltered W. by high-lying downs. The church of St John the Baptist is Perpendicular. There are several modern churches and chapels, numerous villas, a pier and a link connecting the town with the esplanade beneath the cliff. The picturesque winding chasm of Shanklin Chine breaches the cliffs S. of the town.

SHANNON, CHARLES HAZELWOOD (1865— ), English artist, was born at Sleaford in Lincolnshire, the son of the Rev. Frederic Shannon. He attended the Lambeth school of art, and was subsequently considerably influenced by his friend Charles Ricketts and by the example of the great Venetians. In his early work he was addicted to a heavy low tone, which he abandoned subsequently for clearer and more transparent colour. He achieved great success with his portraits and his Giorgionesque figure compositions, which are marked by a classic sense of style, and often interests invested in Shanghai may be gathered from the following rough summary: Assessed value of land in settlements registered as foreign-owned £5,500,000; docks, wharves and warehouses £1,500,000; public concessions £2,500,000; private property estimated £1,500,000 — total £19,250,000. This is exclusive of banks, shipping and insurance companies, and other institutions which draw profits from other places besides Shanghai.

SHANNON, CHARLES JEBUSA (1862— ), Anglo-American artist, was born at Auburn, New York, in 1862, and at the age of eight was taken by his parents to Canada. When he was sixteen, he went to England, where he studied at South Kensington, and after three years won the gold medal for figure painting. His portrait of the Hon. Horatia Stopford, one of the queen's maids of honour, attracted attention at the Royal Academy in 1881, and in 1887 his portrait of Henry Vigne in hunting costume was one of the successes of the exhibition, subsequently securing several medals for the artist at Paris, Berlin and Vienna. He soon became one of the leaders of the new school of portrait painters in London. He was one of the first members of the New English Art Club, and in 1897 was elected an associate of the Royal Academy, and R.A. in 1909. His picture, "The Flower Girl," was bought in 1901 for the National Gallery of British Art.

SHANNON, the principal river of Ireland. It flows with a bow-shaped course from N. to S. and S.W., from the N.W. part of the island to its mouth in the Atlantic on the S.W. coast, with a length of about 240 m. and a drainage area of 4544 sq. m. Rising in county Cavan in some small pools at the foot of Cullaghas Loughs and in county Sligo near the town of Lettermore, traversing the first of a series of large lakes, Lough Allen (9 m. in length). It then separates county Roscommon on the right (W.) bank from counties Leitrim, Longford, Westmeath and King's County on the left. In this part of its course it forms Loughs Boderg (7 m. long), Forbes (3 m.) and Ree (8 m.), and receives from W. the river Boyle and from E. the Inny, while in county Longford it is joined by the Royal Canal. It now separates county Galway on the right from King's County and county Tipperary; receiving the Suck from W. and the Brosna from E., and forming Lough Derg (23 m.). Dividing county Clare from counties Tipperary and Limerick, the Shannon reaches the city of Limerick as a broad and noble river, and debouches upon an estuary 60 m. in length with a direction nearly E. and W. This divides county Clare on the right from counties Limerick and Kerry on the left.

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A wide branch estuary, that of the Fergus, joins from N., and the rivers Mulkear, Maigue and Deel enter from S. From Lough Allen to Limerick, where the Shannon becomes tidal, its falls is 144 ft. With the assistance of short canals the river is navigable for light vessels to Lough Allen, and for small steamers to Athlone; while Limerick is accessible for large vessels. The salmon-fishing is famous; trout are also abundant. On the banks are found, Athlone, Killaloe, and Castleconnel are favourite stations for sportsmen. The scenery is generally pleasant, and on the loughs, with their deeply indented shores and numerous islands, often very beautiful. These islands are in several cases sites of early religious settlements, while on those on the river-banks the most noteworthy is that of the seven churches of Clonmacnoise.

SHANS, a collective name, probably from Chinese Shan-tse, Shan-ye (Shan = mountain )), “highlanders,” given by the Burmese to all the tribes of Thai stock subject to the former kingdom of Burma (see SHAN STATES below). The Shans call themselves Tai or Pauang; while the Chinese call them Pai or P’ai-ya. Among them exist the purest types of the Thai race. They are found all over the province of Yunnan and in the borderland between China and Burma. Politically, where not under the direct control of Chinese magistrates, the tribes are organized under their own chiefs, who are recognized by the Chinese government and endowed with official rank and title. In Burmese such native chiefs are termed Shan-si, or Shan-si, in French, Thaïs. See also LAOS, MIANZEE, LOLLOS. Also A. R. Colquhoun, Amongst the Shans (1885); E. Aymonier, “Les Thaïes,” in Revue de l’histoire des religions for 1891.

SHAN-SI, a northern province of China, bounded N. by Mongolia, E. by Chihli, S. by Ho-nan, and W. by Shen-si. Estimates of its area vary from 66,000 to 81,000 sq. m. and it has its capital, Tai-yuen Fu (pop. 230,000), eight prefectural cities. The population is returned as 12,700,000. It includes, in the northern districts, about 500,000 Mongoils. The configuration of Shan-si is noteworthy, forming, from its southern frontier as far north as Ning-wu Fu—an area of about 30,000 sq. m.—a plateau 2600 to 6600 ft. above the level of the sea, the whole of which is one vast coal-field. North and west the plateau is bounded by high mountain ranges trending south-west and north-east. Down the central line of the province from north to south lies a series of deep depressions, all of which are ancient lake basins. But though forming a series these lakes were not formerly connected with each other, some being separated from those adjoining by high ridges, and being drained by different rivers and in different directions. The Fén-ho, the longest river in Shan-si, with a general S.W. direction, and the Chin-ho, also a considerable stream, are both tributaries of the Yangtze.

Shan-si is one of the most remarkable coal and iron regions in the world, a veritable second Pennsylvania, and Baron von Richthofen gave it as his opinion that the world, at the present rate of consumption of coal, could be supplied for thousands of years from Shan-si alone. In the south the neighbourhood of Tsé-chow Fu abounds in both coal and iron, and has probably, partly through being within reach of the populous plain of Hwai-kang Fu, of the yellow river, of T’ai-kow Chin and Sew-wu Hien (the shipping places for Tientsin and the Grand Canal) and of Ho-nan Fu, furnished more iron to the Chinese than any other of the provinces. A further extent in the empire, the coal is of great purity and easily fusible, while iron, of good quality and for moulds, &c., and a superior anthracite coal, lie ready to hand. The coal is of two kinds, bituminous and anthracite, the line of demarcation between the two is taken by the long tributary of the Hsing-ho. The continuation of the Shan-han range, the fields of bituminous coal being west of these hills, and those of anthracite east. In the neighbourhood of P’ing-t’ing Chow the extent of the coalfield is large and it is also abundant, and even in that part of the country explored by the explorers of the U.S. Geographical Society, Mr. Downie and Mr. Hothofer says: “These extraordinary conditions, for which I know no parallel on the globe, will eventually give rise to some curious features in mineralogy, which I have not predicted that if a coalfield of such extent could ever be built from the plain to this region, branches of it will be constructed within the body of one or other of these beds of anthracite, which are among the thickest and most valuable known among the various beds of coal of the world. The famous anthracite districts of the present coal-belt of P’ing-t’ing Chow. Such a tunnel would allow of putting the produce of the various coal-beds immediately on rail-road carts destined for distant places.” These mines are worked by the Peking Syndicate, which has gained a valuable railway line to connect the lines of the Fén-ho and Han trunk line, which traverses the east of the province.

Salt is produced in the prefecture of P’ing-yang in the south of the province, both from a salt lake and from the alluvial soil in the neighbourhood of the Fén-ho. Shan-si produces cereals, tobacco, cotton and sometimes rice, but in agricultural products the province is poor and the transport is ruinously and insufficient. The people of Shan-si are great traders, and nearly all the commerce of southern Mongolia is in their hands. A railway connecting the capital with Pekin was opened in 1906. The only wagon road leading into and through Shan-si is the great highway from Peking to Si-gan Fu, which enters Shan-si west of Chéng-t’ing Fu, and leaves the province at Tung-kwan at the great bend of the Hwang-ho. Transport is chiefly on the backs of camels, mules and asses. The province suffered from a terrible famine in 1875-1879, about which time Protestant missionaries began work in the capital. In the north, beyond the Great Wall, is the city of Kwei-hwa-Cheng (pop. about 200,000), formerly the residence of the grand Lama of Mongolia; it has many Lama monasteries.

Shan-si university, one of the best equipped in China, owes its existence to the Boxer rising. Certain Protestant missionary bodies in the province refused to accept the compensation awarded them for damage to their property, and at their request the money was devoted to the foundation of a university, the missionaries being guaranteed for ten years the control of the work. By the 30th of June, 1902, the six states were under the governor of the S. Shan States, and 37 under the superintendent and political officer of the S. Shan States. In addition, two states are under the commissioner of the Mandalay division, namely, Hkamti Long on the N. of Myitkyina district and Mông Mit which is temporarily administered as a subdivision of the Ruby Mines district; and two states, Sinkalng Hkamti and Hsawng Haup, near Manipur, are under the supervision of the commissioner of the Sagaing division. There are besides a number of Shan States beyond the border of Burma, under Chinese and Thai control.

SHAN STATES, a collection of semi-independent states on the E. frontier of Upper Burma inhabited by the Shan or Thai race. The Shan States have a total area of 57,915 sq. m. and a total population (1902) of 1,387,444. There are six states under the direct control of the S. Shan States, and 37 under the superintendent and political officer of the S. Shan States. In addition, two states are under the commissioner of the Mandalay division, namely, Hkamti Long on the N. of Myitkyina district and Mông Mit which is temporarily administered as a subdivision of the Ruby Mines district; and two states, Sinkalng Hkamti and Hsawng Haup, near Manipur, are under the supervision of the commissioner of the Sagaing division. There are besides a number of Shan States beyond the border of Burma, under Chinese and Thai control.

Physical Features.—The shape of the Shan States is roughly that of a triangle, with its base on the plains of Burma and its apex on the Mekong river. The Shan plateau is properly only the country between the Salween and Irrawaddy rivers. On the W. it is abruptly marked by the long line of hills, which bend down to the Mekong and run S. till they sink into the plains of Lower Burma. On the E. it is no less sharply defined by the deep and narrow rift of the Salween. The average height of the plateau is between 2000 and 3000 ft., but it is seamed and ribbed by mountain ranges, which split up and run into one another. On the N. the Shan States are barred across by the E. and W. ranges which follow the line of the Namtu. The huge mass of Loi Limg, 9000 ft., projects S. from this, and on either side of the ranges is the foot of the ranges, which extend down to Mong Nai. The highest peaks are in the N. and the S. Loi Limg is the highest point W. of the Salween, and in Kongkang there is a peak of 8100 ft. There are many peaks above 7000 ft. The majority of the intermediate parallel ranges have an average of between 4000 and 5000 ft. with peaks rising to over 6000. The country beyond the Salween is a mass of broken hills, ranging in height from 3000 to 4000 ft. In the range of the Wa tribes towards the Wa states they average from 5000 to 7000. Several peaks rise to 8000 ft. such as Loi Maw (8102). The climate varies
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considerably. From December to March it is cool everywhere, and 10° to 18° F. on the coast. The average temperature is 80° to 90°, rising to 100° in the Salween valley. The rains begin about the end of April, but are not continual till August, which is usually the wettest month. They last until the end of October, and from the middle of May to the end of July the temperature varies from 60 in. in the broader valleys to 100 on the higher mountains.

Race and Language.—According to the census of 1901 there were 18,787,035 Chinese (see above) in Burma. The Thai or Tai, as they call themselves, were first known to the Burmese as Taroks or Tarets. The original home of the Thai race was S.W. China, or rather that was the geographical center from which the various branches spread out as a people. It is probable that their first settlement in Burma proper was in the Shweil valley, and that from this centre they radiated at a comparatively recent date N., W. and S.E. through Upper Burma, Lower Burma, and the Shan districts. They are represented by tribes of various races across the whole breadth of Indo-China, from the Brahmaputra as far as the gulf of Siam and Tonking; that is among those peoples not only the Shan proper, the Lao of the Mekong, the Hakas of S. China, and the Li, the inhabitants of the interior of the far eastern island of Hainan in the Chinese seas. But no exhaustive survey of the Thai has yet been accomplished for the S. Burmese of Burma they may be divided into the N.W., the N.E., the E. and the S. Shan. The Siamese and the Laos are the principal representatives of the S. division. Siamese are found in considerable numbers in the Peninsular Burmese and the Lao in the northern division. The total at the time of the census of 1901 was 31,800, while that of the Laos was 1647. The country of the E. Shan lies between S.E. Kachin between the Meghna and the Irrawaddy, roughly between the N. and S. by the 22nd and 20th parallels of latitude. It includes the S. Shan States and comprises the country of the Lü and the Hkün of the states of Kengtung and Kuki. The country of the Yemai is divided into the kind in the Akyaung described in the Shan dominion acknowledged the suzerainty of the Sawbwa of Mogun. The N.E. Shan are the Chinese-Shan who are found near Upper Burma and the N. Shan states border on China.

The language may be divided into sub-groups, the N. and the S. The S. includes Siamese, Lao, Lü and Hkün; the N. the three forms of Shan, namely N., Burmese-Shan, S., Burmese Shan and Chinese-Shan with Hkamti and Ahom. The vernacular of the people who are directly known in Burma as Shan is the Burmese of Shan. This language is isolating and polytonic. It possesses five tones, a mastery of which is a sine quod non if the language is to be properly pronounced. It is the language of the Shan dominion acknowledged the suzerainty of the Sawbwa of Mogun. The Burmese of Shan are a peaceable race, fond of trading. During the past decade the trade with Burma has increased very largely, and with the construction of the railway to Lashio a still further increase is expected. In the Shan districts the cultivation of rice and potatoes in the S. states promise wealth also when a railway furnishes them means of getting the produce out of the country. Since 1893 the peace of the Shan States has been practically restored.

See N. Elias, Introductory Sketch of the History of the Shan, S. Burmese Shan, and Chinese-Shan with Hkamti and Ahom, the vernacular of the people who are directly known in Burma as Shan, 1878; Cushing, Shan Dictionary (Introduction); Bock, Traité d'Ethnographie de l'A. Phayre, History of Burma; A. R. Colquhoun, Across Chryse (London, 1883), and Amongst the Shan (1885); Duguet, Étude de la langue Thai (Paris, 1896).

Shan-Tung ("East of the Mountains"), a maritime province of China, bounded N. by the province of Chih-li and the Gulf of Chih-lí, E. by the Yellow Sea, S. by Kiangsu and the Yellow Sea, W. by Hopeh, separating it from Manchuria (estimated) 37,500,000. It is the most densely inhabited part of China, and is celebrated as the native province both of Confucius and Mencius. It is divided into ten prefectures, with as many prefectural cities, of which Chi-nan Fu (q.v.), the provincial capital, is the chief.

The physical features of the province are very plainly marked. The centre and eastern are occupied by mountain ranges running N.W. and S.E. The principal mountain range is the T'ai-shan, which lies parallel with the coast, while the western, southern and western portions form part of the great deltaic plain of the north of China. The mountainous region projects seaward beyond the normal coast line forming a large peninsula. The shores of which are deeply indented and abound in good harbours, such as that of Kiao-chow. The most considerable range of mountains occupies the centre of the province, the highest peak being the T'ai-shan (5050 ft.), a mountain famous in Chinese history for more than 4000 years, and to which hundreds of pilgrims annually resort. The Lao-shan, east of Kiao-chow, fringes the eastern coast for about 18 m. With the exception of the Hwang-ho, which traverses the province in a north-easterly direction to the sea, there are no large rivers in Shan-Tung. The most considerable are the Wei, which flows into the Gulf of Chih-li; the Ta-sui and the Ta-yan, which unite to form the Ta-wen, which rises at the southern foot of the I-shan Mountains and terminates in the Grand Canal. The canal traverses the provinces S. to N. east of the mountain region. There are several lakes notably the Tse-shan Hu, which borders on the Grand Canal and lies in the south-west. The fauna includes wild boars, wolves, foxes, badgers, partridges, quails and snipe. Cotton, silk, coal, grain, &c. are produced in the province. The value of the exports is of the same order as the value of the imports. Not being a low-elevation region, the mountains are unproductive, and yield only brushwood and grass, while the plain to the north is so impregnated with salt that it is almost valueless, especially near the coast. Shan-Tung is divided into two distinct parts, the border between the mountains and the plain to the south-west are, however, extremely rich and fertile.

The chief wealth of Shan-Tung consists in its minerals, the principal of which is coal. Several coal-fields are worked; the most considerable lies in the valley of the Lao-fu river in the centre of the province. Another large field lies on the plain a little to the south of I-chow Fu in the south. A third field is in the district of Wei Hien to the north; and a fourth in the neighbourhood of I-Hien in the southern part. Iron ore, ironstone, gold, galena, lead and copper are also found in considerable quantities in many districts.

The staple products of Shan-Tung are rice, sugarcane, hemp, rice, corn, pulse, arrowroot and many varieties of fruits and vegetables. Rice is grown in the extreme south of the province. Amongst trees, stunted pines, dwarf oaks, poplars, willows and the cypresses are fairly plentiful. Thousand acres of fine plains, and such rice as is grown near the river, is often green in the neighbourhood of Lai-yang in the east, giving rise to a considerable trade in the rice produced by the wild insects. Unlike the wheat of the Shan-Tung breed and become productive in the same districts. They are placed upon the trees in the spring, and at the close of the summer they void a peculiar substance which when melted forms wax. In the autumn they are taken off the trees, and are preserved within doors until the following spring. Sericulture is an important industry. The worms are fed in the west on mulberry leaves, in the east on those of the dwarf oak, the material made from the silk produced from these worms being known as great or Chinese silk. The silk itself, after the cocoon has been used, is eaten and is esteemed a delicacy.

Besides Chin-nan Fu, the provincial capital, other inland cities are Tiao-Chow Fu (pop. 150,000) on the Grand Canal (an industrial centre) and Wei-hsien (100,000), a commercial centre. The ports of Shan-tung include Chifu, Wei-hai-wei and Kiao-chow (Tsing-tao), all separately noticed.

As part of compensation for the murder of two German missionaries in 1897 in this province—Protestant mission work has been restricted to the southern part of the province—the Germans took possession on lease of the port of Kiao-chow, 30° 30' N., a lease run by a British company, and which were associated many railway and mining rights in the district. In fulfilment of these rights a railway has been constructed connecting Kiao-chow with Chin-fu, the capital; there it connects with another railway crossing the province north to south and forming part of the Tientsin-Chin-kang line. In consequence of this acquisition of territory by Germany and the subsequent seizure of Port Arthur by Russia, Great Britain accepted the lease of Wei-hai-wei on the same terms. The convention confirming this arrangement was signed on the 1st of July 1898. It was in Shan-Tung that the Boxer movement was first put down against foreigners (see China, § History).


Shapira, M. W. (c. 1830-1884), Polish vendor of spurious antiquities, was of Jewish birth, but appears to have become a Christian early in life. He opened a shop for the sale of antiquities in Palestine, and after the discovery of the Moabite Stone in 1872 was successful in selling to the Russian government for 20,000 thaler a number of alleged pieces of Moabite pottery. These were shown by Clermont-Ganneau and others (cf. Kautzsch and A. Soci, Archiv der moabitisches Alterthümer, 1876) to be forgeries produced by Shapira’s client Selim al-Kari. Undeterred by this exposure, Shapira continued to do a considerable trade especially in Hebrew MSS. from Yemen, but
ultimately ruined himself by a fraud perpetrated upon the British Museum. In 1883 he offered, for the price, it is said, of $1,000,000, a number of leather strips containing speeches of Moses varying in many particulars from, though similar in matter to, those in Deuteronomy, and written in archaic Hebrew characters. It proved, however, that he had obtained them from a British Museum cupboard and discovered them in a Moabite cave. The fragments were submitted to C. D. Ginsburg, who published translations in The Times of Aug. 4, 17, 22, 1883. The French government, however, sent over Clermont-Ganneau to investigate, and, though the British Museum authorities declined to give him permission to make a complete study, he satisfied himself from a few strips which were publicly exhibited that the whole collection must be a forgery (The Times, Aug. 15). This view was confirmed by Ginsburg's report to the Museum. Shapira, who was never known to have been the actual forger, committed suicide in Rotterdam on the 11th of March 1884.

For the fragments see Guthrie, Fragmenta einer Lederhandschrift (Leipzig, 1884); see also Clermont-Ganneau, Les Fragments archéologiques (Paris, 1885), iii., iv.

**SHAPUR**

(Pahlavi, Shakh pervr, "son of the king"); Greek *Sapor*, commonly *Sapor*, the name of three Sassanian kings.

1. **SHAPUR I.** (a. d. 241-272), son of Ardashir I. The Persian legend which makes him the son of an Arsacid princess is not historical. Ardashir I. had towards the end of his reign renewed the war against the Romans. Shapour conquered the Mesopotamian fortresses Nisibis and Carrhae and advanced into Syria; but he was driven back by C. Furius Timesitheus,1 father-in-law of the young emperor, Gordianus III., and beaten at Resena (243). Shortly afterwards Timesitheus died, and Gordianus (q.v.) was murdered by Philip the Arabian, who concluded an ignominious peace with the Persians (244). When the invasion of the Goths and the continuous elevation of new emperors after the death of Decius (251) brought the Roman empire to utter dissolution, Shapour resumed his attacks. He conquered Armenia, invaded Egypt, plundered the treasure of the Church of Ægyptos, and, after the death of Vahran, the marching against him, but suffered near Edessa the fate of Crassus (260). Shapour advanced into Asia Minor, but was beaten by Ballista; and now Odaenathus (Odainath), prince of Palmyra, rose in his rear, defeated the Persian army, reconquered Carrhae and Nisibis, captured the royal harem, and twice invested Ctesiphon (263-265). Shapour was unable to resume the offensive; he even lost Armenia again. But according to Persian and Arabic traditions, which appear to be trustworthy, he conquered the great fortress of Hatra in the Mesopotamian desert; and the great glory of his reign was that a Roman emperor was by him kept prisoner to the day of his death. In the valley of Istakhr (near Persepolis), under the tombs of the Achaemenids at Nakshi Rustam, Shapour is represented on horseback, in the royal armour, with the crown on his head; before him kneels Valerian, in Roman dress, asking for grace. The same scene is represented on the rocks near the ruins of the towns Darabjird and Shapour in Persia. Shapour left other relics and rock inscriptions; one, at Nakshi-Rajab near Persepolis, is accompanied by a Greek translation; here he calls himself "the Mazdazianan (worshipper of Ahuramazda), the god Sapor, king of kings of the Aryans (Iranians) and non-Aryans, of divine descent, son of the Mazdazianan, the god Artaxares, king of kings of the Aryans, grandson of the god-king Papak." Another long inscription at Hajjibad (Istakhr) mentions the king's exploits in archery in the presence of his nobles.

From his titles we learn that Shapur I. claimed the sovereignty over the whole earth, although in reality his domain extended

1. Timesitheus is the generally accepted variant for the Misithiun ("God-Hater") of Capitolinus; Zosimus, i. 16, 17, preferred Timesiologiae. In a paper read before a meeting of the British School of Archaeology in Rome on the 30th of January, 1900, Mr. A. S. Yamey endeavoured to show that Timesitheus is the general commemoration of a bust in the Sala delle Colonne of the Capitoline Museum; this bust is a portrait of Sanguvus in the Museo delle Terme, representing a battle between Romans and barbarians, where the forehead in each case is a non-Christian incised cross of unknown significance.

SHAPUR—SHARE

little farther than that of Ardashir I. Shapour built the great town Gundev-Shapour near the old Achaemenian capital Susa, and increased the fertility of this rich district by a barrage through the Karun river near Shushtar, which was built for his grandson, the emperor Khosrau I., and the mole of the Canopus. Under the reign of the prophet Mani, the founder of Manichaeism (q.v.) began his preaching in Persia, and the king himself seems to have favoured his ideas.

For the monuments and inscriptions cf. Sir R. Ker Porter, Travels; Flandin and Coste, Voyage en Perse; Stolze, Persiopolis; Thomas, Journal R. Asiast. Soc., new series, iii., 1868; West in Grundrisse der Iranischen Philologie, ii. 76; Dittenberger, Orientis Graeci inscr. i., No. 434. A gem with the portrait of the king is in the museum of Goa, cf. Pertsch, Zeitsch. d. deutschen morgenl. Ges. xxii. 280.

2. **SHAPUR II.** (310-379). When King Hormizd II. (302-310) died, the Persian magnates killed his eldest son, blinded the second, and imprisoned the third (Hormizd, who afterwards escaped to the Romans); the throne was reserved for the unborn child of one of the wives of Hormizd. This child, named Shapur, was therefore born king; the government was conducted by his mother and the magnates. But when Shapur came of age, he turned out to be one of the greatest monarchs of the dynasty. Under his reign the collection of the *Avesta* was completed, heresy and apostasy punished, and the Christians persecuted. This was the natural oriental reaction against the weakness of his predecessors, and the union of the Roman and Sassanian empires was completed.

In 337, just before the death of Constantine, Shapour broke the peace concluded in 297 between Nares and Diocletian, which had been observed for forty years, and a war of twenty-six years (337-363) began. Shapour attempted with varying success to conquer the great fortresses of Roman Mesopotamia, Singara, Nisibis (which he invested three times in vain), Amida (Diarbekr). The emperor Constantius II. was always beaten in the field. Nevertheless Shapour made scarcely any progress; the military power of his kingdom was not sufficient for a lasting occupation of the conquered districts. At the same time he was attacked in the E. by nomad tribes, among whom the Chionites are named. After a prolonged struggle they were forced to conclude a peace, and their king, Grumbates, accompanied Shapour in the war against the Romans. Shapour now conquered Amida after a siege of seventy-three days (359), and took Singara and some other fortresses in the next year. In 363 the emperor Julian, at the head of a strong army, advanced to Ctesiphon, but was killed. His successor Jovian was defeated and made an ignominious peace, by which the districts on the Tigris and Euphrates were ceded to the Persians, and the Romans promised to interfere no more in Armenia. In the rock-sculptures near the town Shapur in Persia (Stolze, *Persopolis*, pl. 141) the great success is represented; under the hoofs of the king's horse lies the body of an enemy, probably Julian, and a suppliant Roman, the emperor Jovian, asks for peace.

- Shapur now invaded Armenia, took king Arsaces III. (of the Arsacid race), the faithful ally of the Romans, prisoner by treachery and forced him to commit suicide. He then attempted to introduce Zoroastrian orthodoxy into Armenia. But the Armenian nobles resisted him successfully, secretly supported by the Romans, who sent King Pap, the son of Arsaces III. into Armenia. The war with Rome threatened to break out again; but Valens sacrificed Pap and caused his assassination in Tarsus, where he had taken refuge (374). Shapour had conducted great hosts of captives from the Roman territory into his dominions, most of whom were settled in Susiana. Here he rebuilt Susa, after having killed her rebellious inhabitants, and founded some other towns. He was successful in the east, and the great town Nishapur in Khorasan (E. Parthia) was founded by him.

3. **SHAPUR III.** (383-389), son of Shapur II., elevated to the throne by the magnates against his uncle, Ardashir II., and killed by them after a reign of five years. He concluded a treaty with Theodosius the Great.

(Ed. M.)

**SHARE** (O. Eng. scær or, chiefly in compounds, e.g. land-scær, a share of land, from scærn to cut; cf. "shear"), something cut off, a portion, a definite part of anything distributed among a
number of persons. The word is particularly applied to the fixed and equal amounts into which the capital of a limited company is divided (see STOCKS AND SHARES; COMPANY; and DEBENTURES). From the same O.Eng. verb sceran is derived "share" (O.Eng. sear), the cutting blade of a plough (q.v.).

SHARI, an important river of North-Central Africa, carrying the drainage of a large area into Lake Chad (q.v.). Its headstreams rise on the watersheds between the Lake Chad basin and those of the Nile and Congo. The principal headstream, known variously as the Wahme, Wa, Wam or Wom, rises, in about 6°N., 10°E., in the middle of the grassy plains that divide between the Chad system and the basin of the Sanga affluent of the Congo.

The Wam flows east and then north and in about 7°20' N., 18°20' E. is joined by the Fafa, a considerable stream rising east of the Wam. The upper course of the Wam is much obstructed by rapids, but from a little above the Fafa confluence it becomes navigable. Below the confluence the river, now known as the Bahr Sara, receives three tributaries from the west. In about 9°20' N., 21°05'E., it is joined by the Bamingi, which is formed by the junction of the eastern headstreams of the Shari. The Bamingi, before the exploration of the Wam, was thought to be the true upper course of the Shari. One of its branches, the Kukuru, rises in about 7°21' N., 21°30'E. and its source the Bamingi becomes navigable, being 12 ft. deep and flowing with a gentle current. In 8°42'N. it receives on the west bank the Gribingi, a river rising in about 6°20' N. It is narrow and tortuous with rocky banks and often obstructed by navigation. A little below this point it flows in great part through a forest-clad country. A few miles above its confluence with the Bahr Sara the Bamingi receives on the right the Mambere, a large river, which joins the Bahr Sara in about 7°45' N. and 22° E. in a range of hills which separates the countries of Dar Runga and Dar Bands, and, like the Bamingi, flows through open or bush-covered plains with isolated granite ridges.

Below the junction of the Bahr Sara and the Bamingi the Shari becomes, as it is now called, becomes a large river, reaching, in places, a width of over 4 m. in the rains; while its valley, bordered by elevated tree-clad banks, contains many temporary lakes and backwaters. Its waters abound with hippopotami and crocodiles, and the country on either side with game of all kinds. In 9°46' N. it receives the Bahr Salamat (Awash Aouk) from the east, known in its upper course as the Aukadebe. This, like the Bahr es Salamat, which enters the Shari in 9°28' N. traverses a wide extent of arid country in southern Wadai, and brings no large amount of water to the Shari. In 10°12' a divergent branch, the Ereggi, leaves the main stream, only to rejoin it in 11°30'.

In 12°15' N. and 15° E. the Shari receives on the west bank its largest tributary, the Logone, the upper branches of which rise far to the south between 6° and 7° N. The principal headstreams are the Pende and the Mambere. The Pende rises some 30 m. N. by E. of the source of the Wam. It flows northwards through a fertile valley, enriched by its affluents, the Mambere, which rises in the hills of Adamawa, and flows in a course roughly parallel to the Pende. Below the junction of the Pende and Mambere the Logone is a broad and deep river. Its system is connected with that of the Tope (Sarki) by the Gulf of Guinea. The Logone, flowing northward, a channel joining the Logone in about 10°30' N. Below the Logone confluence, the Shari, here a noble stream, soon splits up into various arms, forming an alluvial delta, filled at high water, before entering Lake Chad. From the source of the Wam to the mouth of the river is a distance, following the windings of the stream, of fully 1400 m.

The existence of the Shari was made known by Oudney, Denham and Clapperton, the first Europeans to reach Lake Chad (1823). In 1852 Heinrich Barth spent some time in the region of the lower Shari and Logone, and in 1872-1873 Gustav Nachtigal studied their hydrographical system and explored the Gribingi, which he called the Bahar el Ardhe. It was not, however, until the partition of the Chad basin between Great Britain, France and Germany (1885-1890) that the systematic exploration of the Shari and its affluents was undertaken. The most prominent explorers have been Frenchmen. In 1865 Emile Gentil reached the Bamingi and in a small steamer passed down the river to its mouth. The existence of the Bahar Sara had been made known by C. Malteste in 1892, and in 1894 F. J. Clozel discovered the Wam. In 1900 A. Bernard demonstrated the identity of these two streams. In 1897 an expedition under Captain E. Lenfant undertook to follow the Shari from its source to the confluence with the Bamingi and showed it to be the true upper course of the Shari. The same expedition also discovered the Pende tributary of the Logone. Captain Lenfant had previously demonstrated (1903) the connexion between the Benue and Logone. From the mouth of the Shari in Lake Chad there is a current towards the Bahr-el-Ghazal channel at the south-eastern end of that lake. This channel has been supposed to be a dried-up affluent of the lake (see CHAD). Investigations by the French scientists E. F. Gautier and R. Chudeau led Chudeau to the conclusion that the Shari did not end in Lake Chad, but, by way of the Bahr-el-Ghazal, passed between Tibesti and Ennedi and ended in some salt in the Libyan desert. That the Shari may have reached the Nile is an hypothesis not absolutely rejected. (See Missions au Sahara, tome ii. (Paris, 1909), and for theories as to the Niger-Nile connexion see NIGER.)

From the spot where it is intersected by 10°40' N. to Lake Chad the Shari forms the boundary between the German colony of Cameroons and French Congo. The best route from the Congo to Lake Chad is via the Sanga affluent of the Congo to the station of Carnot, and thence across the watershed to the Pende.

See the works of Barth, Nachtigal and other travellers, especially Lenfant's La Decouverte des grandes sources du centre de l'Afrique (Paris, 1909).

SHARK, a Selachian fish (see SELACHIANS), belonging to the order Plagiostomi, suborder Squali.

Sharks are almost exclusively inhabitants of the sea, but some species enter the mouths of large rivers, and one species (Car-chorias gangeticus) occurs frequently high up in the large rivers of India. C. nigerognathus of the lake of Nicaragua and the Rio San Juan appears to have taken up its residence permanently in that water. In the tropics there are numerous between the tropics, a few only reaching the Arctic circle; it is not known how far they advance S. in the Antarctic region. Altogether some hundred and fifty different species have been described.

With regard to their habits many are litoral species, the majority pelagic, and a few are known to belong to the deep-sea fauna, having hitherto been obtained down to a depth of nearly 1000 fathoms.

Littoral Sharks. —The littoral forms are of small size, and generally known under the name of "dog-fishes," "hounds," &c. Some pelagic sharks of larger size also live near the shore on certain parts of a coast, but they are attracted to it by the abundance of food, and are as frequently found in the open sea, which is their birthplace; therefore we shall refer to them when we speak of the pelagic kinds.

The majority of the littoral species live on the bottom, sometimes close inshore, and feed on small marine animals or on any animal substance. The following are deserving of special notice.

The tope (Galeus) is common on the coasts not only of England, Ireland and of S. Europe, but also of S. Africa, California, Tasmania and New Zealand. Its teeth are equal in both jaws, of rather small size, flat, triangular, with the point directed towards the one side, and with a notch and denticulations on the shorter side (fig. 1). It is of a uniform slaty-grey colour, and attains to a length of 6 ft. The female brings forth some thirty living young at one birth in May. It becomes troublesome at times to fishermen by taking their bait and driving away other fish they desire to catch. The fins of G. sephurus of the Californian coast are much esteemed for culinarm use by the Chinese.

The hounds proper (Mustelus) possess a very different dentition, the teeth being small, obtuse, numerous, arranged in several rows like pavement (fig. 2). Five or six species are known from the shores of the various temperate and subtropical seas, one (M. vulgaris) being common on the coasts of Great Britain and the United States, on the Pacific as well as the Atlantic side. It is of a uniform grey colour or sparingly spotted with white, and attains to a length of 3 or
SHARK

4 ft. The young, about twelve in number, are brought forth alive in November. It is comparatively harmless and feeds on shells, crustaceans and decomposing animal substances.

The dogfishes proper (Scylium, Chiloscyllium, &c.) are spread over nearly all the temperate and tropical seas. Their teeth are small, in several series, with a longer pointed cusp in the middle, and generally one or two smaller ones on each side (figs. 3 and 5). They are all oviparous, their oblong egg-shells being produced at each corner into a long thread by which the egg is fastened to some fixed object. Some of the tropical species are ornamented with a pretty pattern of coloration. The two British species, the lesser and the larger spotted dogfish (Sc. canicula and Sc. catulus), belong to the most common fishes of the coast and are often confounded with each other. But the former is finely dotted with brown above, the latter having the same parts covered with larger rounded brown spots, some of which are nearly as large as the eye. As regards size, the latter exceeds somewhat the other species, attaining to a length of 4 ft. Dogfishes may become extremely troublesome by the large numbers in which they congregate at fishing stations; they are rarely used as food, except in the Mediterranean countries, in China and Japan, and in the Orkneys, where they are dried for home consumption. The black-mouthed dogfish (Pristiurus melanostomus) is rarely caught on the British coasts, and is recognized by a series of small, flat spines with which each side of the upper edge of the caudal fin is armed.

The tiger-shark (Stegostoma tigrinum) is one of the commonest and handsomest sharks in the Indian Ocean. The ground colour is a brownish-yellow, ornamented with black or brown transverse bands or rounded spots. It is a littoral species, but adult specimens, which are from 10 to 15 ft. long, are met far from land. It is easily recognized by its enormously long bladelike tail, which is half as long as the whole fish. The teeth are small, trilobed, in many series. The fourth and fifth gill-openings are close together.

The genus Crossorhinus, of which three species are known from the coasts of Australia and Japan, is remarkable as the only instance in this group of fishes in which the integuments give a "protective" resemblance to their surroundings. Skinny frond-like appendages are developed near the angle of the mouth, or form a wreath round the side of the head, and the whole body closely assimilates that of a rock covered with short vegetable and coralline growth. The species of Crossorhinus grow to a length of 10 ft.

The so-called Port Jackson shark (Heterodontus Cestracion) is likewise a littoral form. Besides the common species (H. philippus), three other closely allied kinds from the Indo-Pacific are known. This genus, which is the only existing type of a separate family, is one of special interest, as similar forms occur in Primary and Secondary strata. The jaws are armed with small obtuse teeth in front, which in young individuals are pointed, and provided with from three to five cusps. The lateral teeth are larger, pad-like, twice as broad as long and arranged in oblique series (fig. 7). The fossil forms far exceeded in size the living, which scarcely attain to a length of 5 ft. The shells of their eggs are found thrown ashore like those of our dogfishes. The shell is pyriform, with two broad lamellar ridges each wound edgewise five times round it (fig. 8).

The spiny or piked dogfish (Acanthias) inhabits the temperate seas of both the N. and S. hemispheres. For some part of the year it lives in deeper water than the sharks already noticed, but at uncertain irregular times it appears at the surface and close inshore in almost incredible numbers. Couch says that he has heard of 20,000 having been taken in a seine at one time; and in March 1858 the newspapers reported a prodigious shoal reaching W. to Uig, whence it extended from 20 to 30 m. seaward, and in an unbroken phalanx E. to Moray, Banff and Aberdeen. These fishes are distinguished by each of the two dorsal fins being armed in front by an acute spine. They do not possess an anal fin. Their teeth are rather small, placed in a single series, with the point so much turned aside that the inner margin of the tooth forms the cutting edge (fig. 9). The spiny dogfish are of a greyish colour, with some whitish spots in young specimens, and attain to a length of 2 or 3 ft. They are viviparous, the young being produced throughout the summer months.

Finally, we have to notice among the littoral sharks the "angel-fish" or "monk-fish" (Rhino squatinus), which, by its broad flat head and expanded pectoral fins, approaches in general appearance the rays. It occurs in the temperate seas of the S. as well as the N. hemisphere, and is not uncommon on sandy parts of the coast of England and Ireland. It does not seem to exceed a length of 5 ft. and is too rare to do much injury to other fish. It is said to produce about twenty young at a birth.
Pelagic Sharks.—All these are of large size, and some are surpassed in bulk and length only by the larger kinds of cetaceans.

Those armed with powerful cutting teeth are dangerous to man, whilst others, which are provided with numerous but very small teeth, feed on small fishes only or marine invertebrates, and are of a timid disposition, which causes them to retire into the solitudes of the open sea. On this account we know very little of their life. All pelagic sharks have a wide geographical range, and nearly all seem to be viviparous.

Of the more remarkable forms which we propose to notice here the genus most abundantly represented in species and individuals is *Carcharias*, now split up by many authors into several separate genera. Perhaps nine-tenths of the sharks of which we read in books of travel belong to this genus. Between thirty and forty species have been distinguished, all of which are found in tropical seas. They are the sharks which so readily attach themselves to sailing vessels, following them for weeks. Others affect more the neighbourhood of land. One of the most common species is the blue shark (*Carcharias glaucus*), of which specimens (4 to 6 ft. long) are frequently caught on the S. coasts of England and Ireland. Other species of *Carcharias* attain a length of 30 ft. The mouth of all is armed with a series of large flat triangular teeth, which have a sharp, smooth or serrated edge (fig. 10).

*Galeocerdo* is likewise a large shark very dangerous to man, differing from the preceding chiefly by having the outer side of its teeth deeply notched. It has long been known to occur in the N. Atlantic, close to the Arctic Ocean (*G. arcticus*), but its existence in other parts has been ascertained within a recent period; in fact, it seems to be one of the most common and dangerous sharks of the Indo-Pacific, the British Museum having obtained specimens from Mauritius, Kurrajbee, Madras and the W. coast of Australia.

Hammerheaded sharks (*Sphyraena* *Zygana*) are sharks in which the anterior portion of the head is produced into a Lower Tooth of *Lamna* lobe on each side, the extremity of which is occupied by the eye. The relation of this unique configuration of the head to the economy of the fish is unknown. Otherwise these sharks resemble *Carcharias*, and are equally formidable, but seem to be more stationary in their habits. They occur in all tropical and subtropical seas, even in the Mediterranean, where *S. Zygana* is by no means rare. In the Indian Ocean it is common, and Cantor states that specimens may be often seen ascending from the clear blue depths of the ocean like a great cloud.

The porbeagles (*Lamna*) differ from the preceding sharks in their dentition and are not dangerous to man; at least there is no instance known of a person having been attacked by the species common on the British coast (*L. cornubia*). This is referred to in the works of older British authors as "*Beaumaris* shark." The short and stout form of its body contrasts strikingly with its much attenuated tail, which, however, is strengthened by a keel on each side and terminates in a large and powerful caudal fin. The snout is pointed, and the jaws are armed with strong lanceolate teeth, each of which bears a small cusp on each side of the base (see fig. 11). The teeth are not adapted for cutting, like the flat triangular teeth of man-eating sharks, but rather for seizing and holding the prey, which consists chiefly of various kinds of fishes and cephalopods. In the upper jaw there are from thirteen to sixteen teeth on each side, the third being remarkable for its small size; in the lower jaw from twelve to fourteen. The gill-openings are very wide. The porbeagle attains to a length of 10 or 12 ft., and is a pelagic fish, not rare in the N. Atlantic and Mediterranean, and frequently wandering to the British and more rarely to the American shores. This species is widely distributed over the N. of the Atlantic and Pacific Oceans. Other closely allied species (*L. spallanzanii*, *L. glauca*) are known to occur in the S. Atlantic, from the Mediterranean to the Cape of Good Hope.

To the genus *Carcharodon* particular interest is attached, because the single still existing species is the most formidable of all sharks, as were those which preceded it in Tertiary times. The existing species (*C. rodesti*) occurs in almost all tropical and subtropical seas, but seems to be verging towards extinction. It is known to attain to a length of 40 ft. The tooth figured...
hereof the natural size (fig. 12) is taken from a jaw much shrunk in drying, but still 20 in. wide in its transverse diameter, and taken from a specimen 36 ft. long. The extinct species must have been still more gigantic in bulk, probably reaching a length of 90 ft., as we may judge from teeth which are found in the crag or which were dredged up from the Pacific Ocean by the "Challenger" expedition, and which are 4 in. wide at the base and 5 in. long measured along their lateral margin. In some Tertiary strata these teeth are extremely abundant, so much so that—for instance, in Florida—the strata in which they occur are quarried to obtain the fossil remains for export to England, where they are converted into artificial manure.

The shark or thresher (Alopecias vulpes), of which every year specimens are captured on the British coast, but which is common in the N. and S. hemispheres, is readily recognized by its extremely slender tail, the length of which exceeds that of the remainder of the body. Its teeth are small, flat, triangular and without serration. It follows the shoals of herrings, pilchards and sprats in their migrations, destroying incredible numbers and frequently injuring the nets. When feeding it uses the long tail in splashing the surface of the water, whilst it swims in gradually decreasing circles round a shoal of fishes which are thus kept crowded together. Sometimes two threshers may be seen working together. Statements that it has been seen to attack whales and other large cetaceans rest upon erroneous observations; its dentition is much too weak to bite through their skin. The thresher attains to a length of 15 ft., the tail included.

The basking shark (Cetorhinus maximus), sometimes erroneously called "sunfish," is the largest fish of the N. Atlantic, growing to a length of more than 30 ft. Though best known from the N. of the Atlantic or Pacific oceans, this species has also been recorded from the Australian seas. The mouth is of an extraordinary width, and, like the gill-cavity, capable of great expansion, so as to enable the fish to take at one gulp an enormous quantity of the small fish and other marine creatures on which it subsists. Also the gill-slits are of great width, and the internal opening of each is guarded by a kind of strainer, formed by the enormously elongated gill-riders, which serves to prevent the food organisms from passing out through the slits. The teeth are very small, numerous, arranged in several series, conical and probably without use in feeding. This shark is therefore quite harmless if not attacked. Off the W. coast of Ireland it was at one time hunted for the sake of the oil from the liver, one fish yielding from a ton to a ton and a half. Its capture is not unattended with danger, as one blow from the tail is sufficient to stave in the sides of a large boat. The basking shark is gregarious, and may be seen in calm weather lying with the upper part of the back raised above the surface of the water, a habit which it has in common with the true sunfish (Orthagoriscus), and from which it has derived its name.

A shark similar in many points to the basking shark, and an inhabitant of the Indo-Pacific Ocean, is Rhinodon typicus. So far as our present knowledge goes, it is the largest of all sharks, as it is known to exceed a length of 50 ft., but it is stated to attain that of 70. The captures of only a few specimens are on record, at the Cape of Good Hope and near the Seychelles, where it is known as the "chagrin." The snout is extremely short, broad and flat, with the mouth and nostrils placed at its extremity; the gill-openings very wide, and the eye very small. The teeth are extremely small and numerous, conical in shape. No opportunity should be lost of obtaining exact information.

**Fig. 13.—Basking Shark.**

**Fig. 14.—Greenland Shark (Lamarche borealis).**

**Fig. 15.—Dentition of Greenland Shark.**

On this shark. The same applies to the allied Microstomus punctatus recorded from off the W. coast of America.

The Greenland shark (Lamarche borealis) belongs to the same family as the spiked dogfish, but grows to a much larger size, specimens 26 ft. long having been met with. The two dorsal fins are small and destitute of spines. The teeth (fig. 15) in the upper jaw are small, narrow, conical in shape; those of the lower flat, arranged in several series, one on the top of the other, so that only the uppermost forms the sharp dental edge of the jaw. The points of these lower teeth are so much turned aside that the inner margin only enters the dental edge.

The Greenland shark is an inhabitant of the Arctic regions, sometimes straying to the latitudes of Great Britain and of Cape Cod in the W. Atlantic; it is one of the greatest enemies of the whale, which is often found with large pieces bitten out of the tail by this shark. Its voracity is so great that, as Scoresby tells us, whilst engaged in feeding on the carcass of a whale it will allow itself to be stabbed with a lance or knife without being driven away. The spiny shark (Echinarhynchus spinosus) is readily recognized by the short bulky form of its body, its short tail, and the large round bony tubercles which are scattered all over its body, each of which is raised in the middle into a pointed conical spine. While most frequently recorded from the E. Atlantic, specimens have also been obtained from the coasts of N. America and of New Zealand. It always lives on the bottom, and probably descends to some depth. It does not seem to exceed a length of 10 ft.

**Bathybiel Sharks.**—Sharks do not appear to have yet reached the greatest depths of the ocean; and so far as we know at present we have to fix the limit of their vertical distribution at 1000 fathoms. Those which we find to have reached or to pass
the 100 fathoms line belong to generic types which, if they include littoral species, are ground-sharks—as we generally find the bottom-feeders of our littoral fauna much more strongly represented in the deep sea than the surface swimmers. All belong to two families only, the Scylliidae and Spinacidae, the littoral members of which live for the greater part habitually on the bottom and probably frequently reach to the 100 fathoms line. Distinctly bathyal species are two dogfishes—

**Spinax granulatus** from 120 fathoms, and

**Scyllium canescens** from 400 fathoms, both on the S. W. coast of S. America; also *Centroscyllium granulatum* from 340 fathoms in the S. Ocean, whose congener from the coast of Greenland probably descends to a similar depth. The shark which reaches the greatest depth recorded hitherto appears to be *Scyliorhinus indicaus* obtained by the Valdivia expedition from a depth of nearly 1000 fathoms in the W. Indian Ocean. It belongs to the genus *Centrophorus*, of which some ten species are known, all from deep water in the N. Atlantic, Mediterranean, the Molucca and Japanese seas. The Japanese species were discovered by the naturalists of the

**Notidaniidae** are the Chlamydoselachidae or frilled sharks, represented so far as is known by a single living species, *C. anguineus* Garman (fig. 16), which occurs frequently in deep water off the coast of Japan and as isolated specimens off the coasts of New South Wales, Madeira and Norway. A fossil species has been described from the Pliocene of N. Italy. It resembles a conger in shape, and differs from the *Notidani* proper by its elongated body; wide nearly terminal mouth, extremely wide gill-openings and peculiarly formed teeth. The teeth are similar in both jaws, each composed of three slender curved cusps separated by a pair of minute intermediate points, and with a broad base directed backwards.

A few words may be added with reference to the economic uses of this group of fishes. As mentioned above, some of the smaller dogfishes are eaten at certain seasons by the cappers, and by Japanese fishermen for the covers of which the population. An interior kind of oil, chiefly used for the adulteration of cod-liver oil, is extracted on some of the N. fishing stations from the liver of the spiked dogfishes, and occasionally of the larger sharks. Cabinet-makers make extensive use of shark's skin under the name of "shagreen" for smoothing or polishing wood. This shagreen is obtained from species (such as our dogfishes) whose skin is covered with small, pointed, closely-set, calcified papillae, whilst very rough skins, in which the papillae are large or blunt, are useless for this purpose. The dried fins of sharks (and as rays) form in India and China the Chinese preparing gelatin from them, and using the better sort for culinary purposes. They are assorted in two kinds, viz."white" and "black." The former consists exclusively of the dorsal fins, which alone are cut in this way, the pectoral, ventral and anal fins constitute the "black" sort; the caudal are not used.

(A. C. G.: J. G. K.)

**SHARON**, a borough of Mercer county, Pennsylvania, U.S.A., on the Shenango river, about 70 m. by rail N. N. W. of Pittsburg. Pop. (1900) 8916, of whom 1805 were foreign-born and 113 were negroes; (1910 U.S. census) 15,270. Sharon is served by the Erie, the Lake Shore & Michigan Southern, and the Pennsylvania (Erie and Pittsburg divisions) rail ways. Sharon has an excellent public school system, and the F. H. Buhl Club (1905) is a social and educational institution, which has added much to the comfort of the borough. Sharon is an iron manufacturer of the borough. The borough has blast furnaces and rolling-mills; and iron and steel products, tinplate and terne-plate are its principal manufactures. The total value of factory products in 1905 was $4,776,914, being 26.9% more than in 1900. Sharon and South Sharon (pop. by U.S. census in 1910, 10,100), which was separately incorporated as a borough in 1901, form what is virtually a single industrial community. Sharon was first settled in 1795, but was only a small village when a movement for developing the coal-mines in the vicinity was begun in 1836. It was incorporated as a borough in 1841.

**SHARP, GRANVILLE** (1735-1813), English philanthropist, was the ninth of the fourteen children of Thomas Sharp (1693-1758), a prolific theological writer and biographer of his father, John Sharp, archbishop of York. Granville, who was born at Durham in 1735, was educated at the grammar school there, and apprenticed to a London draper, but obtained employment in the government ordnance department in 1758. Sharp's tastes were scholarly; he managed to acquire knowledge of Greek and Hebrew, and before 1779 he had published more and educational institution, which has added much to the comfort of the borough. Sharon is an iron manufacturer of the borough. The borough has blast furnaces and rolling-mills; and iron and steel products, tinplate and terne-plate are its principal manufactures. The total value of factory products in 1905 was $4,776,914, being 26.9% more than in 1900. Sharon and South Sharon (pop. by U.S. census in 1910, 10,100), which was separately incorporated as a borough in 1901, form what is virtually a single industrial community. Sharon was first settled in 1795, but was only a small village when a movement for developing the coal-mines in the vicinity was begun in 1836. It was incorporated as a borough in 1841.

**Challenger** on the Hyalonema ground off Inosima in 345 fathoms. Dr E. P. Wright found *C. coelolepis* at a still greater depth on the coast of Portugal. The fishermen of Setúbal fish for these sharks in 400 or 500 fathoms, with a line of some 600 fathoms in length. "The sharks caught were from 3 to 4 ft. long, and when they were hauled into the boat fell down into the like so many dead pigs"; in fact, on being rapidly withdrawn from the great pressure under which they lived they were killed, like other deep-sea fishes in similar circumstances. It is noteworthy that the organization of none of these deep-sea sharks has undergone such a modification as would lead us to infer that they are inhabitants of great depths.

One of the most interesting types of the division of sharks is the small family of *Notidaniidae*, which is externally distinguished by the presence of a single dorsal fin only, without spine and opposite to the anal, and by having six or seven wide branchial openings. They represent an ancient type, the presence of which in Jurassic formations is shown by teeth extremely similar to those of the living species. Their skeleton is notochordal. Only four species are known, of which one (*Notidanus griseus*) has now and then strayed N. to the English coast. Allied to

![Fig. 16.—*Chlamydoselachus anguineus*.](image-url)
emancipated slaves at Sierra Leone. Granville Sharp was also one of the founders of the British and Foreign Bible Society, and of the Society for the Conversion of the Jews. One of his tracts, entitled Remarks on the Uses of the definitive article in the Greek text of the New Testament, published in 1798, propounded the rule known as "Granville Sharp's canon," which on account of its important bearing on Unitarianism has since been confuted by numerous writers. In the controversy leading divines took part, including Christopher Wordsworth. This rule was to the effect that "when two personal nouns of the same case are connected by the copulate ον, if the former has the definite article and the latter has not, they both belong to the same person." Sharp died on the 6th of July 1813, and a memorial of him was erected in Westminster Abbey.


SHARP, JAMES (1618–1679), Scottish divine, the son of William Sharp, sheriff-clerk of Banffshire, and Isabel Leslie or Lesley, daughter of Leslie of Kinininvie, of the family of Halyburtons of Pitcur in Angus, was born in Banff Castle on the 4th of May 1618. In 1633 he went to King's College, Aberdeen, and graduated in 1637. He there studied divinity for one or two years, Aberdeen being at that time the home of Episcopal sentiment. Through the outbreak of civil war in 1644 and 1645 he shared the experiences of the Covenanters, meeting with Cromwell in London and visited Oxford and perhaps Cambridge, becoming acquainted with the principal English divines. Upon his return he was chosen in 1643, through the influence of Lord Rothes, to be one of the "regents" of philosophy in St Leonard's College, St Andrews. In December 1647 he went through his ordinary trials for the ministerial office before the presbytery of St Andrews, and was appointed minister of Crall in Fife, on the presentation of the earl of Crawford, in January 1648. In the great schism of Resolutioners and Protestors, he, with the large majority of educated men, took active part with the former. As early as March 1651 he was recognized as one of the leading men of the party, and was taken prisoner by Cromwell's forces. For eight months he was kept in the Tower of London, and liberated on parole. His first public employment was in 1656, when he went to London to endeavour to counteract with the Protector the influence of Archibald Johnston, Lord Wariston, who was acting for the Protestors. He displayed all his undoubted talents for small diplomacy, and considerable subtlety in argument, while on this service, and his mission was doubtless successful. He returned to Scotland in 1659, but upon Monk's march to London was appointed to meet the Resolutioners to watch over their interests in London, where he arrived on the 13th of February. He was most favourably received by Monk, to whom it was of great importance to remain on good terms with the dominant party in Scotland. His letters to Douglas and others during this period, if they may be trusted, are useful towards following the intrigues of the time day by day. In the beginning of May he was despatched by Monk to the king at Breda. His letters on this occasion to Douglas show that he regarded himself equally as the emissary of the Scottish bishops, who appointed him to this office, as he was the bearer of a secret letter from Lauderdale to the king. There can be little doubt that while on this mission he was finally corrupted by Charles and Clarendon, not indeed so far as to make up his mind to betray the kirk, but at any rate to decide in no way to imperil his own chances by too firm an integrity. The first thing that aroused the jealousy of his brethren was his writing from Holland in commendation of Clarendon. This jealousy was increased on his return to London (May 26) by his plausible endeavours to stop all coming of Presbyterian missionaries from Scotland and Ireland, though he professed to desire the presence of Douglas and Dickson, by his urgent advice that the Scots should not interfere in the restoration of Episcopacy in England, and by his endeavours to frustrate the proposed union of Resolutioners and Protestors. He informed them that Presbyterianism was a lost cause in England, but as late as August 11 he intimated that, though there had been great danger for the Scottish kirk as well, this danger had been constantly and successfully warded off by his efforts. He returned to Scotland in this month, and busied himself in endeavouring to remove all suspicions of his loyalty to the kirk, but at the same time in 1663, he still supported all petitions from Scottish ministers to king, parliament or council. His letters to Drummond, a Presbyterian minister in London, and to Lauderdale, without absolutely committing him, show clearly that he was certain that Episcopacy was about to be set up. How far he was actively a traitor in the matter had always been disputed until the question was set at rest by the discovery of his letter, dated May 21, from London, whither he went in April 1661, to Middleton, the high commissioner, whose chaplain he now was, showing that he was in unlimited communication with Clarendon and the English bishops, that he was earnestly co-operating in the restoration of Episcopacy in Scotland, that he had before leaving Scotland held frequent conferences with Middleton on the subject (a fact which he had vehemently denied) and was aware that Middleton had all along intended it, and that he drew up the quibbling proclamation of June 10, the sole purpose of which was "the disposing of minds to acquiesce in the king's pleasure." The original of this letter (which is printed in the Lauderdale Papers and in the Scottish Review) is preserved in the Museum of the Society of Antiquaries, and shows that Sharp was determined on the 13th of May, on the eve of starting on his mission to court with Rothes and Glencarne, he declared to Baillie that no change in the kirk was intended. The mask was at length dropped in August, when Episcopacy was restored, and Sharp was appointed archbishop of St Andrews. He and Leighton, Fairfoul and Hamilton were dubbed, first preaching deacons, then presbyters, and then consecrated bishops in one day, by Dr Sheldon and a few others." On April 8th the new prelates entered Scotland, and on the 20th of April 1662 Sharp preached his first sermon at St Andrews.

Sharp had carefully kept on good terms with Lauderdale, and when the Billeting Plot was concocted in September 1662 against the latter by Middleton, he managed to avoid acting against him; indeed it is probable that, after being appointed under an oath of secrecy to be one of the scrutineers of the billets, he, in violation of the oath, was the cause of Lauderdale receiving timely information of the decision against him; and yet he shortly went up to London to explain the whole affair in Middleton's interest. When Lauderdale's supremacy was established he readily co-operated in passing the National Convention on the 13th of May, in the first step in the intended subjection of the church to the crown. In 1664 he was again in London, returning in April, having secured the grant of a new church commission. So oppressive was his conduct and that of other bishops that it called forth a written protest from Gilbert Burnet. Sharp at once summoned him before the bishops and endeavoured to obtain a sentence of deprivation and excommunication against him, but was overruled by his brethren. On the death of Glencarne, the chancellor's greatest efforts were made to secure the vacant office for Sharp, and he failed in his object, his lay interest; the place was given, however, filled up until 1667, and then by the appointment of Rothes. He was in strict alliance with Rothes, Hamilton and Dalyell, and the other leaders of oppression, and now placed himself in opposition to the influence of Lauderdale, attacking his friends, and especially the earl of Kincardine. In 1665 he was again in London, where, through his own folly and mendacity, he suffered a complete humiliation at the hands of Lauderdale, well described by the historian Burnet. The result of their system of violence and extortion was the rising of the Covenanters, during which, being in temporary charge during the National's absence, he showed, according to Bellenden, the utmost fear, equalled only by his cruelty to the prisoners after the rout of Pentland. When the convention of estates met in January 1665 Hamilton was substituted for him as president. He now
wrote letters of the most whining contrition to Lauderdale, who extended him a careless reconciliation. For a time he made himself actively useful, and helped to restrain his brethren from writing to London to complain of the conciliatory policy which for a while Lauderdale carried out. On July 10, 1668 an attempt was made upon his life by James Mitchell, who fired a pistol at him while driving through the streets of Edinburgh. The shot, however, missed Sharp, though his companion, the bishop of Orkney, was wounded by it, and Mitchell for the time being fell. When Sharp went up to London, returning in December, and with his assistance Tweeddale's tolerant proposals for filling the vacant parishes with some of the "outed" ministers were carried out. In the debates on the Supremacy Act, by which Lauderdale destroyed the autonomy of the church, Sharp at first showed reluctance to put in motion the desired policy, but gave way upon the first pressure. When, however, Leighton, as archbishop of Glasgow, endeavoured to carry out a comprehensive scheme, Sharp actively opposed him, and expressed his joy at the failure of the attempt. From this time he was completely subservient to Lauderdale, who had now finally determined upon a career of oppression, and in 1674 he was again in London to support this policy. In this year also Mitchell, who had shot at him six years before, was arrested, and, upon Sharp's promise to obtain a pardon, privately made a full confession. When Mitchell later claimed this promise, Sharp denied that any such promise had been given. His falsehood was proved by the entry of the act in the records of the court. Mitchell was finally condemned, but a reprieve would have been granted had not Sharp himself insisted on his death. This was speedily avenged. On the 3rd of May 1679, as he was driving with his daughter Isabel to St Andrews, he was set upon by nine men, and, in spite of the appeals of his daughter, was cruelly murdered. The place of the murder, on Magus Muir, now covered with fir trees, is marked by a monument erected by Dean Stanley, with a Latin inscription recording the deed.

Unless otherwise mentioned, the proofs of the statements in this article are to be found in vols. i. and ii. of the Lauderdale Papers (Cambden Society) and in two articles in the Scottish Review, July 1884 and January 1885.

SHARP, JOHN (1645-1714), English divine, archbishop of York, was born at Bradford on the 16th of February 1645, and was educated at Christ's College, Cambridge. He was ordained deacon and priest on August 12th 1667, and until 1676 was chaplain and curate in the family of Sir Heneage Finch at Kensington House. Meanwhile he became archdeacon of Berkshire (1673), prebendary of Norwich, rector of St Giles's-in-the-Fields, and in 1681 dean of Norwich. In 1686, when chaplain to James II., he was suspended for ten months on a charge of having made some reflections on the king, and in 1688 was cited for refusing to read the declaration of indulgence. Under William and Mary he succeeded Tillottson as dean of Canterbury in 1689, and (after declining a choice of sees vacated by non-jurors who were his personal friends) followed Thomas Lumplugh as archbishop of York in 1691. He made a thorough investigation of the affairs of his see, and regulated the disordered chapter of Southwell. He preached at the coronation of Queen Anne and became her almoner and confidential adviser in matters of church and state. He welcomed the Armenian bishops who came to England in 1713, and corresponded with the Prussian court on the possibility of the Anglican liturgy as a means of reconciliation between Lutherans and Calvinists. He died at Bath on the 2nd of February 1714.

SHARP, RICHARD (1759-1835), known as "Conversation Sharp," was born in Newfoundland in 1750, the son of a British officer in garrison there. He was for many years in business in London, and amassed a large fortune. He was the host of leading literary and political men at his houses in Park Lane and near Dorking. Johnson, Burke, Rogers, Hallam, Grattan, Sydney Smith, James Mill, Wordsworth and Coleridge were among his many friends. From 1806 to 1812 he was M.P. for Castle Rising, and subsequently he represented Portarlington and Ilchester. He was the author of a volume of Letters and Essays in Prose and Verse (1834), which the Quarterly Review declared to be remarkable for "wisdom, wit, knowledge of the world and sound criticism." Sharp died at Dorchester on the 30th of March 1835.

SHARP, WILLIAM (1745-1824), English line-engraver, was born at London on the 29th of January 1749. He was originally apprenticed to what is called a bright engraver, and practised as a writing engraver, but gradually became inspired by the higher branches of the engraver's art. Among his earlier plates are some illustrations, after Stothard, for the *Nemesis* Magazine. He engraved the "Doctors Disputing on the Immaculateness of the Virgin" and the "Ecce Homo" of Guido Reni, the "St Cecilia," of Domenichino, the "Virgin and Child" of Dolci, and the portrait of John Hunter of Sir Joshua Reynolds. His style of engraving is thoroughly masterly and original, excellent in its play of line and rendering of half-tints and of "colour." He died at Chiswick on the 25th of July 1824. In his youth, owing to his hotly expressed adherence to the politics of Paine and Horne Tooke, he was examined by the privy council on a charge of treason. Mesmer and Brothers found, in Sharp a staunch believer; and for long he maintained Joanna Southcott at his own expense as an engraver he achieved a European reputation, and at the time of his death he enjoyed the honour of being a member of the Imperial Academy of Vienna and of the Royal Academy of Munich.

SHARP, WILLIAM (1856-1905), Scottish poet and man of letters, was born at Paisley on the 12th of September 1856. His was a double personality, for during his lifetime he was known solely by a series of poetical and critical works of great, but not of outstanding merit, while from 1894 onwards he published, with elaborate precautions of secrecy, under the name of "Fiona Macleod," a series of stories and sketches in poetical prose which made him perhaps the most conspicuous Scottish writer of the modern Gaelic renaissance. His early life was spent chiefly in the W. highlands of Scotland, and after leaving Glasgow University he went to Australia in 1877 in search of health. After a cruise in the Pacific he settled for some time in London as clerk to a bank, became an intimate of the Rossettis, and began to contribute to the *Pall Mall Gazette* and other journals. In 1885 he became art critic to the *Glasgow Herald*. He spent much of his life in Rome and travelled extensively in America and the Near East. He had a number of cousins, one of whom was John Macleod, a writer of *Athenaeum* stating that she wrote under the name of "Fiona Macleod." He wrote biographies of Dante Gabriel Rossetti (1882), of Shelley (1887), of Heinrich Heine (1888), of Robert Browning (1890), and edited the memoirs of Joseph Severn (1892). The most notable of his novels was *Silence Farm* (1890). During the later years of his life he was obliged for reasons of health to spend all his winters abroad. The secret of his authorship of the "Fiona Macleod" books was faithfully kept until his death, which took place at the Castello di Manlace, Sicily, on the 13th of December 1905.

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of dreams (1890); The Divine Adventure: Isaacs and other Studies in Spiritual History (1900), and Winged Destiny (1904).

SHARPE, DANIEL (1860–1850), English geologist, was born in Marylebone, London, on the 6th of April 1866. His mother was a sister of Samuel Rogers, the poet. At the age of 10 he entered the counting-house of a Portuguese merchant in London, and at the age of 25, after spending a year in Portugal, he joined his elder brother as a partner in a Portuguese mercantile business. As a geologist he first became known by his researches (1832–1840) on the geological structure of the neighbourhood of Lisbon. He studied the Silurian rocks of the Lake District and North Wales (1842–1844), and afterwards investigated the structure of the Alps (1854–1859). He was elected F.R.S. in 1850. He published several essays on cleavage (1847–1852), and showed from the evidence of distortion of organic remains that the direction of the pressure producing concretions in the rocks was perpendicular to the planes of cleavage. Most of his papers were published in the Quarterly Journal of the Geological Society, but one ‘On the Arrangement of the Foliation and Cleavage of the Rocks of the North of Scotland,’ was printed in the Phil. Trans. 1852. He was also author of a Monograph on the Cephalopoda of the Chalk, published by the Palaeontographical Society (1853–1857). In 1856 he was elected president of the Geological Society, but he died in London, from the effects of an accident, on the 23rd of May that year.

SHARPSBURG (1806–1856), a borough in Allegheny county, Pennsylvania, U.S.A., on the Allegheny river, opposite the N.E. part of Pittsburg. Pop. (1900) 6842 (1280 foreign-born); (1910) 8153. Sharpsburg is served by the Pennsylvania and the Baltimore & Ohio railways. Coal is mined in the vicinity. Among the manufactories are iron pipes, truck and bar iron, wire, stove, paint and lubricating oil. Sharpsburg was settled in 1826, was named in honour of James Sharp, the original proprietor, and was incorporated in 1841.

SHASHI, the chief of the province of Hu-pch, China, on the left bank of the river Yangtsze, about 83 m. below Ich'ang. Pop. about 80,000. It was opened to foreign trade under the Japanese treaty of 1895. The town lies below the summer level of the Yangtsze, from which it is protected by a strong embankment. Formerly Shashi was a great distributing centre, but the opening of Ich'ang to foreign trade diverted much of the traffic to the last-named port. It is the terminus of an extensive network of canals which run through the low country lying on the north bank of the Yangtsze as far down as Hankow. Native boats, as a rule, prefer the canal route to the turbulent waters of the Yangtsze, their cargoes being transferred at Shashi across the embankment into river boats. Foreign residents are few, and the trade passing through the maritime customs is comparatively insignificant. The place is still, however, a large distributing centre for native trade, and is the seat of an extensive manufacture of native cotton cloth. The British consulate was withdrawn in January 1899, British interests being placed under the care of the consul at Ich'ang.

SHAW, GEORGE BERNARD (1856– ), British dramatist and publicist, was born in Dublin on the 26th of July 1856. His father, George Carr Shaw, was a retired civil servant, the younger son of Bernard Shaw, high sheriff of Kilkenny. His mother, Lucinda Elizabeth Gurlty, was a good musician, who eventually became a teacher of singing in London. G. B. Shaw went to school in Dublin, and began to earn his living when he was fifteen. He was for five years a clerk in the office of an Irish land-agent, but came to London with his family in 1876, and in 1879 was, according to his own account in the preface to The Irrational Knot, in the offices of the Edison telephone company. He had begun to write novels, which did not immediately find their market. The Irrational Knot, written in 1879, and Love among the Artists (written in 1881) first appeared as serials in Our Corner, a monthly edited by Mrs Annie Besant; Cashel Byron's Profession (reprinted in 1901 in the series of "Novels of his Nonage") and An Unsocial Socialist first appeared in a Socialist magazine To-day, which no longer exists. Shaw joined the Fabian Society in 1884, a year after its formation, and was active in socialist propaganda, both as a street orator and as a pamphleteer. In 1889 he edited the Fabian Essays, to which he contributed "The Economic Basis of Socialism" and "The Transition to Social Democracy." He began journalism, through the influence of William Archer, on the reviewing staff of What's New in 1887, and in London in 1890 as musical critic, writing from 1888 to 1890 for the Star, where his articles were signed "Corno di Bassetto," and then in 1890 to 1894 for the World. In 1895 to 1898 he was dramatic critic to the Saturday Review, his articles being collected in 1907 as Dramatic Opinions and Essays. He was an early champion of Richard Wagner and of Henrik Ibsen, and indicated his aesthetic point of view in the pamphlets, The Quintessence of Ibsenism (1891) and The Perfect Wagnerite (1898). His first play, Widowers' Houses, two acts of which had been written in 1895 in collaboration with Mr William Archer, was but fees by the Independent Theatre under the management of Mr J. T. Grein at the Royalty in 1892. This found few admirers outside Socialist circles, and was hoisted by the ordinary playgoer. In 1893 he wrote The Philanderer, a topical comedy on Ibsenism and the "new woman," for the same theatre, but the piece proved technically unsuitable for Mr Grein's company. To replace it Mr Shaw wrote Mrs Warren's Profession, a powerful but disagreeable play, which was rejected by the censor and not presented until the 5th of January 1893, when it was privately given by the Society at the Theatre Royal Haymarket. The play was printed in New York by Mr Arnold Daly's company in 1905 the actors were prosecuted. These three plays were classed by the author as "unpleasant plays" in the printed version. Arms and the Man was produced at the Avenue Theatre (21st of April 1894) by Miss Florence Farr, who was experimenting on the lines of the Independent Theatre, and by Mr Richard Mansfield at the Herald Square Theatre, New York (the 17th of Sept. 1894). The scene was laid in Bulgaria, the piece being a satire on romanticism, a destructive criticism on military "glory." The original was written in 1894 for Mr Mansfield, who did not produce it until December 1895, but it was played in Aberdeen in July 1897 by the Independent Theatre Company. This defence of the poetic point of view against brute force and common sense was admirably constructed and it proved one of the most popular of his plays. The pieces which followed are: The Man of Destiny (written in 1895, played at Croydon in 1897 by Mr Murray Carson), a Napoleonic drama, which was revived at New York by Arnold Daly in 1904; You Never Can Tell (written in 1896, produced at the Strand Theatre in 1906), a farce, and a comedy, The Devil's Disciple (produced at New York by Richard Mansfield in 1899), a play with the scene of which is laid in the War of American Independence, Caesar and Cleopatra (1898) and Captain Brassbound's Conversion (1898)—printed as Three Plays for Puritans (1900); The Adorable Bashville (Stage Society, Imperial Theatre, 1903), a dramatization of Cashel Byron's Profession. He had found no regular English audience when he published Plays Pleasant and Unpleasant (2 vols.) in 1898, and his pieces first became well known to the ordinary playgoer by the performances given at the Royal Court Theatre under the manage- ment of Mr Harley Granville Barker. The oldest play of all is Superman (published in 1903) was produced there on the 23rd of May 1903, in a necessarily abridged form, with Granville Barker in the part of John Tanner, the author of the "Revolutionists' Handbook and Pocket Companion," printed as an appendix to the play. Mr Shaw asserted that the piece originated in a suggestion from Mr A. B. Walkley that he should write a Don Juan play, which he proceeded to do in a characteristic topsy-turvy fashion. John Tanner (Juan Tenor) is a voluble exponent of Schopenhauer and Nietzsche, who finally falls a victim to the life force in Aryan Major Bards (Court Theatre, Nov. 1905), a "discussion in three acts," placed the Salvation Army on the stage. The Vedrenne-Barker management also revived Candida (April 1904), You Never Can Tell (May 1905), Captain Brassbound's Conversion (March 1906) and John Bull's other Island (November 1904), a statement of the Irish land
question, which had been produced at the Camden Theatre in 1903, and later by the Stage Society. At the same theatre was produced (20th of November 1906) The Doctor's Dilemma, a satire on the medical profession, and How He Lied to Her Husband (Feb. 1905), which had been previously played in New York. Later plays were: Getting Married (1908), The School for Scandal by (1812) and The Women (1893).

Among Mr. Shaw's later writings on economics are: Socialism for Millionaires (1901), The Common Sense of Municipal Trading (1904), and Fabianism and the Fiscal Question (1904). Although an energetic member of the South Sth Pancras borough council, he failed to secure election to the London County Council when he stood as a candidate in 1904. Mr. Shaw married in 1898 Miss Charlotte Frances Payne-Townshend.

In his work H. L. Mencken (Boston and London, 1905), by E. E. Hale (Dramatists of To-Day London, 1906), &c.; "The Plays of Mr. Bernard Shaw," in the Edinburgh Review (April 1905); Mr. Bernard Shaw's Counterfeit Presentment of Women, in the Fortnightly Review (March 1906); "Bernard Shaw as Critic," in the Fortnightly Review (June 1907); and an appreciation by Holbrook Jackson, Bernard Shaw (1907).

SHAW, HENRY WHEELER (1818-1885), American humorist, known by the pen-name of "Josh Billings," was born of Puritan stock at Lanesborough, Massachusetts, on the 21st of April 1818. His father, Edward Walter Shaw, was a representative in Congress in 1817-1821. The son left Hamilton College to go West. In 1858 he settled in Poughkeepsie, N.Y., as a land-agent and auctioneer, and began writing newspaper articles, especially for the Poughkeepsie Daily Press. His "Essa on the Muel bi Josh Billings" (1860) in a New York paper was followed by many similar articles, chiefly in the New York Weekly and the New York Sunday Paper, and by several popular volumes, among which are Josh Billings: His Sayings (1860), Josh Billings on Ice (1868), Everybody's Friend (1870), Josh Billings: His Works, Complete (1876), Trump Card's (1879), Old Probabilities (1879), Josh Billings' Spice-Box (1881), and Josh Billings' Farmers' Almanax, burlesquing the Old Farmers' Almanac, issued annually between 1870 and 1880, and collected into a volume in 1902 under the title Josh Billings' Old Farmers' Almanax.

He died in Monterey, California, on the 14th of October 1885. His platform lectures, such as "Milk," "Hobby Horse," "The Pensive Cockroach," and "What I Know about Hotels," his mannerisms and apparently unstudied witticisms made him conspicuous.

See Life and Adventures of Josh Billings (New York, 1883), by Francis S. Smith.

SHAW, LEMUEL (1781-1861), American jurist, was born at Barnstable, Massachusetts, son of the minister of the West Parish there, on the 9th of January 1781. He graduated from Harvard College in 1800, and was admitted to the bar (of New Hampshire and of Massachusetts) in 1804. In 1805 he began to practice law in Boston. He was a vigorous Federalist and was a member of the Massachusetts House of Representatives in 1811-1814, in 1826, and in 1832, and of the state Senate in 1821-1822, a delegate to the state constitutional convention of 1820-1821, and chief justice of the Supreme Court of the state from 1830 to 1860. He died in Boston on the 30th of March 1861.

As chief justice Shaw maintained the high standard of excellence set by Theophilus Parsons. He presided over the trial in 1850 of Professor John White Webster (1792-1839) for the murder of Dr George Parkman. His work in extending the equity, jurisdiction, and powers of the court was especially notable. He was also largely instrumental in defeating an attempt (1843) to make a reduction of salary apply to judges already in office, and an attempt (1852) to abolish the life term of judges. His opinion in Cary v. Daniels (8 Metcalfe) is the basis of the present law in Massachusetts as to the regulation of water power rights of riparian proprietors.

See the address by B. F. Thomas in Proceedings of the Massa- chusetts Historical Society (1851) for a sketch of his life; and through his son, Henry, in his Life and Works (by F. L. Tracy, 1883) by Samuel S. Shaw and P. Emary Aldrich in vol. iv, pp. 240-247, of Memorial Biographies of the New England Historic Genealogical Society (Boston, 1885).

SHAW, RICHARD NORMAN (1831-1912), British architect, was born in Edinburgh on the 7th of May 1831. At the age of sixteen he went to London and became a pupil of William Burn. In Burn's office he formed that friendship with William Eden Nesfield which so profoundly influenced the careers of both, and was thoroughly grounded in the science of planning and in the classical vernacular of the period. He also attended the architectural schools of the Royal Academy, and devoted himself with industry to study and practice.

In 1854, having finished his term of apprenticeship, with Burn, he gained the gold medal and travelling studentship of the Royal Academy, and until 1856 travelled on the continent, studying and drawing old work. On his return in 1856 he was requested by the Council of the Royal Academy to publish his drawings. This work, entitled Architectural Sketches from the Continent, was issued in 1858. In the meantime Nesfield was continuing his studies with Anthony Salvin; Mr. Shaw also entered his office, and remained there until 1857, when he widened his experience by working for three years under George Edmund Street. In 1862, after sixteen years of severe training, he began to practise. For a short time he and Nesfield joined forces, but their lines soon diverged. Mr. Shaw's first work of importance was Leyes Wood, in Surrey, a building of much originality, followed shortly afterwards by Cragside, for Lord Armstrong, which was begun in 1880. From that time until he retired from active practice his works followed one another in quick succession. In 1872 Mr. Shaw was elected an Associate of the Royal Academy, and a full member in 1877; he joined the "club" list at the end of 1887.

Other characteristic examples of his work are: Freemen's, Shropshire; New Zealand Chambers, Leadenhall Street; Pierscourt, Wispers, and Merrist Wood, in Surrey; Lower Lodge, Kensington; Adcote, in Shropshire; his houses at Kensington, Oxford, and Cambridge, and his house at Henley near Oxford; Lodge, Berkshire; Dawpool, in Cheshire; Bryanstone, in Dorset- shaftire; Chesters, Northumberland; New Scotland Yard, on the Embankment. Besides several fine works in Liverpool and the neighbourhood, he has drawn the plan and portions of the best known of which are St John's Church, Leeds; St Margaret's, Deal, and All Saints', Leek. His early buildings were most frequently the "half timber" and "hung" effect, and only at the current work of time. The use of "half timber" and hanging tiles, the projecting gables and massive chimneys, and the cunningly contrived bays and recessed fireplaces, together with the complete freedom from the conventions and trammels of "style," not only appealed to the artist, but gained at once a place in public estimation. Judged in the light of his later work, some of those early buildings appear almost too full of feature and design; they show, however, very clearly that Shaw was discarding one of the "academic" styles, and inventing a style appropriate to the age and environment.

His work throughout is especially distinguished by treatment of scheme. There is nothing tentative or hesitating. His planning is invariably fine and full of ingenuity. Adcote (a beautiful drawing of which hangs in the Diploma Gallery at Burlington House) is, perhaps the best example of the series of his country houses built between 1870 and 1880. The elements are few but perfectly proportioned and combined, and the scale throughout is consistent. The Great Hall is the keynote of the plan, and is properly but not unduly emphasized. The grouping of the rooms round the Hall is very ably managed—each room is in its right position, and has its appropriate character and aspect. Chanctonbury (another work of about the same period (1870-1880)), is a valuable example of Mr Shaw's versatility. Here he employed a completely different method of expression from any of his preceding works, and there is a certain boldness in the planning which, in one of those of 1870-1880), is a valuable example of Mr Shaw's versatility. Here he employed a completely different method of expression from any of his preceding works, and there is a certain boldness in the planning which, in his design, and in the best contemporary style. The Hall is divided into two stories, and a large cell of brickwork between the two stories, divided by piers of brickwork into three equal spaces, filled by shaped bays rich with moulded plaster; above, defining the whole composition together, is a finely enriched plaster cove. An attic storey, roofed with three gables, completes the building, which is the antithesis of the accepted type of city offices; it is yet perfectly adapted to modern uses. New Scotland Yard is another masterpiece of Mr Shaw's, so also is Lowther Lodge. The granite base is not only subtly suggestive of the purposes of the building, but by dividing the height with a strongly marked line gives a greater apparent width to the structure; it suggests also a division into compartments. Above, in the attic story, the walls dwelled on the necessary irregularity of the lower windows, which are not only different in character from those of the upper storeys, but more numerous and quite irregularly spaced. The projecting
angle turrets are most happily conceived, and besides giving emphasis to the corners, form the main point of interest in the composition of the river front. The chimneys are not allowed to cut the sky; indeed the whole line of them is kept continuous and full. The variety of the time, however, blocks, and contribute much to the general air of dignity and strength for which this building is remarkable. Simple roofs of ample span complete, a composition conspicuous for its breadth and unity.

Mr. Shaw's influence on his generation can only be adequately gauged by a comparison of current work with that which was, in 1950 when he began his career. The works of Pugin, Scott, and other names of the time, and most of the thoughts both of architects and the public towards a "revived Gothic." Before he entered the field, this teaching had hardened into a creed. Mr. Shaw was not content with this line of work, and with characteristic courage threw over these artificial barriers and struck out a line of his own. The rapidity with which he conceived and created new types, and as it were set a new fashion in building, compelled admiration for his genius, and won the ranks of his adherents. It is largely owing to him that there is now a distinct tendency to approach architecture as the art of Building rather than as the art of Designing, and the study of old work as one of methods and expressions which are for all time, rather than as a means of learning a language of forms proper only to their period.

SHAW-KENNEDY, SIR JAMES (1788–1865), British soldier and military writer, was the son of Captain John Shaw, of Dalton, Kirkcudbrightshire. Joining the 43rd (Monmouthshire) Light Infantry in 1805, he first saw service in the Copenhagen Expedition of 1807 as a lieutenant, and under Sir David Baird took part in the Corunna Campaign of 1807–8. In the retreat Shaw contracted a fever, from the effects of which he never fully recovered. The 43rd was again engaged in the Dourou and Talavera Campaigns, and Shaw maintained his instant and unflinching reputation in the battle of Talavera. As Robert Craufurd's aide-de-camp he was on the staff of the Light Division at the Costa and the Aguade, and with another officer prepared and edited the "Standing Orders of the Light Division" (printed in Home's Précis of Modern Tactics, pp. 257–277), which serve as a model to this day. He was wounded at Almeida in 1810, but rejoined Craufurd at the end of 1811 and was with his chief at the siege of Ciudad Rodrigo in January 1812. At the great assault of January 19th Shaw carried his general, mortally wounded, from the glaci, and at Badajoz, now once more with the 43rd, he displayed, at the lesser breach, a gallantry which furnished his brother officer William Napier with the theme of one of his most glorious descriptive passages (Peninsular War, bk. xvi. ch. v.). At the siege and the battle of Salamanca, in the retreat from Burgos, Shaw, still a subaltern, distinguished himself again and again, but he had to return to England at the end of the year, broken in health. Once more in active service in 1815, as one of Charles Alten's staff officers, Captain Shaw, by his reconnoitring skill and tactical judgment was of the greatest importance, and was primarily responsible for bringing him brevet-major in July, and brevet lieutenant-colonel in 1819. During the occupation of France by the allied army Shaw was commandant of Calais, and on his return to England was employed as a staff officer in the North. In this capacity he was called upon to deal with the Manchester riots of 1819, and his memorandum on the methods to be adopted in dealing with civil disorders embodied principles which have been recognized to the present day. In 1820 he married, and in 1824, on succeeding, in right of his wife, to have been distinguished by Kirkcham, near Wetherby, W. Yorks, he returned to his old regiment and was promoted to colonel in 1842, and in 1852 commanding the 57th, and became colonel commandant of the 43rd; he was also ADC. to the Duke of Wellington, and his name is associated with the organization of the Royal Irish Constabulary, which he raised and trained according to his own ideas. He remained inspector-general of the R.I.C. for two years, after which for ten years he led a retired country life. In 1848, during the Chartist movements, he was suddenly called upon to command at Liverpool, and soon afterwards was offered successively a command in Ireland and the governorship of Mauritius. Ill-health compelled him to decline these, as also the offer to command a little later, and for the rest of his life he was practically an invalid. He became full General in 1862 and was made K.C.B. a year later. In 1859, at the time of the Orsini case, he published a remarkable essay on The Defence of Great Britain and Ireland, and in 1865 appeared his famous Notes on Waterloo, appended to which is a Plan for the defence of Canada. He died the same year.

See the autobiographical notice in Notes on Waterloo, also the regimental history of the 43rd, and Napier, passim.

SHAWL, a square or oblong article of dress worn in various ways dependent from the shoulders. The term is, of Persian origin (šād), and the article itself is most characteristic of the natives of N.W. India and Central Asia; but in various forms, and under different names, the same piece of clothing is found in most parts of the world. The shawls made in Kashmir occupy a pre-eminent place among textile products; and it is to them and to their imitations from Western looms that specific importance attaches. The Kashmir shawl is characterized by the elaboration of its decoration; and especially those in which the "cone" pattern is a prominent feature, and by the glowing harmony, brilliance, depth, and enduring qualities of its colours. The basis of these excellences is found in the very fine, soft, short, fleshy under-wool, called pashm, found on the shawl-goat, a variety of Capra hircus inhabiting the elevated regions of Tibet. There are several varieties of pashm, but the finest is a strict monopoly of the maharaja of Kashmir. Inferior pashm and Kirman wool—fine soft Persian sheep's wool—are used for shawl weaving at Amritsar and other places in the Punjab, where colonies of Kashmir shawlers are established. From these, and from Kashmir, there are only two principal classes: (1) loom-woven shawls called tilla-wool, till-šād or kān-šād—sometimes woven in one piece, but more often in small segments which are sewn together with such precision that the sewing is quite imperceptible; and (2) embroidered shawls-amālik-šād, in which over a ground of plain pashmina is worked by needle a minute and elaborate pattern.

SHAW, SHALM (Fr. chalumeau, chalumele, haubois; Ger. Schalmei, Schalme; It. Piffer cernavole; Lat. calamus; ibid; Gr. αἷμα), the medieval forerunner of the oboe, the trembler member of the large family of reed instruments known in Germany as the Pommern (q.v.), Bombart or Scholme family. Michael Praetorius, at the beginning of the 17th century, enumerates the members of this family (see Oboe); the two of highest pitch are Schalmeys, the first or little Schalme being in B (third line) or A, the second, also called cantus or discantus, in E or D below. The shawl or Schalme had a compass of two octaves, the second diatonic octave being obtained by overblowing each of the notes of the first octave an octave higher. To the chalumeau, or Schalme, and shalmeys, are assigned the notes of the palate; the holes by cross-fingering. In some instances the reed mouthpiece was half enclosed in a pirouette, a small case having a slit through which that part of the reed which is taken into the mouth of the player was alone exposed, the edges of the slit thus forming a rest for his lips.

In the miniatures of the illuminated MSS. of all countries, more especially from the 14th century, and in early printed books, Schalmeys and Pommern are represented in every conceivable phase of social life in which music takes a part.

SHAWNEE or SHAWNO (said to mean "southerner"), a tribe of North American Indians of Algonquian stock. They are said to have been first found in Wisconsin. Under the name Sacannas towards the end of the 17th century they had their headquarters in South Carolina on the upper Savannah. Moving eastward they came in contact with the Iroquois, by whom they were driven S. again into Tennessee. Thence they crossed the mountains into South Carolina and again spread northward as far as New York state and southward to Florida. Subsequently they recrossed the Alleghany mountains, once more in contact with the Iroquois and were driven into Ohio. They joined in Pontiac's conspiracy. They fought on the English side in the War of Independence and again in 1812 under Tecumseh. They are now on a reservation in Oklahoma.

SHAWNEE, a city of Pottawatomie county, Oklahoma, U.S.A., on the North Fork of the Canadian river, about 38 m. E.S.E. of Oklahoma city. Pop. (1907) 10,955, including 274 negroes and 20 Indians; (1910) 12,474. Shawnee is served by the Atchison, Topeka & Santa Fé, the Chicago, Rock Island & Pacific, and the Missouri, Kansas & Texas railways and by interurban electric.
lines. The city has two large public parks and a Carnegie library, and is the seat of the Curtice Industrial School. Shawnee is situated in a fine agricultural region, is a shipping-point for allia, cotton and potatoes, is an important market for mules, and has large railway repair shops, and cotton-gins and cotton compresses; among its manufactures are cotton-seed oil, cotton goods, lumber, bricks and flour. Shawnee was first settled in 1805 and was chartered as a city in 1806.

SHAYS, DANIEL (1747–1825), American soldier, the leader of Shays's Insurrection in W. Massachusetts in 1786–1787 (see MASSACHUSETTS: History), was born in Hopkinton, Massachusetts, in 1747. In the War of Independence he served as second lieutenant in a Massachusetts regiment from May to December 1775, became captain in the 5th Massachusetts regiment in January 1777, and resigned his commission in October 1780. After the collapse of Shays's Insurrection he escaped to Vermont. He was pardoned in June 1788, and died at Sparta, New York, on the 20th of September 1825.

SHEarer, THomas, English 18th-century furniture designer and cabinet-maker. The solitary biographical fact we possess relating to this distinguished craftsman is that he was the author of most of the plates in The Cabinet Maker's London Book of Prices and Designs of Cabinet Work, issued in 1788 "For the London Society of Cabinet Makers." The majority of these plates were republished separately as Designs for Household Furniture. They exhibit their author as a man with an eye at once for simplicity of design and delicacy of proportion. Indeed some of his pieces possess a dainty and slender elegance which has been rarely seen in the history of English furniture.

There can be little doubt that Shearer exercised considerable influence over Hepplewhite, with whom there is reason to suppose that he was closely associated, while Sheraton has recorded his admiration for work which has often been attributed to others. Shearer, in his turn, owes something to the brothers Adam, and something no doubt, to the stock designs of his predecessors. There is every reason to suppose that he worked at his craft with his own hands and that he was literally a cabinet-maker—so far as we know, he never made chairs. Much of the elegance of Shearer's work is due to his graceful and reticent employment of inlays of saithwood and other foreign woods. But he was as successful in form as in decoration, and no man ever used the curve to better purpose. In Shearer's time the sideboard was in process of evolution; previously it had been a table with drawers, the pedestals and cabinet-boxes being separate pieces. He would seem to have been first to combine them into the familiar and often beautiful form they took at the end of the 18th century. The combination may have been made before, but his plate is, in point of time, the first published document to show it.

Shearer, like many of his contemporaries, was much given to devising "harlequin" furniture. He was a designer of high merit and real originality, and occupies a distinguished place among the little band of men, often, like himself, ill-educated and obscure of origin, who raised the English cabinet-making of the second half of the 18th century to an illustrous place in artistic history.

SHEARS, an implement for cutting or clipping. The O. Eng. shears, to clip, cut, represents one branch of a very large number of words in Indo-European languages which are to be referred to the root shars, to cut, and of which may be mentioned Gr. 


For cutting cloth "shears" take the form of a large, heavy pair of scissors with two crossed flat blades pivoted together, each with a looped handle for the insertion of the fingers; for clipping or "shearing" the sheep the usual form is a single piece of steel bent round, the ends being shaped into the cutting blades, and the bend or "bow" forming a spring which opens the blades when the pressure used in cutting is released. Another form of the same word, "sheers," is used of an apparatus for hoisting heavy weights, generally known as "sheer-legs." These consist of two or more uprights meeting at the top, where the hoisting tackle is placed, and set wide apart at the bottom. The mastings of ships was formerly carried out from another vessel, a dismasted hulk, hence a "sheer-hulk," on which the "sheer-legs" were placed (see CRANE). From this word must be distinguished "sheer," straight, precipitous, also absolute, downright; this is to be connected with Dan. skjær, clear, bright; Ger. schier, free, clear; the root is also seen in O. Eng. scianen, to shine. The nautical phrase "to sheer off," to deviate from a course, is due to the similar Dutch use of scheren, to cut, shear, to cut off a course abruptly.

SHEARWATER, the name of a bird, first published in F. Willughby's Ornithologia (p. 232), as made known to him by Sir T. Browne, who sent a picture of it with an account that is given more fully in J. Ray's translation of that paper (p. 334), stating that it is "a Sea-fowl, which fishermen observe to resort to their vessels in some numbers, swimming..." to and fro, backward, forward and about them, and doth as it were radere aquam, shear the water, from whence perhaps it had its name. Ray's mistaking young birds of the Isle of Man for the young of the couterneb, now usually called "Puffin," has already been mentioned under that heading; and not only has his name Puffinus anguorum hence become attached to this species, commonly described in English books as the Manx puffin or Manx shearwater, but the barbarous word Puffinus has come into use for all birds thereto allied, forming a well-marked group of the family Procellariidae (see PETREL), distinguished chiefly by their elongated bill, and numbering some twenty species, if not more—the discrimination is that Puffinus has fixed the ingenuity of Ornithologists. Shearwaters are found in nearly all the seas and oceans of the world generally within no great distance from the land, though rarely resorting thereto, except in the breeding season. But they also penetrate to waters which may be termed inland, as the Bosphorus, where they are known to the French-speaking part of the population as âmes damnées, it being held by the Turks that they are animated by condemned human souls. Four species of Puffinus are recorded as visiting the coasts of the United Kingdom; but the Manx shearwater is the only one that at all commonly breeds in the British Islands. It is a very plain-looking bird, black above and white beneath, and about the size of a pigeon. Some other species are larger, and almost whole-coloured, being of a sooty or dark cinereous hue both above and below. All over the world shearwaters seem to have precisely the same habits, laying their single purely white egg in a hole under ground. The young are thickly clothed with long down, and are extremely fat. In this condition they are thought to be good eating, and enormous numbers are caught for this purpose in some localities, especially of a species, the P. brevicaudus of Gould, which frequents the islands off the coast of Australia, where it is known as the "Mutton-bird." (A. N. T. 1.)

SHEATHBILL, a bird so-called by T. Pennant in his Gen. Birds, ed. 2, p. 43) from the horny case which ensheaths the basalt part of its bill. It was first made known from having been met with on New-Year Island, off the coast of Staten Land, where Cook anchored on New Year's eve 1774. A few days

³ Meaning, no doubt, skimming or "hovering." the latter word was used by Browne in his Account of Birds found in Norfolk (Mus. Brit. Mus. MS. Sloane, No. 422, p. 193) and also by Edwards (Gleanings, lii. 315) speaks of comparing his own drawing "with Brown's old draught of it, still preserved in the British Museum." This seems to be the latter's "shearwater " with the "puffin of the Isle of Man."

⁴ Tyrie appears to be the most common local name for this bird in Orkney and Shetland; but Scrab and Scraeb are also used in Scotland. These are from the Scandinavian Skraæ or Skraa, and considering Skraa's remarks (Etym. Dictionary) as to the alliance between the words shear and scraee it may be that Browne's hesitation as to the derivation of "shearwater" had more ground than at first appears.

⁵ The chief exception would seem to be the Bay of Bengal and thence throughout the W. of the Malay Archipelago, where, though they occur, they are very uncommon.

⁶ A strange fallacy arose that this case or sheath was movable. It is absolutely fixed.

⁷ Doubtless some of the earlier voyagers had encountered it, as Forster suggests (Deter. animalium, p. 330) and Lesson asserts.
later he discovered the islands that now bear the name of South Georgia, and there the bird was again found—in both localities frequented the rocky shores. On his third voyage, while seeking some land reported to have been found by Kerguelen, Cook in December 1768, probably an atoll lying to the E. of Cook's Islands, the species was generally known by the name of the French explorer, and here, among many other kinds of birds, was a Sheathbill, which for a long while no one suspected to be otherwise than specifically identical with that of the western Antarctic Ocean; but, as will be seen, its distinctness has been subsequently admitted. The Sheathbill, so soon as it was brought to the notice of naturalists, was recognized as belonging to a genus different from the one now and J. R. Forster in 1778 (Enchiridion, p. 37) conferred upon it, from its snowy plumage, the name Chionis, which has most properly received general acceptance, though in the same year the compiler Comte de Buffon (Histoire Naturelle, v. 6, p. 631) arranged it under the generic name of his own country, as Anthus, under the English name, and the species alba. It has thus become the Chionis alba of ornithology. It is about the size of and has much the aspect of a Penguin; its plumage is pure white, its bill somewhat yellow at the base, passing into pale pink towards the tip. Round the eyes the skin is bare, and beset with cream-coloured papillae, while the legs are bluish-grey. The second or eastern species, first discriminated by G. Hartlaub (Rei. zoologique, 1841, p. 5; 1842, p. 402, pl. 2) as A. minor, is smaller in size, with plumage just as white, but having the bill and bare skin of the face black and the legs much darker. The former of the two species is a much finer bird; the latter is quite different, for in C. alba it is almost level throughout, while in A. minor it rises in front like the pommel of a saddle. The western and larger species gathers its food, consisting chiefly of sea-weeds and shell-fish, on or near the shore; but it is more especially fond of eating birds' eggs. As to the flavour of its flesh, some assert that it is wholly unattractive, and others that it is palatable. Though most abundant as a shore-bird, it is frequently met with far out at sea, and has once been shot in Ireland. It is found on Auckland Island and the Crozetts, is smaller, with pinkish feet. The eggs of both species, though of peculiar appearance, bear an unmistakable likeness to those of oyster-catchers, while occasionally exhibiting a resemblance to those of the tropic-birds. The systematic position of the sheathbills has been the subject of some discussion. The name Chionis was first employed in a generic sense by R. Forster (Gen. Chioniae, amongst Charadriiformes, asiaticae, vol. ii. p. 192), and has been maintained by J. Forster (in his account of the Xizincormes and Attagis, which are peculiar to certain localities in S. America and its islands). SHEBOYGAN, a city and the county seat of Sheboygan county, Wisconsin, U.S.A., on the W. shore of Lake Michigan at the mouth of the Sheboygan river, about 52 m. N. of Milwaukee. Pop. (1910 census) 26,398. The population is largely of German descent, and two German newspapers are published; many Greeks settled here after 1855. Sheboygan is served by the Chicago and Northwestern railway, by interurban electric lines and by a steam-boat line to Green Bay and Oswego. The city N. of the river and the southern half of the peninsula of the river are built on a plateau 20-40 ft. above the lake level. Along the river is the factory district. The principal public buildings are a fine Federal building in which are housed the post-office and the office of the internal revenue; a Carnegie library, the Sheboygan County Court House, an opera house, St Nicholas Hospital and a county insane asylum. Included in the public school system is a school for deaf children, partly supported by the state. The city is a good harbour and is an important distributing point for fruit and salt. A rich agricultural region, (Man. d'ornithologie, ii. 343); but for all practical purposes we certainly owe its discovery to the naturalist's second volumes of New Zealand. By some error, probably of transcription, New Zealand, instead of New-York Island, appears in many works as the place of its discovery, while not a few writers have added thereto New Holland. Hitherto there is no real evidence of the occurrence of a Sheathbill in the waters of Australia or New Zealand. The Kelp-Pigeon is called the "Kelp-Pigeon," and by some of the earlier French navigators the "Phoebus plane a bras." The cognate species of Kerguelen Land is named by the sealers "Bore-eye Pigeon," from its prominent fleshly orbits, as well as "Pied-Diable." It is distinguished from its white plumage calling to mind that of some of the smaller Egrets. In the same region, and not suspecting it to be distinct, Whitehead (loc. cit.) has been led to reconcile the discrepancies of the latter's description with that given of the other species by earlier authors

SHEBOYGAN—SHECHEM
devoted largely to dairying, extends to the N., S. and W., and large quantities of cheese are exported. Among the city's other manufactures are furniture, particularly chairs (for which the city is noted), toys, machinery, bee-hives, gloves, knit goods, brick, carriages, wagon parts of the Hebrews, wicker-work, enamel ware, canned vegetables (especially peas), beer, flour, pianos and plumbing supplies. The total value of the factory product in 1905 was $10,856,609, 38.1% representing furniture; and 56.7% of the whole number of factory wage-earners were employed in the furniture factories. A trading post at the mouth of the Sheboygan river was established about 1820 and was maintained for about fourteen years; in 1834 a saw-mill was built at the first rapids of the river, about 2 m. from its mouth, and during the next three years many settlers came and a great city was platted on paper. Sheboygan was incorporated as a village in 1846, and was first chartered as a city in 1857. Several miles from Sheboygan Falls (pop. in 1905, 1411), a village about 5 m. W. of Sheboygan and S.W. of Plymouth (pop. in 1905, 2764), the Spring Farms Association, a Fourierite community of ten families, farmed successfully thirty acres of land from 1845 until 1848, when lack of interest in the experiment brought about a dissolution by mutual agreement.

SHECHEM (mod. Nablus), an ancient town of Palestine, S.E. of Samaria, which first appears in history as the place where Jacob built his family's second altar (Gen. xxxiii. 19; cf. John iv. 12). It was occupied then by Hivites and a tragedy took place in connexion with the chieftain's violation of Jacob's daughter Dinah. It was set apart as a city of refuge (Jos. xx. 7) and was occupied by the Kohathite Levites in the tribe of Ephraim (xxii. 21). Here, between Ebal and Gerizim, Joshua made his last speech to the elders of the Israelites (Jos. xxiv. 1). The mother of Abimelech the son of Gideon was a Shechemite, and Shechem was the centre of his short-lived kingdom (Jud. viii. 31, x.). Here Rehoboam made the foolish wager, and John the Baptist sought the revolting of the N. kingdom (1 Kings xii. 1), after which it was for a time the headquarters of Jeroboam (1 Kings xii. 25). Shechem was evidently a holy place in remote antiquity. The "oak" under which Jacob hid his teraphim (Gen. xxxiv. 4) was doubtless a sacred tree, as there the images (which it was not so easily to bring on a pilgrimage to Beth-el) would be safe. The god of the Canaanite city was Baal-Berith; his temple was destroyed when Abimelech quelled the rising of his fickle subjects (Jud. ix. 4, 46). A great standing stone under an oak-tree here was specially associated with Joshua's last speech (Jos. xxiv. 26). During the last two centuries the name Shechem has been a thing of history; nothing of Shechem, no doubt on account of the commanding importance of the neighbouring city of Samaria. It no doubt owed its subsequent development to the destruction of Samaria and the rise in the district surrounding the Samaritan nation founded on the colonists settled by Sargon and Assur-bani-pal. To Josephus it was the "new city" by the inhabitants called Mabotha (B. J., iv. viii. 1), but the official name Neapolis or Flavia Neapolis, so called to commemorate its restoration by Titus Flavius Vespasianus, soon became universal; and is still preserved in the modern name Nablus—a signal exception to the general rule that the place-names of Palestine, whenever disturbed by foreign influence, usually revert in time to the old Semitic nomenclature.

There was a bishopric at Neapolis during the Byzantine period, and an attack made by the Samaritans on the bishop (Pentecost, a.d. 474) was punished by the emperor Zeno, who gave Gerizim to the Christians. It was captured by the crusaders under Tancred soon after the conquest of Jerusalem (1099); they held it till 1184, when they lost it to Saladin. The principal mosque of the town is a church settled for a while (1185) by the headquarters of the turbulent sheik Kasim el-Ahmad. In 1834 the soldiers of Ibrahim Pasha pillaged it.

Nablus is now the chief town of a subdivision of the province of Beirut. It lies in the valley between Ebal and Gerizim, on the main caravan route from Jerusalem northward. The situation
is famous for its beauty. There are about 24,000 inhabitants—
all Moslems except about 150 Samaritans and perhaps 700
Christians. The inhabitants are notorious for fanaticism and
lawlessness, and Europeans are usually greeted with vile epithets.
There are missions, both Protestant and Roman Catholic; and
an important hospital under the auspices of the Church Missionary
Society. There is a flourishing trade in soap, which is here
manufactured, and a considerable commerce in wool and cotton
with the regions E. of the Jordan.

In the neighbourhood of Nablus are shown: (1) a modern building
which covers the traditional site of the tomb of Joseph, as accepted
by Jews, Samaritans and Christians. The authority for the burial
of Joseph was a very especial one (Acts xii. 16), though
Josephus places the sepulchre at Hebron (Ant. ii. 22). Moslem
tradition also regards Shechem as the burial-place of Joseph; but
it appears as though the actual site, as shown, has not been always
in one unvarying spot. (2) The well of Jacob; about a mile and
a half from Nablus on the way to Jerusalem, which is an excavation
of great depth. The tradition fixing this hallowed place seems to have
been common throughout the whole of the Christian centuries, and
it is one of the very few "holy places" shown to travellers and
pilgrims in Palestine, the authenticity of which deserves considera-
tion. It is one of the small number of sites mentioned by the
Bordeaux pilgrim (A.D. 353).

The site of the sacred oak has been sought at two places: one
called El-'Amud, "the column"—where is "Joseph's tomb"; and
the other at Balata (a name containing the consonants of the
Semitic word "shech") near Jacob's Well. (3) The House of
Shed. (1) A small hut, shelter or outhouse, especially one
with a "shed roof" or "lean-to," a roof with only one set of
rafters, falling from a higher to a lower wall, like an aisle roof.
"Shed" is also the term applied to a large roofed shelter open at
the sides for the storage of goods, rolling-stock, locomotives, &c.,
on a railway or dock-wharf. According to Skeat, the word is a
Ger. Schatten; the ultimate origin is the root ska-, to cover,
seen in Gr. σκια, shadow, ωμοχων, tent, shelter, stage, whence
Eng. scene. The Eng. "sky-barn" comes from a closely allied root, ska-, to cover, as in Lat. salubraria, "a shelter" (2) To separate, to cast off; originally the word seems to have meant to part,
to divide, a use only surviving in "watershed." The O. Eng. verb
was seedan, in Mid. Eng. sheden, to divide, separate. "Shed"
"in the sense of to spill has, however, by some etymologists been
taken to be a separate word from that meaning to part; it would
in that case appear to be connected with O. Fris. scheda, to shake,
the root of which is found in "shudder."
undulating districts, rather than the precipitous heights to which goats are partial. It may be added that the long tails of most tame breeds are, like wool, in all probability the results of domestication.

The Pamir plateau, on the confines of Turkestan, at an elevation of 16,000 ft. above the sea-level, is the home of the magnificent Ovis poli, named after the celebrated Venetian traveller Marco Polo, who met with it in the 13th century. It is remarkable for the great size of the horns of the old rams and the wide open sweep of their curve, so that the points stand boldly out on each side, far away from the animal's head, instead of curling round nearly in the same plane, as in most of the allied species. A variety inhabiting the Thian Shan is known as O. poli carelini.

An even larger animal is the argali, O. ammon, typically from the Altai, but represented by one race in Ladak and Tibet (O. ammon hodgsoni), and by a second in Mongolia. Although its horns are less extended laterally than those of O. poli, they are grander and more massive. In their short summer coats the old rams of both species are nearly white. Ovis sairensis from the Sair mountains and O. litedalei from Kulja are allied species. In the Stanovoi mountains and neighbouring districts of E. Siberia and in Karachatka occur two sheep which have been respectively named O. borealis and O. mincola. They are, however, so closely allied to the so-called bighorn sheep of N. America, that they can scarcely be regarded as more than local races of O. canadensis, or O. cervina, as some naturalists prefer to call the species. These bighorns are characterized by the absence of face-glands, and the comparatively smooth front surface of the horns of the old rams, which are thus very unlike the strongly wrinkled horns of the argali group. The typical bighorn is the khaki-coloured and white-rumped Rocky Mountain animal; but on the Stickin river there is a nearly black race, with the usual white areas (O. canadensis stewarti), which was introduced in Alaska by the nearly pure white O. c. dalli; the grey sheep of the Yukon (O. c. fannini) being perhaps not a distinct form. Returning to Asia, we find in Ladak, Astor, Afghanistan and the Punjab ranges, a sheep whose local races are variously known as urial, urial and shapo, and whose technical name is O. vigui. It is a smaller animal than the members of the argali group, and approximates to the Armenian and the Sardinian wild sheep or mouflon (Ovis orientalis and O. musimon) (see MOUFLON). We have in Tibet the bhural or blue sheep, Ovis (Pseudois) bhural, and in N. Africa the udad or aoudad, O. (Ammotragus) lervia, both of which have no face-glands and in this and their smooth horns approximate to goats (see BHARAL and AOUDAD).

The sheep was domesticated in Asia and Europe before the dawn of history, though unknown in this state in the New World until after the Spanish conquest. It has now been introduced by man into almost all parts of the world where agricultural operations are carried on, but flourishes especially in the temperate regions of both hemispheres. Whether this well-known and useful animal is derived from any one of the existing wild species, or from the crossing of several, or from some now extinct species, are matters of conjecture. The variations of external characters seen in the different breeds are very great. They are chiefly manifested in the form and number of the horns, which may be increased from the normal two to four or even eight, or may be altogether absent in the female alone or in both sexes; in the shape and length of the ears, which often hang pendent by the side of the head; in the peculiar elevation or arching of the nasal bones in some eastern races; in the length of the tail, and the development of great masses of fat at each side of its root or in the tail itself; and in the colour and quality of the fleece.

On the W. coast of Africa two distinct breeds of hairy sheep are indigenous, the one characterized by its large size, long limbs and smooth coat, and the other by its inferior stature, lower build and heavily maned neck and throat. Both breeds, which have short tails and small horns (present only in the rams), were regarded by the German naturalist Fitzinger as specifically distinct, and he named them Ovis hugiana and Ovis vittata. For the first type he proposed the name O. longipes and for the second O. jubata. Although such distinctions may be doubtful (the two African breeds are almost certainly descended from one ancestral form), the retention of such names may be convenient as a provisional measure.

The long-legged hairy sheep, which stands a good deal taller than a Southdown, ranges, with a certain amount of local variation, from Lower Guinea to the Cape. In addition to its long limbs, it is characterized by its Roman nose, large (but not dropping) ears, and the presence of a dewlap on the throat (Fig. 15). The ewes are hornless, but in Africa the rams have very short, thick and somewhat goatlike horns. On the other hand, in the W. Indian breed, which has probably been introduced from Africa, both sexes are devoid of horns. The colour is variable. In the majority of cases it appears to be pied, showing large blotches of black or brown on a white ground; the head being generally white with large black patches on the sides, most of the neck and the fore-part of the body black, and the hind-quarters white with large coloured blotches. On the other hand, these sheep may be uniformly yellowish white, reddish brown, greyish brown or even black. The uniformly reddish or chestnut-brown specimens approach most nearly to the wild mouflon or urial in colour, but the chestnut extends over the whole of the underparts and flanks; domestication having probably led to the elimination of the white belly and dark flank band, which are doubtless protective characters. The feeble development of the horns is probably also a feature due to domestication.

In Angola occurs a breed of this sheep which has probably been crossed with the fat-tailed Malagasy breed; while in Guinea there is a breed with lappets, or wattles, on the throat, which is probably the result of a cross with the long-eared sheep of the same district. The Guinea long-eared breed, it may be mentioned, is believed to inherit its drooping ears and throat wattles from an infusion of the blood of the Roman-nosed hornless Theban goat (see GoAT). Hairy long-legged sheep are also met with in Persia, but are not pure-bred, being apparently the result of a cross between the long-legged Guinea breed and the fat-tailed Persian sheep.

The maned hairy sheep (Ovis jubata), which appears to be confined to the W. coast of Africa, takes its name from a mane of longish hair on the throat and neck; the hair of the body being also longer than in the ordinary long-legged sheep. This breed is frequently black or brown and white; but in a small sub-breed from the Cameroons the general colour is chestnut or foxy red, with the face, ears, buttocks, lower surface of tail and under-parts black. The most remarkable thing about this Cameroonian sheep is, however, its extremely diminutive size, a full-grown ram standing only 19 in. at the withers.

In point of size this pigmy Cameroon breed comes very close to an exceedingly small sheep of which the limb-bones have been
SHEEP

BRITISH BREEDS OF SHEEP, from photographs by F. Babbage. The comparative sizes of the animals are indicated by the scale of reproduction.
SHEEP

BRITISH BREEDS OF SHEEP, from photographs by F. Babbage. The comparative sizes of the animals are indicated by the scale of reproduction.
found in certain ancient deposits in the S. of England; and the question arises whether the two breeds may not have been nearly related. Although there are no means of ascertaining whether the extinct pigmy British sheep was clothed with hair or with wool, it is practically certain that some of the early European sheep retained hair like that of their wild ancestor; and the reason why the breed in question should not have been hairy. On the other hand, since the so-called pecat-sheep of the prehistoric Swiss lake-dwellers appears to be represented by the existing Graubünden (Grisons) breed, which is woolly and coloured something like a Southdown, it may be argued that the former was probably also woolly, and hence that the survival of a hairy breed in a neighbouring part of Europe would be unlikely. The latter part of the argument is not very convincing, and it is legitimate to surmise that in the small extinct sheep of the S. of England we may have a possible relative of the pigmy hairy sheep of W. Africa.

Fat-rumped sheep, *Ovis steatopyga*, are common to Africa and Asia, and are piebald with rudimentary horns, and a short hairy coat, being bred entirely for their milk and flesh. In fat-tailed sheep, on the other hand, which have much the same distribution, the coat is woolly and generally piebald. Four-horned sheep are common in Iceland and the Hebrides; the small half-wild breed of Sos often showing this reduplication. There is another four-horned breed, distinguished by its black (in place of brown) horns, whose home is probably S. Africa. In the unicorn shire of Nepal or Tibet the two horns of the rams are completely welded together. In the Himalayan and Indian hump sheep, the rams of which are specially trained for fighting, and have highly convex foreheads, the tail is short at birth. Most remarkable of all is the so-called Wallachian sheep, or Zackelschaf (*Ovis strepsiceros*), represented by several more or less distinct breeds in F. Europe, in which the long upright horns are spirally twisted like those of the mazzkhor wild goat.


**Modern Breeds of Sheep.**—The sheep native to the British Isles may be classified as the lowland and the mountain breeds, and subdivided into longwools and shortwools—the latter including the Down breeds, sometimes termed black-faced. The *longwool* breeds are the Leicester, Border Leicester, Cotswold, Lincoln, Kent, Devon Longwool, South Devon, Wensleydale, and Roscommon. The *shortwool* breeds are the Oxford Down, Southdown, Shropshire, Hampshire Down, Suffolk, Ryeland, Dorset, and Somerset Horn, Kerry Hill, Radnor, and Clun Forest. The mountain breeds include the Cheviot, Scotch Black-face, Long, Rough Swaaledale, Derbyshire Gritstone, Penistone, limestone, Herdwick, Dartmoor, Exmoor, and Welsh Mountain. These breeds are all English, except the Border Leicester, Cheviot and Scotch Black-face, which belong to Scotland; the Welsh Mountain, which belongs to Wales; and the Roscommon, which is Irish. The majority of the true mountain breeds are horned, the males only in the cases of Cheviot, Herdwick, Penistone and Welsh, though most Cheviot and many Herdwick rams are hornless. Of Derbyshire Gritstone neither sex has horns. In the other horned breeds, the Dorset and Somerset, Limestone, Exmoor, Old Norfolk, and Western or Old Wiltshire, both sexes have horns. The remaining breeds are hornless. The white-faced breeds include the Leicester, Border Leicester, Lincoln, Kentish, Cheviot, Ryeland, Devon Longwool, South Devon, Dorset, and Somerset Horn, Limestone, Penistone, Exmoor, and Roscommon.

The Leicester, though now not numerous, is of high interest. It was the breed which Robert Bakewell took in hand in the 18th century, and greatly improved by the exercise of his skill and judgment. Bakewell lived at Dishley Grange, Leicestershire, and in France the Leicester sheep are still called Dishleys. In past centuries considerable wool was extensively employed in the improvement or establishment of other long-wool breeds, but the Leicester, as seen now, has a white wedge-shaped face, the forehead covered with wool; thin mobile ears; neck full towards the trunk, short and level with the back; width over the shoulders and through the heart; a full broad breast; fine clean legs standing well apart; deep round barrel and great depth of carcass; firm flesh, springy pelt, and pink skin, covered with fine, curly, lustrous wool. The breed is maintained pure upon the richer pastures of Leicestershire, E. and N. Yorkshire, Cheshire, Cumberland and Durham, but its chief value is for question, when it is found to promote maturity and to improve the fattening propensity.

The Border Leicester originated after the death in 1795 of Bakewell, when the Leicester breed, as it then existed, diverged into two branches. The one is represented by the breed still known in England as the Leicester. The other, bred on the Scottish Borders, with an early admixture of Cheviot blood, acquired the name of Border Leicester. The distinguishing characteristics of the latter are that it is an upstanding animal of gay appearance with light offal; and has a long though strong neck carrying a long, lean, clean head covered with white, hard, but not wiry hair, free from wool, long highset ears and a black muzzle; back broad and muscular, belly well covered with wool; legs clean, and a fleece of long white woolly, arranged in characteristic locks or pilres.

The Blue-faced Wensleydales take their name from the Yorkshire dale of which Thirsk is the centre. They are longwool sheep, derived from the old Teeswater breed by crossing with Lincoln rams. They have a tuft of wool on the forehead. The skin of the body is sometimes smooth, whilst the wool has a bright lustre, is curled in small distinct pirs, and is of uniform staple. The rams are in much favour in Scotland and the N. of England for crossing with ewes of the various black-faced horned mountain breeds to produce mutton of superior quality and to use the cross-ewes to breed to a pure longwool or sometimes a Down ram.

The Cotswold is an old-established breed of the Gloucestershire hills, extending thence into Oxfordshire. It was but slightly crossed for improvement by the Dishley Leicesters and has retained its characteristic type for generations. They are big, handsome sheep, with finely-arched necks and graceful carriage. With their broad, straight backs, curved ribs, and capacious quarters, they carry a great weight of carcass upon strong, wide-standing legs. The fine white fleece of long wavy wool gives the Cotswold an attractive appearance, which is enhanced by its topknot or forelock. The mutton of the Cotswolds is not of high quality except at an early age, but the sheep are useful for crossing purposes to impart size, and because they are exceptionally hardy.

The Lincolns are descended from the old native breed of Lincolnshire, improved by the use of Leicester blood. They are hardy and prolific, but do not quite equal the Cotswold in size. They have larger, bolder heads than the Leicesters. Breeders of Lincoln rams like best a darkish face, with a few black spots on the ears; and white legs. The wool has a broad staple, and is denser and longer, and the fleece heavier, than in any other British breed. For this reason it has been the best breed in favour with breeders in all parts of the world for mating with Merino ewes and their crosses. The progeny is a good general-purpose sheep, giving a large fleece of wool but only a medium quality of mutton. With a greater proportion of Lincoln blood in the mixed flocks of the world there is a growing tendency to produce a better mutton by using Down rams, but, for the sacrifice of part of the yield of wool. In 1906 Henry Dudding, of Riby Grove, Lincolnshire, obtained at auction the sum of £1,450 guineas for a Lincoln ram bred by him,—the highest price paid for a sheep in the United Kingdom. In the same year Robert and William Wright, of Nocton Heath, Lincoln, sold their flock of 950 animals to Señor Manuel Cobo, Buenos Aires, for £30,000.

The Devon *Longwool* is a breed locally developed in the valleys of W. Somerset, N. and E. Devon, and parts of Cornwall. It originated in a strong infusion of Leicester blood amongst the old Bampton stock of Devonshire. The Devon Longwool is not a large sheep, but has a well constituted carcase. It is white-faced, with a lock of wool on the forehead.

The South Devon or South Down are, like the cattle of that
name, a strictly local breed, which likewise exemplify the good results of crossing with the Leicester. The South Devons have a fairly fine silky fleece of long staple, heavier than that of the Devon Longwool, which it also excels in size.

The Roscommon—the one breed of modern sheep native to Ireland—is indebted for its good qualities largely to the use of Leicester blood. It is a big-bodied, high-standing sheep, carrying a long, wavy, silky fleece. It ranges mainly from the middle of Ireland westwards, but its numbers have declined considerably in competition with the Shropshire.

The Kent or Romney Marsh is native to the rich tract of grazing land of that name, county of Kent. They are hardy, white-faced sheep with a close-coated longwool fleece. They were gradually, like the Cotswolds, improved from the original type of slow-maturity sheep by selection in preference to the use of rams of the Improved Leicester breed. With the exception of the Lincoln, no breed has received greater distinction in New Zealand, where it is in high repute for its hardiness and general usefulness. When difficulties relating to the quantity and quality of food arise the Romney is a better sheep to meet them than the Lincoln or other longwools.

The Oxford Down is a modern breed which owes its origin to crossing between Cotswolds and Hampshire Downs and Southdowns. Although it has inherited the forelock from its longwool ancestors, it approximates more nearly to the shortwool type, and is accordingly classified as such. An Oxford Down ram has a bold masculine head; the poll well covered with wool and the forehead adorned by a topknot; ears self-coloured, upright, and of fair length; face of uniform dark brown colour; legs short, dark, and free from spots; back level and chest wide; and the fleece heavy and thick. The breed is popular in Oxford and other midland counties. Its most notable success in recent years is on the Scottish and English borders, where, at the annual sales at Kelso, a greater number of rams is auctioned of this than of any other breed, to cross with flocks of Leicester-Cheviot ewes especially, but also with Border Leicesters and three-parts-bred ewes. It is supplanting the Border Leicester as a sire of mutton sheep; for, although its progeny is slower in reaching maturity, legs can be fed to greater weights in spring—65 to 68 lb per carcass—without becoming too fat to be classed as finest quality.

The Southdown, from the short close pastures upon the chalky soils of the South Downs in Sussex, was formerly known as the Sussex Down. In past times it did for the improvement of the shortwool breeds of sheep very much the same kind of work that the Leicester performed in the case of the longwool breeds. A pure-bred Southdown sheep has a small head, with a light brown or brownish grey (often mouse-coloured) face, fine bone, and a symmetrical, well-leshed body. The legs are short and neat, the animal being of small size compared with the other Down sheep. The fleece of is fine, close, short wool, and the mutton is excellent. “Underhill” flocks that have been kept for generations in East Anglia, on the Weald, and on flat meadow land in other parts of the country, have assumed a heavier type than the original “Upperdown” sheep. It was at one time thought not to be a rent-paying breed, but modern market requirements have brought it well within that category.

The Shropshire is descended from the old native sheep of the Salopian hills, improved by the use of Southdown blood. Though heavier in fleece and a bulkier animal, the Shropshire resembles an enlarged Southdown. As distinguished from the latter, however, the Shropshire has a darker face, blackish brown as a rule, with very near ears, whilst its head is more massive, and is better covered with wool on the top and at the sides. This breed has made rapid strides in recent years, and it has acquired favour in Ireland as well as abroad. It is an early-maturity breed, and no other Down produces a better back to handle for condition—the frame is so thickly covered with flesh and fat.

The Hampshire Down is another breed which owes much of its improved character to an infusion of Southdown blood. Early in the 19th century the old Wiltshire white-faced horned sheep, with a scanty coat of hairy wool, and the Berkshire Knott, roamed over the downs of their native counties. Only a remnant of the former under the name of the Western sheep survives in a pure state, but their cross descendants are seen in the modern Hampshire Down, which originated by blending them with the Southdown. Early maturity and great size have been the objects aimed at and attained, this breed, more perhaps than any other, being identified with early maturity. One reason for this is the early date at which the ewes take the ram. Whilst heavier than the Shropshire, the Hampshire Down sheep is less symmetrical. It has a black face and legs, a big head with Roman nose, darkish ears set well back, and a broad level back (especially over the shoulders) nicely filled in with lean flesh.

The Dorset Down or West Country Down, “a middle type of Down sheep pre-eminently suited to Dorsetshire,” is a local variety of the Hampshire Down breed, separated by the formation of a Dorset Down sheep society in 1904, about eighty years after the type of the breed had been established.

The Suffolk is another Down, which took its origin about 1790 in the crossing of improved Southdown rams with ewes of the old black-face Horned Norfolk, a breed still represented by a limited number of animals. The characteristics of the latter are seen in the black face and legs of the Suffolk, but the horns have been bred out. The fleece is moderately short, the wool being of close, fine, lustrous fibre, without any tendency to mat. The limbs, woolled to the knees and hocks, are clean below. The breed is distinguished by having the smoothest and blackest face and legs of all the Down breeds and no wool on the head. Although it handles hard on the back when fat, no breed except the old Horned Norfolk equals it in producing a saddle cut of mutton with such an abundance of lean red meat in proportion to fat. It carried off the highest honours in the dressed carcass competition at Chicago in 1903, and the championship in the “block test” at Smithfield Club Show was won for the five years 1902-1906 by Suffolks or Suffolk cross lambs from big-framed Cheviot ewes. In 1907, the championship went to a Cheviot wether, but in the two pure, short-woolled classes all the ten awards were secured by Suffolks, and in the two cross-bred wether classes nine of the ten awards went to a Suffolk cross. The mutton of all the Down breeds is of superior quality, but that of the Suffolk is pre-eminently so.

The Cheviot takes its name from the range of hills stretching along the boundary between England and Scotland, on both sides of which the breed now extends, though larger types are produced in East Lothian and in Sutherlandshire. The Cheviot is a hardy sheep with straight wool, of moderate length and very close-set, whilst wiry white hair covers the face and legs. Put to the Border Leicester ram the Cheviot ewe produces the Half-bred, which as a breeding ewe is unsurpassed as a rent-paying, arable-land sheep.

The Scotch Black-face breed is chiefly reared in Scotland, but it is of N. of England origin. Their greater hardness, as compared with the Cheviots, has brought them into favour upon the higher grounds of the N. of England and of Scotland, where they thrive upon heather hills and coarse and exposed grazing lands. The colour of face and legs is well-defined black and white, the black predominating. The spiral horns are low at the crown, with a clear space between the roots, and sweep in a wide curve, sloping slightly backwards, and clear of the cheek. The fashionable fleece is down to the ground, hairy and strong, and of uniform quality throughout.

The Lowk has its home amongst the moorlands of N. Lancashire and the W. Riding of Yorkshire, and it is the largest of the mountain breeds of the N. of England and Scotland. It bears most resemblance to the Scotch Black-face, but carries a finer, heavier fleece, and is larger in head. Its face and legs are mottled black and white, and its horns are strong. The tail is long and rough. The Herdwick is the hardiest of all the breeds thriving upon the poor mountain land in Cumberland and Westmorland. The rams sometimes have small, curved, wide horns like those of the Cheviot ram. The colour of the fleece is white, with a few darkish spots here and there; the faces and legs are dark in the lambs, gradually becoming white or light grey in a few years.
The wood is strong, standing up to the shoulders and down the breast like a mane. The forehead has a topknot, and the tail is well covered.

The **Limestone** is a breed of which little is heard. It is almost restricted to the fells of Westmorland, and is probably nearly related to the Scotch Black-face. The breed does not thrive off its own geological formation, and the ewes seek the ram early in the season. The so-called "Limestones" of the Derbyshire hills are really Leicesters.

The **Welsh Mountain** is a small, active, soft-wooled, white-faced breed of hardy character. The legs are often yellowish, and this colour may extend to the face. The mutton is of excellent quality. The ewes, although difficult to confine by ordinary fences, are in high favour in lowland districts for breeding fattening lambs to Down and other early maturity rams.

The **Clun Forest** is a local breed in W. Shropshire and the adjacent part of Wales. It is descended from the old Tan-faced sheep. It is now three parts Shropshire, having been much crossed with that breed, but its wool is rather coarser.

The **Radnor** is short-limbed and low-set with speckled face and legs. It is related to the Clun Forest and the **Kerry Hill** sheep. The draft ewes of all three breeds are in high demand for breeding to Down and longwool rams in the English midlands.

The **Ryeland** breed is so named from the Ryelands, a poor upland district in Herefordshire. It is a very old breed, against which the Shropshire has made substantial headway. Its superior qualities in wool and mutton production have been fully demonstrated, and a demand for rams is springing up in S. as well as N. America. The Ryeland sheep are small, hornless, have white faces and legs, and remarkably fine short wool, with a topknot on the forehead.

The **Dartmoor**, a hardy locally Devonshire breed, is a large hornless, longwool, white-faced sheep, with a long mottled face. It has been attracting attention in recent years.

The **Exmoor** is a horned breed of Devonshire moorland, one of the few remaining remnants of direct descent from the old forest breeds of England. They have white legs and faces and black nostrils. The hooves are more closely to the head than in the Dorset and Somerset Horn breed. The Exmoors have a close, fine fleece of short wool. They are very hardy, and yield mutton of choice flavour.

The **Dorset and Somerset Horn** is an old west-country breed of sheep. The fleece is fine in quality, of close texture, and the wool is intermediate between long and short, whilst the head carries a forelock. Both sexes have horns, very much coiled in the ram. The muzzle, legs and hoofs are white; the nostrils pink. This is a hardy breed, in size somewhat exceeding the Southdowns.

The special characteristic of the breed is that the ewes take the ram at an unusually early period of the year, and cast ewes are in demand for breeding house lamb for Christmas. Two crops of lambs in a year are sometimes obtained from the ewes, although it does not pay to keep such rapid breeding up regularly.

The **Merino** is the most widely distributed sheep in the world.

**From a photo in Professor Robert Walpole’s *Farm Life* Stock of Great Britain (4th edition).**

It has been the foundation stock of the flocks of all the great sheep countries. A few have existed in Britain for more than a hundred years. They thrive well there, as they do everywhere, but they are wool-sheep which produce slowly a secondary quality of mutton—thin and blue in appearance. The Merino resemble the Dorset Horn breed. The rams possess large coiling horns which the ewes do not carry. The wool is generally thick and is flesh-coloured and the face covered with wool. The wool, densely set on a wrinkled skin, is white and generally fine, although it is classified into long, short, fine and strong. Merino cross with early-maturity longwool, Down, or other close-wooled rams, are good butchers' sheep, and most of the frozen mutton imported into the United Kingdom has had more or less of a merino origin.

(W. Fr.; R. W.)

**Lowland Sheep-breeding and Feeding.**—A Shropshire flock of about two hundred breeding ewes is here taken as a typical example of the sheep-system. They are predominantly Westmorland longwool and an early maturity ram. The flock is managed on a part-time basis between the family farms of Swedes and Swedes and Swedes. The ewes are generally kept in good condition through the winter, and are mated in February. The lambs are weaned in May and are turned out to the hills in June. The lambs are marketed at the age of six months, and are then turned out to the hills in January to the end of February. The lambs have the shelter of a lambing shed for a few days. When drafted to an adjoining field they run in front of their mothers and get a little crushed oats and linseed cake meal, the ewes receiving kail or roots and hay to develop milk. The sheep are given place to mangolds, rye and clover before the end of May. In the autumn, pasture is left for the sheep to eat 

**Dr.**
Sheepshanks.

North America. It is said to attain to a length of 30 in. and a weight of 15 lb. Its food consists of shellfish, which it detaches with its incisors from the base to which they are fixed, crushing them with its powerful molars. It may be distinguished from other allied species by seven or eight dark cross-bands traversing the body, by a recumbent spine in the dorsal fin, by twelve spines and as many rays of the dorsal and ten rays of the anal fin, and by forty-six scales along the lateral line. The term "sheephead" is also given in some parts of North America to a freshwater sciaenoid, *Cortina obscura*, which is much less esteemed for the table.

Sheerness, a garrison town and naval seaport in the Faversham parliamentary division of Kent, England, in the Isle of Sheppey, on the right bank of the Medway estuary at its junction with the Thames, 53 m. E. of London by the South-Eastern & Chatham railway. Pop. of urban district (1901) 18,179. Blue Town, the older part of the town, with the dockyard, is defended by strong modern-built fortifications, especially the forts of Garrison Point and Barton's Point, commanding the entrance of both the Thames and the Medway. The dockyard, chiefly used for naval repairs, covers about 60 acres, and consists of three basins and large docks, the depth of water in the basins ranging down to 26 ft. Within the yard there are extensive naval stores and barracks. Outside the dockyard are the residences of the admiral of the home fleet and other officers, and barracks. The harbour is spacious, sheltered, and deep even at low water. Sheerness has some trade in corn and seed, and there is steamboat connexion with Port Victoria, on the opposite side of the Medway; with Southend, on the opposite side of the Thames; and with Chatham and London, and the town is in some favour as a seaside resort. A small fort was built at Sheerness by Charles II., which, on the 10th of July 1667, was taken by the Dutch fleet under De Ruyter.

Sheet, an expanse or surface, flat and thin, of various materials; a rope attached to a sail. These two apparently widely separated meanings are to be explained by the generally received etymology. In O. Eng. there are three words, all from the root seen in "shoo," to dart, let fly, thrust forward; *scate* or *scicle*, a sheet of cloth, *scot* or *corner* or fold of a garment, projecting angles, region (e.g. *sæs scæl*, portion of the sea, gulf, bay), and *scetla*, foot of a sail, *pes veli* (Wright, *Glass*). The original meaning, according to Skeat, is "projection," or that which shoots out, then a corner, especially of a garment or of a cloth; after which it was extended to mean a whole cloth or "sheet." In Icelandic, the cognate word *skóull* has much the same meanings, including that of a rope attached to a sail. Other cognate forms in Teutonic languages are Ger. *Schoss*, lap, bosom, properly fold of a garment, Dutch *schoot*, Icel. *skaut*, &c. In current English usage, "sheet" is commonly applied to any flat, thin surface, such as a sheet of paper, a sheet of metal, or, in a transferred application, to an expanse of water, ice, fire, &c. More specifically it is used of a rectangular piece of linen or cotton used as that part of the usual bed cloth which lies next the body. In nautical usage the term "sheet" is applied to a rope or chain attached to the lower corners of a sail for the purpose of extension or change of direction (see Rigging). The connexion in derivation with "shoot" is clearly seen in "sheet-anchor," earlier "shoot-anchor"—one that is kept in reserve, to be "shot" in case of emergency (see Anchors).

Sheffield, John Baker Holroyd, 1st Earl of (1735–1821), English politician, came of a Yorkshire family, a branch of which had settled in Ireland. He inherited considerable wealth, and in 1760 bought Sheffield Place in Sussex from Lord de la Warr. Having served in the army, he entered the House of Commons in 1768, and in that year was prominent against Lord George Gordon and the rioters. In 1783 he was created an Irish peer as Baron Sheffield of Roscommon, a barony of the United Kingdom (Sheffield of Sheffield, Yorks) being added in 1802. In 1816 he was created Viscount Pevensey and earl of Sheffield. He was a great authority on farming, and in 1803 he was made president of the Board of Agriculture; but he is chiefly remembered as the friend of Gibbon (q.v.), whose works he afterwards edited. His son and grandson succeeded him, and the latter (1812–1890) being a well-known patron of cricket, at whose death the earldom became extinct. The Irish barony, however, under a special remainder, passed to the 4th baron Stanley of Alderley, who thus became Baron Sheffield of Roscommon.

Sheffield, a city, and municipal, county and parliamen- tary borough in the West Riding of Yorkshire, England, 158 m. N.N.W. from London. Pop. (1901) 409,070. It is served by the Midland, Great Central and Great Northern railways, and has direct connexion with all the principal lines in the north of England. The principal streets are (St. John's Central) and Midland. Sheffield is situated on hilly ground in the extreme south of the county, and at the junction of several streams with the river Don, the principal of which are the Sheaf, the Porter, the Rivellin and the Loxley. The manufacturing quarter lies mainly in the Don valley, while the chief residential suburbs extend up the picturesque hills to the south. The centre of the city, with the majority of the public buildings, lies on the slope south of the Don, and here are several handsome thorough- fares. The older portions were somewhat irregular and over- crowded, but a great number of improvements were effected under an act of 1875, and have been steadily continued. There is an extensive system of tramways, serving the outlying townships. The parish church of St Peter is a cruciform building, mainly Perpendicular. The original Norman building is supposed
to have been burned during the wars of Edward III. with the barons, and the most ancient existing part is the tower, dating from the 14th century. A restoration in 1886, when transepts and a W. front were added, improved the church by detaching it from the Shrewsbury University buildings. There are a number of interesting mural monuments; and the Shrewsbury chapel contains a fine tomb of the 4th earl of Shrewsbury, who founded it in the 16th century. Of the principal public buildings, the town hall was opened by Queen Victoria in 1897. It is a fine building in the style of the Renaissance, surmounted by a lofty tower, which is crowned by an emblematic statue in bronze. The Cutlers' hall was built in 1832 and enlarged in 1857 by the addition of a magnificent banqueting hall. The handsomë corn exchange, in Tudor style, and the market hall were acquired from the duke of Norfolk by the corporation. Among several theatres the Theatre Royal was originally erected in 1793. Others are the Alexandra, Lyceum and Alhambra. There are extensive barracks. Literary and social institutions include the Athenaeum (1847), with news-room and library; the literary and philosophical society (1822), the Sheffield club (1862), the Sheffield library, founded in 1777, and the free library (1856), with several branches. The public museum and the Mappin art gallery are situated in Weston Park; and in Meersbrook Hall is the fine Ruskin museum, containing Ruskin's art, mineralogical, natural history, and botanical collections, and some original drawings and valuable books. These are in the custody of the corporation. Beyond St Peter's church relics of antiquity are few, but there remains a part of the manor-house of Hallam, dating from the 16th century. In the S. of the city is Broom Hall, a fine ancient half-timbered building.

The educational establishments are important. University College, constituted by that title in 1897, was founded in 1879 as the Firth College by Mark Firth (1819-1880), an eminent steel-manufacturer. This institution was enlarged in 1897, and comprises both the college and the Technical college (1882), occupying the buildings of the former grammar school, and equipped with metallurgical laboratories, steel works, iron foundry, a machine and fitting shop, &c.; and a medical school, together with a school of pharmacy. In 1903 the foundation was laid of a building, at Western Bank, to contain the departments of medicine, arts, pure science, commerce, &c. When the college became dissociated in 1904 from the Victoria University, Manchester, of which it had formed a constituent, the necessary financial and other preparations were taken in hand to enable the corporation to form a separate and self-sustained institution, which was opened as such by King Edward VII. Other educational institutions are the free writing school (1715, rebuilt in 1827), the boys' charity school (founded 1760), the girls' charity school (1780), the Church of England educational institute, the Roman Catholic reformatory (1861), the Wesley College, associated with London University, Ranmoor College of the Methodist New Connexion, the mechanics' institute, and the school of art.

Among numerous medical or benevolent institutions may be mentioned the general infirmary, opened in 1797; the public hospital, erected in 1858 in connexion with the Sheffield medical school established in 1792; the school and manufactory for the blind, 1879, and the South Yorkshire lunatic asylum, 1872. Among many charities founded by citizens the most noteworthy is the Shrewsbury hospital for twenty men and twenty women, originally founded by the 7th earl of Shrewsbury (d. 1616), but greatly enlarged by successive benefactions.

Among public monuments are the statue of Queen Victoria before the town hall; the statue to James Montgomery the poet (1771-1854), chiefly erected by the Sunday school teachers of Sheffield; the monument in Weston Park to Ebenesor Elliot (1781-1849), known as the Corn Law rhymr; the column to Godfrey Sykes the artist (1852-1866); the monument to those who died during an outbreak of cholera in 1832; and the monument to the natives of Sheffield who fell in the Crimean War. Sir Francis Chantry, the eminent sculptor, was born (1781) and died (1842) near Norton in Derbyshire, in the neighbourhood of Sheffield, which was the scene of his earlier work.

Sheffield is well supplied with parks and public grounds. In the western suburbs is Weston Park, occupying the grounds of Weston Hall purchased by the corporation in 1873. The Firth Park, of 36 acres, on the N.E. of the city, was opened in 1874 by Mark Firth, and was opened in 1875 by King Edward VII. and Queen Alexandra when prince and princess of Wales. There are botanical gardens of 18 acres in the western suburbs. A park and other recreation grounds have been presented by the duke of Norfolk as lord of the manor. To the N.W., towards Penistone, is Wharncliff, retaining much of the characteristics of an ancient forest, and overlooking the valley of the Don from bold rocky terraces and ridges. The Bramall Lane cricket ground in Sheffield is used for the great annual match by the three county cricket matches. The prosperity of Sheffield is chiefly dependent on the manufacture of steel. The smelting of iron in the district is supposed to date from Roman times, and there is distinct proof carrying it back as far as the Norman Conquest. The town had become famed for its cutlery by the 14th century, as is shown by allusions in Chaucer. There was an important trade carried on in knives in the reign of Elizabeth, and the Cutlers' Company was incorporated in 1624. Sheffield steel was introduced for the first time (1740) by Benjamin Huntsman of Handsworth, introduced the manufacture of cast steel, and Sheffield retains its supremacy in steel manufacture, besides being the chief centre of the manufacture of surgical instruments, &c. The manufacture of steel is still made in Sheffield. The heavy branch of the steel manufacture includes armour plates, rails, tyres, axles, large castings for engines, steel shot, and steel for rifles. The cutlery trade embraces almost every variety of instrument and tool—sawing and springing knives, razors, scissors, surgical instruments, mathematical instruments, edge tools, files, saws, scythes, sickles, spades, shovels, engineering tools, hammers, vices, &c. The manufacture of engines and machinery is also largely carried on, as well as that of stoves and grates. The art of silver plating was introduced by Thomas Bolsover in 1742, and specimens of early Sheffield plate are highly prized. Among the other industries of the town are tan-netting, confectionery, cabinet-making, bicycle-making, iron and brass founding, silver refining, the manufacture of brushes, combs, optical instruments, horse-hair cloth, and railway fittings, and testing. The Cutlers' Company (1624) exercises, by acts of 1883-1888, jurisdiction in all matters relating to the registration of trade marks, over all goods composed in whole or in part of any metal, wrought or unwrought, as also over all marks of Metal or steel personal to the Corporation, and within 6 m. thereof. There are numerous collieries in the neighbourhood.

Sheffield is the seat of a suffragan bishop in the diocese of York. The town trust for the administration of property belonging to the town's estates, and composed of the town council and a number of aldermen, was by an act of 1832 confirmed and further regulated. The manner of election of the "town trustees" was definitely settled by a decree of the Court of Chancery. Additional powers were conferred by an act of 1883, by which the committee of the first returned members to parliament in 1832. In 1885 the representation was increased from two to five members, the parliamentary divisions being Attercliffe, Brightside, Central, Ecclesall and Hallam. The county borough was created in 1888, and in 1893 the town became a city. The corporation consists of a lord mayor (the title was conferred on the chief magistrate in 1897), 16 aldermen, and 48 councillors. Area, 23,662 acres.

At the time of the Domesday Survey the four manors of Grimesthorpe, Hallam, Attercliffe and Sheffield (Escafele) made up the township of the same name. Of the four manors, Hallam was the most important, being the place where Earl Walthere, the Saxon lord of the manors, had his court. After the Conquest the earl was allowed to retain his possessions, and when he was executed for treason they passed to his widow Judith, niece of William the Conqueror, of whom Roger de Busli was holding Hallam with the three less important manors at the time of the Domesday Survey. From him the manors passed to the family of de Lovetot, but in the reign of Henry II., William de Lovetot, the 2nd lord, died without male issue, and his property passed to the monks of Exeter, who held it until the Dissolution. By the end of the 14th century Sheffield had become more important than Hallam, partly no doubt on account of the castle which one of the Furnivals had built here. Thomas de Furnival, great-grandson of Gerard and Maud, in 1296 obtained a grant of a market every Tuesday and a fair every year on the
SHEFFIELD PLATE—SHEIKH

eve, day and morrow of Holy Trinity, and in the following year he gave the inhabitants a charter granting them the privileges of holding the town at a fee-farm rent of £5, 8s. 9d. yearly, of having a court baron held every three weeks, and of freedom from toll throughout the whole of Hallamshire. From the Furnivals the manor passed by marriage to John Talbot, after wards earl of Shrewsbury, whose descendant the 6th earl was entrusted with the care of the magnificent portraits which hang in the town hall in Sheffield. In the reign of Edward VI. the property belonging to the town which had been amalgamated with other land left to the burgesses in trust for certain charitable uses was forfeited to the crown under the act for the suppression of colleges and chantries, but on their petition it was restored in 1554 by Queen Mary, who at the same time incorporated the town under the government of twelve capital burgesses.

See Victoria County History, Yorkshire: Joseph Hunter, Hallamshire: the history and topography of the parish of Sheffield (1860).

SHEFFIELD PLATE, the name applied to a variety of articles of domestic use or ornament, made of copper coated with silver by a special and now abandoned process. Many of them were actually manufactured in Birmingham, but as the secret of producing the material was discovered and brought to perfection in Sheffield, the name of that town was naturally connected with it, and thence transferred to articles constructed from it.

In 1742 a workman named Thomas Bolsover was mending the handle of a knife made of silver and copper, when, accidentally overheating it, he caused the metals to fuse and find that as a consequence the silver adhered to the copper as a thin coating. Being an intelligent man, he perceived the commercial value of this chance discovery, and began the manufacture of articles which, with all the appearance of silver, were both cheaper and stronger than those made of the pure metal.

He apparently, however, confined himself to applying the silver direct to the surface of the copper after the latter had been given the shape destined to it, and was thus limited to the production of small articles such as snuff-boxes, knife handles, toilet articles, &c. It was reserved to Joseph Hancock to realize that by making the plate first and working it into the desired form afterwards he could almost indefinitely extend the possibilities of the material. The process in its final and highest development was as follows. The groundwork was a mixture of copper and brass, either metal alone having serious defects. This was cast into an oblong ingot, 1 to 1½ in. in thickness, 2½ in. in breadth, and of a length regulated by the size of the plate desired. The surface of this was brought by planing, grinding and other means to the highest possible pitch of smoothness and evenness. A sheet of silver of a finer quality than standard, ranging in thickness from ¼ in. to nearly 1 in. according to the quality aimed at, and of the same superficial extent as the copper bar, was levelled and polished in the same way and accurately fitted to it, neither surface at any time being soiled by contact with the workman’s fingers. A sheet of copper, rather smaller than the other two and ¼ in. thick was laid upon the silver, and on the top of all was added a piece of iron, ¼ in. thick, 1 in. wide, and a little shorter than the three others, to protect them from the direct contact of the strong iron wire which was to be used to roll them. The finished compound was put into the furnace and the edges of the silver and copper-blend was treated with a flux of borax and the whole was submitted to the heat of a furnace until the silver was seen to be melting, when it was instantaneously removed, care being taken to avoid pressing upon the upper or lower surfaces, as the liquid silver in that case would have been squeezed out from between the two enclosing plates and the operation ruined. It was then left to cool, and after being thoroughly cleansed presented the appearance of a copper ingot with one silver side. This was passed again and again between gradually approximated rollers, with occasional annealing, until the desired thickness had been attained. The great extension of surface thus produced had the drawback of exaggerating any small defect in the union of the two metals, increasing it to a blister of an inch or more in diameter. It was, however, fortunately found easy to remedy this. The blister if unbroken was heated, pricked, and then rubbed level with a burnisher; if, as sometimes happened, the silver had flaked away it was replaced by coatings of pure leaf silver rubbed in with a burnisher. The plate when passed as flawless was cut into the desired form and moulded as far as possible into shape, the edges where necessary being soldered. At first only one surface of the copper was plated with silver, and thus its usefulness was necessarily restricted, but it was a simple matter to apply the silver to both sides and thenceforward whatever was made in solid metal could be reproduced in plate, and firm after firm went into the business, ever and anon introducing further improvements. The possibility of embossing the metal beyond a certain point without fracturing the coating of silver was got over by casting or stamping the raised ornament in silver, filling the hollows with a form of pewter and soldering the result to the appropriate part of the general design. Another difficulty, the concealment of the inner core of copper which was seen as a thinned line when a cut edge was exposed, was met about 1784 by George Cadman, who adopted the practice of soldering on an edging, generally ornamented, of solid silver so as to cover the junction, and the presence of this is one of the trustworthy tests by which genuine Sheffield plate may be recognized.

The labour of rolling the metal by hand was done away with about 1760, by the firm of Tudor, Leader & Sherburn, who first employed horse-power, and for more than half a century the trade both in Sheffield and Birmingham continued to flourish. In 1736 there were under 10,000 inhabitants in the former city; in 1760 when Horace Walpole passed through rapidly for the purpose of examining the plate of local origin, he thought it “quite pretty,” and pronouncing it to be “one of the foulest towns in England,” there were two-and-twenty thousand who remitted eleven thousand pounds a week to London. It would be impossible, were it desirable, to enumerate all the varieties of the articles turned out, or to overpraise the beauty and elegance of most of them. The designs were identical with those in favour with the gold- and silver-smiths of the period, which was happily one when exceptionally good taste prevailed. The appreciation of light and well-proportioned curves and the skillful employment of well-contrived pierced work are conspicuous features.

The success was, however, doomed to be short lived and to come to an end as swiftly as it had grown up. In the year 1800 W. Cruikshank was already experimenting with a process of electro-plating, and in 1837 Mr Spencer in England, and in 1838 Professor M. H. Jacobi (1801-1874) in Russia, working independently, succeeded in contriving methods which could be made commercially profitable. Two years later Messrs Elkington in London and M. de Ruolz of Paris started in business on those lines, and the Sheffield plate rapidly fell into disuse, and the costly manufacture at Sheffield and Birmingham was thus utterly died out.

Of recent years old Sheffield plate after long neglect has come into fashion again, and genuine articles in good condition have greatly gone up in value, often exceeding in cost those of more modern date in sterling silver. Concurrently fraudulent imitation has regrettably increased. In some cases the whole object is a modern reproduction in electro-plate, but more often really old articles from which the original plating has been worn off in course of time have been replaced, both equally being in the eyes of the connoisseur, unworthy of serious attention and comparatively valueless. The difference after a little experience is not difficult to detect, though inexplicable in words. The pressure to which the Sheffield plate was submitted produces a definite colour and texture which is absent from the surface produced by the deposit of silver in a liquid medium by electrical means, and the coat of silver is spread by the latter uniformly over the whole surface without a break, while in the former the junction between the embossed ornaments and the silver strips covering the cut edges may often be detected on careful examination.

See Sheffield Plate by Bertie Wyllie; H. N. Veitch, Sheffield Plate: its history, manufacture and application (M. Be.)

SHEIKH, or SHAikh, an Arabic title of respect. Strictly it means a venerable man, of more than fifty years of age. It is specially borne by heads of religious orders, chiefs of
tribes and headmen of villages. Every village, however small, every separate quarter of a town, has a sheikh in whom is lodged the executive power of government—a power loosely defined, and of more or less extent according to the personal character and means of the individual who wields it. A village sheikh is a sort of head magistrate and chief of police. The Koran, the sole authentic authority in all matters, legal or civil, never accurately distinguished between the sheikh and the cadî (q.v.), and its phrases, besides, are vague and capable of admitting different and even opposite interpretations. (For the Sheikh al-Islam see MURR.)

RICHARD LEIL LALOR (1791-1821), Irish politician and writer, was born at Drumdowney, Tipperary, on the 17th of August 1791. His father, Edward Shell, had acquired considerable wealth in Spain, and owned an estate in Tipperary. The son was taught French and Latin by the Abbé de Grimau, a French refugee. He was then sent to a school in Kensington, London, presided over by another émigré, M. de Broglie. In October 1804 he was removed to Stonyhurst college, Lancashire, and in November 1807 entered Trinity College, Dublin, where he specially distinguished himself in the debates of the Historical Society. After taking his degree in 1811 he entered Lincoln's Inn, and was admitted to the Irish bar in 1814. His play of _Adelaie, or the Emigrants_, was played at the Crow Street theatre, Dublin, on the 19th of February 1824, with complete success, and on the 23rd of May 1816 it was performed at Covent Garden. The _Apology_, produced at the latter theatre on the 3rd of May 1817, firmly established his reputation as a dramatist. His principal other plays are _Ballamira_ (written in 1818), _Exodane_ (1810), _Huguenot_, produced in 1822, and _Montini_ (1820). In 1822 he began, along with W. H. Curran, to contribute to the _New Monthly Magazine_ a series of graphic and racy papers entitled _Sketches of the Irish flora_. These were edited by M. W. Savage in 1855 in two volumes, under the title of _Sketches Legal and Political_. Shell was one of the principal founders of the Catholic Association in 1823 and drew up the petition for inquiry into the mode of administering the laws in Ireland, which was presented in that year to both Houses of Parliament. In 1825 Shell accompanied O'Connell to London to protest against the suppression of the Catholic Association. The protest was unsuccessful, but, although nominally dissolved, the association continued its propaganda after the defeat of the Catholic Relief Bill in 1825; and Shell was one of O'Connell's leading supporters in the agitation persistently carried on till Catholic emancipation was granted in 1829. In the same year he was returned to Parliament for Milborne Port, and in 1831 for Louth. He took a prominent part in all the debates relating to Ireland, and although he was greater as a platform orator than as a debater, he gradually won the somewhat reluctant admiration of the House. In August 1839 he became vice-president of the board of trade in Lord Melbourne's ministry. After the accession of Lord John Russell to power in 1846 he was appointed master of the mint, and in 1850 he was appointed minister at the court of Tuscany. He died at Florence on the 23rd of May 1854.

See Memoirs of Richard Lalor Shell, by W. Torrens M'Cullagh (2 vols., 1855). His _Speeches_ were edited in 1845 by Thomas McNevin.

SHEKEL (from Heb. _shakol_, to weigh), originally a Jewish unit of weight (₁₉ of a mina, and ₁₃ of a talent) and afterwards a coin of the same weight. The Biblical references to shekels must refer to uncoined ingots. In the time of Josephus it seems that the _light_ shekel weighed from 210 to 210.55 grains; the _heavy_ shekel was twice that amount, which is practically identical with the Phoenician weight (224.4 grains). It corresponded to 1 s. 3d. and 2s. 9d. respectively in English silver. Jewish shekels were first coined by Simon the Hasmonaeus, probably in 139-138 B.C. These bear inscriptions in the archaic Hebrew and various emblems, such as the cup or chalice, the lily branch with three flowers, the candlestick, the citron and palm branch and so forth. They never bear the portraits of rulers or figures of animals. A later series of shekels, belonging to the Roman period, are tetradrachms, "which came from the mints of Caesarea and Antioch and were used as blanks on which to impress Jewish types." Hence in Matt. xvi. 24 the temple tax of half a shekel is called a dirachm (2 drams). In 2 Samuel xiv. 26 we read of "shekels after the King's weight." The royal norm was heavier than the common norm. The Hebrews divided the shekel into 20 parts, each of which was called a _gerah_. (See also NUMISMATICS.)


_SHEKINAH_, a Hebrew word meaning "that which dwells" or "the dwelling." It is one of the expressions used in the Targums in place of "God." In the Targums.—The word "Shekinah" is of constant occurrence in the Targums or Aramaic paraphrases of the Biblical lections that were read in the synagogue-service to the people. Great care was taken by the scribes in these renderings to mitigate the anthropomorphic expressions applied to God in the Scriptures, and by paraphrase, the use of abstract terms and indirect phraseology, to prevent such expressions from giving rise to the idea of God's "personal" majesty. Indeed, the popular mind. Whenever, e.g., any indication of local limitation or action was implied or expressed, in the Hebrew text, of God the Targumists were careful to substitute some expression involving the use of "Shekinah." In these connections "Shekinah" thus becomes the equivalent of "God" or its synonyms. One or two examples will make the Targum-usage clear. Thus Ex. xxix. 45 ("and I will dwell among the children of Israel and will be their God") is rendered in the Targum (Onkelos): "And I will cause my Shekinah to dwell in the midst of the children of Israel, and I will be their God." All expressions implying God's "local" presence are similarly rendered: thus e.g. Habak. ii. 20 ("Jehovah is in his holy temple") is rendered "Jehovah was pleased to cause His Shekinah to dwell," etc. To see "God" is similarly paraphrased. Thus Is. xxxii. 17 ("thine eyes shall see the King in His beauty") is rendered (Targum of Jonathan): "Thine eyes shall see the Shekinah of the king of the worlds in His beauty." So too "hiding the face" when used of God is regularly paraphrased "remove His Shekinah" (Is. lvii. 17, viii. 17, lxx. 2; Jer. xxxiii. 5; cf. Is. i. 15, &c.).

Closely connected with the idea of the Shekinah, but distinct from it, is "the glory of the Lord," "the Shekinah," "the apparel," etc. In this connexion it was conceived of as a property of the Shekinah (as, in fact, it is of God for whom "Shekinah" is the equivalent). For the divine "glory" as a property of the Shekinah, cf. e.g. Is. vi. 5 ("mine eyes have seen the King, the Lord of hosts"). which is rendered in the Targum: "mine eyes have seen the glory of the Shekinah of the King of the worlds the Lord of hosts." In the New Testament.—In the New Testament both the term and the idea are referred to in various ways. The close association of the divine "glory" with the visible Shekinah has already been referred to. This Shekinah-glory is several times designated in the New Testament by δόξα. The most notable passage is Rom. i. 4 where St Paul, enumerating the list of Israel's privileges, says: "whose is the adoption, and the glory" (i.e. the Shekinah-glory, the visible presence of God among His people), &c. cf. Luke ii. 9. There is also an obvious allusion to the Shekinah in the description of the theophanic cloud of the transfiguration narrative (St. Matt. xvii. 5: "a bright cloud overshadowed them, and behold a voice out of the cloud, saying" &c.; cf. St Mark ix. 7; St Luke ix. 34), the same verb being used as in the LXX. of Exod. xi. 34, 35, of the cloud which rested on the tabernacle when it was filled with the glory. Indeed.

There can be no doubt, too, that the word rendered "tabernacle" (σκηνή) with the corresponding verb "to tabernacle" (σκηνοθείμαι) has been chosen for use in St John i. 14 and Rev. xii. 3, from its likeness both in sound and meaning to the term "Shekinah." The passage in Revelation runs: "Behold the tabernacle (σκηνή) of God is with men, and He will tabernacle (σκηνοθείμαι) with them." In St John i. 14 there is an allusion to the Word (=memra) of the Targums, the Shekinah, and the Shekinah-glory,
all of which the writer declares became incarnate in Jesus. Cf. also Heb. i. 3 ("effulgence of the [Shekinah] glory").

In Talmud and Midrash.—It is remarkable that the memra (=Logos or "Word") of the Targums almost entirely disappears in the Midrashic literature and the Talmud, its place being taken by Shekinah. The Rabbis apparently dreaded the possibility of such terms being assimilated into personal entities distinct from God. Against this they emphasized the Shekinah-idea. It is safe to say that wherever Shekinah is mentioned in Rabbinc literature it is God’s direct action or activity that is thought of. Independent personality is never imputed to it.1 It is probable that the use of the term was often in Rabbinc writings polemical (against Jewish Christians or gnostic sects).


SHELBY, ISAAC (1750-1826), American soldier and pioneer, was born at North Mountain, near Hagerstown, Maryland, on the 11th of December 1750. With his father, Evan Shelby (1720-1794), an emigrant from Wales, he removed to what is now Bristol, Tennessee, in 1771, and in 1774 took a conspicuous part in the battle of Point Pleasant.2 He was a surveyor in Kentucky for the Transylvania Company in 1775; became a captain of Virginia minute-men in 1776, and in 1777 became commissary with supervision over transportation of supplies from Staunton, Virginia, to the frontier. In 1779 he was elected to the House of Delegates, but by the Age of Eippey. Until 1813 he commanded twelve Kentucky regiments at the battle of the Thames, and for his services received the thanks of Congress and a gold medal. In 1818 he was a commissioner with Andrew Jackson to the Chickasaws. He died on his estate in Lincoln county, Kentucky, on the 18th of July 1826.

SHELBVILLA, a city and the county-seat of Shelby county, Indiana, U.S.A., about 27 m. S.E. of Indianapolis, on the Big Blue river. Pop. (1890) 5451; (1900) 7160, including 326 foreign-born; (1890) 16,643. There are many industries: linen, cotton, and woolen mills; boat yards; wool and flour mills; a large railway station; and a large market. The city also has a public library, a hospital, and a children’s home. The city is a trading centre for the surrounding farming region; among its manufactures furniture is the most important. Shelbyville, named in honour of General Isaac Shelby of Kentucky, was platted in 1822, incorporated as a town in 1850, and chartered as a city in 1860.

SHELDRAKE, or, as commonly spelled in its contracted form, Sheldrake, a word whose derivation1 has been much discussed, one of the most conspicuous birds of the duck tribe, Anatidae, called, however, in many parts of England the "Burrow-Duck" and in some districts by the almost obsolete name of "Bergander" (Du. Berg-ende, Ger. Bergente), a word used by Turner in 1544.

The sheldrake is the Anas tadorina4 of Linnaeus, and the Tagomodora of modern ornithology, a bird somewhat larger and of more upright stature than an ordinary duck, having its bill, with a basal fleshy protuberance (whence the specific term cornuta), pale red, the head and upper neck very dark glossy green, and beneath that a broad white collar, succeeded by a still broader belt of bright bay extending from the upper back across the upper breast. The outer scapulars, the primaries, a median abdominal stripe, which dilates at the vent, and a bar at the tip of the middle tail-quills are black; the inner secondaries and the lower tail-coverts are grey; and the speculum or wing-spot is rich bronzed-green. The rest of the plumage is pure white, and the legs are flesh-coloured. There is little external difference between the sexes, the female being only somewhat smaller and less brightly coloured. The sheldrake frequents the sandy coasts of nearly the whole of Europe and North Africa, extending across Asia to India, China and Japan, generally keeping in pairs and sometimes penetrating to favourable inland localities. The nest is always made under cover, usually in a rabbit-hole among sandhills, and in the Frisian Islands the people supply this bird with artificial burrows, taking large toll of it in eggs and ducks.

T. radjah of Australia, Papuasia and the Moluccas almost equals the true sheldrake in its brightly contrasted plumage, but the head is white in both sexes. Barbary, southern-Europe, and Central Asia are inhabited by an allied species of more inland range and very different coloration, the T. casarea or Casarea rutula of ornithologists, the ruddy sheldrake of English authors—for it has several times strayed to the British Islands—and the "Brahminy Duck" of Anglo-Indians, who find it resorting in winter, whether by pairs or by thousands, to their inland waters. This species is of an almost uniform bay colour all over, except the quill-feathers of the wings and tail, and (in the male) a ring round the neck, which are black, while the wing-coverts are white and the speculum shines with green and purple; the bill and legs are dark-coloured.4 A species closely resembling the last, but with a grey head, C. cana, inhabits South Africa. In Australia occurs another species of more sombre colours, the C. tadoronoides; and New Zealand is the home of another species, C. variegata, still less distinguished by bright hues. In the last two the plumage of the sexes differs not inconceivably.

The males will, if attention be paid to their wants, breed freely in captivity, crossing if opportunity be given them with other species, and an incident therewith connected possesses an importance hardly to be overrated by the philosophical naturalist. In the Zoological Society’s gardens in London in the spring of 1859 a male of T. cornuta mated with a female of C. cana, and, as will have been inferred from what has been before stated, these two species differ greatly in the colouring of their plumage.

The young of their union, however, presented an appearance wholly unlike that of either parent, and an appearance which can hardly be said, as has been said (P.Z.S., 1859, p. 442), to be "a mixture of both parents." Both sexes of this hybrid have been admirably portrayed by J. Wolf; and, strange to say, when these figures are compared with equally faithful portraits by the same master of the Australian and New Zealand species, C. tadoronoides and C. variegata, it will at once be seen that the hybrids present an appearance almost midway between that of the parents.5

4 Jordon (B. India, iii. 793) tells of a Hindu belief that once upon a time two lovers were transformed into birds of this species, and that they or their descendants are condemned to pass the night on the opposite banks of a river, whence they unceasingly call to one another: "Chakwa, shall I come?" "No, Chakwi." "Chakwi, shall I come?" "No, Chakwa." As to how, in these circumstances, the race is perpetuated the legend is silent.
between the two species last named—species which certainly had nothing to do with their production.1

The genera Todorna and Casarca, as shown by the tracheal characters and coloration, are most nearly related to Chenolepis, containing the third so well known as the Egyptian goose, C. aegyptiaca, and an allied species, C. jubata, from South America. For the same reason the genus Plectropterus, composed of the spur-winged geese of Africa, and perhaps the Australian Anseranas and the Indian and Ethiopian Sarcidionus, also appear to belong to the same group, which should be reckoned rather to the Anatine than to the Anserine section of the Anatidae. (A. N.)

SHELLEY, CHARLES MONROE (1857— ), American Congregational clergyman, was born in Wellsville, New York, on the 26th of February 1857. Graduating at Brown University in 1885 and at Andover Theological Seminary in 1886, he was pastor at Wellington, Massachusetts, in 1886-1888, and in 1889 became pastor of the Central Congregational Church of Topeka, Kansas. He is well known as the author of a number of widely read books of fiction, which at the same time inculcate an uncompromising obedience to the precepts of the Gospel in everyday life. Of these, In His Steps (1890), though not the earliest, is perhaps the best, and it is this one which first brought him into prominence.

SHELLEY, GILBERT (1566—1677), archbishop of Canterbury, was born at Stanstede in the parish of Ellastone, Staffordshire, and educated at Oxford. He was ordained in 1622 and was appointed chaplain to Thomas Lord Coventry (1578—1649). Four years later he was elected warden of All Souls' College, Oxford. During the years 1632—1639 he received the livings of Hackney (1635); Oddington, Oxfordshire; Ickford, Buckinghamshire (1636); and Newington, Oxfordshire; besides being a prebendary of Gloucester from 1632. In 1638 he was on a commission appointed to visit Merton College, Oxford. He was intimate with the Royalist leaders, participated in the negotiations for the surrender of Oxford, and collected funds for the King. In 1643 he was appointed chaplain of Felbridge, in order of parliament, and imprisoned for some months, but he regained the wardenship in 1659. In 1660 he became bishop of London and master of the Savoy, and the Savoy Conference was held at his lodgings. He was consecrated archbishop of Canterbury in 1663. He was greatly interested in the welfare of Oxford University, of which he became chancellor in 1667, succeeding Clarendon (1600—1674). The Sheldonian theatre at Oxford was built and endowed at his expense.

SHELF (O. Eng. shell, shield, cf. D. schel, shell, Goth. skæls, tile; the word was used for thin flake, cf. Swed. skal, to peel off; it is allied to “sable” and “skill,” from a root meaning to cleave, divide, separate), the hard outside natural covering of anything, as of some fruits and seeds; more particularly, the conch (q.v.) or integument which acts as a defence for the bodies of various animals (see Mollusca, Gastropoda, Malacostraca, &c.), the test, crust or carapace; also the outer covering of an egg. The word is also used of many objects resembling the natural shell in use or shape, and especially of a hollow projectile filled with explosives (see Ammunition, § Shell, and Ordinance).

See also Shell-heaps, Shell-money.

SHELLEY, MARY WOLLSTONECRAFT (1759—1815), English writer, only daughter of William Godwin and his wife Mary Wollstonecraft, and second wife of the poet Percy Bysshe Shelley, was born in London on the 30th of August 1759. For the history of her girlhood and of her married life see Godwin, William, and Shelley, P.B. When she was in Switzerland with Shelley and Byron in 1816 a proposal was made that various members of the party should write a romance or tale dealing with the supernatural. The result of this project was that Mrs Shelley wrote Frankenstein, Byron the beginning of a narrative about a vampyre, and Dr Poldiory, Byron’s physician, a tale named The Vampyre, the authorship of which used frequently

in past years to be attributed to Byron himself. Frankenstein, published in 1818, when Mrs Shelley was at the utmost twenty-one years old, is a very remarkable performance for so young and inexperienced a writer; its main idea is that of the combination of vital and life-giving principle in the recesses of nature, of an adult man, who, entering the world thus under unnatural conditions, becomes the terror of his species, a half-involuntary criminal, and finally an outcast whose sole resource is self-immolation. This romance was followed by others: Valperga, or the Life and Adventures of Castruccio, Prince of Luna (1823), an historical tale written with a good deal of spirit, and readable enough even now; The Last Man (1829), a fiction of the final agonies of human society owing to the universal spread of a pestilence—this is written in a very stilted style, but possesses a particular interest because Adrian is a portrait of Shelley; The Fortunes of Perkin Warbeck (1830); Lodore (1835), also bearing partly upon Shelley’s biography, and Falkner (1837). Besides these novels there was the Journal of a Weeks’ Tour (the tour of 1814 mentioned below), which is published in conjunction with Shelley’s prose-writings; and Rambles in Germany and Italy in 1840—1842—1843 (which shows an observant spirit, capable of making some true forecasts of the future), and various miscellaneous writings. After the death of Shelley, for whom she had a deep and even enthusiastic affection, marred at times by defects of temper, Mrs Shelley in the autumn of 1823 returned to London. Shortly afterwards she married for the last time, and the only son of her second marriage. Mrs Shelley died on the 29th of November 1851.

SHELLEY, PERCY BYSSHE (1792—1822), English poet, was born on the 4th of August 1792 at Field Place, near Horsham, Sussex. He was the eldest child of Timothy Shelley (1753—1844), M.P. for Shoreham, by his wife Elizabeth, daughter of Charles Pilkford, of Effingham, Surrey. His father was the son and heir of Sir Bysshe Shelley, Bart. (d. 1815), whose baronetcy (1806) was a reward from the Whig party for political services. Sir Bysshe’s father Timothy had emigrated to America, and he himself had been born in Newark, New Jersey; but he had gone to England in 1640 and was an invaluable lessee of the Manor of Worminghurst.

The branch of the Shelley family to which the poet Percy Bysshe belonged traces its pedigree to Henry Shelley, of Worminghurst, Sussex, who died in 1623. These Worminghurste or Castle Goring Shelleys are of the same stock as the Michelgrove Shelleys, who trace up to Sir William Shelley, judge of the common pleas under Henry VII., thence to a member of parliament in 1451, and to the reign of Edward I., or even to the epoch of the Norman Conquest. The Worminghurst branch was a family of credit, but not of special distinction, until its fortunes culminated under the above-named Sir Bysshe Shelley.

In the character of Percy Bysshe Shelley three qualities became early manifest, and may be regarded as innate: impressionableness or extreme susceptibility to external and internal impulses of feeling; a lively imagination or erratic fancy, blurring a sound estimate of solid facts; and a resolute repudiation
of outer authority or the despoticm of custom. These qualities were highly developed in his earliest manhood, were active in his boyhood, and no doubt made some show even on the borderland between childhood and infancy. At the age of six he was sent to a day school at Warnham, kept by the Rev. Mr Edwards; at ten to Sion House School, Brentford, of which the principal was Dr Greenlaw, while the pupils were mostly sons of local tradesmen; at twelve (or immediately before that age, on the 29th of July 1804) to Eton. The headmaster of Eton, up to nearly the close of Shelley's sojourn in the school, was Dr Goodall, a mild disciplinarian; it is therefore a mistake to suppose that Percy (unless during his very brief stay in the lower school) was frequently flagellated by the formidable Dr Keate, who only became headmaster after Goodall. Shelley was a shy, sensitive, mopish sort of boy from one point of view—from another a very unruly one, having his own notions of justice, independence and mental freedom; by nature gentle, kindly and retiring—under provocation dangerously violent. He resisted the odious fagging system, exerted himself little in the routine of school-learning, and was known both as "Mad Shelley" and as "Shelley the Atheist." Some writers try to show that an Eton boy would be termed atheist without exhibiting any propensity to atheism, but solely on the ground of his being mutinous. However, as Shelley was a declared atheist a good while before attaining his majority, a shrewd suspicion arises that, if Etonians dubbed him atheist, they had some relevant reason for doing so.

Shelley entered University College, Oxford, in April 1810, returned thence to Eton, and finally quitted the school at mid-summer, and commenced residence in Oxford in October. Here he met a young Durham man, Thomas Jefferson Hogg, who had preceded him in the university by a couple of months; the two youths at once struck up a warm and intimate friendship. Shelley had at this time a love for chemical experiment, as well as for poetry, philosophy, and classical study, and was in all his tastes and bearing an enthusiast. Hogg was not in the least an enthusiast, rather a cynic, but he also was a steady and well-read classical student. In religious matters both were sceptics, or indeed decided anti-Christians; whether Hogg, as the senior and more informed disputant, pioneered Shelley into strict atheism, or whether Shelley, as the more impassioned and unflinching speculator, outran the easy-going jeering Hogg, is a moot point; we incline to the latter opinion. Certain it is that each egged on the other by perpetual disquisition on abstruse subjects, conducted partly for the sake of truth and partly for that of mental exertion, without on either side any disposition to bow to authority or stop short of extreme conclusions. The upshot of this habit was that Shelley and Hogg, at the close of some five months of happy and carefree college life, got expelled from the university. Shelley—for he alone figures as the writer of the "little syllabus," although there can be no doubt that Hogg was his confidant and coadjoctor throughout—published anonymously a pamphlet or fly-sheets entitled The Necessity of Atheism, which he sent round to bishops and all sorts of people as an invitation or challenge to discussion. It amounted to saying that neither reason nor testimony is adequate to establish the existence of a deity, and that nothing short of a philosophical and logical proof that the deity would be sufficient. The college authorities heard of the pamphlet, and accordingly, as its author, and summoned him before them—"our master, and two or three of the fellows." The pamphlet was produced, and Shelley was required to say whether he had written it or not. The youth declined to answer the question, and was expelled by a written sentence, ready drawn up. Hogg was next summoned, with a result practically the same. The precise details of this transaction have been much controverted; the best evidence is that which appears on the college records, showing that both Hogg and Shelley (Hogg is there named first) were expelled for "contumaciously refusing to answer questions," and for "repeatedly declining to disavow" the authorship. Thus they were dismissed as being mutineers against academic authority, in a case pregnant with the suspicion—not the proof—of atheism; but how the authorities could know beforehand that the two undergraduates would be contumaciously and stiff against disavowal, so as to give warrant for written sentences ready drawn up, is nowhere explained. Possibly the sentences were worded without ground assigned, and would only have been produced in terraeum had the young men proved more reasonable. The date of this incident was the 6th of March 1811.

Shelley and Hogg came up to London, where Shelley was soon left alone, as his friend went to York to study convivancying. Percy and his incensed father did not at once come to terms, and for a while he had no resource beyond pocket-money saved up by his sisters (four in number altogether) and sent round to him, sometimes by the hand of a singularly pretty school-fellow, Miss Harriet Westbrook, daughter of a retired and moderately rich hotel-keeper. Shelley, in early youth, had a somewhat "griggish turn for moralizing and argumentation, and a decided mania for proselytizing; his school-girl sisters, and their little Methodist friend Miss Westbrook, aged between fifteen and sixteen, must all be enlightened and converted to anti-Christianity. He therefore cultivated the society of Harriet, calling at the house of her father, and being encouraged in his assiduity by her much older sister Eliza. Harriet not unnaturally fell in love with him; and he, though not it would seem at any time ardently in love with her, dallied along the flowery pathway which leads to sentiment and a definite courtship. This was not his first love-affair; for he had but a very few months before been courting his cousin Miss Harriet Grove, who, alarmed at his last disgust with school, and at his proposal to have her family and himself brought to the country, of which he was sojourn for a month or so.) Shelley had gone away, had by that time all suffered grief and perturbation at the time. It is averred, and seemingly with truth, that Shelley never indulged in any sensual or dissipated amour; and, as he advances in life, it becomes apparent that, though capable of the passion of love, and unusually prone to regard with much effusion of sentiment women who interested his mind and heart, the mere attraction of a pretty face or an alluring figure left him unenthralled. After a while Percy was reconciled to his father, revisited his family in Sussex, and then stayed with a cousin in Wales. Hence he was recalled to London by Miss Harriet Westbrook, who wrote complaining of her father's resolve to send her back to her school, in which she was now regarded with repulsion as having become too apt a pupil of the atheist Shelley. He replied counselling resistance. "She wrote to say" (these are the words of Shelley in a letter to Hogg, dating towards the end of July 1811) "that resistance was useless, but that she would fly with me, and threw herself upon my protection." Shelley, therefore, returned to London, where he found Harriet agitated and waverings; finally they agreed to elope, travelled in haste to Edinburgh, and there, on the 28th of August, were married with the rites of the Scottish Church. Shelley, she would understand, had by this time his griefs and perturbations had been relieved, not only by the open and openly broken, not only with the dogmas and conventions of Christian religion, but with many of the institutions of Christian polity, and in especial with such as enforce and regulate marriage; he—who with William Godwin and some other theorists—that marriage ought to be simply a voluntary relation between a man and a woman, to be assumed at joint option and terminated at the after-option of either party. If, therefore, he had acted upon his personal conviction of the right, he would never have wedsed Harriet, whether by Scotch, English or any other law; and, if such was his decision, he could understand that in such an experiment the woman's stake, and the disadvantages accruing to her, are out of all comparison with the man's. His conduct, therefore, was so far entirely honourable; and, if it derogated from a principle of his own (a principle which, however contrary to the morality of other people, was and always remained matter of genuine conviction on his individual part), this was only in deference to a higher and more imperious standard of right.

Harriet Shelley was not only beautiful; she was amiable, accommodating, adequately well educated and well bred. She liked reading, and, in fact, broke off with Hogg in a strictly frivolous. But she could not (as Shelley said at a later date) "feel poetry and understand philosophy." Her attractions were all on the surface;
there was (to use a common phrase) "nothing particular in her.""

For nearly three years Shelley and she led a shifting sort of life upon an income of £400 a year, one-half of which was allowed (after his first severance in January at the mutual estrangement was past) by Mr. Timothy Shelley, and the other half by Mr. Westbrooke. The couple left Edinburgh for York and the society of Hogg; broke with him upon a charge made by Harriet, and evidently fully believed by Shelley at the time, that, during a temporary absence of his upon business in Sussex, Hogg had tried to seduce her (this quarrel was entirely made up at the end of about a year); moved off to Keswick in Cumberland, where they received kind attentions from Southey, and some hospitality from the duke of Norfolk, who, as chief magistrate in the Shoreham region of Sussex, was at pains to reconcile the father and his too unfilial heir; sailed thence to Dublin, where Shelley was wages and in some degree romanced, in the good cause of Catholic emancipation, conjoined with repeal of the union; crossed to Wales, and lived at Nant-Gwili, near Rhayader, then at Lymmouth in Devonshire, then at Tanyrallt in Carnarvonshire. All this was between September 1811 and February 1813. At Lymmouth an Irish servant of Shelley's was sentenced to six months' imprisonment for distributing and posting up printed papers, bearing no printer's name, of an inflammatory or seditious tendency—being a Declaration of Rights composed by the youthful reformer, and some verses of his named The Devil's Walk, at Tanyrallt, named Robin Pant Evan, being irritated by some well-meant acts of Shelley in terminating the lives of dying or diseased sheep, did really combine with two other shepherds to drive the Tanyrallt Evan was the person who made out the part of "asylum." He himself avowed as much to members of a family, Greaves, who were living at Tanyrallt between 1847 and 1865. This was the break-up of the residence of the Shelleys at Tanyrallt; they revisited Ireland, and then settled for a while in London. Here, in June 1813, Harriet gave birth to her daughter Ianthe Eliza (she married a Mr. Esdaile, and died in 1876). Here also Shelley brought out his first poem of any importance, Queen Mab; it was privately printed, as its exceedingly aggressive tone in matters of religion and morals would not allow of publication. In July the Shelleys took a house at Broad Street, Watling Forest, where they had congenial neighbours, Mrs. Boinville and her family.

The speculative sage whom Shelley especially reverenced was William Godwin, the author of Political Justice and of the romance Caleb Williams; in 1796 he had married Mary Wollstonecraft, authoress of The Rights of Woman, who died shortly after giving birth, on the 30th of August 1797, to a daughter Mary. With Godwin Shelley had opened a volunteered correspondence late in 1811, and he had known him personally since the winter which closed 1812. Godwin was then a bookseller, living with his second wife, who had been a Mrs. Claremont; there were four other inmates of the household, two of whom, call for some mention here—Fanny Wollstonecraft, the daughter of the authoresses and Mr. Imlay, and Claire (Clara Mary Jane), the daughter of Mrs. Claremont. Fanny committed suicide in October 1816, being, according to some accounts which remain unverified, hopelessly in love with Shelley; Claire was closely associated with all his subsequent career. It was towards May 1814 that Shelley first saw Mary Wollstonecraft Godwin as a grown-up girl (she was well on towards seventeen); he instantly fell in love with her, and she with him. Just before this, on the 24th of March, Shelley had remarried Harriet in London, apparently with a view to strengthening his position in his relations with his father as to the family property; but, on becoming enamoured of Mary, he seems to have rapidly made up his mind that Harriet should not stand in the way. She was at Bath while he was in London. They had, however, met again in London and come to some sort of understanding before the final crisis arrived—Harriet remonstrating and indifferent, but incapable of effective resistance—Shelley sick of courtship, and bent upon gratifying his own wishes, which as we have already seen he must at odds with his avowed principles of conduct. For some months past there had been bickerings and misunderstandings between him and Harriet, aggravated by the now detested presence of Miss Westbrook in the house; more than this cannot be said, and it seems dubious whether more will be hereafter known. Shelley, and not he alone, alleged grave misdoing on Harriet's part—perhaps mistakenly. The upshot came on the 28th of July, when Shelley aided Mary to elope from her father's house, Claire Claremont deciding to accompany them. They crossed to Calais, and proceeded across France to Switzerland. Godwin and his wife were greatly incensed. Though he and Mary Wollstonecraft had entertained and avowed bold opinions regarding the marriage-bond, similar to Shelley's own, and had in their time acted upon these opinions, it is not clearly made out that Mary Godwin had ever been encouraged by paternal influence to think or do the like. Shelley and she chose to act upon their own likings and responsibility—he disregarding any claim which Harriet had upon him, and Mary setting at nought her father's authority. Both were prepared to ignore the claims of the laws, and to run the risks of love.

The three young people returned to London in September. In the following January 1815 Sir Bysahe Shelley died, and Percy, who had lately been in great money-straits, became the immediate heir to the entailed property inherited by his father Sir Timothy. This entailed property seems to have been worth £4000 per annum, or little less. There was another very much larger property which Percy might shortly before have secured to himself, contingently upon his father's death, if he would have consented to put it upon the same footing of entail; but this he resolutely refused to do, on the professed ground of his becoming a peer, and proceeded upon the system of entail. Godwin, on his grandfather's death the larger property passed wholly away from any interest which Percy might have had in it, in use or in expectancy. He now came to an understanding with his father as to the remaining entailed property; and, giving up certain future advantages, he received henceforth a regular income of £1000 a year. Out of this he assigned £200 a year to Harriet, who had given birth in November to a son, Charles Bysahe (he died in 1826). Shelley, and Mary as well, were on moderately good terms with Harriet, seeing her from time to time. His peculiar views as to the relations of the sexes appear markedly again in his having (so it is alleged) invited Harriet to return to his and Mary's house as a domicile; a curious arrangement which of course did not take effect. He had, undoubtedly, while previously abroad with Mary, invited Harriet to stay in their immediate neighbourhood. Shelley and Mary (who was naturally always called Mrs. Shelley) now settled at Bishopgate, near Windsor Forest; here he produced his first excellent poem, Alastor, or the Spirit of Solitude, which was published soon afterwards with a few others. Thomas Love Peacock was one of his principal associates at Bishopgate.

In May 1816 the pair left England for Switzerland, together with Miss Claremont, and their own infant son William. They went straight to Sécheron, near Geneva; Byron, whose separation from his wife had just then taken place, arrived there immediately afterwards. A great deal of controversy has arisen as to the
motives and incidents of this foreign sojourn. The clear fact is that Miss Clairmont, who had a fine voice and some inclination for the stage, had seen Byron, as connected with the management of Drury Lane theatre, early in the year, and an amorous intrigue had begun between them in London. Prima facie it seems quite reasonable to suppose that she had explained the facts to Shelley or to Mary, or to both, and had induced them to convey her to the society of Byron abroad; were this finally established as the fact, it would show no inconsistency of conduct, or breach of his own code of sexual morals, on Shelley's part. On the other hand, documentary evidence exists showing that Mary was totally ignorant of the amour shortly before they went abroad. Whether or not they knew of it while they and Claire were in Drury Lane theatre, is not known. Byron, by him on the shore of the Lake of Geneva, may be left unargued. The three returned to London in September 1816, Byron remaining abroad; and in January 1817 Miss Clairmont gave birth to her daughter named Allegra.

The return of the Shelles was closely followed by two suicides —first that of Fanny Wollstonecraft (already referred to), and second that of Harriet Shelley, who on the 9th of November drowned herself in the Serpentine. The body was not found until the 10th of December. The latest stages of the lovely and ill-starred Harriet's career have never been very exactly recorded. It seems that she formed a connexion with some gentleman from whom circumstances or desertion separated her, that her habits became intemperate, and that she was treated with contumelious harshness by her sister during an illness of their father. She had always had a propensity (often laughed at in earlier and happier days) to the idea of suicide, and she now carried it out in act—possibly without anything which could be regarded as an extremely cogent predisposing motive, although the total weight of her distresses, accumulating within the past two years and a half, was beyond question heavy to bear. Shelley, then at Bath, hurried up to London when he heard of Harriet's death, giving manifest signs of the shock which so terrible a catastrophe had produced on him. Some self-reproach must no doubt have mingled with his affliction and dismay; yet he does not appear to have considered himself gravely in the wrong at any stage in the transaction, and it is established that in the train of quite recent events which immediately led up to Harriet's suicide he had borne no part.

This was the time when Shelley began to see a great deal of Leigh Hunt. Hunt, the poet and artist (author of the Dreamer), they were close friends, and Hunt did something to uphold the reputation of Shelley as a poet—which, we may here say once for all, scarcely obtained any public acceptance or solidity during his brief lifetime. The death of Harriet having removed the only obstacle to a marriage with Mary Godwin, the wedding ensued on the 30th of December 1816, and the married couple settled down at Great Marlow in Buckinghamshire. Their tranquillity was shortly disturbed by a Chancery suit set in motion by Mr Westbrook, who asked for the custody of his two grand-children, on the ground that Shelley had deserted his wife and intended to bring up his offspring in his own atheistic and anti-social opinions. Lord Chancellor Eldon delivered judgment on the 27th of March 1817. He held that Shelley, having avowed condemnable principles of conduct, and having fashioned his own conduct to correspond, and being likely to inculcate the same principles upon his children, was unfit to have the charge of them. He appointed as their curator Dr Hume, an orthodox army-physician, who was Shelley's own nominee. The poet had to pay for the maintenance of the children a sum which stood eventually at £1000 a year. He was asked at the divorce of Claire, that was no more than what he had previously allowed to Harriet. This is the last incident of marked importance in the perturbed career of Shelley; the rest relates to the history of his mind, the poems which he produced and published, and his changes of locality in travelling. The first ensuing poem was The Revolt of Islam, referred to near the close of this article.

In March 1818, after an illness which he regarded (rightly or wrongly) as a dangerous pulmonary attack, Shelley, with his wife, their two infants William and Clara, and Miss Clairmont and her baby Allegra, went off to Italy, where the short remainder of his life was passed. Allegra was born in March; to Venetia, to her father, who, ever since parting from Miss Clairmont in Switzerland, showed a callous and unfelling determination to see and know no more about her. In 1818 the Shelles—always nearly with Miss Clairmont in their company—were in Milan, Leghorn, the Bagni di Lucca, Venice and its neighbourhood, Rome, and Naples; in 1819 in Rome, the vicinity of Leghorn, and Florence (both their infants were now dead, but a third was born late in 1819, Percy Florence Shelley, who in 1844 inherited the baronetcy); in 1820 in Pisa the Bagdi di Pisa (or di San Giuliano), and Leghorn; in Pisa and Leghorn; in Venice, Genoa, Leghorn; and on the Bay of Spezia, between Lerici and Tenerizzo. The incidents of this period are but few, and of no great importance apart from their bearing upon the poet's writings. In Leghorn he knew Mr and Mrs Gisborne, the latter a once intimate friend of Godwin; she taught Shelley Spanish, and he was eager to promote a project for a steamer to be built by her son for a brother marriage, the engineer Henry Reveley; it would have been the first steamer to navigate the Gulf of Lyons. In Pisa he formed a sentimental intimacy with the Countess Emilia Viviani, a gifted woman, pining in a convent pending her father's divorce, who was a hotelier, and of both of whom he was very fondly attached—which soon came to an end, as Emilia's character developed less favourably in the eyes of her Platonic adorer—produced the transcendental love-poem of Epipsychidion in 1821. In Ravenna the scheme of the quarterly magazine the Liberal was concerted by Byron and Shelley, the latter being principally interested in it with a view to benefiting Leigh Hunt by such an association with Byron. In Pisa Byron and Shelley were—very constantly together, having in their company at one time or another Shelley's cousin and schoolfellow Captain Thomas Melmoth (1788—1849), Lieutenant Edward Ellicker Williams (1793—1822) and his wife, to both of whom the poet was very warmly attached, and Captain Edward John Trelawny, the adventurous and romantic-natured seaman, who has left important and interesting reminiscences of this period.

Byron admired very highly the generous, unworlily and enthusiastic character of Shelley, and set some value on his writings; Shelley half-worshipped Byron as a poet, and was anxious, but in some conjunctures by no means able, to respect him as a man. In Pisa he knew also Prince Alexander Mavrocordato, one of the pioneers of Greek national feeling, Captain Thomas Melmoth (1788—1849), Lieutenant Edward Ellicker Williams (1793—1822) and his wife, to both of whom the poet was very warmly attached, and Captain Edward John Trelawny, the adventurous and romantic-natured seaman, who has left important and interesting reminiscences of this period. Byron admired very highly the generous, unworlily and enthusiastic character of Shelley, and set some value on his writings; Shelley half-worshipped Byron as a poet, and was anxious, but in some conjunctures by no means able, to respect him as a man. In Pisa he knew also Prince Alexander Mavrocordato, one of the pioneers of Greek national feeling, Captain Thomas Melmoth (1788—1849), Lieutenant Edward Ellicker Williams (1793—1822) and his wife, to both of whom the poet was very warmly attached, and Captain Edward John Trelawny, the adventurous and romantic-natured seaman, who has left important and interesting reminiscences of this period. Byron admired very highly the generous, unworlily and enthusiastic character of Shelley, and set some value on his writings; Shelley half-worshipped Byron as a poet, and was anxious, but in some conjunctures by no means able, to respect him as a man. In Pisa he knew also Prince Alexander Mavrocordato, one of the pioneers of Greek national feeling, Captain Thomas Melmoth (1788—1849), Lieutenant Edward Ellicker Williams (1793—1822) and his wife, to both of whom the poet was very warmly attached, and Captain Edward John Trelawny, the adventurous and romantic-natured seaman, who has left important and interesting reminiscences of this period.
exists that an aged Italian seaman on his deathbed confessed that he had been one of the crew of the fatal felucca, and that the collision was intentional, as the men had plotted to steal a sum of money supposed to be on the "Don Juan," in charge of Lord Byron. In fact there was a moderate sum there, but Byron had neither embarked nor intended to embark. This may perhaps be the true account of the tragedy; at any rate Trelawny, the best possible authority on the subject, accepted it as true. He it was who laboriously tracked out the shore-washed corpses of Williams and Shelley, and who undertook the burning of them, after the ancient Greek fashion, on the shore near Via Reggio, on the 15th and 16th of August. The great poet's ashes were then collected, and buried in the new Protestant cemetery in Rome. His height, within a month of completing the thirty-third year of his age—a surprising example of rich poetic achievement for so young a man.

The character of Shelley can be considered according to two different standards of estimation. We can estimate the original motive forces in his character; or we can form an opinion of his actions, and thence put a certain construction upon his personal qualities. We will first try the latter method. It cannot be denied by his admirers and eulogists, and is abundantly clear to his censors, that his actions were in some considerable degree abnormal, and not to be called handsome. His height was nearly 5 ft. 11; he was slim, agile, and strong, with something of a stoop; his complexion brilliant, his hair abundant and wavy, dark brown but early beginning to grizzle; the eyes, deep blue 'in tint, have been termed "stag-eyes"—large, fixed and beaming. His voice was wanting in richness and suavity—high-pitched, and tending to the screechy; his general aspect, though extremely variable according as his mood of mind and his expression shifted, was on the whole uncommonly juvenile. The only portrait of Shelley, from which some idea of his looks used to be formed, is that painted by an amateur, Miss Curran, in 1817; Mrs Shelley, later, pronounced it to be "in many things very like." This is now in the National Portrait Gallery, together with a quasi-duplicate of it painted by Clint, chiefly from Miss Curran's likeness, and partly from a water colour (now lost) by Lieutenant Williams. In 1905 (Century Magazine) another portrait was brought forward: a pencil sketch taken in the last month of the poet's life by an American artist, William E. West, followed by an oil-painting founded on that sketch. The two works differ very considerably, and neither of them resembles Miss Curran's portrait; yet I cannot incline to believe that the sketch was really taken from Shelley.

If we except Goethe (and leave out of count any living writers, whose ultimate value cannot at present be assessed), we must consider Shelley to be the supreme poet of the new era which, beginning with the French Revolution, remains continuous into our own day. Victor Hugo comes nearest to him in poetic stature, and might for certain reasons be even preferred to him; Byron and Wordsworth also have their numerous champions not to speak of Tennyson or Browning. The grounds, however, on which Shelley may be set highest of all are mainly three. He excels all his competitors in idealism, he excels them in music, and he excels them in importance. By importance we here mean the direct import of the work performed, its controlling power over the reader's thought and feeling, the tangential fire of its white-hot intellectual passion, and the long reverberation of its appeal. Shelley is emphatically the poet of the future. In his own day an alien in the world of mind and invention, and in our day but partially a denizen of it, he appears destined to become, in the long vista of years, an innermost shrine of human thought. Shelley appeared at the time when the sublime frenzy into which the French revolutionary movement had exhausted the elasticity of men's thought—at least in England—and had left them flaccid and stolid; but that movement prepared another in which revolution was to assume the milder guise of reform, conquering and to conquer. Shelley was its prophet. As an iconoclast and an idealist he took the only position in which a poet could advantageously work as a reformer. To outrage his contemporaries was the condition of leading his successors to triumph and of personally triumphing in their victories. Shelley had the temperament of an innermost shrine of human thought, in which wondrously poetical he united speculative keenness and humanitarian zeal in a degree for which we might vainly seek his precursor. We have already named idealism as one of his leading excellences. This Shelleyan quality combines, as its constituents, sublimity, beauty and the abstract passion for good. It should be acknowledged that, while this great quality forms the chief and most admirable factor in Shelley's poetry, the defects which go along with it mar his work too often—producing at times vagueness, unreality and a pomp of glittering indistinctness, in which excesses of sentiment welled up and exceeded words. This blinism affects the long poems much more than the pure lyrics; in the latter the rapture, the music and the emotion are in exquisite balance, and the work has often as much of delicate simplicity as of fragile and flower-like perfection.

Some of Shelley's principal writings have already been mentioned above; we must now give a brief account of others. Of his early work prior to Queen Mab—such romances as Zastrozzi and Si Iryne, such verse as the Poems by Victor and Cazire, and the Fragments of Margaret Nicholson—we can only here refer. In 1816 Shelley wrote The Necessity of Nature, a short essay on the grounds of science and art and the possible existence of God. In 1817 Shelley's first work of importance was contributed to the Cazire, or The House of Dante; it is a translation of Dante's Inferno with a commentary and an introduction. Of the first of the later fragments, the The Revolt of Islam, a poem of no common importance, in the Spenserian stanza, preaching bloodless revolution; it was written in a sort of friendly competition with Keats (who produced Endymion) and is amazingly fine in parts, but as a whole somewhat long-drawn and exhausting. This transcendent epic (for such it may be termed) was at first named Lamo and Cythna, or The Revolution of the Golden City, and the lovers of the story were then brother and sister as well as lovers—an experiment upon British endurance which the publishers would not connive at. The year 1818 produced Rosalind and Helen, a comparatively weak poem, begun in England and finished in Italy, and Julian and Maddalena, a very strong one, written in the neighbourhood of Venice—demonstrating in Shelley a singular power of seeing ordinary things with directness, and at once figuring them as reality and transfiguring them into poetry. In each of these two poems Shelley gives a quasi-portraiture of himself. The next year, 1819, was his culmination, producing as it did the grand tragedy of The Cenci and the sublime ideal drama Promethus Unbound, composed partly on the ruins of the Baths of Carculla in Rome. This last we have no hesitation in calling his masterpiece. In forms of surpassing imagination and beauty; and in an intellect and most daring conceptions. Prometheus, the human mind and will, has invested with the powers proper to himself Jupiter, the god of heaven, who thereupon chains and torments Prometheus and oppresses mankind; in other words, the anthropomorphic god of religion is a creation of the human mind, and both the
mind of man and man himself are enslaved as long as this god exercises his delegated but now absolute power. Prometheus, who is from old wedded to Asia, or Nature, protests against and anathematizes the usurper enthroned by himself. At last the anathema (although Prometheus has revok'd it by an act of self-confess) takes effect: Eternity, Demogorgon, dismisses Jupiter to unending pursuits, for Prometheus is at once bound and free; he is reunited to his spouse Nature, and the world of man passes from thraldom and its degradation into limitless progression, or (as the phrase goes) perfectibility, moral and material. This we regard as in brief the argument of Prometheus Unbound. It is closely analogous to the argument of the juvenile poem Queen Mab, but so raised in form and creative touch that, whereas to write Queen Mab was only to be an ambitious and ebullient tiro, to invent Prometheus Unbound was to be the poet of the future. The Witch of Atlas (1820) is the most perfect work among all Shelley's longer poems, though it is neither the deepest nor the most interesting. It may be rated as a pure exercise of rousing imagination—guided, however, by an intense sense of beauty, and by its author's exceeding fineness of nature. The poem has often been decried as practically meaningless; we do not subscribe to this opinion. The "witch" of this subtle and magical invention seems to represent that faculty which we term the "fancy"; using this assumption as a clue, we find plenty of meaning in the poem, but necessarily it is fanciful or volatil meaning. The action is a spirit and the arena of poetry, yet without being distorted out of its own essence—is to be found in the English language.

The chief original authorities for the life of Shelley (apart from his own writings, which contain a good deal of autobiography, if heedfully sifted and collated) are—(1) the notices by Mrs Shelley interpolated in her edition of the Poems; (2) Hogg's amusing, discerning and authentic, although in some respects exaggerated, book; (3) Trelawny's Records; (4) the Life by Medwin; and (5) the articles written by Peacock. Some other writers, especially Leigh Hunt, might be mentioned, but they come less close to the facts. Among biographical books produced since Shelley's death, by authors who did not know him personally, the leading work is the Life by John Addington Symonds, in 2 vols. (1886), which was the work of the English poet while in residence, by the Shelley family. The Real Shelley, by J. C. Jeaffreson (1885), is controversial in method and decidedly hostile in tendency, and tries a man of genius by tests far from well adapted (in our opinion) to bring out a right result; it contains, however, an ample share of solid information and sharp disquisition. The memoir by W. M. Rosetti, prefixed to an edition of Shelley's Poems in two volumes (1875), is an attempt to formulate in brief space, out of the then confused and conflicting accounts, an accurate account of Shelley—admiring, but not uncandidly one-sided. There is valuable material in Lady Shelley's Shelley Memorials, and in the Thomas Love Peacock's life of Shelley, which was published in 1831 by his widow. The Life of Shelley, in the English Men of Letters series, is characteristic of the writer. The most complete edition of Shelley's poems is now the Oxford edition, edited by Thomas Hutchinson (Clarendon Press, 1905), which contains the original pieces of all the other editions, as well as the emendations, &c., published by Mr C.D. Locock (1903) from examination of the MSS. in the Bodleian Library. Mr Buxton Forman's earlier and excellent edition includes the writings in prose as well as in verse. (W. M. R.)

SHELLEY'S CASE, RULE IN, an important decision in the law of real property. The litigation was brought about by the settlement made by Sir William Shelley (c. 1450–1549), a judge of the Court of King's Bench, pleads, on an estate of shell-sized shells of the common degradation of Sion Monastery. After prolonged argument the celebrated rule was laid down by Lord Chancellor Sir Thomas Bromley, who presided over an assembly of all the judges to hear the case in Easter term 1580–1581. The rule may be stated as follows: when an ancestor by any gift or conveyance takes an estate of freehold and in the same gift or conveyance an estate is limited, either mediatly or immediately, to his heirs or the heirs of his body, in such a case the word "heirs" is a word of limitation and not of purchase; that is to say, the estate of the ancestor is not a life or other freehold estate with its power to the heirs or heirs of the body, but an estate in fee or an estate tail according to circumstances. The rule is a highly technical one, and has led to much litigation, and in many cases without doubt to the defeat of a testator's intentions. It is said to have had its origin in the wish of the law to preserve to the lords their right of wardship, which would have been ousted by the heir taking as purchaser and not as successor. The rule is reported by Lord Coke in 1 Reports 93 b. (see also Von Grafton v. Foswell, 1897, A.C. 629). In the United States the rule in Shelley's case was not followed in a case in which a life estate was disposed of, on one condition of purchasing the common law, but it has been repealed by statute in most states. SHELL-HEAPS, or KITCHEN-MIDDEN (Dan. Kjøbken-mødding), prehistoric refuse heaps or mounds found in all quarters of the globe, which consist chiefly of the shells of edible molluscs mixed with fragments of animal bones, and implements of stone, bone and horn. They may sometimes, as in the Straits of Magellan, be seen in process of formation. Many having a prehistoric origin have been examined, notably on the eastern coast of Denmark. These were at first thought to be raised beaches, and other examples, not in process of formation, were thought to be artificial construction. Further investigation by archaeologists proved these shell-heaps to belong to a very ancient period, probably the early part of the Neolithic age, "when the art of polishing flint implements was known, but before it had reached its greatest development" (Lord Avebury, Prehistoric Times, 6th ed. p. 235). They contained the remains of quadrupeds, birds and fish, which served as the food of the prehistoric inhabitants. Among the bones were those of the wild bull or aurochs, beaver, seal and great auk, all now extinct or rare in this region. Moreover, a striking proof of the antiquity of these shell-heaps is that the bones of the shell-heaps, which are mixed with oyster, which cannot live at present in the brackish waters of the Baltic except near its entrance, the inference being that the shores where the oyster at that time flourished were open to the salt sea. Thus also the eatabile cockle, mussel and periwinkle abounding in the kitchen-middens are of full ocean size, whereas those now living in the adjoining waters are dwarfed to a third of their natural size by the want of saltiness. It thus appears that the connexion between the ocean and the Baltic has notably changed since the days of these rude stone-age peoples. The middens of debris were in some places ten to twelve feet thick and stretched a thousand feet. It does not appear that the men of the kitchen-middens had any knowledge of agriculture, nor traces of grain of any sort being found. The only vegetable remains were burnt pieces of wood and some charred substance, possibly a sea-plant used in the production of salt. Flat stones blackened with fire, forming hearths, were also found. That periods of scarcity must have been frequent in the absence of cereals is indicated by the discovery of bones of the fox, wolf and other carnivora, which would hardly have been eaten from choice. The kitchen-middens of Denmark were not mere summer-quarters: the ancient fishermen appear to have stayed in the neighbourhood for two-thirds, if not the whole, of the year. This is suggested by an examination of the bones of the wild animals, from which it is often possible to tell the time of year when they were killed. Thus the remains of the wild swan (Cygnus musica),
a winter visitor, leaving the Danish coast in March and returning in November, are found in abundance. Additional proof is afforded among the mammalian remains by two periodical phenomena, the shedding of the stag's antlers and the birth and growth of the young. The flint implements found include flake, axes, awls, slinging-stones or net-weights, and rude lanceheads. A fragment of one polished axe was found at Havelse which had been worked up into a scraper. Small pieces of coarse pottery are also met with. The Danish kitchen-midden men were not cannibals. In physique they seem to have resembled the Lapps, a race of small men with heavy-hanging brows and round heads. The excavation of the Danish shell-heaps was followed by the investigation of others in other countries. At Omori (Japan), in the Aulean Islands, in British Columbia, Oregon and California shell-mounds were explored, always with the result of proving that the present populations had been preceded by ruder tribes of great antiquity. On the Atlantic coast of Brazil shell-heaps, which must have taken thousands of years to accumulate, are now overgrown with dense forests.

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SHELL-MONEY, a medium of exchange common to many primitive races, consisting of sea shells or pieces of them worked into beads or artificially shaped. Shell-money has not been restricted to one quarter of the globe, but in some form or other appears to have been almost universal. It has been found in America, Asia, Africa and Australia. The shell used by the Indians of Alaska and California was the Dentalium pretiosum, a species of tusk-shell found along the north-west coast. It received its name from its tusk-like appearance, and was valued by length and not by the number of shells. The usual method of measuring was by the finger-joints, and the iga, the highest denomination of their coinage, consisted of twenty-five shells strung together, which from end to end made a total measurement of a fathom (6 ft.) or thereabouts, equalling in English coinage about £50. Farther south on the shore of California the Indians used the Saxidomus gracilis or Tapa gracilis, while in the islands close to the littoral the Lhoboria obesa was in common use.

But the shell most used by primitive peoples has always been the Cypraea Moneta, or money shell (COWRY). It is not abundant in the Indian Ocean, and is collected more particularly in the Maldivie Islands, in Ceylon, along the Malabar coast, in Borneo and other East Indian islands, and in various parts of the African coast from Ras Hafun to Mozambique. It was formerly in familiar use in Bengal, where, though it required 3840 to make a rupee, the annual importation was valued at about £30,000. In western Africa it was, until past the middle of the 19th century, the usual tender, and before the abolition of the slave trade there were large shipments of cowry shells to some of the English ports for reshipment to the slave coast of Africa. The value of the cowry was very much greater in West Africa than in the regions from which the supply was obtained, the trade was extremely lucrative, and in some cases the gains are said to have been 500%. The use of the cowry currency gradually spread inland in Africa, and about 1850 Heinrich Barth found it fairly recognized in Kano, Kuka, Gando, and even Timbuktu. Barth relates that in Muniyoma, one of the ancient divisions of Bornu, the king's revenue was estimated at 30,000,000 shells, every full-grown man being required to pay annually 1000 shells for himself, 1000 for every pack-ox, and 2000 for every slave in his possession. In the countries of Mozambique and south-western Africa the cowry is most commonly found in strings of 50 or 100 each, so that fifty or twenty strings represented a dollar; but in the interior they were laboriously counted one by one, or, if the trader were expert, five by five. The districts mentioned above received their supply of kurti, as they were called, from the west coast; but the regions to the north of Unyamwezi, where they were in use under the name of simbi, were dependent on the Moslem traders from Zanzibar. The shells are still used in the remnant parts of Africa, but the yearly tendency to give way to ordinary currency. The shell of the land-snail, Achatina monetaaria, cut into circles with an open centre has been long used as coin in Benguella, Portuguese West Africa. In parts of Asia Cypraea annulus, the ring cowry, so-called from the bright orange-coloured ring on the back or upper side of the shell, was commonly used. Many specimens were found by Sir Henry Layard in his excavations at Nimrud in 1845-1851.

In north Australia different shells were used, one tribe's shell being often absolutely valueless in the eyes of another. In parts of the islands north of New Guinea the shells are broken into flakes. Holes are bored through these flakes, which are then valued by length, as in the case of the American tusk-shell, the measuring, however, being done between the nipples of the breasts instead of by the finger-joints. Two shells are used by these Pacific islanders, one a cowry found on the New Guinea coast, and the other the common pearl shell broken into flakes. As late as 1882 local trade in the Solomon Islands was carried on by means of a coinage of shell beads, small shells laboriously ground down to the required size by the women. No more than were actually needed were made, and as the process was remunerative the value of these islands increased greatly. The custom of breaking or flaking shells was common among some of the American Indian tribes, but the shells so manipulated were of the ponderous Pachyderma crassatellodes species, while in the south Pacific Islands the Oliva canoel was used.


SHELTON, THOMAS (fl. 1612-1620), English translator of Don Quixote. In the dedication of The delightfull history of the witte knight, Don Quixote (1612) he explains to his patron, Lord Howard de Walden, afterwards 2nd Earl of Suffolk, that he had translated Don Quixote from Spanish into English some five or six years previously in the period of forty days for a very dear friend who was unable to understand the original. Shelton did not use the original editions published in Brussels in 1605. On the appearance of the Brussels imprint of the second part of Don Quixote in 1616, he translated that also into English, completing his task in 1620, and printing at the same time a revised edition of the first part. His performance has become a classic among English translations for its racry, spirited rendering of the original. Light was thrown on Thomas Shelton's personal history by the researches of Mr. Alexander T. Wright in a paper published in October 1868. Among the kinsfolk of the earl of Suffolk were three persons bearing the name Thomas Shelton, and though all died before 1620 it is probable that one of the members of the same family. It seems safe to identify him with the Thomas Shelton who wrote a sonnet prefixed to the Restitution of Decayed Intelligence (1605) of Richard Verstegan, who was most likely the friend referred to in Shelton's preface, for there is reason to believe that both of them were then employed in a matter of doubtful loyalty, the intrigues of the Roman Catholics in England. He was acquainted with the "cries of the wild Irish," and seems to have been honestly employed in carrying letters to persons in England from Lord Deputy Fitzwilliam at Dublin Castle. But in 1599 he apparently acted as agent for Florence McCarthy to offer his services to the king of Spain, especially fitted him. Soon afterwards an official précis of the facts was drawn up, in which Shelton was implicated.
by name. A second version of this document in 1617 is actually signed by him, but all reference to his share in the matter is omitted. Lady Suffolk, the wife of his patron, received yearly £1000 in secret service money from the Spanish king, and Shelton may have been her accomplice. If the "many affairs" of his preface were official he would not wish to call attention to his antecedents by owning friendship with Verstegan.

The 1612 edition is available in Mr Fitzmaurice Kelly's reprint for the Tudor Translations (1892); that of 1620 is reproduced in Macmillan's "Library of English Classics" with an introduction by Mr A. W. Pollard, who incorporates the suggestions made by Mr A. T. Wright in his Thomas Shelton, Translator. This gives "name only" "(posteriori)", the Bible, the eldest of the three sons of Noah, whose superiority over Canaan is reflected in the tradition that Noah pronounced a curse upon the latter (Gen. ix. 20-27). In the genealogies (x. 21 sqq.), Semitic numbers among his descendants Assyrian, Arabian, Aramaean and Hebrew populations, whence the ethnic Semitic (strictly speaking, Semitic) has been coined as a convenient term for these peoples. It is not altogether scientific, since the Lydians (Lud) and Elamites are included among Sem's or Noah's sons, apparently on account of their geographical position rather than their immediate kinship to Assyrian culture. On the traditions of Sem, see E. Meyer, Israeliten u. Nachbarstämme (Halle, 1906), pp. 219 sqq.

**Shemakia**, a town of Russian Transcaucasia, in the government of Baku, 70 m. W. of the town of Baku, and in 41° 38' N. and 48° 40' E. It has some 20,000 inhabitants, consisting of Tatars (75%), Armenians and Russians. Shemakia was the capital of the khanate of Shirvan, and was known to the Roman geographer Ptolemy as Kamachia. About the middle of the 16th century it was the seat of an English commercial factory, under the traveller Jenkinson, afterwards envoy extraordinary of the khan of Shirvan to Ivan the Terrible of Russia. In 1743 Shemakia was taken and destroyed by Nadir Shah of Persia, who, to punish the inhabitants for their creed (Sunnite Mahomedanism), built a new town under the same name about 16 m. to the W., at the foot of the main chain of the Caucasus. The new Shemakia was at different times a residence of the khan of Shirvan, but it was finally abandoned, and the old town rebuilt. The Russians first entered Shirvan in 1723, but soon retired. In 1795 they captured Shemakia as well as Baku; but the old town once more declined, and Shemakia was not finally annexed to Russia until 1805.

**Shenandoah**, a borough of Schuykill county, Pennsylvania, U.S.A., about 40 m. N.N.W. of Reading. Pop. (1910, census), 25,774. Among the foreign-born the Lithuanians and Poles predominate—in 1910 a Lithuanian and a Polish paper were published here. Shenandoah is served by the Pennsylvania, the Lehigh Valley and the Philadelphia & Reading railways. The borough has a public library. The United Greek Catholic Church (Ruthenian Rite) here is said to be the first of this sect in the United States; it was organized as St Michael's Parish in 1885, the first building was erected in 1888, and a new building was completed in 1909. Shenandoah is situated in the eastern part of the middle basin of the great anthracite coal region of Pennsylvania, and the mining and shipping of coal are its chief industries. A log house was built on the site of the present Shenandoah as early as 1835, but there was no further development until 1862, when the first colliery was opened. The borough was incorporated in 1866.

**Shenandoah Valley Campaigns.** During the American Civil War the Shenandoah Valley was frequently the scene of military operations. The town was at one time or another in the war these operations rose to the height of separate campaigns possessing great significance in the general development of the war. From a military point of view the Shenandoah Valley was valuable to the army which controlled it as a requisitioning area, for in this fertile region crops and cattle were plentiful. There were, moreover, numerous mills and factories. For the Confederates the Valley was also a recruiting area. A macadamized road from Lexington via Staunton and Winchester to Martinsburg gave them access to Maryland and enabled them to cover Lynchburg from the north. By a system of railways which united Gordonsville and Charlottesville troops from Richmond and Lynchburg were detainted within easy distance of five good passes over Blue Ridge, and as Strasburg in the valley lies almost due west of Washington it was believed in the North that a Confederate army therabouts menaced a city the protection of which was a constant factor in the Federal plan of campaign. The Valley was 60 m. wide at Martinsburg and had been cleared of timber, so that the movements of troops were not restricted to the roads: the creeks and rivers were fordable at most places and the Shenandoah Valley was consequently valuable to the Confederates as a territory specially suited for mounted troops. The existence of the parallel obstacle between Strasburg and Newmarket, the two forks of the Shenandoah river enclosing the Massanutten range, afforded opportunities for strategic manœuvres.

In the spring of 1862 the immense army organized by General McClellan advanced and threatened to sweep all before it. The Confederates, based on Richmond, were compelled to show a front westward to the Alleghanies, northward to the Potomac and eastwards to the Atlantic. The main armies were engaged at Yorktown, but the Shenandoah Valley operations were secondary. Yet in one instance a Confederate detachment that varied in strength between 5000 and 17,000 contrived to make some stir in the world and won renown for its commander. General Thomas J. Jackson with small means achieved great results, if we look at the importance which politics played in the affairs of the belligerents; and even in a military sense he was admirable for skilfully utilizing his experiences, so that his discomfitures of the winter of 1861, when Rosecrans and Lander and Kelley were opposed to him, taught him how to deal with such Federal leaders as Shields and Banks, Milroy and Frémont, and to the Yorktown operations he was a marked success.

In the Valley operations in 1862 began by a retrograde movement on the part of the Confederates, for Jackson on the 12th of March retired from Winchester, and Banks at the head of 20,000 men took possession. Banks pushed a strong detachment under General Shields on to Strasburg a week later, and Jackson then withdrew his small division (5000) to Mount Jackson, so yielding the Shenandoah Valley for 40 m. south of Winchester. He was now acting under instructions to employ the invaders in the Valley and prevent any large body being sent eastward to reinforce the main army, and he had a number of operations here to the danger of defeat. He was to keep near the enemy, but not so near as to be compelled to fight Banks's superior forces. Such instructions, however, were difficult to carry out. When, on the 21st of March, Banks recalled Shields in accordance with orders from Washington, Jackson conceived that he was bound to follow Shields, and, when Shields stood at bay at Kernstown on the 23rd of March with 7000 men, Jackson at the head of 3500 attacked and was badly beaten.

For such excess of zeal two years later Sigel was removed from his command. But in 1862 apparently such audacity was true wisdom, for the road thus afforded by Jackson of his inability to contend with Shields seems to have been regarded by the Federal authorities as an excuse for reversing their plans: Shields was reinforced by Williams's division, and with this force Banks undertook to drive Jackson from the Valley. A week after the battle of Kernstown, Banks moved to Strasburg with 16,000 men, and a month later (April 26) is found at Newmarket, after much skirmishing with Jackson's rear-guard which burnt the bridges in retiring. Meanwhile Jackson had taken refuge in the passes of Blue Ridge, where he too was reinforced. Ewell's division joined him at Swift Run Gap, and at the beginning of May he decided to watch Banks with Ewell (who was not to, and to proceed himself with the remainder of his command to join Edward Johnson's division, then beset by General Milroy west of Staunton. Secretly moving by rail through Rockfish Gap, Jackson united with Johnson and in a few days located Milroy at the village of McDowell. After reconnaissance Jackson concentrated his forces on Settlington Hill and proposed to attack on the morrow (May 8th), but on this occasion the Federals (Milroy having just been joined by Schenck) took the initiative, and after a four
hours' battle Jackson was able to claim his first victory. The Confederates lost 500 of 6000 men and the Federals 250 out of 2500 men. Jackson's pursuit of Milroy and Schenck was fruitless, and he returned to his camp at McDowell on the 14th of May. Meanwhile General Banks had been ordered by President Lincoln to fall back from Newmarket, to send Shields's division to reinforce General McDowell at Fredericksburg, to garrison Front Royal, and to entrench there was of brief duration, for McDowell was moving westward from Fredericksburg and Frémont eastward from Franklin under instructions from Washington to intercept him. On the 31st of May Frémont had reached Cedar Creek, McDowell was at Front Royal and Jackson had retired to Strasburg, where he was compelled to wait for a detachment to come in. This rejoined on the evening of the 1st of June. Ewell's division held Frémont back until Jackson was on his way to Newmarket.

Jackson's opportunity had come to destroy Banks's force completely. The Confederates numbered 16,000, the Federals only 6000 men. Jackson availed himself of the Luray Valley route to intercept Banks after capturing the post at Front Royal. He captured the post, but failed to intercept Banks, who escaped northwards by the turnpike road and covered his retreat across the Potomac by a rear-guard action at Winchester on the 25th of May. Jackson followed and reached Halltown a few days later. But his stay

McDowell had sent Shields up the Valley by the Luray route. But Jackson gained Newmarket in safety and destroyed the bridge by which Shields could emerge from the Luray Valley to join Frémont, who was left to cope with Jackson single-handed. Jackson's rearguard destroyed the bridges and otherwise impeded Frémont's advance, but a week later (June 7th) Frémont at Harrisonburg located his enemy at Cross Keys and next day he attacked with 10,500 men. Shields was still at Luray. Jackson held Frémont with Ewell's division (5000) and with the remainder proceeded to the left bank
of the Shenandoah near Port Republic to await developments, for Shields had pushed forward a strong advanced guard under General Tyler, whose vanguard (two squadrons) crossed the river while Frémont was engaged with Ewell. Tyler’s cavalry was driven back with heavy loss. Jackson retained possession of the bridge by which Tyler and Frémont could unite, and next day he crossed the river to attack Tyler’s two brigades. The engagement of the 9th of June is called the battle of Port Republic. Jackson with 13,000 men attacked Tyler with 5000 men, and Tyler, after stoutly resisting in the vain hope that the main body under Shields would come up from Conrad’s Store or that Frémont would cross the river and fall upon Jackson, retired with a loss of some 800 men, leaving as many Confederates hors de combat. Tyler’s brave efforts were in vain, for Shields had once more received orders from Washington which appeared to him to justify leaving his detachment to its fate, and Frémont could not reach the river in time to save the bridge, which Ewell’s rear-guard burnt after Jackson had concentrated his forces against Tyler on the right bank. A few days later Jackson received orders to quit the Valley and join the main army before Richmond, and President Lincoln simultaneously discovered that he could not afford to keep the divisions of Frémont, Banks and McDowell engaged in operations against Jackson: so the Valley was at peace for a time.

In strict connection with the operations of the main armies in Virginia, the Confederates brought off two great coups in the Valley—Jackson’s capture of Harper’s Ferry and Martinsburg in the autumn of 1862 and Ewell’s expulsion of Milroy from Martinsburg and Winchester in June 1863. The concentration of the Federal forces in N. Virginia in May 1864 for the campaign which ultimately took Grant and Lee south of the James involved a fresh series of operations in the Valley. At first a Union containing force was placed there under Sigel; this general, however, took the offensive and unwisely divided his army and was defeated at Newmarket. Next Hunter, who superseded Sigel in command in West Virginia and the Valley, was to co-operate with the Army of the Potomac by a movement on Staunton and thence to Gordonsville and Lynchburg, with the object of destroying the railways and canal north of the James river by which troops and supplies reached the Confederates from the West. Sigel meanwhile was to cover the Ohio railroad at Martinsburg. Hunter encountered Jones’s division at Piedmont (Mount Crawford) on the 5th of June and caused General Lee to detach from his main army a division under Breckinridge and Jones. Grant then detached Sheridan to join Hunter at Charlottesville, but Lee sent Hampton’s cavalry by a shorter route to intercept Sheridan, and a battle at Trevilian Station compelled Sheridan to return and leave Hunter to his fate. The losses in this cavalry combat exceeded 1000, for the dense woods, the use of barricades and the armament of the mounted troops caused both sides to fight on foot until lack of ammunition brought the action to an end. Sheridan during his three months’ command of the Federal cavalry had steadily adhered to the principle of always fighting the enemy’s cavalry, and, though now compelled to return to the Pamunkey, he contrived to draw Hampton’s force after him in that direction.

Meanwhile on the 13th of June General Early had moved from Cold Harbor to add his command to the Confederate forces in the Valley. Early succeeded ininterposing between Hunter and Lynchburg, and within a week drove Hunter out of Virginia by the Kanawha river route. Early then moved down the Valley turnpike unchallenged. Expelling Sigel from Martinsburg on the 4th of July and crossing the Potomac opposite Sharpsburg, he marched to a position between Winchester and the Rappahannock, and, with the aid of Lee’s and Ewell’s divisions and the newly arrived force under Lew Wallace on the Monocacy. Grant then detached Wright’s corps (VI.) from Petersburg and called Emory’s corps (XIX.) from the West to oppose Early, who after creating serious alarm retired, on the 13th of July, by Leesburg and Snicker’s Gap into the Valley at Winchester. Hunter had meanwhile gained Harper’s Ferry via the Baltimore and Ohio Railroad, and, when Early withdrew towards Strasburg, General Crook collected the forces of Hunter and Sigel to follow

the Confederates, but Early turned upon Crook and drove him back to the Potomac. Early then sent a detachment into Maryland to burn the town of Chambersburg. The alarm in the North for the safety of Washington was only quieted by the appointment of General Sheridan to command in the Valley.

He arrived on the scene early in August. His mission was to drive Early up the Valley or, if the Confederates crossed into Maryland, to intercept their return, and in any case he was to destroy all supplies in the country which could not be consumed by his own army. Sheridan made Harper’s Ferry his headquarters and concentrated at Hailtown. Early retained his position about Bunker’s Hill, on the Orange and Alexandria Railroad, and held the main road up the Valley until Sheridan moved out in force on the 10th of August. Early then retreated up the Valley to Fisher’s Hill (Strasburg), where he expected to be joined by Anderson’s corps from Richmond. Sheridan had followed Early, but hearing of this reinforcement to the enemy, he decided to take up a defensive line at Hailtown—the only point in the Valley which did not favour flanking operations—and await reinforcements. Sheridan’s retrograde movement from Cedar Creek on the 17th of August was, however, regarded in the North as a sign of indecision, and the few days he held at the end of August, Sheridan meanwhile had moved out between the Shenandoah and the Opequon to seize all routes towards Washington, from Martinsburg on Early’s left as far up as the Winchester-Berryville turnpike by which his own reinforcements reached the Valley through Snicker’s Gap. Sheridan also held the Smithfield crossing of the Opequon in Early’s front. Each commander, however, hesitated to bring on a battle, Sheridan because the result of the Presidential election would be seriously affected by his defeat at this moment, and Early because with his inferior forces he was content to keep the field for the more powerful forces than Sheridan’s flank effectively covered the Valley. But Sheridan, being a veteran of a formidable army that had ever invaded this region. It consisted of three small army corps under Wright (VI.), Emory (XIX.) and Crook (VIII.) and Torbert’s cavalry (6000) in three divisions under Averell, Merritt and Wilson, the whole numbering 30,000 infantry, 6000 cavalry and 27 batteries. Early continued to hold Winchester with four divisions under Rodes, Gordon, Breckinridge and Rameur and two cavalry divisions under Fitz Lee and Lomax. He had soon been deprived of Anderson’s corps which was sorely needed at Richmond, a fact which Sheridan discovered through his spies in Winchester, and indeed Sheridan had been waiting a fortnight for this movement by which Early’s command was to be reduced. For a month the two armies had manoeuvred between Hailtown and Strasburg, each commander hoping for such an increase to his own or decrease of his enemy’s numbers as would justify attack. The Valley operations were aided indirectly by assaults and sorties about Petersburgh. Grant aimed at preventing Lee sending reinforcements to Early until Sheridan’s plans had been carried out. Meanwhile Early had been gathering up the harvests in the northern Valley, but on the 9th of August Sheridan was able to report “I have destroyed everything that was valuable south of Winchester, and they will have to haul supplies from well up to Staunton.” Sheridan in September could put 25,000 infantry and 8000 cavalry into action, and at this moment he was visited by Grant, who encouraged his subordinate to seize an opportunity to attack the enemy.

The first encounter of Sheridan and Early took place on the
19th of September about 2 m. east of Winchester. Sheridan had crossed the Opequon and found the enemy in position astride the Winchester-Berryville road. Early was out-numbered and outfought, but he attributed his defeat to the enemy’s “immense superiority in cavalry,” and in fact Sheridan deployed Mansfield’s division (Longstreet’s corps), or pistol in hand and literally riding down a hostile battery, taking 1200 prisoners and 5 guns. The Federal victory, however, cost Sheridan 4500 casualties and he had hoped for greater success, since Early had divided his forces. Sheridan’s plan was to overwhelm Ramsay before he could be supported by Rodes and Gordon, but Early contrived to bring these divisions up and counter-attack while Sheridan was engaged with Ramsay. Early had confided his left to Fitz Lee’s cavalry and taken Breckinridge to strengthen his right. But Merritt’s horsemen rode cavalry the Confederate cavalry, who fled, communicating their panic to the infantry of the left wing, and the day was lost. Early retreated through Newtown and Strasburg, but at Fisher’s Hill behind Tumbling Run, where the Valley was entrenched on a front of 3 m. between the Shenandoah river and Little North Mountain, Early rallied his forces and again detailed his cavalry to protect his left from a turning movement. But Sheridan repeated his manoeuvre, and again on the 22nd of September Early was attacked and routed, General Crook’s column having outflanked him by a détour on the western or Back road. Early now retreated, and Kozeny’s division (Longstreet’s corps) at Tumbling Run, and, evading all Sheridan’s efforts to bring him again to battle, reached Port Republic on the 25th of September. On learning of this disaster, and the distress of his troops, General Lee promised to send him boots, arms and ammunition, but under pressure of Grant’s army, he could not spare any troops. Lee had estimated Sheridan’s force at 12,000 effective infantry, and Early’s report as to his being outnumbered by three or four to one was not credited. Yet Early had much to do to avoid destruction, for Sheridan had planned to cut off Early by moving his cavalry up the Laurel Valley. As the Valley was formed in the front, the infantry held him at Fisher’s Hill; but Torbert with the cavalry blundered. Sheridan made Harrisonburg his headquarters on the 25th of September, where he relieved Averell of his command for having failed to pursue after the battle of Fisher’s Hill. In the first week of October Sheridan held a line across the Valley from Port Republic along North river to the Back road, and his cavalry had advanced to Waynesboro to destroy the railroad bridge there, to drive off cattle, and burn the mills and all forage and breadstuffs. Early had taken refuge in Blue Ridge at Rockfish Gap, where he awaited Ross’s cavalry, and Kershaw’s division (Longstreet’s corps), for Lee had resolved upon once again reinforcing the Valley command, and upon their arrival Early advanced to Mount Crawford and thence to Newmarket. The Federals retired before him, but his cavalry was soon to suffer another repulse, for Rosser and Lomax having followed up Sheridan closely on the 9th of October with five brigades, the Federal cavalry under Torbert turned upon this body when it reached Tom’s Brook (Fisher’s Hill) and routed it. Sheridan burnt the bridges behind him as he retired on Winchester, and apparently trusted that Early would trouble him no more and then he would rejoin Grant at Petersburg. But Early determined to go north again, though he had to rely upon Augusta county, south of Harrisonburg, for supplies, for he had resisted Rockingham and Shenandoah counties in accordance with Grant’s order. The Union commander-in-chief, contemplating a longer struggle between the main armies than he had at first reckoned on, had determined that the devastation of the Valley should be thorough and lasting in its effect.

Sheridan at Winchester was now free to detach troops to aid Grant, or remain quiescent covering the Ohio railroad, or move east of Blue Ridge. He had resisted the demand of the government, which Grant had endorsed, that Early should be rejoined through the Blue Ridge back on Richmond. Sheridan pointed out that guerrilla forces were always in his rear, that he would need to reopen the Alexandria railroad as a line of supply, that he must detach forces to hold the Valley and protect the railroads, and that on nearing Richmond he might be attacked by a column sent out by Lee to aid Early. Yet in fact Sheridan carried out the government programme at the beginning of 1865, and a defensive line along the north bank of the Ohio river from the end of November, Early again advanced to reconnoitre at Cedar Creek, but was driven back to Newmarket. At the beginning
of December the weather threatened to interfere with movement, and both sides began to send back their troops to Petersburg. During the winter the extremely caravans and guerilla warfare and in February 1865 the remaining on each side was less than a strong division. Sheridan seized the opportunity to advance with 10,000 cavalry. Early delayed this advance with his cavalry, while he evacuated Staunton; he called up a brigade to defend Lynchburg and proceeded to Wayneboro to await developments. Sheridan feared to advance on Lynchburg leaving Early on his flank and decided to attack Early at Wayneboro; and on the 2nd of March the Federal commander was warned by despatch, capturing 1,000 and his cannon and artillery. Early himself escaped and Rosser's cavalry dispersed to their homes in the Valley, but with Early's third defeat all organized resistance in the Shenandoah Valley came to an end. Sheridan moved over Blue Ridge to Charlottesville and began his work of destruction south and east. Lynchburg was too strongly held to be captured, but from Amherst Court House the railway to Charlottesville and the canal to Richmond were destroyed, and thus Lee's army was deprived of these arteries of supply. On the 16th of March at Columbia, on the James River Railroad to Petersburg, a division of cavalry, sent to reward Grant of his success, and on the 19th of March he rejoined the main army in Eastern Virginia, receiving Grant's warm commendation for having "voluntarily deprived himself of independence." (G. W. R.)

SHENDI, a town in the Anglo-Egyptian Sudan in the madiria (province) of Berber, on the right bank of the Nile in 18° 1' N., 33° 59' E., and 104 m. N.N.W. of Khartum by rail. Shendi possesses small manufactories of leather, iron and cotton; extensive railway workshops and a government experimental farm. It is the headquarters of the cavalry of the Egyptian army stationed in the Sudan. Shendi lies within the "Island of Meroë" and is a town of great antiquity. Thirty miles north are the pyramids of Meroë. On the opposite (west) bank of the Nile is the village of Mettemma, whence there is a caravan route across the Bayuda Desert to the Merawi (Merowe) by Jebel Barkal; this was the route followed by the desert column under Sir Herbert Stewart in 1884 in the Gordon relief expedition. In 1772 James Bruce stayed some time at Shendi—then governed by a woman—on his way to Egypt after visiting the source of the Blue Nile. When the Egyptians invaded the Sudan in 1820, Shendi, then a place of considerable size, submitted to Ismail Pasha, son of Mehmet Ali, the pasha of Egypt. In 1822, however, Ismail and his chief followers were treacherously burnt to death at Shendi by order of the mek (ruler) of the town, in revenge for the cruelties committed by the Egyptians. Later in the same year an Egyptian army from Kordofan raged the town to the ground, most of the inhabitants being massacred. From that period until the establishment of Anglo-Egyptian rule in 1898 Shendi was but a poor village. Its subsequent growth has been comparatively rapid. There is a considerable area of fertile land on either side of the Nile in the neighbourhood.

SHENG-KING, SHEN-KING, or LIAO-TUNG, a province of the Chinese empire, in southern Manchuria. It occupies an area of 50,000 sq. m. and contains a population of 4,000,000. Its capital is Mukden, or, as it is otherwise known, Sheng-kung, "the Flourishing Capital." The province includes the Liao- tung peninsula, the most southern part of which, including Port Arthur, is leased to Japan.

Sheng-kung is a lofty mountainous. A line drawn from King-chow Fu (41° 12' N., 121° 10' E.) N.E. to Mukden, and then south by west through Lénoi-yang and Hai-ch'eng to Kai-ping and the sea, would define the level country. A large portion of the province is fertile, but in the neighbourhood of the sea the saline exudation common in the north of China renders futile all attempts at cultivation. North and east of this district run numerous mountain ranges, for the most part in a north-and-south direction. The climate of Sheng-kung is marked by extremes of heat and cold. In summer the temperature varies from 70° to 90° F., and in winter from 50° above to 10° below zero. The mountain scenery is extremely picturesque, and the trees and shrubs are such as are common in England, the mountain ash being the only common tree which is there conspicuous by its absence. The most important rivers are the Liao-ho and the Yalu. The former takes its rise in Mongolia, and after running an easterly course for about 400 m., turns S.W., and empties into the Gulf of Liao-tung, in the neighbourhood of Ying-tsze, up to which town, 20 m. from the bar, the river is navigable for large junks. The Yalu rises in the contain- tains to the south of the plain, and empties into the Yellow Sea.

The chief cities, Mukden, Liao-yang, Niu-chwang, Port Arthur and Tairen (Dalny) are separately noticed. Niu-chwang is the chief port of the province. Sheng-kung is well supplied with railways, Mukden being in direct railway connexion with Peking, Niu-chwang, Port Arthur and Tairen as well as with the Korean railways, and with European and Vladivostock by the trans-Siberian line. The Mukden-Peking railway for another route to the interior has been begun (Dairen) which passes through the Great Wall at Shan-kai-wan and along the shores of the Gulf of Chih-li, and after leaving Mukden divides into three branches—one going eastward to Korea, another going by Kirin and A-she-ho to San-sing, while a third diverges N. by W. to Faku; thence through Mongolia to Pe-tu-na, and then to T'ai-tai-har, Mengen, and the Amur. Another road leads east from Niu-chwang to Fung-hwang-chung, now a station on the Mukden-Korea railway. The chief agricultural products are wheat, barley, millet, oats, maize, cotton, indigo and tobacco. Coal, iron and gold are also found in considerable quantities in the district. (See also Manchuria and China.)

SHEN-SI, a northern province of China, bounded N. by the Great Wall, W. by the province of Kan-su, S. by the province of Sze-ch'uen, and E. by Shan-si, from which it is separated by the Hwang-ho. Area about 75,000 sq. m.; pop. about 8,300,000. Si-gan Fu (q.v.), or Sian Fu, is the provincial capital; there are six other prefectural cities. Shen-si is divided into two parts by a barrier of mountains, consisting of the Fu-niu Shan and the Tsing-ling Shan, which attain elevations of over 11,000 ft., and run across the southern portion of the province. The great rivers of the west divide into the basins of the Wei-ho and of several other tributaries to the Hwang-ho. The name Shen-si, "west of the pass," refers to the Tungkwan pass, near the confluence of the Wei and the Hwang-ho. The valley of the Wei, situated between high tableland (the Ordis plateau) on the north and rugged mountains to the south, forms the great channel of communication between Eastern China and Central Asia. Were it in the hands of an enemy the Chinese colonies in Central Asia would be completely severed from the mother country, hence the eagerness evinced by the government through- out the Han-kiang and the Tien-shan, the district are the sites of cities used as capitals of China in remote antiquity. Si-gan Fu, founded in the 3rd century B.C., was usually the capital until the time of the Kin dynasty (A.D. 1127), and it was chosen by the dowager empress as the temporary capital during the stress of the Boxer outbreak (1900-1901). It is noted also as containing the celebrated Nestorian tablet, erected A.D. 781, on which is engraved an edict according to Moslem to the Nestorian missionaries. Modern Christian (Protestant) mission work in the city dates from 1896. The walls of Si-gan enclose a square space of 6 m. each way, and, unlike most Chinese cities, its fortifications are kept in perfect repair. During the Mahomedan rebellion it was closely invested for two years (1868-1870) by the rebels, who, however, failed to capture it. During a great famine which occurred in 1902 about 2,500,000 persons in the province died of starvation.

From Si-gan Fu radiate a number of roads going east, south and west. The east road is the great Tung-kwan road, which forms the main principle of communication between Peking and the north-eastern provinces of the empire, and Sze-ch'uen, Yunnan and Tibet. To the south, one road crosses the mountains to Shang-chow, and is connected with the Tsaidam and the Tsaidam river. Another to the east leads to the Yangtze-kiang, and another to the Yangtze-shan. This road was followed by the Nestorians and by the T'ang-shan nann-lu. It was along these roads that the fame of China first reached Europe, and it was by the T'ang-shan nann-lu that Marco Polo entered the empire. To defend this line of communication the Great Wall...
SHENSTONE—SHEPPY

was extended beyond Su-chow, and the Kia-yu gate, “the door of the empire,” was built. During the reign of Hia-wu Ti of the Han dynasty, Chinese colonies and high roads lined with fortified cities were established along this route, and though at times the government have lost possession of the line beyond the Great Wall, it has always succeeded in re-establishing its supremacy over it. Occupying a position, then, at the confluence of the roads which connect north-east China with the west and south, and although the city of Peking is in the north and the city of Hu-tu in the south, it was a city of great commercial importance. It has few manufactures, but does an extensive trade principally in the importation of silk from Cheh-chiang and Sze-ch‘en, tea from Hu-peh and Hu-tu, and manufactured goods from the north and the south. It is the present home of many of the other articles (such as skins and furs) to Kan-suh, Russia and Central Asia.

Shen-si is purely an agricultural province. Its principal products are Poem, cotton and opium—the anti-opium decrees of 1906 had little effect on the province up to 1910—and these it exchanges with the neighbouring provinces for coal, iron, salt, &c., Kao-liao, pulse, millet, maize, groundnut, barley, beans, peas, luceerne, and rye are also produced. In addition to these crops, Si-gan evergreen trees or shrubs are to be met with within the province. Shen-si is specially noted for the varnish tree. Wolves are numerous in the mountains; the heron, ibis, wild goose and snipe in the valleys.


SHENSTONE, JOHN [Jack] (1714-1765), English poet, son of Thomas Shenstone and Anne, daughter of Willem Penn of Harborough Hall, Hagley, was born at the Leasowes, a property in the parish of Halesowen, now in Worcestershire, but then included in the county of Shropshire. At school he began a life-long friendship with Richard Jago, and at Pembroke College, Oxford, where he matriculated in 1732, he made another firm friend in Richard Graves, the author of The Spiritual Quixote. He took no degree, but, while still at Oxford, he published for private circulation Poems on various occasions, written for the entertainment of the author (1737). This edition, containing the first draft of "The Schoolmistress," Shenstone tried hard to suppress, but in 1742 he published anonymously a revivified form of The Schoolmistress, a Poem in imitation of Spenser.

The original was Sarah Lloyd, teacher of the village school where Shenstone received his first education. Isaac D’Israeli pointed out that it should not be classed, as it was by Robert Dodson, as a moral poem, but that it was intended as a burlesque, to which Shenstone appended in the first instance a "ludicrous index." In 1741 he published The Judgment of Hercules. He inherited the Leasowes estate, and retired there in 1745 to undertake what proved the chief work of his life, the beautifying of his property. He embarked on elaborate schemes of land drainage which gave the Leasowes a wide celebrity, but sadly impoverished the owner. Shenstone was not a contented recluse. He desired constant admiration of his gardens, and he never ceased to lament his lack of fame as a poet.

Shenstone’s poems of nature were written in praise of her most artificial aspects, but the emotions they express were obviously genuine. His Schoolmistress was admired by Goldsmith, with whom Shenstone had much in common, and his "Elegies" written at various times and to some extent biographical in character won the praise of Robert Brooke, in the preface to Poems, chiefly in the Scottish Dialect (1786), called "the most celebrated poet whose divine elegies do honour to our language, our nation and our species." This was the best pure example of his skills in the management of the anaepaestic trimer in his "Pastoral Ballad in Four Parts" (written in 1743), but first printed in Dodson’s Collection of Poems (vol. iv., 1755). Shenstone died unmarried on the 11th of February 1765.

His works were first published by his friend Robert Dodson (3 vols., 1773), but the most complete edition is that of R. A. Dodsley, containing the Poetical Works and Correspondence of the Leasowes. The last, consisting of correspondence with Graves, Jago and others, appeared after Dodson’s death. Other letters of Shenstone’s are included in Select Letters (ed. Thomas Hill 1728). The letters of Lady Luxborough (née Henrietta St John to Shenstone were printed by T.Dodside in 1775; much additional correspondence is preserved in the British Museum—letters to Lady Luxborough are in the MS. 28959, and correspondence between Shenstone and Bishop Percy from 1737 to 1763—the last being of especial interest to Shenstone was due to the original suggestion of Percy’s Reliques, a celebrated collection of poetry which would attract attention. Shenstone’s work has been a monument of the romantic movement in English literature. See also Richard Graves, Recollections of some particulars in the Life of the Late William Shenstone, 1770; H. Sydney Grazebrook, The Family of Shenstone the Poet (1800); Lenear Morison, “Shenstone" in the Gentleman’s Magazine (vol. 289, 1900, pp. 196-205); A. Chalmers, English Poets (1810, vol. xii), with "Life" by Samuel Johnson; his Poetical Works (1778), and, in the Modern Library of the British Classics (ed. G. Grimaldi; T. D’Oyly), "The Domestic Life of a Poet—Shenstone vindicated," in Curiosities of Literature; and "Burns and Shenstone," in Field in Field (1894), by "Hugh Halliburton" (J. L. Robertson.

SHEPPY, JOHN [Jack] (1702-1724), English criminal, was born at Stepney, near London, 11 December 1702. His father, who, like his grandfather and great-grandfather, was a carpenter, died the following year, and Jack Sheppard was brought up in the Bishopsgate workhouse. One of his father’s old employers apprenticed him to the family trade, but young Sheppard fell into bad company at a neighbouring Drury Lane tavern. Here he met Elizabeth Lyon, known as "Edgeworth Bess," a woman of loose character with whom he lived, and to gratify whose tastes he committed many of his crimes. At the end of 1723 he was arrested as a runaway apprentice, and then escapes. In 1724, "he was heard of almost every one that stood in my way," Joseph Blake, known as "Blueskin," being a frequent confederate. In the first six months of 1724 he twice escaped from gaol, and towards the end of that period he was responsible for an almost daily robbery in or near London. Eventually, however, his independent attitude provoked the bitter enmity of Jonathan Wild, who procured his capture at the end of July. Sheppard was tried at the Old Bailey and condemned to death, but, largely thanks to "Edgeworth Bess," he managed to escape from the condemned cell, and was soon back in his old haunts. In September he was re-arrested and imprisoned in the strongest cell of Newgate, being actually chained to the floor of his cell, but by a combination of strength and skill he escaped through the chimney to the roof of the prison, whence he lowered himself into the adjoining house. After a few days' concealment he was roused enough to reappear in the Drury Lane quarter. He was captured, hopelessly drunk, in a Clare Market tavern and reimprisoned, his cell being now watched night and day. On 16th of November 1724 he was hanged at Tyburn. He was then not quite twenty-two.

Sheppard has been made the unworthy hero of much romance, of which Harrison Ainsworth’s novel, Jack Sheppard (1839), is the most notable instance. In truth he was merely a vulgar scoundrel, who did not hesitate to rob his only real friend.

See A Narrative of all the Robberies, Escapes, &c., of John Sheppard, attributed to Daniel Defoe (London, 1724); Newgate Calendar, ed. Knapp and Baldwin; Grifiths, Chronicles of Newgate; British Journal (August, October 1724); Weekly Journal (August, September, November 1724); Celebrated Trials.

SHEPPY, an island off the Kentish coast of England, included in the north-eastern parliamentary division of Kent. It is the largest of the several low islands which are separated from the mainland by the ramifying creeks about the mouth of the river Medway. The strait isolating Sheppy is called the Swale; it is about 3 m. broad at its eastern end, but narrows to some 300 yds. at the west, where it is crossed on a bridge by a branch of the South-Eastern & Chatham railway, and by a road. There is a ferry here, but at low water the straggers are low-lying, with one small elevation slightly exceeding 200 ft. near the north coast, which presents slight cliffs towards the shallow sea. These are frequently encroached upon by the sea, while the flat shore on the south is protected by embankments. Sheppy is 10¾ m. in extreme length from E. to W., while the greatest breadth is about 5 m. On the south, narrow branches of the Swale, formerly wider, divide the isles of Harty and Elmley from the main island, of which, however, they now practically form part. Sheppy is for the most part treeless but very fertile,
bears much grain and fruit; its name, meaning the "island of sheep," is still appropriate, as great flocks are bred. On the west are the port of Queenborough and the naval station of Sheerness. From here the Sheppey light railway runs east through the island, serving Sheppey, Lowen, and Lovelady, which are in some favour as seaside resorts. The London clay, of which the island is composed, abounds in fossils.

SHEPSTONE, SIR THEOPHILUS (1817–1893), British South African statesman, was born at Westbury near Bristol, England, on the 8th of January 1817. When he was three years old his father, the Rev. William Shepstone, emigrated to Cape Colony. Young Shepstone was educated at the native mission stations at which his father worked, and the lad acquired great proficiency in the Kaffir languages, a circumstance which determined his career. In the Kaffir War of 1835 he served as headquarters interpreter on the staff of the governor, Sir Benjamin D'Urban, and at the end of the campaign remained on the frontier as clerk to the agent for the native tribes. In 1838 he was one of the party sent from Cape Colony to occupy Port Natal on behalf of Great Britain. This force was recalled in 1839, when Shepstone was appointed British resident among the Fingo and other tribes in Kafraria. Here he remained until the definite establishment of British rule in Natal and its organization as an administrative entity, when Shepstone was made (1843) agent for and captain-general of the native tribes. In 1848 he became captain-general of the native levies; in 1855 judicial assessor in native causes; and, in 1856, on the remodelling of the Natal government, secretary for native affairs and a member of the executive and legislative councils. This position he held until 1877. Thus for over thirty years he was the director of native policy in Natal. A man of strong will and pronounced views he gained a great influence over the natives, by whom he was called "father, and, in acknowledgment of his hunting exploits, "Somsete." The main line of his policy was to maintain tribal customs as far as consistent with principles of British law and not to attempt to force civilization. The result of his policy is still traceable in the condition and status of the Natal natives. While he remained in charge there was but one serious revolt of the natives—that of Langalilebele in 1873—against white control.

Shepstone's influence with the Zulus was made use of by the Natal government; in 1861 he visited Zululand and obtained from Panda a public recognition of Cetywayo as his successor. Twelve years later Shepstone attended the proclamation of Cetywayo as king, the Zulu chieftain, and shepherded Cetywayo to live at peace with his neighbours. In 1874 and again in 1876 Shepstone was in London on South African affairs, and to his absence from Natal Cetywayo's failure to keep his promises is, in part, attributed. When in London in 1876 Shepstone was entrusted by the 4th Earl of Carnarvon, then secretary of state for the colonies, with a special commission to confer with the Transvaal executive on the question of the federation of the South African states, and given power, should he deem it necessary, to annex the country, subject to the confirmation of the British government. Shepstone went to Pretoria in January 1877, and on the 12th of April issued a proclamation announcing the establishment of British authority over the Transvaal. Shepstone's force consisted of twenty-five mounted policemen only, but no overt opposition was made to the annexation; the republic at the time was in a condition bordering on anarchy. "Nothing but annexation," wrote Sir Theophilus to the Colonial Office, "will or can save the state, and nothing else can save South Africa from the direst consequences. All the thinking and intelligent people know this, and will be thankful to be delivered from the thrall of petty factions which, if they are perpetually kept in a state of excitement and unrest, because the government and everything connected with it is a thorough sham" (Martineau's Life of Sir Bartle Frere, ch. 18). Shepstone's action has been condemned as premature. He had, however, reason to believe that if Great Britain remained inactive, Germany would be induced to undertake the protection of the Transvaal.

Moreover, had the policy of self-government for the Boers which he outlined in his annexation proclamation been carried out, the revolt of 1880–81 might not have occurred. The British policy also probably of the 19th century, and a science of native expeditions, as assistant-commissary of Zululand, in the South African War, 1899-1902, and became in 1909 secretary for native affairs (Natal) and secretary of the Natal native trust. A younger brother of Sir Theophilus, John Wesley Shepstone (b. 1827), filled between 1846 and 1866 various offices in Natal in connexion with the administration of native affairs.

SHEPSTONE MALLET, a market town in the eastern parliamentary division of Somersetshire, England, 22 m. S.W. of Bath, on the Somerset & Dorset and the Great Western railways. Pop. of urban district (1911), 5,258. The old town extends in a narrow line along the river Sheppey, while the modern town has for its main street a viaduct across the river valley. The church of St Peter and St Paul is especially noteworthy. Consisting of a chancel, clerestoried nave, and aisles, it is Early English and Perpendicular in style, and contains a beautiful 13th-century oak roof of 350 panels, each with a different design; a 15th-century pulpit of carved stone; and some interesting old monuments of the Strode, Mallet and Gournay families. The market cross, over 50 ft. high, and one of the finest in Somerset, was erected by Walter and Agnes Buckland in 1500. Shepstone possesses a grammar school, a training college, and an agricultural and art school. The once flourishing cloth and woollen trades have declined, but there are large breweries, roperies, potteries, and, in the neighbourhood, marble, granite, asphalt and lime works.

Shepton, before the conquest called Sepetom, was in the possession of the abbots of Glastonbury for four hundred years, and then passed to a Norman, Roger de Courcelle. Afterwards it came into the possession of the Norman barons Mallet or Mallet, one of whom was fined for rebellion in the reign of King John. From the Mallets it went to the Gournays, but in 1556 it reverted to the crown, and it is now included in the duky of Cornwall. The town received the grant of a market from Edward II. Monmouth and the rebel army passed through Shepton twice in 1685, and twelve of the rebels were hanged here by Judge Jeffreys.

SHERANI, or SHRANI, a Pathan tribe on the Dera Ismail Khan border of the North-west Frontier Province of India. The Sherani Agency occupies an area of 1,500 sq. m. and had a population in 1901 of 12,371. The Sherani occupy the principal part of the mountainous tract known as the Tskhi-i-Sulman and the country thence eastward down to the border of Dera Ismail Khan district. They are bounded on the north by the Gomal Pass, and beyond that by the Mahaud Wahziris; on the south by the Ustaranas and Zmarais; and on the west by the Haripals, Kakars and Mandu Khels. Between the Sherani country and the British border lie several small mountain ridges, across which the three chief passes are the Zarakni or Shidkhi Haidar.

1 Freer to J. M. Maclean, 22nd of April 1881: Life of Sir Bartle Frere, vol. ii. p. 183.)
the Drabant and the Chandwan. The Sheranis are generally of middling stature, thin, but handy and active. They have bold features, high cheek-bones, and their general appearance is wild and manly. Their dress consists of a coarse black blanket tied round the waist, and another thrown over the shoulders. Their chief occupation is agriculture, but they carry on an extensive trade in furs, and it is said that the jaffa men of the Dera jacket district. The Sherani tribe and country are divided into two well-defined branches called Bargha and Largha, or the Highlands and the Lowlands, the inhabitants being called respectively Barghawals and Larghawals. The Highlands are on the side of Zhub, the Lowlands on the side of the Dera jacket, and the dividing line being generally the watershed and higher peaks of the Takhti-Sultan range of mountains. The physical configuration of the country makes the separation so complete that the two tribal divisions act independently of each other. After the Zhub expedition of 1890 the question of boundaries between the Punjab and Baluchistan came up for settlement, and the government decided that Bargha should remain with Baluchistan and Largha with the Punjab. The Gomal river from Kundar-Domandi to Kajuri-Kach is the boundary between Baluchistan and Waziristan, as well as between the respective provinces. In 1901 these frontier districts were transferred from the Punjab to the North-west Frontier Province.

SHERATON, THOMAS (c. 1735-1806), next to Chippendale, the most famous English furniture-designer and cabinet-maker, was born in humble circumstances as the Stockton-on-Tees. His education was rudimentary, but he picked up drawing and geometry. He appears to have been apprenticed to a cabinet-maker, but he was ever a strange blend of mechanic, inventor, artist, mystic and religious controversialist. Indeed, it is as a writer on theological subjects that we first hear of him. Although his parents were church people he was a Baptist, and in 1782 he published at Stockton A Scriptural Illustration of the Doctrine of Regeneration, to which was added A Letter on the Subject of Baptism, describing himself on the title page as a "mechanic, one who never had the advantage of a collegiate or academical education." Of his career as a meister and designer of furniture nothing is known until he is first heard of in London in 1790, when he was nearly forty. The date of his migration is uncertain, but it probably took place while he was still a young man. In London he did work which, although it has made him illustrious to posterity, never raised him above an almost sordid poverty. Biographical particulars are exceedingly scanty, and we do not know to what extent, if at all, he worked with his own hands, or whether he confined himself to evolving new designs, or modifying and adapting, and occasionally partly copying, those of other men of his time. It was not until after he began to write, and we know that some part of his scanty income was derived from giving drawing lessons. Even the remarkable series of volumes of designs for furniture which he published during the last sixteen years of his life, and upon which his fame depended, were not a commercial success. He was a great artistic genius who lived in chronic poverty. The only trustworthy information we possess regarding his circumstances is found in the Memoirs of Adam Black, who when he first arrived in London lodged a week in his house, only two years before Sheraton's death. "Sheraton," he says, "lived in a poor street, in London, his house half shop, half dwelling-house, and himself looked like a worn-out Methodist minister, with threadbare black coat. I took tea with them one afternoon. There was a cup and saucer for the host, and another for his wife, and a little porringer for their daughter. The wife's cup and saucer were given to me, and she had to put up with another little porringer. My host seemed a good man, with some talent. He had been a cabinet-maker, and was now author, publisher, and teacher of drawing, and, I believe, occasional preacher. Black shrewdly put his finger upon the very quickness of Sheraton's failure. He was a worn-out encyclopaedist and preacher is an interesting character. . . . He is a man of talent and, I believe, of genuine piety. He understands the cabinet business—I believe he bred to it. He is a scholar, writes well, and, in my opinion, draws masterfully—

is an author, bookseller, stationer and teacher. . . . I believe his abilities and resources are his ruin in this respect—by attempting to do everything he does nothing. There is, however, little indication that Sheraton chafed under the tyranny of those twin jailors of the daring heart, low birth and iron form as it was, 'I cannot help the reader,' he writes in one of his books, 'though I am thus employed in raking my invention to design fine and pleasing cabinet-work, I can be well content to sit upon a wooden-bottom chair, provided I can but have common food and raiment wherewith to pass through life in peace.' His first book on furniture was published in 1791 with the title of The Cabinet-Maker and Upholsterer's Drawing Book. It was issued in parts by T. Bensley, of Bolt Court, Fleet Street; there was a second edition in 1793 and a third in 1802, each with improvements. In the first edition it was stated that copies could be obtained from the author at 41 Davies Street, Grosvenor Square; in the second, that he was living at 106 Wardour Street; the last address we have is 8 Broad Street, Golden Square. There was also an 'Accompaniment' and an "Appendix." In this book, which contained 111 copper-plate engravings, Sheraton gives abundant evidence of the arrogance and conceit which marred all his publications. He dismissions Chippendale's designs in a patronizing way as "now wholly antiquated and laid aside, though possessed of great merit according to the times in which they were executed." His lack of practical common sense is suggested by the fact that most of the book is taken up with a treatise on perspective, needless then and unreadable now. He falls foul of every volume on furniture which had been published before his time, and is abundantly satisfied of the merit of his own work. The designs in the book are exceedingly varied and unequal, ranging from pieces of perfect proportion and the most pleasing simplicity to efforts ruined by too abundant ornament. Some of the chair-backs are delightful in their grace and delicacy, but in them, as in other of his drawings, it is easy to trace the influence of Hepplewhite and Adam—his mentor. In 1802 he published a book, the authorship of which is generally ascribed to Adam. Sheraton, indeed, like his predecessors, made extensive use not so much perhaps of the works of other men as of the artistic ideas underlying them which were more or less common to the taste of the time. He was sometimes original, sometimes adaptive—what Alexandre Dumas père called a "conqueror"—sometimes a copyist. His "conquest" of Hepplewhite was especially unmerciful, for he abused as well as pillaged him. But his slender forms and sweeping curves were his own inspiration, and his extensive use of sashwood differentiated his furniture from that of his contemporaries. It must be remembered that Sheraton's books, like those of the other great cabinet-makers of the second half of the 18th century, were intended not for the "general reader" but for the practical use of the trade, which, no doubt, copied their designs extensively, although it is reasonable to suppose that he himself obtained orders by the publication of his books and employed other cabinet-makers to manufacture the work. It seems certain, however, that he himself never possessed anything more than a small shop. Of his own actual manufacture only one piece is known with certainty—a glass-fronted book-case, of somewhat frigid charm, stamped "T.S." on the inside of one of the drawers. It lacks the agreeable swan-necked pediment so closely associated with his style. The Drawing Book, of which a German translation appeared at Leipzig in 1794, was followed in 1802 and 1803 by The Cabinet Dictionary, containing an Explanation of all the Terms used in the Cabinet, Chair and Upholstery branches, containing a display of useful articles of furniture, illustrated with eighty-eight copperplate engravings. The text is in alphabetical form, and, in addition to a supplement with articles on drawing and painting, the book contained a list of "most of the master-cabinet-makers, upholsterers, and chair makers,"" 252 in number, then living in and around London. Sheraton told his readers that he had hitherto derived no profit from his publications on account of the cost of producing them.
SHERBET—SHERBORNE

Some of the designs in this volume show the earlier stages of the tendency to the tortured and the bizarre which disfigured so much of Sheraton's later work. This debased taste reached its culmination in The Cabinet Maker, Upholsterer and General Artists' Encyclopedia, the publication of which began in 1804. It was to consist of 125 numbers, but when the author died two years later only a few had been issued. The plates are in colour. The scope of this work was much wider than the title suggests. It dealt not only with furniture and decoration, but with history, geography, biography, astronomy, botany and other sciences. The method of illustration was the engraving of "material things that Sheraton loved in his style, once so graceful and so delicate, by an over-anxious following of the pseudo-classical taste which in France marked the period of the Consulate and the Empire. The harmonious marquetry, the dainty painting of flowers in wreaths and festoons, the lightness and finish were replaced by pieces of furniture which at the best were clumsy and at the worst were hideous. Some of the chairs especially which he designed in this last period are amazingly grotesque, their backs formed of fabulous animals, their "knees and legs and heads of animals." Sheraton was a very changing little work-tables bear Sheraton's attribution, even if these graceful trifles in his later forms lose their delicacy and become squat and heavy. He designed many beautiful sideboards and bookcases, but he finished by drawing pieces that were ruined by insistence upon the characteristics, and often the worst characteristics, of the Empire manner. Sheraton's inventive ingenuity had led him to devise many of the ingenious pieces of combination or "harlequin" furniture which the latter part of the 18th century loved. Thus a library table would conceal a step-ladder for reaching the top shelves of bookcases, a dressing table would be also a wash-stand and an escritoire—but this he admitted that he did not introduce—looking-glasses would enclose dressing-cases, writing-tables or work-tables. But his most astonishing fancy was an ottoman with "heating urns" beneath, "that the seat may be kept in a proper temperature in cold weather." How far he was responsible for the introduction of the hideous hall chair, made of mahogany, with the owner's crest painted on the back, which was common for three-quarters of a century after he died, is not clear; but he describes and illustrates it.

That Sheraton can have been personally popular is incredible. His books make it evident that his character was tart, angular and self-assertive, and that he was little disposed to be generous towards the work of predecessors or rivals. Such an attitude towards the world would suffice to explain his lack of substantial success. He appears to have preached occasionally to the end, and even in his furniture books he sometimes falls into improving remarks of a religious character. As we have seen, his first publication was a religious work, and when in 1794 his friend Adam Candler, the landscape painter, wrote a pamphlet entitled Thoughts on the Peaceable and Spiritual Nature of Christ's Kingdom, Sheraton contributed to it an exhortation upon Spiritual Subjection to Civil Government, which was reprinted separately with additions a year later. In 1805 he issued A Discourse on the Character of God as Love. He died on Oct. 22nd, 1806, at No. 8 Broad Street, Golden Square, aged about 55, from, it is said, over-work. An obituary notice of him appeared in the Gentleman's Magazine of the following month, which stated that he had been for many years "a journeyman cabinet-maker, but since 1793 supported a wife and two children by authorship." He was described as "a well-disposed man, of an acute and enterprising disposition." The writer added that he had "left his family, it is feared, in distressed circumstances, and that he had travelled to Ireland to obtain subscribers for the Encyclopedia, of which at the time of his death nearly 1000 copies had been sold. In 1812 there appeared a parallel volume, Designs for Household Furniture exhibiting a Variety of Elegant and Useful Patterns in the Cabinet, Chair and Upholstery Branches on eighty-four Plates. By the late T. Sheraton, Cabinet-maker. This was in the main, if not entirely, a collection of plates from the Cabinet Dictionary and the Encyclopedia.

Thomas Sheraton is unquestionably the most remarkable man in the history of English furniture. His genius was less sane and less balanced than that of Chippendale, but despite his excursions into the Chinese and Louis Quinze manners, Chippendale always produced an impression of English work. Sheraton's greater adaptability, his readiness to receive foreign impressions, his adaptations of Louis Seize ideas, the lightness of his forms and the grace of his conceptions had about them a touch of the exotic which was heightened by his lavish employment of satin-wood and other beautifully grained woods susceptible of a high polish. To this there are no more charming things inside French furniture than some of the creations of Sheraton in his great period. The severe and balanced forms, the delicate inlay, the occasional slight carving in low relief, the painted enrichments, the variety of the backs and legs of his chairs produce an impression of lightness and grace that has never been surpassed; whether he designed a little knife-case or the body of a long clock, harmony, proportion and a delicate fancy were ever present. It is true that he adapted and even copied extensively, but so did every one else, and it is impossible to be sure what he might have done if he had not been adapted to the particular man whose name has become associated with it. Indeed "Sheraton," like "Chippendale," has come to indicate a style rather than a personal attribution. But the volume and the beauty of the designs in his books is such that, when every allowance has been made for adaptation, there remains a mass of beautiful work which cannot be denied to him. In later life his very adaptability was his undoing. The public, always ready to take its mobiliary fashions from France, demanded Empire furniture, and Sheraton may have been, or have have forced himself to be, compelled to give them what they wanted. His extravagant creations in that sphere—far worse than anything that was designed in France—had much to do with the development of a fashion of English Empire which finally ruined British furniture design. He rioted in sphinxes and lions and fabulous beasts, he evolved forms that were dull and cumbrous, and added to their heaviness by brass mounts at once massive and uninspired. After his death the eccentricity may have been less, but the heaviness and dullness were greater, and with the disappearance of Sheraton the brief but splendid outburst of English furniture ended in gloom. It had lasted little more than a half a century, but it was a half-century which only France ever could, or did, rival. It is one of the strangest ironies in the history of art that the last and almost the greatest exponent of the English genius in the sphere of furniture was in fact a visitation from abroad that France ever could, or did, rival. It is one of the strangest ironies in the history of art that the last and almost the greatest exponent of the English genius in the sphere of furniture was in fact a visitation from abroad that France ever could, or did, rival. It is one of the strangest ironies in the history of art that the last and almost the greatest exponent of the English genius in the sphere of furniture was in fact a visitation from abroad that France ever could, or did, rival. It is one of the strangest ironies in the history of art that the last and almost the greatest exponent of the English genius in the sphere of furniture was in fact a visitation from abroad that France ever could, or did, rival. It
SHERBROOKE, WESTCOTT

SHERBROOKE, ROBERT LOWE, Viscount (1811–1892), British statesman, was born on the 4th of December 1811 at Bingham, Notts, where his father was the rector. He was educated at Winchester and University College, Oxford, where he took a first class in classics and a second in mathematics, besides taking a leading part in the Union debates. In 1835 he won a fellowship at Magdalen, but vacated it on marrying, in 1836, Miss Georgina Orred (d. 1884). He was for a few years a successful "coach" at Oxford, but in 1838 was bitterly disappointed at not being elected to the professorship of Greek at Glasgow. In 1841 Lowe moved to London, to read for the Bar ("called" 1842); but his eyesight showed signs of serious weakness, and, acting on medical advice, he determined to try his fortune in the colonies rather than in London. He went to Sydney, where he set to work in the law courts. In 1845 he was nominated by Sir George Gipps, the governor, to a seat in the New South Wales Legislative Council; owing to a difference with Gipps he resigned his seat, but was elected shortly afterwards for Sydney. Lowe soon made his mark in the political world by his clever speeches, particularly on finance and education; and besides obtaining a large legal practice, he was one of the principal writers for the Atlas newspaper. In 1850 he went back to England, in order to enter political life there. His previous university reputation and connexions, combined with his colonial experience, stood him in good stead. The Times was glad to employ his ready pen, and as one of its ablest leader-writers he made his influence widely felt. In 1852 he was returned to Parliament for Kidderminster in the Liberal Interest. The House of Commons was not a place for a man of Lowe's size and an agricultural centre. On the separation of the offices of bishop and abbey in 1122, the abbot's see was carved out of the bishop's manor, but did not include the town. Bishop Roger of Caen (1107–1130) built the castle, described by Henry of Huntingdon as scarcely inferior to that of Devizes, "than which there was none greater within the confines of England." Its strength made Stephen force Bishop Roger to surrender it in 1139, but during the civil war in his reign it passed into the hands of the empress Maud. It was later granted to the earls of Salisbury, who seem to have allowed it to fall into disrepair, for in 1315 and in 1319 the abbey of Sherborne was appointed to inquire into its condition. It was recovered by the bishop in 1355, and retained by the see until granted in 1599 to Elizabeth, who gave it to Sir Walter Raleigh. The abbey church was partly burnt in 1437, in a riot due to the monks' refusal to recognize the town's church of St. Peter's. As the parish church, though they had restricted their use of the abbey church for parochial purposes. Signs of this fire are still visible on the walls, which are in part tinged red by the flames. The town, though frequently the centre for medieval assizes and inquisitions, never became a municipal or parliamentary borough, but was governed by two constables, elected in the municipal court. In 1540 Sir John Horsey, who had bought the manor and church at the Dissolution, sold the abbey to the vicar and parishioners. The Reformation made no break in the continuity of the school, which had probably existed in the abbey since the 11th century. Edward VI. by his charter in 1550 made its governors one of the first purely lay educational corporations founded in England. The town suffered severely during the civil wars, the castle being besieged by the parliamentary forces in 1642 and 1645. The fairs now held on the 8th of May, the 26th of July and the first Monday after the 10th of October, have been granted to the town since 1212, 1290 and 1309. After the decline of the medieval trade in cloth, lace and buttons were the only articles manufactured here until the introduction of silk-weaving in 1740. In June 1905, in commemoration of the 1200th anniversary of "the town, the bishopric and the school," an historical pageant, invented and arranged by Louis N. Parker (at one time music-master at the school), was held in the grounds of Sherborne Castle, and set the model for a succession of pageants held subsequently in other historic English towns.

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See William Beauchamp Wildman, A Short History of Sherborne from A.D. 705 (1902), and Life of S. Edelheim, first Bishop of Sherborne (Sherborne, 1905).

1 This phrase is always ascribed to Lowe, and has become history in association with him. But what he really said in his address to the Edinburgh Philosophical Institution in 1867 was that it was necessary "to induce our future masters to learn their letters."
SHERIDAN

halfpenny a box on lucifer matches in 1871 (for which he sug-
gested the epigram ex luce lucellum, “out of light a little profit”) rousted a storm of opposition, and had to be dropped. In 1873 he was transferred to the Home Office, but in 1874 the govern-
ment resigned. When the Liberals returned to power in 1880 he was raised to the peerage as Viscount Sherbrooke, but from 1875 till his death at Watlingham, Surrey, on the 27th of July 1892, his health was constantly failing, and by degrees he figured less and less in public life.

Bobby Lowe, as he was popularly known, was one of the most remarkable personalities of his day, with his tall, striking figure, albinic complexion, and hair, and faculty for epigram and irony. During the ’seventies the following epitaph was suggested for him by one of the wits of his day:—

“Here lies poor old Robert Lowe;
Where he’s gone I don’t know;
If to the realms of peace and love,
Farewell to happiness above:
If, haply, to some lower level,
We can’t congratulate the devil.”

Lowe was delighted with this, and promptly translated it into Latin, as follows:—

“Centinuntur hac in fossa
Humilis Roberti ossa;
Sic ad coelum evolabit,
Pax in coele aut non restabit;
Sin in inferis jacebit,
Diabolum ejus poenitet.”

His literary talent, though mainly employed in journalism, was also shown in a little volume of verses, Poems of A Life (1884). He married a second time, in 1885, but left no children.

See Life and Letters by A. Patchett Martin (London, 1902) (H. Ct.)

SHERBROOKE, a city and port of entry of Quebec, Canada, and capital of Sherbrooke county, 101 m. E. of Montreal, at the confluence of the rivers Magog and St Francis, and on the Grand Trunk, Canadian Pacific, Quebec Central and Boston & Maine railways. Pop. (1901) 11,765. It is the seat of a Roman Catholic bishopric and of the district courts, and contains manufactories of woolens and cotton goods and machinery, also saw and gist mills. It derives its name from Sir John Coape Sherbrooke (1764-1830), who from 1816 to 1818 was governor-general of Canada.

SHERE ALI KHAN (1825-1879), Amir of Afghanistan, was born in 1825, one of the younger sons of the amir Dost Mahommed, whom he succeeded in 1863. For some time after his succession Afghanistan was in a state of anarchy, and his rebellious half-brothers overran the country while he remained at Kandahar mourning the loss of a favourite son. At length, however, the capture of Kabul in 1866 roused him to action, but in spite of his own bravery he suffered general defeat until 1868, when he regained Kabul. Supported by the viceroys of India, Lord Lawrence and Lord Mayo, Shere Ali remained on good terms with the British government for some years; but after the rebellion of his son Yakub Khan, 1870-74, he leaned towards Russia, and welcomed a Russian agent at Kabul in 1878, and at the same time refused to receive a British mission. This led to long negotiations, and ultimately to war, when the British forced the Khyber Pass in November 1878, and defeated the Amir’s forces on every occasion. Shere Ali fled from his capital and, taking refuge in Turkestan, died at Mazar-i-Sharif on the 21st of February 1879.

SHERIDAN, the name of an Anglo-Irish family, made illustri-
sous by the dramatist Richard Brinsely (No. 4 below), but prominently connected with literature in more than one genera-
tion before and after his.

1. THOMAS SHERIDAN (1687-1738), grandfather of the drama-
tist, was born at Cavan in 1687, and was educated at Trinity College, Dublin, taking his B.A. degree in 1711 and that of M.A. in 1714; he married in 1716. By a marriage with Elizabeth, heiress of Charles MacFadden, he restored to the Sheridan family Quilcagh House, which they had forfeited by their Jacobite sympathies. Thomas Sheridan is chiefly known as the favourite companion and confidant of Swift during his later residence in Ireland. His correspondence with Swift and his whimsical treatise on the “Art of Punning”1 make perfectly clear from whom his grandson derived his high spirits and delight in practical joking. The “Art of Punning” might have been written by the author of The Critic. Swift had a high opinion of his scholarship, and that it was not con-
temptible is attested by a translation of the Sappho he prepared in Dublin in 1726. He also translated the Satires of Juvenal and the Philoctetes of Sophocles. When Swift came to Dublin as dean of St Patrick’s, Sheridan was established there as a schoolmaster of very high repute, and the two men were soon close friends. Sheridan was his confidant in the affair of

Draper’s Letters; and it was at Quilcagh House that Gulliver’s Travels was prepared for the press. Through Swift’s influence he obtained a living near Cork, but damaged his prospects of further preferment by a feat of unlucky absence of mind. Having to preach at Cork on the anniversary of Queen Anne’s death he hurriedly chose a sermon with the text, “Sufficient unto the day is the evil thereof,” and was at once struck off the list of chaplains to the lord-lieutenant and forbidden the castle. In spite of this mishap, for which the archdeacon of Cork made amends by the present of a lease worth £250 per annum, “I still remained,” said the earl of Orrery (Remarks on the Life and Writings of Jonathan Swift, 1751), “a punster, a quibbler, a fiddler and a wit,” the only person in whose genial presence Swift relaxed his habitual gloom. His latter days were not prosperous, probably owing to his having “a better knowledge of Covent Garden of a man in the way of commerce” than Swift by fulfilling an old promise to tell the dean if he ever saw signs of avarice in him, and the friends parted in anger. He died in poverty on the 10th of October 1738.

The original source of information about Dr Sheridan is his son’s Life of Swift (vol. i. pp. 369-395), where his scholarship is dwelt upon as much as his improvident conviviality and simple kindness of nature.

2. THOMAS SHERIDAN (1719-1788), son of the above, was born in Dublin in 1719. His father sent him to an English school (Westminster); but he was forced by stress of circumstances to return to Dublin and complete his education at Trinity College, where he took his B.A. degree in 1739. Then he went on the stage, and at once made a local reputation. He even wrote a play, Captain O’Blunder, or the Brave Irishman, which became a stock piece, though it was never printed. There is a tradition that on his first appearance in London he was set up as a rival to Garrick, and Moore counterfeited the idea that Garrick remained jealous of him to the end. For this tradition there is little foundation. Sheridan’s first appearance in London was at the Theatre Royal, Drury Lane, on March 4, 1741, when, heralded in advance as the brilliant Irish comedian, he played for three weeks in a succession of leading parts, Hamlet being the first. In October he appeared at Drury Lane, playing Horatio in Rowe’s Fair Penitent, and subsequently as Pierre in Otway’s Venice Preserved, and in Hamlet and other parts. On his return to Dublin he became manager of the Theatre Royal, and married Frances Chamber-
laine. He was driven from Dublin as a result of his unpopular efforts to reform the theatre. A young man named Kelly had insulted the actresses, and when Sheridan interfered threatened him with the police. Shere Ali fled from his capital and, taking refuge in Turkestan, died at Mazar-i-Sharif on the 21st of February 1879.

SHERIDAN, the name of an Anglo-Irish family, made illustri-
sous by the dramatist Richard Brinsley (No. 4 below), but prominently connected with literature in more than one genera-
tion before and after his.

1 Published in Nichols’s Supplement to the works of Swift (1779).
Sheridan's the in his most failure Drury scheme was but success was of his children hitherto, and that they would exercise the school-master in the quality of patience, for two such impenetrable plumes as "for" and "had never," humorously described was Richard Brinsley, then aged seven. At the age of eleven he was sent to Harrow school. Sheridan was extremely popular at school, winning somehow, Dr Parr confessed, "the esteem and even admiration of all his schoolfellows"; and he acquired, according to the same authority, more learning than he is usually given credit for. He left Harrow at the age of seventeen, and was placed under the care of a tutor. He was also trained by his father daily in elocution, and put through a course of English reading. He had fencing and riding lessons at Drury Lane.

After leaving Harrow he kept up a correspondence with a school friend who had gone to Oxford. With this youth, N. B. Halhed, he concocted various literary plans, and between them they actually executed and published (1771) metrical translations of Aristaenetus. In conjunction with Halhed he wrote a farce entitled Jupiter, which was refused by both Garrick and Foote and remained in MS., but is of interest as containing the same device of a rehearsal which was afterwards worked out with such brilliant effect in The Critic. Some of the dialogue is very much in Sheridan's mature manner. Extracts given from papers written in the seven years between his leaving Harrow and the appearance of The Rivals—sketches of unfinished plays, poems, political letters and pamphlets—show that he was far from idle. The removal of the family to Bath in 1770-1771 led to an acquaintance with the daughters of the composer Thomas Linley. The eldest daughter, Elizabeth Ann (b. 1754), a girl of sixteen, the prima donna of her father's concerts, was exceedingly beautiful, and had many suitors, among them Sheridan, N. B. Halhed and a certain Major Mathews. To protect her from this man's persecutions, Sheridan, who seems to have acted at the time rather as a friend, than as a protector, drew up a plan of escorting Miss Linley, in March 1772, to a nunnery in France. Sheridan returned and fought two duels with Mathews, which made a considerable sensation at the time. The pair had gone through the ceremony of marriage in the course of their flight, but Sheridan kept the marriage secret, and was sternly denied access to Miss Linley by her father, who did not consider him an eligible suitor. Sheridan was sent to Waltham Abbey, in Essex, to continue his studies, especially in mathematics. He was entered at the Middle Temple on the 6th of April 1773, and a week later he was openly married to Miss Linley.

His daring start in life after this happy marriage showed a confidence in his genius which was justified by its success. Although he had no income, and no capital beyond a few thousand pounds brought by his wife, he took a house in Orchard Street, Portman Square, furnished it "in the most costly style," and proceeded to return on something like an equal footing the hospitalities of the fashionable world. His first comedy, The Rivals, was produced at Covent Garden on the 17th January 1775. It is said to have been not so favourably received on its first night, owing to its length and to the bad playing of the part of Sir Lucius O'Trigger. But the defects were remedied before the second performance, which was deferred to the 28th of the month, and the piece at once took that place on the stage which it has never lost. His second piece, St Patrick's Day, or, The Scheuning Lieutenant, a lively farce, was written for the benefit of the artist's work, hangs at Knole, Sevenoaks, Kent.
SHERIDAN

performance (2nd of May 1779) of Lawrence Clinic, who had succeeded as Sir Lucius. In November 1775, with the assistance of his father-in-law, he produced the comic opera of The Duenna, which was played 75 times at Covent Garden during that season. Sheridan now began to negotiate with Garrick for the purchase of his share of Drury Lane, and the bargain was completed in June 1776. The sum paid by Sheridan and his partners, Thomas Linley and Dr Ford, for the half-share was £33,000; of this Sheridan contributed £10,000. The money was raised on mortgage, Sheridan contributing only £5,000 in cash.1 Two years afterward Sheridan and his friends bought the other half of the property for £55,000.

From the first the direction of the theatre would seem to have been mainly in the hands of Sheridan, who derived very material assistance from his father. In February 1777 he produced his version of Vanbrugh's Relapse, under the title of A Trip to Scarborough. This is printed among Sheridan's works, but he has no more title to the authorship than Colley Cibber to that of Richard III. His chief task was to remove inconsistencies he added very little to the dialogue. The School for Scandal was produced on the 8th of May 1777. Mrs Abington, who had played Miss Hoyden in the Trip, played Lady Teazle, who may be regarded as a Miss Hoyden developed by six months' experience of marriage and town life. The lord chamberlain refused to license the play, and was only persuaded on grounds of personal friendship with Sheridan to alter his decision. There are tales of the haste with which the conclusion of The School for Scandal was written, of a stratagem by which the last act was got out of him by the anxious company, and of the fervent "Amen" written on the last page of the copy by the prompter, in response to the author's "Finished at last, thank God!"

But, although the conception was thus hurriedly completed, we know from Sheridan's sister that the idea of a "scandalous college" had occurred to him five years before in connexion with his own experiences at Bath. His difficulty was to find a story sufficiently dramatic in its incidents to form a subject for the machinations of the character-slayers. He seems to have tried more than one plot, and in the end to have desperately forced two separate conceptions together. The dialogue is so brilliant throughout, and the action scene and the screen scene so effective, that the construction of the comedy meets with little criticism. The School for Scandal, though it has not the unity of The Rivals, nor the same wealth of broadly humorous incident, is universally regarded as Sheridan's masterpiece. He might have settled the doubts and worries of authorship with Puff's reflection: "What is the use of a good plot except to bring in good things?"

Sheridan's farce, The Critic, was produced on the 29th of October 1779, The School for Scandal meantime continuing to draw larger houses than any other play every time it was put on the stage. In The Critic the laughable instruments of all classes connected with the stage—authors, actors, patrons and audience—are touched off with the lightest of hands; the fun is directed, not at individuals, but at absurdities that grow out of the circumstances of the stage as naturally and inevitably as weeds in a garden. It seems that he had accumulated notes for another comedy to be called Affection, but his only dramatic composition during the remaining thirty-six years of his life was Pizarro, produced in 1790—a tragedy in which he made liberal use of some of the arts ridiculed in the person of Mr Puff. He also revised for the stage Benjamin Thompson's pantomime, The Stranger, of Kotzebue's Menschenkass und Reue.

He entered parliament for Stafford in 1780, as the friend and ally of Charles James Fox. Apparently he owed his election for Stafford to substantial arguments. He is said to have paid the burgesses five guineas each for the honour of representing them, beside gifts in dinners and ale to the non-voting part of the community, for their interest and applause. His first speech in parliament was to defend himself against the charge of bribery, and was well received. He spoke little for a time and chiefly on financial questions, but soon took a place among the best speakers in the House. Congress recognized his services in opposing the war in America by offering him a gift of £20,000 which, however, he refused. Under the wing of Fox he filled subordinate offices in the short-lived ministries of 1782 and 1783. He was under-secretary for foreign affairs in the Rockingham ministry, and a secretary of the treasury in the Coalition ministry. One of the diatribes he has published is for Sir G. C. (Sheridan's) antagonist's argument, and the happy art of putting them in an irresistibly ludicrous light without losing his good temper or his presence of mind. In those heated days of parliamentary strife he was almost the only man of mark that was never called out, and yet he had no match in the weapon of ridicule.

Sheridan found his great opportunity in the impeachment of Warren Hastings. His speeches in that proceeding were by the unanimous acknowledgment of his contemporaries among the greatest delivered in that generation of great orators. The House denounced Hastings July 1787, on the charges brought against Hastings with regard to the beggars or princesses of Oude. Sheridan spoke for more than five hours, and the effect of his oratory was such that it was unanimously agreed to adjourn and postpone the final decision till the House should be in a calmer mood. Of this, and of his last great speech on the subject in 1794, only brief abstractions have been preserved; but with the second, the four days' speech delivered in his capacity of manager of the trial, in Westminster Hall, on the occasion so brilliantly described by Macaulay, posterity has been more fortunate. Gurney's verbatim reports of the speeches on both occasions, published by Sir G. C., were more successful in instigation 1839, and from them we are able to form an idea of Sheridan's power as an orator. There are passages here and there of gaudy rhetoric, loose ornament and declamatory hyperbole; but the strong common sense, close argumentative force and masterly presentation of telling facts enable us to understand the impression produced by the speech at the time.

From the time of the break-up of the Whig party on the succession of Burke he was more or less an "independent member," and his isolation was complete after the death of Fox. When the Whig denunciation of the French Revolution, Sheridan joined with Fox in vindicating the principles of non-intervention. He maintained that the French people should be allowed to settle their constitution and manage their affairs in their own way. But when the republic was succeeded by the empire, and it became apparent that France under Napoleon would interfere with the affairs of its neighbours, he employed his eloquence in denouncing Napoleon and urging the prosecution of the war. One of his most celebrated speeches was delivered in support of strong measures against the mutineers at the Nore. He was one of the few members who actively opposed the union of the English and Irish parliaments. When the Whigs came into power in 1806 Sheridan was appointed treasurer of the navy, and became a member of the Privy Council. After Fox's death he succeeded his chief in the representation of Westminster, and aspired to succeed him as leader of the party, but this claim was not allowed, and thenceforward Sheridan fought for his own hand. When the prince became regent in 1811 Sheridan's private influence with him helped to exclude the Whigs from power. Throughout his parliamentary career Sheridan was one of the boon companions of the prince, and his champion in parliament in some dubious matters of payment of debts. He always resented any imputation that he was not prince's confidential adviser or mouthpiece. A certain proud and sensitive independence was one of the most marked features in Sheridan's parliamentary career. After a coolness arose between him and his Whig allies he refused a place for his son from the government, lest there should be any suspicion in the public mind that his support had been bought.

His last years were harassed by debt and disappointment. He sat in parliament for Westminster in 1806-1807. At the general election of 1807 he stood again for Westminster and was defeated, but was returned as member for Ilchester, at

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1 For the elucidation of these transactions, see Brander Matthews's edition (1885) of Sheridan's Comedies (pp. 29-31).
the expense apparently of the prince of Wales. In 1812 he failed to secure a seat at Stafford. He could not raise money enough to buy the seat. He had quarrelled with the Prince Regent, and seems to have had none but obscure friends to stand by him. As a member of parliament he had been safe against arrest for debt, but now that this protection was lost his creditors closed on him, and the history of his life from this time till his death in 1816 is one of the most painful in the biographie of great men. It may be regarded as certain, however, that the description of the utter destitution and misery of the last weeks of his life given in the Croker Papers (i.e. pp. 288-312, ed. L. J. Jennings) is untrue. In any attempt to judge of Sheridan as he was apart from his works, it is necessary to make considerable deductions from the mass of floating anecdotes that have gathered round his name. It was not without reason that his grand-daughter Mrs Norton denounced the unfairness of judging of the real man from unauthenticated stories. The real Sheridan was not a pattern of decorous respectability, but we may fairly believe that he was very far from being the Sheridan of vulgar legend. Against the stories about his reckless management of his affairs we must set the broad facts that he had no source of income but Drury Lane theatre, that he bore from it for thirty years all the expenses of a fashionable life, and that the theatre was twice rebuilt during his proprietorship, the first time (1791) on account of its having been pronounced unsafe, and the second (1809) after a disastrous fire. Enough was lost in this way to account ten times over for all his debts. The records of his wild bets in the betting books of the Club, which he frequented, give a wide notion of his first wife, to whom he was devotedly attached. He married again in 1795, his second wife being Esther Jane, daughter of Newton Ogle, dean of Winchester. The reminiscences of his son's tutor, Mr Smyth, show amusing and fidgety family habits, curiously at variance with the accepted tradition of his imperturbable recklessness. He died on the 7th of July 1816, and was buried with great pomp in Westminster Abbey.

Sheridan's only son by his first marriage, THOMAS SHERIDAN (1775-1817), was a poet of some merit. He became colonial treasurer at the Cape of Good Hope. His wife, Caroline Henrietta, née Calander (1779-1851), wrote three novels, which had some success at the time. She received, after her husband's death, quarters at Hampton Court, and is described by Fanny Kemble as more beautiful than anybody 'but her daughters. The eldest child, HELEN SELINA (1807-1867), married Commander Price Blackwood, afterwards Baron Dufferin. Her husband died in 1841, and in 1862 she consented to a ceremony of marriage with George Hay, Earl of Gifford, who died a month later. Her Songs, Poems and Verses (1854) were published, with a memoir, by her son, the famous Second Countess of Dufferin and Ava. Her husband, Mr. Dufferin, married Mrs Norton (q.v.). The youngest, JANE, GEORGINA, married Edward Adolphus Seymour, afterwards 12th Duke of Somerset.

BIBLIOGRAPHY.—Memoirs of the . . . Life of . . . R. B. Sheridan, with a Particular Account of his Family and Connections (1817), by John Watkins ("who deals," said Byron, "in the life and libel line"), was an altogether inadequate piece of work, and made many false statements. The Memoirs, &c. (1823), compiled by Thomas Moore did not contain the information of the Watkins suite. In 1840, in the family, William Smyth (Memoir of Mr Sheridan, 1840), who had been a tutor in Sheridan's house, was responsible for many of the scandals and sombre details of the latter's career. Smith's material is sometimes made use of by the dramatist's parents and of his grandfather are given by Alicia Lefanu in her Memoirs of the Life and Writings of Mrs Frances Sheridan, &c. (1854). There are numerous references to Sheridan in the Letters and Journals of Byron, and several anecdotes (see especially vol. v. p. 411 seq., ed. Prothero, 1901). Popular works on the Sheridans are Mrs Oliphant's Sheridan (1853) in the "English Men of Letters" series; Mr Percy Fitzgerald's Life of the Sheridan (2 vols., London, 1880) by R. B. Sheridan's son, the Rev. H. B. L. R. C. Sanders in the "Great Writers" series. An attractive sketch of Sheridan's political career is given in Wilkes, Sheridan, Fox: the Opium War (1799) by Mr W. B. Croker. From a careful re-construction of Sheridan's biography from the original sources and vindicating his reputation from the misstatements of earlier writers, in Sheridan: a Biography (2 vols., 1896), which has an introduction by the marquess of Dufferin and Ava, the great-grandson of the dramatist. The Life of R. B. Sheridan by Walter Sickel (1909) is, however, the best account now available.

Severalnumerous works of Sheridan's plays, of which only The Rivals was published by the dramatist himself, may be mentioned: Sheridan's Plays now printed as he wrote them (1902), edited by W. Fraser Rae, who quotes at length the criticisms in the contemporary press; Plays of J. B. Stepney (1900), edited by Mr A. W. Pollard; and Sheridan's Comedies (Boston, U.S.A., 1885), with a valuable introduction by Mr Brander Matthews. For further details see the exhaustive bibliography by Mr J. P. Anderson in the Life by Lloyd C. Sanders.

SHERIDAN, PHILIP HENRY (1832-1888), American general, was born at Albany, N.Y., on the 6th of March 1831. His early life was spent in a country district in Perry county, Ohio, and he proceeded to West Point in 1848, graduating in 1853. He was assigned to the infantry and served on the frontier and on the Pacific coast, gaining some experience of war in operations against the Indians. At the outbreak of the Civil War in 1861 he had just become first lieutenant, and soon afterwards he was promoted captain and entrusted with administrative duties in the western theatre of war. Early in 1862 he was commissioned colonel of the 2nd Michigan cavalry, with which he served in Halleck's army on the Tennessee. In June he was placed in command of a cavalry brigade, and a month later he won promotion to the rank of brigadier-general U.S.V. by his skilful conduct of the fight of Booneville on the 1st of July. He took part in General Buell's campaign against Bragg, and led the 11th division of the Army of the Ohio at the hard-fought battle of Perryville (October 8). Sheridan distinguished himself still more at the sanguinary battle of Murfreesboro (Stone river), and on (June 7-28), in view of co-operation with the army of General David Hunter in the Valley. In the course of this was fought the battle of Yellow Tavern, where the Confederate general J. E. B. Stuart was killed. After rejoining the army Sheridan fought another well-contested action at Hawes' Shop and took and held Cold Harbor. After the battle at that place Sheridan undertook another raid, this time towards Charlottes- ville. Sheridan's corps took part in the battles of the Wilderness and Spottsylvania Court House (see the article Wilderness), incidents of which led to a bitter quarrel between Sheridan and Meade and to Sheridan's being despatched by General Grant on a far-reaching cavalry raid towards Richmond. In the course of this was fought the battle of Trevilian's Station (June 11). A little later came General Sheridan's greatest opportunity for distinction. He was appointed to command a new "Army of the Shenandoah" to oppose the forces of General Early, and conducted the brilliant and decisive campaign which crushed the Confederate army and finally put an end to the war in Northern Virginia (see AMERICAN CIVIL WAR AND SHENANDOAH VALLEY CAMPAIGNS). The victories of the Opequon, or Winchester (September 19), Fisher's Hill (September 21) and Cedar Creek (October 9) produced great elevation on the North and corresponded with depression in the Confederacy, and Sheridan was made successively brigadier-general U.S.A. for Fisher's Hill and major-general U.S.A. for Cedar Creek. "Sheridan's Ride" of 20 m. from Winchester to Cedar Creek to take command of the hard-pressed Union troops is a celebrated incident of the war. His capacity for accepting the gravest responsibilities was shown, not less than by his handling of an army in battle, by his ruthless devastation of the Valley—a severe measure felt to be necessary both by Sheridan himself and by Grant. From the Valley the cavalry rode through the enemy's country to join Grant before Petersburg, fighting the action of Waynesboro', destroying
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communications and material of war, and finally reporting to the general-in-chief on the 25th of March 1865. A few days later the indefatigable Sheridan won the last great victory of the war at Five Forks. The operations were conducted entirely by him and were brilliantly successful, leading to the retreat of Lee from the lines of Petersburg and the final catastrophe of Appomattox Court House. In the course of the battle of Five Forks Sheridan once more displayed his utter fearlessness of criticism by summarily dismissing from his command General G. K. Warren, an officer of the highest repute, whose corps was only temporarily under Sheridan's orders. The part played by the cavalry corps in the pursuit of Lee was most conspicuous, and Sheridan himself commanded the large forces of infantry and cavalry which cut off Lee's retreat and compelled the surrender of the famous Army of Northern Virginia (see AMERICAN CIVIL WAR and PETERSBURG).

Soon after the close of the war, Sheridan, who by these services had gained his reputation as one of the greatest soldiers of the time, was sent to exercise the military command in the southwest, where a corps of observation, on the Mexican frontier, watched the struggle between Maximilian and the Liberals (see MEXICO: Hidalgo). General Sheridan was stated to be responsible that material assistance was afforded to the Liberals out of the U.S. arsenals, and the moral effect of his presence on the frontier certainly influenced the course of the struggle to a very great extent. Later, in the Reconstruction period, he commanded the Fifth Military District (Louisiana and Texas) at New Orleans, where his administration of the conquered states was most stormy, his differences with President Johnson culminating in his recall in September 1867. He was then placed in charge of the Department of the Missouri, which he commanded for sixteen years, and in 1869, on Grant's election to the presidency and Sherman's consequent promotion to the full rank of general, he was made lieutenant-general. In 1868-1869 he conducted a winter campaign against the Indians, which resulted in their defeat and surrender. During the Franco-German War of 1870 General Sheridan accompanied the great headquarters of the German armies as the guest of the king of Prussia. In 1873, at the time of the "Virginius" incident (see CUBA), when an invasion of Spain was projected, Sheridan was designated to command the United States field army. In 1875 he was sent to New Orleans to deal with grave civil disorder, a duty which he carried out with the same uncompromising severity that he had previously shown in 1867. In 1883 he succeeded Sherman in the chief command of the United States army, which he held until his death at Norquitt, Mass., on the 5th of August 1888. A few months previously he had been raised to the full rank of general. As a soldier, Sheridan combined brilliant courage and pains-taking skill. As a fighting general he was unsurpassed. Few of the leaders of either side could have stemmed the tide of defeat as he did at Stone river and turned a mere rally into a great victory as he did at Cedar Creek, by the pure force of personal magnetism. His restless energy was that of a Charles XII., to whom in this respect he has justly been compared, while, unlike the king of Sweden, he was as careful and vigilant as the most methodical strategist. He was a devout Roman Catholic, and in his private life he had the esteem and admiration of all who knew him well. General Sheridan was president of the Society of the Army of the Potomac and of the Society of the Army of the Cumberland, the latter for fourteen years. In 1875 he married Irlene, daughter of General D. H. Rucker, U.S.A.

His Personal Memoirs (2 vols.) were published soon after his death.

SHERIFF, or SHIRE-REEVE (O. Eng. scir-reve or scirman, 1 Latin, vice-come), often called "high sheriff," the English and Irish executive authority in a county, or other place, often called his "bailliwick." The office also exists in about twenty ancient cities and boroughs, among which may be named London, Norwich, York, Bristol, Oxford, Lincoln, Chester and Cheshire, and Dublin, Cork, Limerick, and other places in Ireland. In most of these the office is of an honorary 1 nature. The office is at present an annual one, though this has not been always the case. Three names are put on the list by the chancellor of the exchequer and the judges of king's bench division on the morrow of St Martin (24th of November), and the first name is usually picked by the king in council in the February or March following. City and borough sheriffs are usually appointed by the corporations for by the act of 1887, s. 33, and the sheriffs of the counties of Cornwall and Lancaster are separately appointed, the act not applying to them. The sheriff was at one time a far more important office than it is at present. "The whole story of English justice and police," says Maitland (Justice and Police, 69), "might be brought under this rubric, the decline and fall of the sheriff." That the sheriff sometimes abused his power is obvious from the grievances stated in the Inquest of Sheriffs of 1170. But he was necessary to protect the interests of the crown and the people against the powerful local baronage. Besides executing the king's writs, he called out the posse comitatus on any emergency needing an armed force. He had the form of the shire (the rent he paid being called "sheriff-geld") and presided at the quarterly Sessions of the Peace and assizes. He was until the 17th century an officer of judicial purposes he held as the king's deputy the sheriff's town, where his jurisdiction had not been ousted by franchise. He might be a peer or a judge, Bracton being an instance of the latter. The appointment seems to have been originally by popular election, a right confirmed by 28 Edw. I. c. 8, but ultimately vested in the crown unless where certain powerful landowners had contrived to make the office hereditary. The hereditary shrievalty of Wearmouth was not abolished until 1850 by 13 & 14 Vict. c. 36. The tendency of the hereditary office to become obsolete was no doubt helped by the creation of Viscount Beaumont as an hereditary peer under the new dignity of vice-comes in 1440. At one time contributions to the expense of the office were made by the magnates and others of the county. "Sheriff-tooth" was a tenure on condition of supplying entertainment to the sheriff at the county court. Up to the 19th century "riding with the sheriff" was an incident of the assizes, the riders being some of the principal men of the shire who brought with them wine and victuals in order to assist the sheriff in showing hospitality to the judges.

At the present day the expensive duties of the sheriff depend on numerous statutes beginning with 2 Edw. III. c. 3 (1358). The most important is the Sheriffs Act 1887, mainly a consolidating act applying to England only. The person nominated is usually a magistrate for the county, but anyone is eligible provided that he have land in the county sufficient to answer the 5. Exempt are peers, clergy, officers in active service, practising barristers and solicitors and others. Poverty is also a ground of exemption. The sheriff appoints his undersheriff. The duties of the office at the present day are both administrative and judicial. Among the former the most important is attendance on the judges at assizes and election petitions. A certain amount of stately ceremony is required, and any lack of it is punishable by fine either by the judge of assize or by the High Court. Other administrative duties are execution of writs 4 and of the sentence of death, acting as returning officer at parliamentary elections, preparing the panel of jurors for assizes, the keeping prisoners in safe custody, he being liable for their escape, and the—now nominal—duty of summoning the posse comitatus. His judicial duties consist in himself or his deputy sitting to assess damages under the Lands Clauses Act 1845, and in cases set down for trial where the defendant has made default in appearance and the issue resolves itself into one of damages. The expenses of the office are partly met by the 4 The form is abolished by the act of 1887, s. 19.

1 Abolished by s. 18 of the same act.

4 Repealed and re-enacted by the act of 1887, s. 31.

6 Where a question arises as to the ownership of goods seized in execution the sheriff may have to undergo the process known as sheriff's interpleader
Treasury in accordance with the Treasury order of the 2nd of August 1898. The order lays down with somewhat grim humour that the sheriff is not limited to the allowances, but may spend more if he likes. A sheriff cannot during his year of office act as a magistrate for the county of which he is sheriff.

See the works on the history of law by Stubbs, Pollock and Maitland and Holdsworth. Also W. S. McKeehan's The Law of Sheriff's & Justices' Accounts (1683); Greenwood, Baudetueren (1685); The Compleat Sheriff (1696); Impye (1766); Atkinson (1785); Churchill and Bruce (1862); and MacKie, Discount (1903).

Scotland.—As far as is known the sheriff did not exist in Scotland before the beginning of the Norman period. In the feudal system he became as in England the centre of the local administration of justice, the representative of the crown in executive as well as judicial business, and was always a royal officer appointed by and directly responsible to the king. The earliest sheriffs on record belong to the reigns of Alexander I. and David I., and the office was common before the death of Alexander II. In many cases it had become hereditary, instances of which are those of De Sinton in Selkirk and Alistair Galloway. The ordinance of Edward I. in 1305 rejected the hereditary character of the office, but an act of James II. shows that the office had again become hereditary.

One of the consequences was that sheriffs ignorant of law required deputies to discharge their judicial duties. In the course of succeeding reigns, down to that of James VI., the jurisdiction of the sheriffs was made extremely extensive by grants of baronies and regalities which gave the grantees the right to hold both civil and criminal courts of less or greater jurisdiction to the exclusion of the sheriff.

The civil jurisdiction of the sheriff was originally of very wide extent, and was deemed specially applicable to questions relating to the land within the shire, but after the institution of the court of session in 1532 it became restricted, and all causes relating to property in land, as well as those requiring the action called declarator for establishing ultimate right, and most of those requiring equitable remedies, were withdrawn from it. Nor did it possess any consistorial jurisdiction. Practically, therefore, the civil jurisdiction of the sheriff fell under the head of actions concluding for payment of money and actions to regulate the possession of land. The criminal jurisdiction of the sheriff was in like manner in its origin of almost universal extent. But this was first limited to cases where the offenders were caught in or shortly after the act, afterwards to cases in which the trial could be held within forty days, and subsequently further restricted as the business of the justiciary court became more organized. The punishment of death, having by long custom come to be held beyond the power of the sheriff, and the statutory punishments of transportation or penal servitude never having been entrusted to him, his jurisdiction as regards crimes was usually said to be limited to those punishable arbitrarily, that is, by imprisonment, fine or admonition.

As a consequence of the suppression of the Jacobite rising of 1745, after the 1st of March 1748 all heritable sheriffships were extinguished by 20 Geo. II. c. 43. The act declared that there should be but one sheriff-depute or steward-depute in every shire or stewartry, who was to be an advocate of three years' standing, appointed by the crown. Since 1769 the sheriff-depute has held his office ad vitam aut culpam. Power was given to him by 20 Geo. II. c. 43 to appoint one or more sheriffs-substitute. In 1787 the sheriff-substitute was placed on the civil establishment and paid by the crown; in 1824 a qualification of three years' standing (now five years by the Sheriff Courts (Scotland) Act 1877) as an advocate or procurator before a sheriff court was required (6 Geo. IV. c. 23); in 1838 he was made removable by the sheriff-depute only with the consent of the lord president and lord justice clerk, and it was made compulsory that he should reside in the sheriffdom, the provision of 20 Geo. II. c. 43, which required the sheriff-depute so to reside for four months of each year, being repealed (1 & 2 Vict. c. 119).

In 1877 the right of appointment of the substitutes was transferred from the sheriff-depute to the crown by the act of 1877.

While the sheriff-depute has still power to hear cases in the first instance, and is required to hold a certain number of sittings in each place where the sheriff-substitute holds courts, and also once a year a small-debt court in every place where a circuit small-debt court is appointed to be held, the ordinary course of civil procedure is that the sheriff-substitute acts as judge of first instance, with an appeal under certain restrictions from his decision to the sheriff-depute, and from him to the court of session in all cases exceeding £5 in value. An appeal direct from the sheriff-substitute to the court of session is competent, but is not often resorted to. By the Interpretation Act 1880, s. 28, the word "sheriff" in any act relating to Scotland is to include a sheriff-substitute.

As regards criminal proceedings, summary trials are usually conducted by the sheriff-substitute; trials with a jury either by him or, in important cases, by the sheriff-depute. The sheriff-substitute also has charge of the preliminary investigation into crime, the evidence in which, called a preognition, is laid before him, and if necessary taken before him on oath at the instance of his procurator-fiscal, the local crown prosecutor.

The duties of the sheriff-deputes are now divided into ministerial and administrative. The ministerial are the supervision of the accounts of the inferior officers of the sheriffdom; the superintendence of the parliamentary elections; the qualification and election of the sheriff-substitutes of the courts for registration of electors; the preparation of the list of persons liable to serve both on criminal and civil juries; the appointment of sheriff officers and supervision of the execution of judicial orders by them; and all occasionals connected with the task of attending to the duties of justices of the peace for the counties or the county of which his jurisdiction extends.

The administrative duties of the sheriff-depute are, as regards crimes, the trial of all causes remitted by the counsel of the crown for the trial by sheriff and jury, as well as summary trials if he chooses to take them. This now means for which a maximum of two years imprisonment (or, in cases where a sentence of more than eighteen months is the longest sentence imposed) is deemed sufficient, and which are not by statute reserved for the justiciary court. His civil jurisdiction is regulated by several statutes too technical for detail, but may be said generally comprise the conduct of all matters which can only be determined by the court of session, and thus the sheriff-depute is required to hold the courts at which appeals can be heard.

The courts which the sheriff holds are (1) the criminal court; (2) the ordinary civil court; (3) the small-debt court for cases under £12 in value (6 Geo. IV. c. 48); (4) the debts recovery court for cases above £12 and under £50 in value (Debts Recovery [Scotland] Act 1895). It is subject to appeal. The court of session, as stated, is subject to review by the court of justiciary, and in the ordinary civil court and the debts recovery court by the court of session. As in the case of the small-debt court, an appeal lies to the next circuit court of justiciary. The sheriff-substitute may competently exercise all the judicial jurisdiction of the sheriff, subject to appeal in civil cases other than small debt cases. As regards his administrative functions he assists the sheriff generally, and may act for him in the registration and taxing courts, and he superintends the preliminary stage of criminal inquiries, consulting with the sheriff if necessary; but the other administrative duties of the office are conducted by the sheriff-depute in person.

The executive functions of the sheriff are performed by messengers-at-arms. The civil jurisdiction depends on numerous statutes known as the Sheriff Courts Act 1854. The salaries of sheriff-deputes vary from £2000 to £5000 a year, those of sheriff-substitutes from £400 to £500. There is a principal sheriff-clerk appointed by the crown for each county, who has depute clerks under him in the principal courts. In England an important position is occupied by the sheriff, and a procurator-fiscal for the conduct of criminal prosecutions for each county and district of a county, who is appointed by the sheriff with the sanction of the home secretary.

Ireland.—The sheriff has much the same duties as in England. His position is defined by numerous statutes, beginning with 53 Geo. III. c. 68 (1817). There is no consolidating act such as that of 1887 in England.

United States.—The office of sheriff is generally elective.
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The sheriff has administrative and limited judicial authority. He sometimes serves for combined counties, as in England for Cambridge and Huntingdon.

SHERIFFMUIR, a battlefield situated on the verge of the extreme north-western flank of the Ochils, Porthshire, Scotland, watered by Wharry Burn, an affluent of the Allan. It lies within the bounds of the parish of Dunblane, 2 1/2 m. E. by N. of the town. It was the site of an indecisive battle (13th of November 1715) between the Jacobites, about 12,000 strong, under John Erskine, 6th or 11th Earl of Mar, and 4000 Royalists under Archibald Campbell, afterwards 3rd duke of Argyll. Both sides, each of which lost 500 men, claimed the victory, although the in fact Mar deemed it prudent to retreat. The "battle stone" enclosed by a railing marks the scene of the encounter.

SHERIF PASHA (1818-1887), Egyptian statesman, was a Circassian who filled numerous administrative posts under Said and Ismail pashas. He was of better education than most of his contemporaries, and had married a daughter of Colonel Séves, the French non-commissioned officer who became Soliman Pasha under Mehemet Ali. As minister of foreign affairs he was useful to Ismail, who used Sheriff's bluff boshkoumie to veil many of his most insidious proposals. Of singularly 'veiled' disposition, he yet possessed considerable tact—he was in fact an Egyptian Lord Melbourne, whose policy was to leave everything alone. His favourite argument against any reform was to appeal to the Pyramids as an immutable proof of the solidity of Egypt financially and politically. His fatal optimism rendered him largely responsible for the collapse of Egyptian credit which brought about the fall of Ismail. Upon the military suspension of September 1881, Sheriff was summoned by the khedive Tewfik to form a new ministry. The impossibility of reconciling the financial requirements of the national party with the objectives of the British and French controllers of the public debt, compelled him to resign in the following February. After the suppression of the Arabi rebellion he was again installed in office (September 1882) by Tewfik, but in January 1884 he resigned rather than sanction the evacuation of the Sudan. As to the strength of the mahdist movement he had then no conception. When urged by Sir Evelyn Baring (Lord Cromer) early in 1883 to abandon some of the more distant parts of the Sudan, he replied with characteristic light-heartedness: "Nous en causerons plus tard; d'abord nous allons donner une bonne râclée à ces mousseurs" (i.e., the mahdists). Hicks Pasha's expedition was at the time preparing to march on El Obeid. (Vide Egypt No. 1 (1907), p. 115). Sheriff died at Gratz, on the 20th of April 1887.

SHERLOCK, THOMAS (1678-1716), English divine, the son of William Sherlock (q.v.), was born at London in 1678. He was educated at Eton and at St Catharine's Hall, Cambridge, and in 1704 succeeded his father as master of the Temple, where he was very popular. In 1714 he became master of his old college at Cambridge and vice-chancellor of the university, whose privileges he defended against Richard Bentley. In 1715 he was appointed dean of Chichester. He took a prominent part in the Bangorian controversy against Benjamin Hoadly, whom he succeeded as bishop of Bangor in 1728; he was afterwards translated to Salisbury in 1734, and to London in 1748. Sherlock was a capable administrator, and cultivated friendly relations with dissenters. In parliament he was of good service to his old schoolfellow Robert Walpole. He published against Anthony Collins's deistic Grounds of the Christian Religion a volume of sermons entitled The Use and Interest of Prophecy in the Several Ages of the World (1725); and in reply to Thomas Woolston's Discourses on the Miracles he wrote a volume entitled The Tryal of the Witnesses of the Resurrection of Jesus (1729), which soon ran through fourteen editions. His Pastoral Letter (1750) on "the late earthquakes" had a circulation of many thousands, and four or five volumes of Sermons which he published in his later years (1754-1758) were also at one time highly esteemed. He died in July 1761.

A collected edition of his works, with a memoir, in 5 vols. 8vo, by J. S. Hughes, appeared in 1830.

SHERLOCK, WILLIAM (c. 1641-1707), English divine, was born at Southwark about 1641, and was educated at Eton and at Peterhouse College, Cambridge. In 1669 he became rector of St George's, Botoilp Lane, London, and in 1681 he was appointed a prebendary of St Paul's. In 1674 he showed his controversial bent by an attack on the puritan John Owen, in The Knowledge of Jesus Christ and Union with Him. In 1684 he published The Case of Resistance of the Supreme Powers stated and resolved according to the Doctrine of the Holy Scriptures, an ably written treatise, in which he drew the distinction between active and passive obedience which was at that time generally accepted by the high church clergy; in the same year he was made master of his college, and involved him in a warm controversy with Robert South and others. In 1691 he became dean of St Paul's in 1691, and died at Hampstead in June 1707. His sermons were collected in 2 vols. 8vo (4th ed., 1755).

SHERMAN, JOHN (1829-1900), American financier and statesman, a younger brother of General W. T. Sherman, was born at Lancaster, Ohio, on the 10th of May 1829. He began the study of law at Mansfield, Ohio, and was admitted to the bar in 1844. For ten years he practised his profession with success, and with only an occasional interest in politics. His associations and predilections were with the Whigs, and he was a delegate to the National Convention that nominated General Zachary Taylor in 1848. Upon the repeal of the Missouri Compromise by the Kansas-Nebraska Bill in 1854, he joined the great popular movement in Ohio against the policy represented by this bill, and was elected to Congress in the autumn of that year as an "Anti-Nebraska" man. In the summer of the next year he took an active part in the formal organization of the Republican party in the state, and at the opening of Congress in December began a long career of public service. As a member of the House (1855-1861), he quietly manifested the qualities which characterized his whole political life. Though a thorough and avowed partisan, he was within the party the counsellor of moderate rather than extreme measures, and thus gained on the whole a position of great influence. He was a member of the committee sent by the House in 1856 to investigate the troubles in Kansas, and drafted the report of the majority. In 1859 he was the Republican candidate for Speaker of the House, but was defeated, after a contest that lasted two months, to withdraw, largely because of the recommendation he had inadvertently given to an anti-slavery book, The Impending Crisis of the South (1857), by Hinton Rowan Helper (1829-1909). He became, however, chairman of the Committee on Ways and Means, and was instrumental in the enactment of the Morrill Tariff Act of 1860. In March 1861 he took his seat in the Senate, to which he had been elected to succeed Salmon P. Chase, when the latter became secretary of the treasury. As senator he sat continuously until he became secretary of the treasury in 1877. His interest and efficiency in financial legislation in the House led to his appointment on the Senate Committee of Finance, and after 1876 he was chairman of that body and influential committee. He thus became associated with the enactment of all the great fiscal laws through which the strain of war and of reconstruction was sustained. He gave earnest support to the Legal Tender Act, and the substitution of the national for the state banking system. When after the end of the war the question of financial readjustment came up, he vigorously opposed Secretary Hugh McCulloch's policy of retiring the legal tenders, and urged a different plan for effecting the resumption of specie payments. On the questions relating to political reconstruction and the
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policy of President Johnson, he supported his party, though opposed to its Radical leaders. He warmly advocated the insertion in the Reconstruction Acts of a provision ensuring the early termination of military government; and he opposed the impeachment of President Johnson, though he voted for conviction on the trial. During the administrations of Presidents Polk and Taylor, his leadership in shaping financial policy became generally recognized. The Resumption Act of 1875, which provided for the return of specie payments four years later, was largely his work both in inception and in formulation, and his appointment to the head of the Treasury Department by President Hayes in 1877 enabled him to carry the policy embodied in the law to successful execution. His administration of the department, in circumstances of great difficulty arising out of the "greenback" agitation and the adverse political complexion of Congress, won him high distinction as a financier.

At the end of the Hayes administration he was again elected to the Senate from Ohio and held his seat until 1897. During this period he was largely concerned in the enactment of the Anti-Trust Law of 1890, and of the so-called Sherman Act of the same year, providing for the purchase of silver and the issuing of Treasury notes based upon it. This latter Act he approved only as a means of escaping the free coinage of silver, and he supported its repeal in 1893. In 1880 and 1888 he aspiringly to the Republican nomination for the presidency, but failed to obtain the requisite support in the Convention. During the whole of the last year of the presidency of the Senate Committee on Foreign Affairs. Upon the accession of President McKinley in 1897, he resigned from the Senate and became secretary of state; but under the tension of the war with Spain the duties of the office became too exacting for his strength at his age, and in April 1898 he resigned and withdrew into private life. Infirmities multiplied upon him, until his death at Washington on the 22nd of October 1900.


W. A. D.

SHERMAN, ROGER (1721-1793), American political leader, a signer of the Declaration of Independence, was born at Newton, Massachusetts, on the 19th of April 1721 (O.S.). He removed with his parents to Stoughton in 1723, attended the country school there, and at an early age learned the cobbler's trade in his father's shop. Removing to New Milford, Connecticut, in 1743, he worked as county surveyor, engaged in mercantile pursuits, studied law, and in 1754, was admitted to the bar. He represented New Milford in the Connecticut Assembly in 1755-1756 and again in 1758-1761. From 1761 until his death New Haven was his home. He was once more a member of the Connecticut Assembly in 1764-1766, was one of the governor's assistants in 1766-1785, a judge of the Connecticut superior court in 1766-1789, treasurer of Yale College in 1765-1776, a delegate to the Continental Congress in 1774-1781 and again in 1783-1784, a member of the Connecticut Committee of Safety in 1777-1779 and in 1781, mayor of New Haven in 1784-1793, a delegate to the Continental and Federal Conventions of 1787, and to the Connecticut Ratification Convention of the same year, and a member of the Federal House of Representatives in 1789-1791 and of the United States Senate in 1791-1793. He was on the committee which drafted the Declaration of Independence, and also on that which drafted the Articles of Confederation. His greatest public service, however, was performed in the Federal Constitutional Convention. In the bitter conflict between the large state party and the small state party he and his colleagues, Oliver Ellsworth and William Samuel Johnson, acted as pacemakers. Their share in bringing about the final settlement, which provided for equal representation in the house and proportional representation in the other, was so important that the settlement itself has come to be called the "Connecticut Compromise." He helped to defeat the proposal to give Congress a veto on state legislation, showing that it was illogical to confer such a power, since the constitution itself is the law of the land and no state act contravening it is legal. In the Federal Congress (1789-1793) he favoured the assumption of the state debts, the establishment of a national bank and the adoption of a protective tariff policy. Although strongly opposed to slavery, he refused to support the Parker resolution of 1789 providing for a duty of ten dollars per head on negroes brought from Africa, on the ground that it emphasized the property element in slavery. He died in New Haven on the 23rd of July 1793. Sherman was not a deep and original thinker like James Wilson, nor was he a brilliant leader like Alexander Hamilton; but owing to his conservative temperament, his sound judgment and his wide experience he was well qualified to lead the compromise cause in the convention of 1787.

Two of Sherman's grandsons, William M. Evarts and George F. Hoar, were prominent in the later history of the country. Lewis H. Boutell's Life of Roger Sherman (Chicago, 1866), based on material collected by Senator Hoar, is a careful and accurate work.
brigadier-general of volunteers, Sherman was in August sent to Kentucky to serve under General Robert Anderson. In October he succeeded to the command of the department. On the 26th of October he reported that 200,000 men would be required for the Kentucky campaign. He was relieved of his post soon afterwards in consequence, but the event justified Sherman’s view. He was soon re-employed in a minor position, and, at the head of a division of new troops, accompanied Grant’s army to Pittsburg Landing. At the battle of Shiloh Sherman’s supply column was almost the only one to remain intact. His appreciation of Grant, and his sympathy with the chaplain he suffered after this battle, cemented the friendship between the two. He took part in Halleck’s advance on Corinth, Mississippi, and at the close of 1862 led the Mississippi column in the first Vicksburg campaign. He suffered defeat at Chickasaw Bayou, but the capture of Port Hindman, near Arkansas Post, compensated to some extent for the Vicksburg failure. In Grant’s final Vicksburg campaign Sherman commanded the XV. corps and the right of the investing line, and after the surrender he was sent to oppose General Johnston in the country about Jackson, Miss. In July he was made a brigadier-general in the regular army. When, after Rosecrans’s defeat at Chickamauga, Grant was placed in supreme command in the west, Sherman succeeded to the command of the Army of the Tennessee, with which he took part in the great battle of Chattanooga (q.v.). He had already prepared for a further advance by making an expedition into the heart of Mississippi as far as Meridian, destroying railways and making impracticable, for a season, the transfer of military operations to that region; and he was transferred becoming general-in-chief (March 1864) he was made commander of the military division of the Mississippi, including his Army of the Tennessee, now under McPherson, the Army of the Cumberland, under Thomas, and the Army of the Ohio, under Schofield. Making detachments for garrisons and minor operations in a theatre of war over 500 m. wide, he assembled, near Chattanooga, his three armies, aggregating 100,000 men, and began (May 1864) the invasion of Georgia. After a brilliant and famous campaign of careful manoeuvre and heavy combats (see American Civil War), Sherman finally wrested Atlanta (q.v.) from the Confederates on the 1st of September. His able opponent Johnston had been removed from his command, and Hood, Johnston’s successor, began early in October a vigorous movement designed to carry the war back into Tennessee. After a devious chase of a month Hood moved across Alabama to northern Mississippi. Sherman thereupon, leaving behind Thomas and Schofield to deal with Hood, made the celebrated “March to the Sea” from Atlanta to Savannah with 60,000 picked men. After a march of 300 m. Savannah was reached in December. Railways were cut and many stores were captured, the country cleared of supplies, and the Confederate government, severed from its western states. In January 1865 Sherman marched northwards again, once more abandoning his base, towards Petersburg, where Grant and Lee were waging a war of giants. Every mile of his march northwards through the Carolinas diminished the supply region of the enemy, and desperate efforts were made to stop his advance. General Johnston was recalled to active service, and showed his usual skill, but his forces were inadequate. Sherman defeated him and reached Raleigh, the capital of North Carolina, on the 13th of April, having marched nearly 500 m. from Savannah. Lee’s position in Virginia was now desperate. Hood had been utterly defeated by Thomas and Schofield, and Schofield (moved 2000 m. by land and sea) rejoined Sherman in North Carolina. With 90,000 men Sherman drove Johnston before him, and when Lee surrendered to Grant Johnston also gave up the struggle. There was much friction between Sherman and the war secretary, Stanton, before the terms were ratified, but with their signature the Civil War came to an end.

Sherman had the good fortune to learn the art of command by degrees. At Bull Run his brigade was wasted in isolated and disconnected regimental attacks, at Shiloh his division was completely surprised owing to want of precaution; but his bravery and energy were beyond question, and these qualities carried him gradually to the front at the same time as he acquired skill and experience. When therefore he was entrusted with an independent command he was in every way fitted to do himself justice. At the head of a hundred thousand men he showed, besides the large grasp of strategy which planned the Carolinas march, besides the patient skill in manoeuvre which gained ground day by day towards Atlanta, the strength of will which sent his men to the hopeless assault of Kennesaw to teach them the

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SHERMAN—‘S HERTOGENBOSCH

In 1866 Sherman was promoted lieutenant-general, and in 1869, when Grant became president, he succeeded to the full rank. General Sherman retired, after being commanding general of the army for fifteen years, in 1884, and he died at New York on the 14th of January 1891. An equestrian statue, by Saint Gaudens, was unveiled at New York in 1903, and another at Washington in the same year.

Sherman’s Memoirs were published in 1875 (New York). See also Rachel Sherman Thornblæke, The Sherman Letters (New York, 1894); Home Letters of Gen. Sherman (1903), edited by M. A. De Wolfe Howe; Sherman—A Memoir of His Life and Services (New York, 1892); Brownson Memorial (New York, 1892); Sherman: A Military Biography (New York, 1865); W. Fletcher Johnson, Life of William Tecumseh Sherman (Philadelphia, 1891); Manning F. Force, General Sherman (Great Commanders’ series) (New York, 1899).

SHERMAN, a city and the county-seat of Grayson county, Texas, U.S.A., 64 m. by rail N. by E. of Dallas and 9 m. S. of Denison. Pop. (1890) 737; (1900) 10,243, of whom 133 were negroes; (1910 census) 12,412. Sherman is served by the St Louis & San Francisco (Frisco System), which has car shops here, the St Louis & South-Western, the Gulf, Colorado & Santa Fé, the Missouri, Kansas & Texas, the Texas & Pacific, and the Houston & Texas Central railways, and by electric lines connecting with Denison and Dallas. In the city are Austin College (Presbyterian, 1830; removed from Austin to Sherman in 1876) for men, Carr-Burndette College (Christian, 1894) for girls, North Texas Female College and Conservatory (Methodist Episcopal, 1877) and Saint Joseph’s Academy (Roman Catholic) for girls. Sherman is situated on a ridge 270 ft. above sea-level between the Red river and the Trinity river, near a fertile part of the Red River Valley, in which the principal industries are the growing of cotton, Indian corn, wheat, oats, potatoes and alfalfa, and stock raising. The city contains cotton gins and compresses, and has various manufactures; in 1905 the value of factory products was $2,841,066 (94.4% more than in 1900). The municipality owns and operates the waterworks and the electric lighting plant. Sherman was settled in 1848 and was chartered as a city in 1865.

SHERRY, originally the name of a wine coming from Xeres (Jerez de la Frontera), near Cadiz, Spain, and now the general name of the strong white wines, the lower grades excepted, which are made in the south of Spain (see Wine). The early form of the word in English was “sherris” (abbreviated from “sherris-wine” or “sherris-sack”), which was taken to a plural, and “sherry” was formed as a singular by mistake.

‘S HERTOGENBOSCH (’s Bosch, or den Bosch, French Bois-le-Duc), the capital of the province of North Brabant, Holland, at the confluence of the Rivers Smeeren and As, which unite before forming the Dieze, and a junction station 29½ m. S.S.E. of Utrecht and 27½ m. W.S.W. of Nijmegen by rail. It is connected by steam tramway with Helmond (21 m. S. by E.) and by the Zuid-Willem’s canal with Maastricht (60 m. S. by E.). Pop. (1900) 32,345. ’s Hertogenbosch is a well-built city and contains several churches. The Roman Catholic cathedral of St John, the Janskerk, with its interior in a state of preservation rare in Holland, is one of the finest architecturally in the country. Occupying the site of a much earlier building, of which there are remains, the present church was begun in the middle of the 15th century. The 15th-century font, the pulpit (1570), the organ (1617), and the early Gothic Lady
chapels containing a much venerated 13th-century image of the Virgin, which was annually carried in procession through the town, are all noticeable. The choir-screen was sold to the South Kensington Museum, but the figure of the Virgin, this sum being devoted to the work of modern restoration. The town hall contains an interesting series of decorative panels by a modern artist, A. Derkinderen, describing the founding of the city. It also includes a museum of local antiquities. In the Provincial museum are interesting Roman, German and Frankish antiquities. The principal other buildings are the court house, government buildings (formerly a Jesuit monastery), episcopal palace, grammar school (once attended by Erasmus), a prison, hospitals, arsenal and barracks. 'S Hertogenbosch is the market of the fertile Meify district, and carries on a commerce in trade, chiefly by water, with Dortrecht and Rotterdam, Nijmegen, Amhem, Maastricht and Liége. The chief industries include distilleries, breweries, glass works, cigar factories and the ancient linen and cutlery manufactures.

SHERWIN, JOHN KYESE (1751-1790), English engraver and history-painter, was born in 1751 at East Deane in Sussex. His father was a wood-cutter employed in shaping bolts for shipbuilders, and the son followed the same occupation till his seventeenth year, when, having shown an aptitude for art by copying engravings and drawings, he was instructed with exceptional accuracy; he was befriended by William Mitford, upon whose advice the elder Sherwin worked, and was sent to study in London, first under John Astley, and then for three years under Bartolozzi—for whom he is believed to have executed a large portion of the plate of Cytie, after Annibal Caracci, published as the work of his master. He was entered as a student of the Royal Academy, and gained a silver medal, and in 1772 a gold medal for his painting of "Coriolanus taking Leave of his Family." From 1774 till 1780 he was an exhibitor of chalk drawings and of engravings in the Royal Academy. Establishing himself in St James's Street, he painted and engraved portraits with considerable success, and obtained great popularity and began to mix in fashionable society. His drawing of the "Finding of Moses," a work of but slight artistic merit, which introduced portraits of the princess royal of England and other leading ladies of the aristocracy, hit the public taste, and, as reproduced by his burin, sold largely. In 1785 he succeeded Woollett as engraver to the king, and he also held the appointment of engraver to the prince of Wales. His professional income rose to about £12,000 a year; but he was constantly in pecuniary difficulties, for he was shiftless, indolent, and unaccountable. He was assisted in his pecuniary difficulties—and prodigal, too, in less reputable directions, for he became a reckless gambler, and habits of intemperance grew upon him. He died in extreme penury on the 24th of September 1790—according to Steevens, the editor of Shakespeare, at "The Hog in the Pound," an obscure alehouse in Swallow Street, or, as stated by his pupil J. T. Smith, in the house of Robert Wilkinson, a printseller in Cornhill.

It is as an engraver that Sherwin is most esteemed; and it may be noted that he was an ambidexterous, working indifferently with either hand upon his plates. His drawing is correct, his line excellent and his textures are varied and intelligent in expression. Such of his plates as the "Holy Family" after Nicholas Poussin, "The Sower" after Vermeer, "The Mill," after the marquis of Buckingham after Gainsborough and that of Pict. occur and hold a place among the productions of the English school of line-engravers. He also worked after Pincio, Dance and Kauffman.

SHERWOOD, MARY MARTHA (1775-1851), English author, was born at Stanford, Worcestershire, on the 6th of May 1775; the daughter of the Rev. George Butt, D.D., then rector of Stanford. In 1803 she married her cousin, Captain Henry Sherwood, an officer in the British army, and subsequently accompanied him to India, where she devoted herself to charitable work and to writing. Her Indian story, Little Henry and his Bear, was translated into many languages. Her best-known work, however, is The History of the Fairchild Family, written after her return to England, of which the first part appeared in 1818, and the second and third parts in 1842 and 1847 respectively. The sub-title of this tale is The Child's Manual, being a series of stories calculated to show the importance and effects of a religious education. The book had a very large sale among the English middle-classes. Mrs Sherwood wrote nearly a hundred stories of a religious type and tracts, mainly for the young. She died on the 22nd of September, 1850.

See The Life and Times of Mrs Sherwood, from the Diaries of Captain and Mrs Sherwood, edited by F. J. H. Darton (1910).

SHERWOOD FOREST, one of the ancient English forests, in Nottinghamshire. It extended from Nottingham northward to Worksop, being over 20 m. long and from 5 to 9 m. broad. The soil is sandy and poor, and although a considerable portion has been brought under cultivation, the district preserves many acres of ancient character, especially as a great part of it is covered by the dome of ancient trees. The Sherwood Dukeries (q.v.). Sherwood was a crown forest from the time of Henry II. and a favourite hunting-ground of several kings; the land was divided between various lords of the manor, and its disafforestation was carried out at various times. The forest is traditionally noted as the retreat of Robin Hood, whose cave is seen at Papplewick near Newstead.

SHELTON, or ZETLAND, a group of islands constituting a county of Scotland, and the most northerly British possession in Europe. It consists of an archipelago of islands and islets, with the number of the islets. Its most important ancient character, especially as a great part of it is covered by the dome of ancient trees. The Sherwood Dukeries (q.v.). Sherwood was a crown forest from the time of Henry II. and a favourite hunting-ground of several kings; the land was divided between various lords of the manor, and its disafforestation was carried out at various times. The forest is traditionally noted as the retreat of Robin Hood, whose cave is seen at Papplewick near Newstead.

The islands occupy an area of 352,889 acres or 551-4 sq. m. Besides Mainland, the principal member of the group, the more important are Yell, Unst and Fetlar in the north, Whalsay and Bressay in the east, Trondra, East and West Burra, Papa Stour, Fair Isle and the north-west in the south. The islands present an irregular surface, frequently rising into hills of considerable elevation (an extreme of 1475 ft. is found in the north-west of Mainland). Most of the inland scenery is bleak and dreary, consisting of treeless and barren tracts of peat and boulders. The coast scenery, especially on the west, is always picturesque and often grand, the cliffs, sheer precipices of brilliant colouring, reaching a height of over 1000 ft. at some places. The shores are so extensively indented with voes, or firths—the result partly of denudation and partly caused by glacial action—that no part of Zetland is more than 3 m. from the sea. There are sheets of fresh water in the larger islands of Orkney, and the most important being Strom Loch (2 m. long), Girlsta (3½ m. long) and Spiggie (1½ m.) in Mainland, and Loch of Cliff (2 m.) in Unst, and numerous short streams. The principal capes are Sumburgh Head, the most southerly point of Mainland, a bold promontory 300 ft. high; Fitful Head, on the south-west of the same island, a magnificent headland, 2 m. in length and nearly 1000 ft. high, where Norna, the prophetess of Sir Walter Scott’s Pirate, was supposed to have her abode and which the Norsemen called the White Mountain, in allusion to the colour of the clay slate composing it; and the Noup and Herma Ness, two of the most northerly points in Unst.

Geology.—The geological character of this group of islands resembles that of the northern part of Scotland. Old Red Sandstone, red grits, sandstones and marls and conglomerate occur in a narrow belt on the east side of Mainland from Sumburgh Head to Rova Head, north of Lerwick; they also form the island of Bressay. In the western portion of Mainland, in Northmavine, there is a considerable tract of rocks of this age which are formed largely of intrusive diabase-porphyrhy; similar volcanic rocks occur in Papa Stour. These are penetrated by intrusions of granitic and felsitic character; one of these masses in Papa Stour is a handsome pink porphyry, which locally all the river beds are filled up by metamorphic schists and gneissses which occur in great variety and with which are associated numerous dikes and masses of intrusive igneous rock. The southern part of Mainland, from Laxfirth Voe to Old Noup Head, is a series of gneissses mixed with granite and with intercalated schists and schistose gneissses, and the rocks are divided into two formations, the other being a series of mixed igneous beds of limestone, which may be followed across the island in a northerly direction to Yell Sound, and to Dales Voe in Delting.
Gabbaro occurs in the peninsula of Fethland; diorite in North-
mavine between Rinas Voe and Mavis Grind; and epidote-syenite in
Dunrossness. Yell is formed of coarse gneiss and granitic rocks.
In Yell is the west wall of a large chambered tomb, which was
followed eastward by schists of various kinds, then by a belt of
serpentine, 2 m. to a quarter of a mile in breadth, which crosses
the island from S.W. to N.E.; this is succeeded by a belt of gabbro, and
finally by the northern edge of a large mass of siliceous schists.
Similar rocks occur in Fetlar. Whalsay is built of coarse
gneisses and schists. During the height of the glacial period the ice
must have reached the islands, or at any rate the main centres of
population. According to Dr. Jakobsen, the largest inhabited island,
belonging to the eastern side are found as boulders scattered over
the western districts. Important formations of chronicle are found
at Hagrid and the Heig Hills; staitite occurs at Kleber Geo, and
many schists are found in the boulder clay cover. Climate and
Population.—The average annual rainfall amounts to 46 in.,
and the mean temperature for the year is 46° F., for March
39° F. and for July 54° F. The climate is very cold in winter,
lasting from November to March; spring begins in April, but it is
the middle of June before warmth becomes general, and by the end
of August summer is gone. The summer is almost nightless, print being
legible at midnight, but in winter the days are only 4 hours long,
though the nights are frequently illuminated with brilliant displays
of the aurora borealis. The well-known Shetland breed of shaggy
ponies are in steady demand for undergound work in coal fields.
The pollen of wills about 1850. The most valuable commercial
feature is the raising of barley, fleecy, furnish beef of remarkable tenderness and flavour; while the
cows, when well fed, yield a plentiful supply of rich milk. The native
sheep is a shaggy and thickly-furred breed, which has a
beauty, as well as
rams generally have short horns, and the wool is long and very fine.
White, black, speckled grey and a peculiar russet brown, called
mooral, are the prevailing colours. It is customary to pluck the wool
by hand, and the dainty fleece is then washed, reared to twice its
second crop. Black-faced and Cheviots are also found in some
places. Large numbers of geese and poultry are kept. The lochs
and tarns are well stocked with brown trout, and the voes and
gills, or narrow inlets off the sea, are well supplied with fish. The
fish are captured in the bays and sounds; the grampus, dolphin and porpoise,
bount the coasts, and seals occasionally bask on the more
outlying islets. Besides the commoner kinds of fishes, sharks, the torsk, ophid and
dolphins inhabit the waters. The waterfowl are very plentiful; the
dpapharole, fulmar petrel, kitiwake, Manx shearwater,
black guillemot, whimbrel, puffin and white-tailed eagle.
Croatling agriculture is conducted on primitive methods, spade
tillage being almost universal, and seaweed the principal manure.
The cottages are generally grouped in small hamlets called "towns.
There are numerous grazing lands, which are generally
owned under 5 acres, but the average holding runs from 5 to 20 acres. At
one time the land was held on the "runrig" system—that is, different
tenants had different tracts of land—whereas for the present the rule of
farming is separate. About one-sixth of the total area is under cultivation,
and barley being the chief grain, and potatoes (introduced in 1730)
and turnips (1807) the chief green crops. Cabbage, said to have been
introduced by a detachment of Cromwellian soldiers, is also raised,
and among fruits black and red currants riper in sheltered situations.
In spite of somewhat adverse climatic conditions, live stock is reared
with success.

The distinctive manufacture is knit goods. The finest work is
said to come from Unst, though each parish has its own speciality.
The making of gloves was introduced about 1800, of shawls about
1850. The art has been improved, and the women do most of the farm work and spend their spare time in
knitting. Fishing is the occupation of the men, and the real
mainstay of the inhabited. Formerly the fishery was not important
in the Dutch, whose supremacy was destroyed, however, by the imposition
of the salt tax in 1712. So complete was their control that they are
estimated to have derived from it more than 200 million sterling
sterlings a year. At present, however, the fishery is not what it was, but
in some measure it is improved, and the fishermen are
forever at war. Meanwhile the fishermen have been content to use the
"skerries," or six-armed fishing boats, till the last quarter of the 19th century, when boats of modern type were introduced.

The Orkney and Shetland fishery districts is the most important north of
Aberdeen, and the Shetland fishery district is the most important north of
the Orkney.

The haaf or deep-sea catch principally consists of cod,
lings, etc. In the north, communication with the islands is maintained
by steamers from Lerwick to Orkney, the Shetland capital, and to Scalloway, the former capital, and other points
once (once a week). Population.—In 1891 the population amounted to 28,711 and in 1901 it was 28,166 or 51 persons to the sq. m. The females
numbered 15,753, or 127 to every 100 males, considerably the
largest proportion to any county in Scotland. In 1901 there
were 55 persons speaking Gaelic and English, none who spoke
Gaelic only, and 92 foreigners (almost all Scandinavians).

In the inhabited islands, proceeding from south to north; but it will be understood
that they do not lie in a direct line, that several are practically
on the same latitude, that the bulk are situated off the east
and west coast of Mainland, and that two of them are distinctly
outlying members of the group. The figures within brackets
include all islands, populated or not. The number of inhabitants
is 10,448. The inhabited islands, proceeding from south to north:
the

S.W. of Sumburgh Head, and is 3 m. long by about 2 m. broad.
The name is derived from the Norse faar, a sheep (a derivation better seen in the Faroe Islands). It is a hilly island, with rocky
cliffs; North Haven, on the east coast, being almost the only place
where landing can be safely effected. From the survivors of
a vessel of the Spanish Armada that went ashore in 1588 the
natives are said to have acquired the art of knitting the coloured
hosiery for which they are noted. The shipwrecked sailors
taught the people how to prepare dyes from the plants and
seaweeds, and the craft has been carried on ever since.

The Inhabited Islands.—The following is a list of the inhabited
islands, proceeding from south to north; but it will be understood
that they do not lie in a direct line, that several are practically
on the same latitude, that the bulk are situated off the east
and west coast of Mainland, and that two of them are distinctly
outlying members of the group. The figures within brackets
include all islands, populated or not. The number of inhabitants
is 10,448. The inhabited islands, proceeding from south to north:
the
(25) lies off the west coast of Mainland, south of the two Burrs. East Burra (203), about 1 m. long by 1 m. broad, is separated from Mainland by Cliff Sound, a narrow arm of the sea, 8 m. long. West Burra (612), 6 m. long by 1 m. broad, with a very irregular coast-line, lies alongside of East Burra and contains a church. It is said to be the Burgh Westra of Sir Walter Scott's *Pirate*. Burra is a contraction of *Borgar-øy*, meaning "Broch island." Trondra (151), "Trond's island," Trond being an old Norse personal name, in the mouth of Scalloway Bay. Oxna (36) lies about 4 m. S.W. of Scalloway, and Papa (priest's isle, 10), to the E. of Oxna. Bressay (676) lies 1 m. E. of Lerwick, from which it is separated by the Sound of Bressay, in which Haakonson, by his will, left it to his widow. Here it removed to fit with Shetland north of the head of a small bay, lies Haroldswick, where Harold Haafager is believed to have landed in 892, when he annexed the Orkney and Shetland Islands to Norway. Burra Firth, in the north of Unst, is flanked on both sides by magnificent cliffs, including the Noup of Unst, the hill of Saxavord (934 ft.), the Gord and Herma Ness. Muckle Flugga (3), about 1 m. N. of Unst, is the most northerly point of Shetland, and the site of a lighthouse.

Administrative. — Shetland unites with Orkney to return a member to parliament. The island is divided into Mainland district (comprising the parishes of Northmavine, Delling, East Burra, Scalloway, Northmavine, and Dunrossness) and North Isles district (the parishes of Unst, Fetlar and Yell). It forms a sherriffdom with Orkney and Caithness, and there is a resident sheriff-substitute at Lerwick, the county town. There are parish poorhouses in Dunrossness and Unst, besides the Shetland combination poorhouse at Lerwick. The county is under school board jurisdiction and Lerwick has a secondary school, and a few of the other schools earn grants for higher education. The "residue" grant is expended on navigation and swimming classes.

Shetland and Orkney, the South-west, is divided into a number of districts, each with a "parish council," which has a seat in the House of Keys, the "Legislative Assembly." This body consists of the members of the group of Otter Skerries, about 4 m. N.E. of Whalsay. There is a lighthouse on Bound, and the rest are fishing stations. Yell (2483), separated from the north-east coast of Mainland by Yell Sound, is the second largest island of the group, having a length of 17 m., and an extreme width of 6½ m., though towards the middle the veso of Mid Yell and Whale Firth almost divide it into two. It contains several brochs and ruined chapels and is an important fishing station. Fetlar (347) lies off the east coast of Yell, from which it is divided by Colgrave Sound and the isle of Hascosay and is 5 m. long by 6½ m. broad. It ranks with the most picturesque and most fertile members of the group and contains a breed of ponies, a cross between the native pony and the horse. Uyea, "the isle," from the Old Norse øy (3), to the south of Unst, from which it is divided by the narrow sounds of Uyea and Skuda, yields a beautiful green serpentine. Unst (1940), to the N.E. of Yell and separated from it by Blue-mull Sound, is 12 m. long and 6 m. wide. It has been called the "garden of Shetland," and often inducements to sportmen in its trout and game. The male inhabitants of the islands engaged in the fisheries and the women are the expert knitters of hosiersy in the islands. Unst contains several places of historic interest. Near the south-eastern promontory stands Muness Castle, now in ruins, built in 1598 — according to an inscription on a tablet above the door — by Laurence Bruce, natural brother to Lord Robert Stewart, 1st earl of Orkney. Buess, near Balta Sound, was the house of Dr Laurence Edmonston (1795—1879), the naturalist. Near Ballasta are the remains of three stone circles. It is supposed the Ting, or old Assembly, met at one of these. Later it removed to Dinwall Firth north of the head of a small bay, lies Haroldswick, where Harold Haafager is believed to have landed in 892, when he annexed the Orkney and Shetland Islands to Norway. Burra Firth, in the north of Unst, is flanked on both sides by magnificent cliffs, including the Noup of Unst, the hill of Saxavord (934 ft.), the Gord and Herma Ness. Muckle Flugga (3), about 1 m. N. of Unst, is the most northerly point of Shetland, and the site of a lighthouse.
SHIBARGHAN, a town and khanate of Afghan Turkestan. The town lies some 60 m. W. of Balkh, and contains 12,000 infantry and about 2,000 Uzbek garrison troops, with a detachment of Persians and Parsees. It has a citadel, but is not otherwise fortified, and is surrounded by good gardens and excellent cultivation. The khanate is one of the "four domains," which were long in dispute between Bokhara and Kabul, but were allotted to the Afghans by the Anglo-Russian boundary agreement of 1873.

SHIBBOLETH, a Hebrew word, meaning an ear of corn or a stream or river, from shibal, to grow, increase, flow, used by Jephthah, probably in the second sense with reference to the river Jordan, as a word to distinguish the Ephraimites, who were unable to pronounce the sh, from the men of Gilead (see Judges xii. 6) at the passage of the Jordan. The word ciceri was similarly used at the time of the massacre of the French known as the Sicilian Vespers, for they betrayed their nationality by their inability to pronounce it. The term has also come generally to mean a watchword, catch-phrase or cry, to which the members of a party adhere after any significance or meaning which it may have imported has disappeared.

See ALPHABET, i. 725, for a discussion of the sibilant difficulty involved in the test of Judges xii. 6.

SHIEL, LOCH, a lake near the Atlantic seaboard of Scotland, lying between the district of Moidart in Inverness-shire and the districts of Ardgour and Sunart in Argyllshire. The boundary line between the two counties is drawn lengthwise down the centre of the lake and is continued down the river Shiel to the sea. The loch is 173 m. long and varies in width from 200 yds. to 1 m., and is only 11 ft. above the sea. The maximum depth is 430 ft. with a mean depth of 83 ft. The lake has an area of 484 acres on 73 sq. m., and drains directly a basin of 745 sq. m., and with an outflow from Loch Dillate, or Dollake, of 85 ft. sq. m. Loch Dillate lies 1½ m. E. of Loch Shiel, into which it flows by the Polloch. It is 13 ft. long at its maximum, with a maximum depth of 55 ft., and covers an area of 142 acres. For fully three-fourths of its length Loch Shiel has a south-westery direction, but at Eilean Fhianain (Finnan's Island) it strikes towards the west. It receives the Finnan and other small streams and discharges by the Shiel to the salt-water Loch Moidart. On the north-west and south-east it is skirted by lofty hills (Sgor Cholma (3164), Sgor nau Coireachan (3153) and others of over 2000 ft.), but the land at the western extremity in Ardmarnoch is low-lying.

SHIELD, WILLIAM (1748–1829), English musical composer, was born at Swalwell, near Newcastle, in 1748. His father began to teach him singing before he had completed his sixth year, but died three years later, leaving him in charge of guardians, who made no provision whatever for continuing his musical education, for which he was therefore dependent entirely upon his own aptitude for learning, aided by a few lessons in thoroughbass which he received from Charles Avison. Notwithstanding the difficulties inseparable from this imperfect training, he obtained admission in 1772 to the orchestra at the Italian Opera in London, at first as a second violin, and afterwards as principal viola, and this engagement he retained for eighteen years. In the meantime he turned his serious attention to composition, and in 1778 produced his first English comic opera, The Fitch of Bacon, at the Little Theatre in the Haymarket, with so great a success that he was immediately engaged as composer to Covent Garden Theatre, for which he continued to produce English and other dramatic pieces in quick succession until 1797, when he resigned his office, and devoted himself to compositions of a different class, producing a great number of very beautiful glees, some instrumental chamber music, and other miscellaneous compositions. In 1817 he was made master of the royal music. He died in London on the 25th of January 1829, and was buried in the south cloister at Westminster Abbey.

Shield's most successful dramatic compositions were Rosina, The Tie and the Blood, The Lock and Key and The Castle of Andalusia. As a composer of songs he was in no degree inferior to his great contemporary Charles Dibdin. Indeed, The Arthure, The Heaving of the Lead and The Post Captain are as little likely to be forgotten as Dibdin's Tom Bowling or Saturday Night at Sea. His vein of melody was inexpressible, thoroughly English in character and always conceived in the purest and most delicate taste, and hence it is that many of his airs are still sung at concerts, though the operas for which they were written have long been banished from the stage. His Introduction to Harmony (1794 and 1800) contains a great deal of valuable information; and he also published a useful treatise, The Rudiments of Thoroughbass.

SHIELD (O. Eng. scild, cf. Du. and Ger. Schild, Dan. Skjold; the origin is doubtful, but may be referred to the root seen in "shell" or "scale"); another suggestion connects it with iccl. skjallo, to clasp, and skjeld, a skene, in skjeldbrae (as seen in Gr. axiros, eioro Lat. culis, skin, scutum, shield, O. Eng. skid, hide, and in "sky"), a piece of defensive armour borne upon the left arm or carried in the left hand as a protection against missiles. Varying in shape and form, it was the principal piece of defensive armour from the Bronze and Iron Age to the introduction of fire-arms, and is still borne by savage warriors throughout the world (see ARMS AND ARMOUR, and for the heraldic shield HERALDY).

In modern times the principle of the shield has been applied to guns of all calibres from 1 in 6 to 1 in 20, and to calibres from 3 to 15 inches. When the turreted, the elongated, and other heavy-armoured structures are intended to be proof against the heaviest projectiles, the shield is usually only designed to resist rife and shrapnel bullets or very light shells. For the application of shields to field artillery, &c., see the articles Artillery and Ordnance.

SHIELDS, JAMES (1810–1879), American soldier, was born in Dungannon, county Tyrone, Ireland, in 1810. He emigrated to the United States in 1826, and in 1832 began to practice law in Kaskaskia, Illinois. He was prominent in Democratic politics at that time. He was a member of the Illinois House of Representatives in 1836–1838, was state auditor in 1841–1843, was judge of the supreme court of the state in 1843–1845, and was commissioner of the U.S. General Land Office in 1845–1847. In the Mexican War he served as a brigadier-general of volunteers under General Zachary Taylor on the Rio Grande, under General John E. Wool in Chihuahua, and under General Winfield Scott in the southern campaign; he was brevetted major-general for gallantry at Cerro Gordo, where he was severely wounded, and he was again wounded at Chapultepec. In 1849–1855 he was a United States senator from Illinois; and in 1856–1859 was a senator from Minnesota. In 1860 he returned to California. In August 1861, soon after the outbreak of the Civil War, he was commissioned brigadier-general of volunteers; in March 1862 he succeeded to the command of General Frederick W. Lander's division; he was in command on the Federal side at Winchester (23 March 1862) and at Port Republic (9 June); and in March 1863 he resigned his commission. He then settled in Carrollton, Missouri, and in 1875 was a member of the State House of Representatives; in 1879 he was United States senator from Missouri for six weeks to fill an unexpired term. He died at Ottumwa, Iowa, on the 3rd of June 1879.

SHIFNAL, or Shiffnal, a market town in the Newport (N.) parliamentary division of Shropshire, England, 154 m. N.W. from London on the Wolverhampton-Shrewbury line of the Great Western railway. Pop. (1901) 3321. The church of St Andrew is cruciform and full of fine details of late Norman, Early English and Decorated work. Trade is mainly agricultural, and cattle-fairs are held. There are large iron-works. The name of the town was Idsal in the Domesday Book in 1086. The town did not come under the Great Seal until the reign of Edward I. It lies on the Severn.

Within 6 m. E. of Shifnal are Tong, Boscoed and the nunnery of White Ladies. Tong Castle shares with the castle of the same name in Kent the legend of the dealings of the Saxon Hengist with the British chieftain Vortigern. The medieval building was demolished late in the 18th century, and the present castle erected in mingled Gothic and Moorish styles. Tong church, of fine early Perpendicular work, contains a remarkable series of ornate tombs, mainly of the 15th and 16th centuries, to members of the Vernon and Stanley families, former owners of the castle.
The Golden Chapel on the south side is rich late Perpendicular, with a roof of fan-tracery, showing signs of the original decoration in colours. The mansion of Boscobel is famous as the house in which Charles II. was concealed in 1652 after an adventurous journey from Worcester, where his arms had failed before those of Cromwell. The secret chamber which hid him is preserved, but he also found refuge in a tree of the forest which then surrounded Boscobel. A tree close to the house still bears the name of Charles's oak, but tradition goes no further than to assert that it grew from an acorn of the original tree. White Ladies was a Cistercian nunnery; and the slight remains are Norman. The pleasant wooded district was formerly part of Brewood Forest, which extended into Staffordshire.

SHIATSÉ, one of the largest towns in Tibet, next in importance to Lhasa, the capital. The town, which is at the confluence of the Nyang chu with the Tsangpo, contains about 9000 inhabitants (exclusive of priests), and is about ½ m. long by a ¼ m. broad. About 1 m. to the north-east is a monastery called Konkaling, whilst to the south-west is the far-famed Tashilhunpo monastery, the residence of the Dalai Lama of Lhasa. Between the Tashilhunpo monastery and the city is the Thom or open market, where all the business of the place is daily transacted. A wall about 1 m. in circumference surrounds the Tashilhunpo monastery, within which are numerous temples and houses, four of the larger temples being decorated with gilded spires. A great wealth of jewels and precious metal is said to enrich the numerous idols of Tashilhunpo. The monastery maintains 3300 priests. The city is protected by a fort which stands on a low hill to the north-west, and the fortifications are strengthened here. The municipal government is in the hands of two dépen assisted by resident Jongpons. The soil around Shigatse is rich and productive, the elevation being between 11,000 and 12,000 ft. Shigatse lay to the west of the British route of advance on Lhasa in 1894, but it was visited by Captain Rawling on his way to open the market at Gartok.

SHIGNAN and ROUSHAN, two small hill states E. of the Badakshan province of Afghanistan. They extend eastwards from the Panj-e, where it forms the eastern boundary of Badakshan to the Pamirs. The native rulers of Roshan and Shigan claim descent from Alexander the Great, and it is given to some extent that the Buddhists are still current in the country about the upper Oxus. The two states were conquered by Abdur Rahman in 1882, but were assigned to Russia by the Durand agreement of 1863. Since that agreement Russia has retired from all districts previously occupied by her on the left bank of the Panj, or upper Oxus.

SHÍ'ITES (from Arab. shi'a, a party, and then a sect), the name of one of the two great religious divisions of Islam. The Shiites hold that the imamate and caliphate belong to the house of Mahomet (Muhammad) alone, and so to 'Ali, Mahomet's son-in-law, and his successors. After the arbitration on the claims of 'Ali and Moawiyah to the caliphate (A.D. 658), two great parties emerged from the strife of feeling caused in the East by the deposition of 'Ali. Those who were known as the Kharijites, being mainly country Arabs, were democratic, and claimed that the office of caliph was elective, and that the caliph might be chosen from any Arab Moslem family. In strong opposition to these stood the party afterwards called the Shiites, who regarded 'Ali and his descendants as the only rightful caliphs. For them the caliphate was a God-given office, and not one to be given by human appointment. Belief in this was an article of faith, and an article of the faith. He who did not accept it as such was an unbeliever. Moreover, the party consisted largely of Persians who on their conversion to Islam brought with them many of the doctrines of their old faith, religious and political. Among these was the belief in the divinity of the sovereign and the duty of worshipping him. Gnostic elements, which may have come from the old religion of Babylonia, were also introduced. The idea of an absolute personal and hereditary monarchy was thus developed among the subjects of 'Ali. But in Islam there is no separation between politics and theology. The theological position of the Shiites was that the superhuman power of Mahomet descended to the members of his house ('Ali and his children), so that they could interpret the will of God and tell future events. The imam was infallible and a mahdi or guide for life. What the imam gained the Koran lost, and many of the Shiites held the Mu'tazilite or rationalistic opinion of the created nature of the sacred book.

The growth of the Shiites was fostered by the great discontent of the eastern half of the caliphate, with Omeyyad rule (see CALIPHATE, and PERSIA: History). Before long an active propaganda was started, and leaders (often adventurers) arose who formed parties and founded sects of their own in the ranks of the Shiites. One of the earliest of these was 'Abdallah ibn Sabah (founder of the Shab'tiyya), who in the caliphate of Othman had preached the return of Mahomet (founded on Koran xxvii. 84), had been concerned in the assassination of Othman, and had proclaimed the divinity of 'Ali, but had been disowned and punished by him. On 'Ali's death he declared the thunder to the Mahomet, and the lightning the scourge of the translated caliph, and announced that his divine power had passed to his successors, the imams.

Another sect, the Kaisanlyya, followed Kaisan, a freedman of 'Ali, in believing in the superhuman knowledge of Mahomed ibn Hanafiyya, a son of 'Ali but not by Fatima. Religion for these was obedience not to law but to a person. When the doctrine of a hidden imam arose, they differed from the Sabahyya in expecting his return from his place of concealment on earth, not from heaven. Among them an adventurer Mohktar (Mukht- tar) ibn 'Ali claimed to be the house of the Sabahyya was converted to the imam of both the knowledge and of the will of God—a development of Mahomet's own teaching. He claimed to fight to avenge the death of Hosain (see HASAN AND HOSAIN) and to serve Mahomed ibn Hanafiyya, who, however, disowned him. He was killed in 687. Some of the Shiite leaders, as Abu Moslim, when renounced by the members of the house of 'Ali, transferred their allegiance to the house of 'Abbas (see KAWDEN). The success of the Abbasids in supplanting the Omeyyads was largely due to the help of the Shiites, and the early Abbasid caliphs, to the time of Moawawillik, were half-Shiites of a lax order. Shahristani (q.v.) in his Book, and the Sects (Khitab Mid-lavan, Nâqî, ed. Curzon, pp. 109 ff; Haarbrücker's translation, vol. I. pp. 164 fo.) divides the Shiites into five main divisions: the Kaisanlyya, the Zaidlyya, the Imamiyya, the Ghâlîyya and the Isma'ilîyya. Of these the Ghâlîyya are represented by the followers of Ibn Sabah (see above), and the Kaisanlyya have been already described. These parties as such have now ceased to exist, the others still remain. The Zaidites or Zaidlyya are the followers of Zaid, a grandson of Hosain, and are the most moderate of the Shiites, for though holding that the imamate belongs only to the descendants of 'Ali by Fatima, and that any of the four channels might be imam (even though two or three should be in existence at the same time), they allow that circumstances might justify the appointment of another caliph for the time. Thus they acknowledge the imamate of Abu Bekr and Omar, though 'Ali was more entitled to the office. One branch of the Zaidites held Tawbaristan from 864 until overrun by the Samanids in 928; another branch, arising about 803 in Yemen, has remained there until the present day. The Isma'ilites or Isma'ilîyya are the followers of Isma'il, the elder son of Ja'far us-Sadiq, the sixth imam (see table below). He was rejected as successor by his father for drinking wine, and eventually he died in 803. Nevertheless, he was revered as imam for the adventurous sceptic 'Abdallah ibn Maimun (for his propaganda see CARMATHIANS). Owing to the success of this man the Isma'ilites have given rise to the Carmathians (q.v.), the Fātimites (q.v.), the Assassins (q.v.) and the Druses (q.v.).

At the present time the Isma'ilîyya still exist in small numbers, chiefly about Surat and Bombay. The Imamiyya believe that each imam has been definitely named by his predecessor. This party broke up into numerous divisions, and imams manifest or hidden secured each his own following. The most important of these parties is that of the Twelve (the Ithna 'ashariyya), who accept and follow the twelve descendants of 'Ali numbered in the accompanying table.
The twelfth imām Maḥommed is said to have vanished and to be in hiding, but will be restored by God to his people, when it pleases Him. The creed of this pantheon of traditions was handed down, when the Safawids conquered the country, and still remains its official creed. The shāh is thus only the temporary substitute for the hidden imām; and authoritative decisions in religious matters are pronounced by Muftis, i.e. theologians who can form their own opinions and require obedience to their decisions.

Other points in which Shi'ites differ from Sunnites depend on their legitimist opinions, or are accommodations of the rites of Islam to the Persian nationality, or else are petty matters affecting ceremonial. The rejection of all the Sunnite books of tradition goes with the repudiation of the caliphs under whose protection these were handed down. The Shi'ites, however, have their own collections of traditions. An allegorical and mystical interpretation reconcile the words of the Koran with the inordinate respect paid to 'Alī; the Sunnite doctrine of the uncreated Koran is denied. To the Mahommedan confession "There is no god but God and Mahomet is His ambassador" they add "and 'Alī is the viceregent of God" (wali, properly "confidant"). There are some modifications in detail as to the four main religious duties of Islam—the precepts of ritual purity, in particular, being made the main duty of the faithful. The prayers are almost exactly the same, and the Shi'ites allow the prayer of the congregation. Pilgrimage to Mecca may be performed by a hired substitute, or its place can be taken by a visit to the tombs of Shi'ite saints, e.g. that of 'Ali at Najef, of Ḥosain at Kerbelā, of Reşā at Meshed, or of the "unstained Fāţima" at Kūm (Fāţima-i-ma‘āṣım, daughter of Mūsā, the seventh imām). The Shi'ites are much the most zealous of Moslems in the worship of saints (real or supposed descendents of 'Ali) and in pilgrimages to their graves, and they have a characteristic eagerness to be buried in those holy places. The Persians have an hereditary love for processions and festivities, and so the Shi'ites have devised many religious feasts. Of these the great sacrificial feast (id-i- Qurbān; Turkish Qurbān Bārām) is also Sunnite; the first ten days of the month Muharram are dedicated to the mourning for the death of Ḥosain at Kerbelā (q.v.), which is celebrated by passion-plays (ta’sayy), while the universal joy of the Nauroz, or the New Year of the Old Persian calendar, receives a Mahommedan sanction by the tradition that on this day the prophet conferred the caliphate on 'Alī.

While they naturally reject the four Sunnite schools of jurisprudence, the Shi'ites also derive all law from the Koran, and their trained clergy (muftis) are the only class that can give legitimate legal responses. The training of the muftis resembles that of the Sunnite 'ālim. The course at the madrasa (medresse) embraces grammar, with some rhetoric and proseody, logic, dogmatic Koran exegesis, tradition and jurisprudence, and finally some arithmetical and algebra. The best madrasa is at Kerbelā. The scholar discharged from his studies becomes first a simple mollah, i.e. local judge and notary. A small place has one such judge, larger towns a college of judges. He is called the shāh, or imām-āl-Islām. The place of the Sunnite muftis is filled by certain of the imām-jum'-a, i.e. presidents of the chief mosques in the leading towns, who in respect of this function bear the title of imām mujtahid. This is a dignity conferred by the tacit consent of people and clergy, and is held at one time only by a very few distinguished men. In Persia, the cadi (kāfi) is an inferior judge who acts for the sheikh u'l-Islām in special cases, and a mufti is a solicitor acting under the judge to prepare cases for court.

Under the Safawids, when the clergy had great influence, they had at their head the podūr 'l-sodrār, who administered all pious foundations and was the highest judicial authority. But so great a power was found dangerous; 'Abbas the Great (1586–1628) abstained from filling up a vacancy which occurred in it, and, though Shāh Saffī (1628–1651) restored the office, he placed it in commission. Nādir Shāh abolished it in his attempt to get rid of the Shiite hierarchy (1736), and since then it has not been restored. Yet the imām-jum'-a of Isfahān, the old Safawi capital, is tacitly regarded as representative of the invisible imām of the house of 'Alī, who is the true head of the church. Few of the ceremonies introduced by the Shīites have been a success in Persia; they are not sanctioned by the clergy, and outside the great shrines of the sect, they are a matter of more religious than civil ceremonies. To the Khoja, or shari'ah, which are used in the courts of the sect, and the mullahs adjust the contract and share the women’s profits. There is still a little life and virgo among the Shi'ites, as appears among the sects, which, allowance being made for "taqyia," play no inconsiderable part. The Akhāhrār (traditionalists), who adopt a semi philosophical way of explaining away the plainest doctrines (such as the resurrection of the flesh) on the authority of false traditions of 'Ali, are not so much a sect as a school of theology within the same pale as the orthodox Shīa or Mu'tahīds. A real dissenting sect, however, is the Sheikhs who are of the Shi'ite shari'ah, and whose doctrines we have but imperfectly correctly. The representation of the Sheikhs, which claim that 'Ali was a divine incarnation, are found all over Persia in the "Ali-Ishāh" or "Ali-Allāh" sect ("Ali defiers"). Finally, in the 19th century arose the remarkable attempt at reform known as Bāshīl (q.v.).

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SHIKARPUR, a town of British India, in the Sukkur district of Sind, Bombay. It is situated about 18 m. from the right bank of the Indus, with a station on the North-Western railway, 23 m. N.W. of Sukkur. Pop. (1901) 49,491. Shikarpur has always been a place of importance, this being the trade route through the Bolan Pass, and its merchants have dealings with many towns in Central Asia. It has a large market and manufactures of carpets, cotton cloth and pottery. Shikarpur was formerly the headquarters of a district of the same name. In 1901 two subdivisions of this district were detached to form the new district of Larkana, and the two other subdivisions were then constituted the district of Sukkur.
SHILLOD, a town market in the Bishop Auckland parliamentary division of Durham, England, 9 m. N.W. from Darlington by a branch of the North Eastern railway. Pop. of urban district of Shildon and East Thockley (1901) 11,759. At New Shildon or East Thockley are extensive railway engine and wagon works belonging to the railway company. A large coal traffic is handled here, as there are collieries and foundries in the vicinity.

SHILLETO, RICHARD (1809-1876), English classical scholar, was born at Ulleskelf in Yorkshire on the 25th of November 1809. He was educated at the Clifton Grammar School and Wesleyan College, Cambridge, and in 1867 was elected a fellow of Peterhouse. His whole life was spent in Cambridge, where he died on the 24th of September 1876. Shilleto was one of the greatest Greek scholars that England has produced; in addition, he had an intimate acquaintance with the Latin and English languages and literature. He published little, being obliged to devote the best years of his life to private tuition. He was the most famous classical "coach" of his day, and almost all the best men passed through his hands. His edition of the De falsa legatione of Demosthenes will always remain in high quarters. His pamphlet Thucydidès or Great? excited a considerable amount of feeling. While it undoubtedly damaged Grote's reputation as a scholar, it was felt that it showed a want of appreciation of the special greatness of the historian. Shilleto's powers as a translator from English into Greek (especially prose) and Latin were unrivalled; a selection of his versions was published in 1901.


SHILLING, an English silver coin of the value of twelve pence. The term is derived from a French word.

There was an Anglo-Saxon coin termed scilling or scyulling, worth about fivepence, which is said to be derived from a Teutonic root, skil, to divide, + iling on the analogy of farthing (q.v.). The silver shilling was first struck in 1504, in the reign of Henry VII. In Charles II.'s reign shillings were first issued with milled edges. In George IV.'s reign they were issued so-called "lion shillings," bearing the royal crest, a crowned lion on a crown, a design reverted to in the coinage of Edward VII. A shilling is token money of a type, it is nominally in value the one-twentieth of a pound, but one pound of sliver is coined into sixty-six shillings, the standard weight of each shilling being 87-27 grains.

SHILLONG, a town of British India, in the Khasi Hills district of Eastern Bengal and Assam. It is situated in 25° 24' N. and 91° 53' E., on a plateau 4978 ft. above the sea, 63 m. by cart-road S. of Saultali, on the Brahmaputra. Pop. (1901) 8384. Shillong practically dates from 1864, when the district headquarters were transferred from Cherrapunji. It was chosen as the seat of government in 1874, when the province of Assam was constituted. Every one of the public buildings and houses that quickly grew up was levelled to the ground by the great earthquake of the 12th of June 1897, but they have since been rebuilt. Cantuorns are still in the form of a wall of Gurkhas with two guns, and Shillong is the headquarters of the Assam brigade of the 8th division of the Northern army. There are a government high school and a training school for masters. The Welsh Presbyterian mission is active in promoting education. Since 1895, when Dacca became the capital of the new province of Eastern Bengal and Assam, Shillong has declined in importance; but it is still the summer residence of the government and the headquarters of the district.

SHILLUH, or Sooery ("ingabonds"), the name given by the Arabized Moors to the Berber peoples of southern Morocco. They occupy chiefly the province of Sus. The name is said to be a corruption of ashkhil (pl. iskhali), a camel-hair tent. They are of fine physique, strong and wiry, and true Berbers in features and fairness. They are as a rule shorter than the Berbers of Algeria (see BERBERS and MOROCCO).

SHILLUK, a Negro race of the upper Nile valley, occupying the lands west of the White Nile from the Sobat northward for about 360 m., and stretching westward to the territory of the Baggar tribes. They are the most numerous of the Negro tribes of the Anglo-Egyptian Sudan, and form one great family with the Alur and Acholi (q.v.) and others in the south. Formerly extending as far north as Khartum and constituting a powerful Negro kingdom, they are now decadent. They are the only race on the upper Nile recognizing one chief as ruler of all the tribes, the chieftainship passing invariably to the sister's child or some other relative on the female side. The Shilluk towns on the Nile bank are usually placed near to one another. They own large herds of cattle. In physique the Shilluks are typically Negroes and jet black. The men used to wear nothing from the waist upward but a calico attached to their girdle, but with the establishment of Anglo-Egyptian control, c. 1900, they gradually adopted clothes. The poorer people smear themselves with ashes. They ornament the hair with grass and feathers in fantastic forms such as a halo, helmet, or even a broad-brimmed hat. When they saw Schweinfurth wearing a broad felt hat they thought him one of them, and were amazed when he took it off. They are skilful as hunters, and especially as fishermen, spearing fish while wading or from amblesh rafts. Their arms are spears, shields and clubs. Their religion is a kind of ancestor worship and nature worship.


SHILOH, BATTLE OF. This, the second great battle in the American Civil War, also called the battle of Pittsburg Landing, was fought on the 6th-7th of April 1862 between the Union forces under Grant and Buell and the Confederates under A. S. Johnston and Beauregard. In view of operations against Corinth, Mississippi, Grant's army had ascended the Tennessee to Pittsburg Landing and there disembarked, while the co-operating army under Buell was passing through the Cumberland valley. The Confederates concentrated about 40,000 men at Corinth and advanced on Pittsburg Landing with a view to beating Grant before Buell's arrival, but their concentration had left them only a narrow margin of time, and the advance was further delayed by the wretched condition of the roads. Beauregard advised Johnston to give up the enterprise, but on account of the bad effect a retreat would have on his raw troops Johnston resolved to continue his advance. Grant meantime had disposed his divisions in camps around the Landing rather with a view to the Confederate army making a direct advance. The Confederates sniped towards the Landing, astonishing Johnston and leading him to cut off and force surrender. Another division had its commander, W. H. L. Wallace, killed. But on the other side the disorder became greater and greater, many regiments were used up, and Johnston himself killed in vainly attacking on a point of Wallace's line called the Hornets' Nest. The day passed in confused and savage scuffles between the raw enthusiasts of either side, but by 5.30 P.M. Grant had formed a last (and now a connected) line of defence with Buell's leading division (Nelson's) and all of his own infantry that he could rally. This line was
hardly 600 yds. from the Landing, but it was in a naturally strong position, and Beauregard suspended the attack at sunset. There was a last fruitless assault, delivered by some of the Confederate brigades on the right that had not received Beauregard's order against Nelson's intact troops, who were supported by the fire of the gunboats on the Tennessee. During the night Grant's detached division (Lew Wallace's) and Buell's army came up, totalling 25,000 fresh troops, and at 5 A.M. on the 7th Grant took the offensive. Beauregard thereupon decided to extricate his sorely-tried troops from the misadventure, and retired fighting on Corinth. About Shiloh Church, a strong rearguard under Bragg repulsed the attacks of Grant and Buell for six hours before withdrawing, and all that Grant and Buell achieved was the withdrawal of the able-bodied troops, who had sustained a federate failure, but not a Union victory, and, each side being weakened by about 10,000 men, neither made any movements for the next three weeks.

**SHILOH**, a town of Ephraim, where the sanctuary of the ark was, under the priesthood of the house of Eli. According to 1 Sam. iii. 3, 15, this sanctuary was not a tabernacle but a temple, with doors. But the priestly narrator of Jos. xviii. 1 has it that the tabernacle was set up there by Joshua after the conquest. In Judges xx. 19 seq. the yearly feast at Shiloh appears as of much importance, in the choice of the champion. The sanctuary of Shiloh having been destroyed, probably by the Philistines after the battle of Ebenezer; cf. Jeremiah vii. 12 seq. The position described in Judges, loc. cit., gives certainty to the identification with the modern Sellun lying some 2 m. E.S. of Khan Labban (Lebanon), on the road from Bethel to Shechem. Here there is a ruined village, on an elevation protected by lofty hills on three sides, and open only towards the south, offering a strong position, which suggests that the place was a stronghold as well as a sanctuary. Fertile land surrounds the hill. The name Sellun corresponds to "Σαλεύον in Joseph. LXX, iam biu. The forms given in the Hebrew Bible (נֶשֶלֶג, נֶשֶלֶג) have dropped the final consonant, which reappears in the adjective נֶשֶלֶג.

**SHIMÔGA, or SHEEMOGA**, a town and district in the state of Mysore, southern India. The town is situated on the Tunga river, and is the terminus of a branch railway. Pop. (1901) 6240. The area of the district is 4025 sq. m. Its river system is twofold; in the east the Tunga, Bhadra and Varada unite to form the Tungabhadra, which ultimately falls into the Kistna and so into the Bay of Bengal, while in the west a few minor streams empty themselves into the Sharavatti, which near the north-western frontier bays through the Western Ghats by the celebrated Falls of Gersoppa (q.v.).

The western half of the district is mountainous and covered with magnificent forest, and is known as the Malnad or hill country, some of its peaks being 4000 ft. above sea-level. The general elevation of Shimoga is about 2000 ft.; and towards the east it opens out into the Maidan or plain country, which forms part of the general plateau of Mysore. The Malnad region is very picturesque, its scenery abounding with every charm of tropical forests and mountain wilds: on the other hand, the features of the Maidan country are for the most part comparatively tame. The mineral products of the district include iron-ore and laterite. The soil is loose and sandy in the valleys of the Malnad, and in the north-east the black cotton soil prevails. Bisons are common in the taluk of Saugar, where also wild elephants are occasionally seen; while tigers, leopards, bears, wild dogs and other wild animals are numerous in the wooded tracts of the west. Shimoga presents much variety of climate. The south-west monsoon is felt in full force for about 25 m. from June to September, bringing an annual rainfall of more than 150 in., but the rainfall gradually diminishes to 21 in. at Shimoga station and to 25 in. or less at Chennagi. The population in 1901 was 53,173. Rice is the staple crop; next in importance is sugar-cane; among the vegetables, temperance of course, include vegetables, fruits and pepper. The chief manufactures are coarse cotton cloths, rough country blankets, iron implements, brass and copper wares, pottery and jaggery. The district is noted for its beautiful teakwood carving.

During the Mahomedan usurpation of Mysore from 1761 to 1799, unceasing warfare kept the whole country in constant turmoil. Although the Hindu emperor Shimoga became the scene of disturbances caused by the mal-administration of the Deshast Brahmans, who had seized upon every office and made themselves obnoxious. These disturbances culminated in the

**SHINGLE.** (1) A Middle English corruption of schindel, from Lat. *scindula* or *scandula*, a wooden tile, from *scandere*, to cut—"a kind of wooden tile, generally of oak, used in places where timber is plentiful, for covering roofs, spires, &c. In England they are generally plain, but on the continent of Europe the ends are sometimes rounded, pointed or cut into ornamental form.

(2) Water-worn detritus, of larger and coarser form than gravel, chiefly used of the pebbly detritus of a sea-beach. This word is of Norwegian origin, from *singl* or *singling*, coarse gravel. It is apparently derived from *singla*, to make a ringing sound, a form *singl* (Lebonah) with alluvial "singling," which is pebbles dropped when walking over shingle.

(3) The word "shingles" the common name of *herpes* *soster*, a particular form of the inflammatory eruption of the skin known as herpes (*q.v.*), is the plural of an obsolete word for a girdle, *sengle*, taken through O. Fr. *cesnelle* from Lat. *cinguluni*, *cingere*, to gird.

**SHINWARI**, a Durani Afghan tribe occupying the northern slopes of the Safed Kob below Jalalabad. One clan, the Ali Sher Khel, fall within the British sphere in the North-West Frontier Province of India. They live on the Loagai border of Peshawar district and numerous fighting men. The remaining three clans are Afghan subjects.

**SHIO-GHI**, the Japanese game of chess. Like Go-bang, the game of the middle classes, and Sugorochu (double-six), that of the common people, it was introduced from China many centuries ago and is still popular with the educated classes. It is played on a board divided into 81 squares, nine on a side, with 20 pieces on each side, arranged on the three outer rows. The pieces, which are flat and pent-shaped with the smaller end towards the front, represent, by means of different inscriptions, the O, or Shio, King-General, with whose checkmate the game ends, his two white sides, the Kii and Ghiu, Gold and Silver Generals (two of each), Ko-Ma, horse or knight (two), Yari, spearman (two), Hisho, or flying chariot (rook), one Kaku (bishop), and nine Hio or Fu, soldiers or pawns. All these pieces, like those in chess, possess different functions. The chief difference between chess and Shio-gi is that in the Japanese game a piece does not cease to be a factor in the game when it is captured by the opponent, but may be returned by him to the board at any time as a reserve; and, secondly, all pieces, except the King and Gold General, are promoted to higher powers upon entering the last three rows of the enemies territory. This possibility of utilizing captured forces against their former masters and the altering values of the different men render shio-gi a very difficult and complicated game.

See Games Ancient and Oriental, by E. Falkénier (London, 1892); the Field (Sept. 1904).

**SHIP**, the generic name (O. Eng. *scip*, Ger. *Schiff*, Gr. *σκάφος*, from the root *skap*, cf. "scoop") for the invention by which man has contrived to convey himself and his goods upon water. The derivation of the word points to the fundamental conception by which, when realized, a means of flotation was obtained superior to the raft, which we may consider the earliest and most elementary form of vessel. The trunk of a tree hollowed out, whether by fire, or by such primitive tools as are fashioned and used with singular patience and dexterity by savage races, represents the first effort to obtain flotation depending on something other than the mere buoyancy of the material. The poets, with characteristic insight, have fastened upon these points. Homer's hero Ulysses is instructed to make a raft with a raised platform upon it, and selects trees "withered of old, exceeding dry, that might float lightly for him" (Od. v. 240). Virgil, glorifying the dawn and early progress of the arts, tells us, "Rivers then first the hallowed alders felt" (Georg. i. 136, ii. 451). Alder is a heavy wood and not fit for rafts. But to make for the first time a dug-out canoe of alder, and so to secure its flotation, would be a triumph of primitive art, and thus the poet's expression represents a great step in the history of the invention of the ship.

Primitive efforts in this direction may be classified in the
following order: (1) rafts—floating logs, or bundles of brushwood or reeds or rushes tied together; (2) dug-outs—hollowed trees; (3) canoes of bark, or of skin stretched on framework or inflated skins (balsas); (4) canoes or boats of pieces of wood stitched or fastened together with sinews or thongs or fibres of vegetable growth; (5) vessels of planks, stitched or bolted together with inserted ribs and decks or half decks; (6) vessels of which the framework is first set up, and the planking of the hull nailed on to them subsequently. All these in their primitive forms have survived, in various parts of the world, with different modifications marking progress in civilization. Climatic influences and racial peculiarities have imparted to them their specific characteristics, and, combined with the available choice of materials, have determined the particular type in use in each locality. Thus on the north-west coast of Australia is found the single log of buoyant wood, not hollowed out but pointed at the ends. Rafts of reeds are also found on the Australian coast. In New Guinea catamarans of three or more logs lashed together with thongs are common, and similar forms appear on the Madras coast and throughout the Asiatic islands. On the coast of Peru rafts made of a very buoyant wood are in use, some of them as much as 70 ft. long and 20 ft. broad; these are navigated with a sail, and, by an ingenious system of centre boards, let down either fore or aft between the lines of the timbers, can be made to tack. The sea-going raft is often fitted with a platform so as to protect the goods and persons carried from the wash of the sea. Upright timbers fixed upon the logs forming the raft support a kind of deck, which in turn is itself fenced in. The result is a vessel completely open to the horizon; the method of side planking to raise the freight above the level of the water and to save it from getting wet, are among the earliest typical expedients which have found their development in the progress of the art of shipbuilding.

I. HISTORY TO THE INVENTION OF STEAMSHIPS

Whether the observation of shells floating on the water, or of split reeds, or, as some have fancied, the nautilus, first suggested the idea of hollowing out the trunk of a tree, the practice ascends to a very remote antiquity in the history of man. Dug-out canoes of a single tree have been found associated with objects of the Stone Age among the ancient Swiss lake dwellings; nor are specimens of the same class wanting from the bogs of Ireland and the estuaries of England and Scotland, some obtained from the depth of 25 ft. below the surface of the soil. The hollowed trunk itself may have suggested the use of the bark as a means of flotation. But, whatever may have been the origin of the bark canoe, its construction is a step onwards in the art of shipbuilding. For the lightness and pliability of the material necessitated the invention of some internal framework, so as to keep the sides apart, and to give the stiffness required both for purposes of propulsion and the carrying of its freight. Similarly, in countries where suitable timber was not to be found, the use of skins or other water-tight material, such as felt or canvas, covered with pitch, giving flotation, demanded also a framework to keep them distended and to bear the weight they had to carry. In the framework we have the rudimentary ship, with longitudinal bottom timbers, and ribs, and cross-pieces, imparting the requisite stiffness to the covering material. Bark canoes are found in Australia, but the American continent is their true home. In northern regions skin or woven material made water-tight supplies the place of work. They are built up of pieces fitted together with ridges on their inner sides, through which the fastenings are passed. These canoes have the advantage of elasticity, which gives them ease in a seaway, and a comparative immunity where ordinary boats would not hold together. In these cases the body of the canoe is constructed first and built to the shape intended, the ribs being inserted afterwards, and attached to the sides, and having for their main function the uniting of the deck and cross-pieces, with the body of the canoe. Vessels thus stitched together, and with an inserted framework, have from a very early time been constructed in the Eastern seas far exceeding in size anything that would be called a canoe, and in some cases attaining to 200 tons burden.

From the stitched form the next step onwards is to fasten the materials out of which the hull is built up by pegs or treenails; and of this system early types appear among the Polynesian islands and in the Nile boats described by Herodotus (ii. 96), the prototype of the modern "nugger." The raft of Ulysses described by Homer presents the same detail of construction. It is remarkable that some of the early types of boats belonging to the North Sea present an intermediate method, in which the planks are fastened together with pins or treenails, but are attached to the ribs by cords passing through holes in the ribs and corresponding holes bored through ledges cut on the inner side of each plank.

We thus arrive, in tracing primitive efforts in the art of ship construction, at a stage from which the transition to the practice of setting up the framework of ribs fastened to a timber keel laid lengthwise, and subsequently attaching the planking of the sides, is not far off. The earliest type of modern vessel may be said to have its prototype in the single log which was the parent of the dug-out. The side planking of the vessel, which has an earlier parentage than the ribs, may be traced to the attempt to fence in the platforms upon the sea-going rafts, and to the planks fastened on to the sides of dug-out canoes so as to give them a raised gunwale. The ribs of the modern vessel are the development of the framework originally inserted after the completion of the hull of the canoe or built-up boat, but with the difference that they are now prior in the order of fabrication. In a word, the skeleton of the hull is now first joined together, with the ribs, &c., as a framework, before the covering is put upon it. This method is the one universally adopted in modern practice.

It is noticeable that the invention of the outrigger and weather platform, the use of which is at the present time distributed from the Andaman Islands eastward throughout the whole of the South Pacific, has never made its way into the Western seas. It is strange that Egyptian enterprise, which seems at a very early period to have penetrated eastward down the Red Sea and round the coasts of Arabia towards India, should not have brought it to the Nile, and that the Phoenicians, who, if the legend of their great migration from the shores of the Persian Gulf to the coast of Canaan is accepted, would in all probability, in their maritime expeditions, have had opportunities of seeing it, did not introduce it to the Mediterranean. That they did not do so, if they saw it at all, would tend to prove that even in that remote antiquity both nations possessed the art of constructing vessels of a type superior to the outrigger canoes, both in speed and in carrying power.

The earliest representations that we have as yet of Egyptian vessels carry us back, according to the best authorities, to a period little short of 3000 years before Christ. Some of these are of considerable size, as is shown by the number of rowers, and by the cargo consisting in many cases of cattle. The earliest of all presents us with the peculiar mast of two pieces, stepped apart but joined at the top. In some the masts are shown lowered

3 See Captain Cook's account of the Friendly Islands, La Pérouse on Easter Island, and Williams on the Fiji Islands.

4 Compare the planks upon the Egyptian war galley, added so as to protect the rowers from the missiles of the enemy.

5 It is curious that these two methods should still survive, and be in use in the construction of modern vessels. Some of these are built ribs first, and skin laid on afterwards; others, skin laid on moulds and framework first, and ribs inserted in the shell when turned over.
SHIP

and laid along a high spar-deck. The larger vessels show on one side as many as twenty-one or twenty-two and in one case twenty-six oars, besides four or five steering. They show considerable camber, the two ends rising in a curved line which in some instances ends in a point, and in others is curved back and over at the stern and terminates in an ornamentation, very frequently of the familiar lotus pattern. At the bow the stem is sometimes seen to rise perpendicularly, forming a kind of forecastle, sometimes to curve backward and then forward again like a neck, which is often finished into a figure-head representing some bird or beast or Egyptian god. On the war galleys there is frequently shown a projecting bow with a metal head attached. In the Phoenician, and the navigation have given place to the single mast furnished with bars or rollers at the upper part, for the purpose apparently of raising or lowering the yard according to the amount of sail required. The sail in some of the galleys is shown with a bottom as well as a top yard. In the war galleys during action it is shown rolled up like a curtain with loops to the upper yard. The steering was effected by paddles, sometimes four or five in number, but generally one or two fastened either at the end of the stern or at the side, and above attached to an upright post in such a way as to allow the paddle to be worked by a tiller.

There are many remarkable details to be observed in the Egyptian vessels figured in Duemichen's Flet of an Egyptian Queen, and in Lepsius's Denkmäler. The Egyptian ship, as represented from time to time in the period between 3000 and 1000 B.C., presents to us a ship proper as distinct from a large canoe or boat. It is the earliest ship of which we have cognizance. But there is a noticeable fact in connexion with Egypt which we gather from the tomb paintings to which we owe our knowledge of the Egyptian ship. It is evident from these records that there were at that same early period, inhabiting the littoral of the Mediterranean, nations who were possessed of sea-going vessels which visited the coasts of Egypt for plunder as well as for commerce, and that sea-fights were even then not uncommon. Occasionally the combination of these peoples for the purpose of attack assumed serious proportions, and we find the Pharaohs recording naval victories over combined Dardanians, Teucrians and Myrians, and, if we accept the explanations of Egyptologists, over Pelasgians, Daunians, Oscans and Sicilians. The Greeks, as they became familiar with the sea, followed in the same track. The legend of Helen in Egypt, as well as the numerous references in the Odyssey, point not only to the attraction that Egypt had for the maritime peoples, but also to long-established habits of navigation and the possession of an art of shipbuilding equal to the construction of sea-going craft capable of carrying a large number of men and a considerable cargo besides.

But the development of the ship and of the art of navigation clearly belongs to the Phoenicians. It is tantalizing to find that the earliest and almost the only evidence that we have of this development is to be gathered from Assyrian representations. The Assyrians were an inland people, and the navigation which they were familiar was that of the two great rivers, Tigris and Euphrates. After the conquest of Phoenicia, they had knowledge of Phoenician naval enterprise, and accordingly we find the war galley of the Phoenicians represented on the walls of the palaces unearthed by Layard and his followers in Assyrian discovery. But the date does not carry us to an earlier period than 700 B.C. The vessel represented is a bireme war galley which is "aphract," that is to say, has the upper tier of rowers unprotected and exposed to view. The apertures for the lower oars are of the same character as those which appear on Egyptian ships of a much earlier date, but without oars.

The artist has shown the characteristic details, though somewhat conventionally. The fish-like snout of the bow, the line of the parodius or outside gangway, the wickerwork cancelli, the shields ranged in order along the side of the bulwark, and the heads of a typical crew on deck (the πρωτες looking out in front in the forecastle, an ἐκβάτας, two chiefs by the mast, and, aft, the κελευτής and κυρευμένης). The supporting timbers of the deck are just indicated. The mast and yard and fore and back stays with the short ratline indicated. But although there can be little doubt that the Phoenicians, after the Egyptians, led the way in the development of the shipwright's art, yet the information that we can gather concerning them is so meagre that we must go to other sources for the description of the ancient ship. The Phoenicians at an early date constructed merchant vessels capable of carrying large cargoes, and of traversing the length and breadth of the Mediterranean, perhaps even of trading to the far Cassiterides and of circumnavigating Africa. They in all probability (if not the Egyptians) invented the bireme and trireme, solving the problem by the use of increased oar-power and consequently speed could be obtained without any great increase in the length of the vessel.

It is, however, to the Greeks that we must turn for any detailed account of these inventions. The Homeric vessels were aphract and not even decked throughout their entire length. They carried crews averaging from fifty to a hundred and twenty men, who, as we are expressly told by Thucydides, all took part in the labour of rowing, except perhaps the chiefs. The galleys do not appear to have been armed as yet with the bow, though later poets attribute this feature to the Homeric vessel. But they had great pikes used in fighting, and the term employed to describe these (ναύβαμαξαί) implies a knowledge of naval warfare. The general characteristics are indicated by the epithets in use throughout the Iliad and the Odyssey. The Homeric ship is sharp (θηόδ) and swift (ϊώκεια); it is hollow (κολύς, γλαυκόμφι, μεγακτης), black, vermilion-cheeked (μιλστάγγαρος), dark-drowed (κολανθραόρος), curved (κορωσόμ, ἀμφελλος), well-timbered (ἐθνελομος), with many thwarts (σαλαςγους, καλαςγους). The stems and sterns are high, upright, and resemble the horns of oxen (οθημωσαμα). They present in the history of the shipping of the Mediterranean a type parallel with that of the Vikings' vessels of the North Sea.

On the vases, the earliest of which may date between 700 and 600 B.C., we find the bireme with the bows finished off into a beak shaped as the head of some sea monster, and an elevated forecastle with a bulwark evidently as a means of defence. The craft portrayed in some instances are evidently piracy vessels, and exhibit a striking contrast to the trader, the broad ship of burden (φορτις ελεχα), which they are imitating. The trireme, which was developed from the bireme and became the Greek ship of war (the long ship, ποσ μακρα, πολει λογα, παρ εξελλενς), dates, so far as Greek use is concerned, from about 700 B.C. according to Thucydides, having been first built at Corinth. The earliest sea-fight that the same author knew of he places at a somewhat later date—664 B.C., more than ten centuries later than some of those portrayed in the Egyptian tomb paintings.

The trireme was the war ship of Athens during her prime, and, though succeeded and in a measure superseded by the larger rates,—quadrireme, quinquereme, and so on, up to vessels of sixteen banks of oars (inhabilis prope magnitudinis)—yet, as containing in itself the principle of which the larger rates merely exhibited an expansion, a difference in degree and not in kind, has, ever since the revival of letters, concentrated upon itself the attention of the learned who were interested in such matters. The literature connected with the question of ancient ships, if collected, would fill a small library, and the greater part of it turns upon the construction of the trireme and the disposition of the rowers therein.

1 See Rawlinson, Ancient Monarchies, vol. ii. p. 176.
During the 17th century a fresh light was thrown upon the subject by the discovery (1634) at the Peiraean by some records of the shipwrights dealing with several years between 373–324 B.C. These were published and admirably elucidated by Boeckh. Further researches were carried out by his pupil Dr Graser. Since the publication of Graser's notable work, De re navali veterum, the subject has been copiously treated by A. Cartault, Breusing, C. Torr and others. The references to ancient writers, and the illustrations from vases, coins, &,c., have been multiplied, and, though the vexed question of the seating of the rowers cannot be regarded as settled, yet, notwithstanding some objections raised, it seems probable that some form of the 'trippe' or 'tribune' was generally used. The two-class system, however, still holds the field, especially as practical experiment has shown the possibility of a set of men, seated very nearly according to his system, using their oars with effect, and without any interference of one bank with another.

On one point it is necessary to insist, because upon it depends the right understanding of the problem. The ancients did not employ more than one man to an oar. The method employed on medieval galleys was alien to the ancient system. A. Jal, Admiral Finetti, Admiral Torr, and others, have all acknowledged that the subject, some as recently as 1906, have led to advocate erroneous, if ingenious, solutions of the problem, by neglect of, and in contradiction with, the facts. The foundation on which it is built, consequently, which overwhelmingly establishes as an axiom of the ancient marine the principle of "one oar, one man." The distinction between 'apbrach' and 'cataphract' which marks the first attempt to classify the ancient vessels. The words, meaning 'infenced' and 'fenced,' refer to the bulwarks which covered the upper tier of rowers from attack. In the apbrach vessels these side planking were continuous and the upper tier of oars was exposed to view from the side. Both classes of vessels had upper and lower decks, but the apbrach class carried their decks on a lower level than the cataphract. The system of side planking with a view to giving additional strength to the vessel is probably a Greek invention, and may be seen in some of the Egyptian representations, but among the Greeks it does not seem to have been adopted till long after the Hellenic period. The Thasians are credited with the introduction of the system.

In our account of the trireme, both as regards the disposition of the rowers and the construction of the vessel, we have mainly, though not entirely, followed Graser. Any such scheme must at the best be hypothetical, based upon inference from the ancient texts, or upon necessities of construction, and in every case plenty of room will be left for the critic, along with the Horatian invitation, "si quid novisti rectius sitis, Candidus imperit." In the ancient vessels the object of arranging the oars in banks was to economize horizontal space, and to obtain an increase in the number of oars without having to lengthen the vessel. It has been reckoned that the difference between the 'hippodrome,' or 'scapeceum,' or space horizontally measured from oar to oar, was 2 cubits. This is exactly borne out by the proportions of an Attic trireme preserved upon a richly coloured Attic vase in the British Museum. The rowers in all classes of banked vessels sat in the same vertical plane, and seats ascending in a line obliquely towards the stern of the vessel. Thus in a trireme the triariste, or oarsman of the hightest in itself conjugal (We may of the things of which to which he belonged. Next behind him and somewhat below him sat his zygiste, or oarsman of the second bank; and next below and behind the zygiste sat the thalamite, or oarsman of the lowest bank. The vertical distance between these seats was probably 2 ft., the horizontal distance about 1 ft. The horizontal distance, it is well to repeat, between each seat in the same bank was 5 ft. (the seat itself about 9 in. broad). Each man had a resting place for his feet, sometimes one seat apart, fixed to the bench of the man on the row next below and in front of him. In rowing, the upper hand, as is shown in most of the representations which remain, was held with the palm turned inwards towards the body. This is accounted for as the difference between the ['hippodrome'] or space horizontally measured from oar to oar, was 2 cubits. This is exactly borne out by the proportions of an Attic trireme preserved upon a richly coloured Attic vase in the British Museum. The rowers in all classes of banked vessels sat in the same vertical plane, and seats ascending in a line obliquely towards the stern of the vessel. Thus in a trireme the triariste, or oarsman of the hightest in itself conjugal (We may of the things of which to which he belonged. Next behind him and somewhat below him sat his zygiste, or oarsman of the second bank; and next below and behind the zygiste sat the thalamite, or oarsman of the lowest bank. The vertical distance between these seats was probably 2 ft., the horizontal distance about 1 ft. The horizontal distance, it is well to repeat, between each seat in the same bank was 5 ft. (the seat itself about 9 in. broad). Each man had a resting place for his feet, sometimes one seat apart, fixed to the bench of the man on the row next below and in front of him. In rowing, the upper hand, as is shown in most of the representations which remain, was held with the palm turned inwards towards the body. This is accounted for as the difference between the outer vole, or side oar, and the inner oar, the latter being the one used as the steersman. Each outer-oar was protected by an ascoma or leather bag, which fitted over the rower, closing the aperture against the wash of the sea without impeding the action of the oar. The oar was attached by a1
bolted to them under either extremity and both within and without, and presented a side of length and breadth equal to the whole of the vessel. The timbers were wedged and let into the box so as to give the vessel, generally painted red, and in the upper part of these the eyes (δεδομένοι) answering to our hawse holes, through which ran the cables for the anchors. On either side of the stern-post about 22 ft. below the deck two projecting pieces into the prow (φυράδως) resting on the ribs of the vessel. This projection was of about 18 to 24 in., which gave a space, increased to about 3 ft., in which was placed the rowing curule or hawse of the vessel. It was held by the upper flanges or strengthening plates. This part of the vessel was provided with supports for the deck, for a passage on either side of the vessel. This gangway was placed in the outer side so as to afford protection to the seamen and marines, who could pass along its whole length under the deck, the crew being divided into two parts. The rowers were posted as light-armed troops, and when needed could use the long supernumerary oars (πτερύγια) mentioned above. The ribs, prolonged upwards upon an inward curve, supported on their upper sides (θέμα) the main deck, and were ditto on the stern-post, which was divided into six sections, and was fastened to the vessel in sections. At various levels on the stern the decks (πρώπια) rose in two or three gradations, upon which was a kind of deck-house for the captain and a seat for the steersman, but none for the rowers of the vessel. The stern was fixed in the upper part of the paddles, which, in later times at least, ran over wheels (πρόκλητα), giving him the power of changing his vessel's course with great rapidity. Behind the deck-house rose the flagstaff, on which was hoisted the pennant, as signals from the stern were given in the case of an admiral's ship. On either side of the decks ran a balustrade (σαλοίστρον), which was covered for protection against attack. The vessel was also provided with a strong and large lower girdle (σαλόνιστρον), as a protection against grappling irons and missiles of all kinds. In Roman vessel towers were carried up fore and aft from which darts could be showered on the enemy's deck; the heavy corvus or boarding bridge swung suspended by a chain near the bows; and the ponderous δολία hung at the ends of the yards ready to fall on a vessel that came near enough alongside. But these were later inventions; the larger ships of the Attic trireme was built for speed and for ramming purposes. The dimensions of some dry docks discovered at Mynychus and Zante, and the measurements of the ancients called them, afford some indications as to the dimensions of the later Athenian vessels. It is likely that the Athenians, who used them. The measurements indicate for these houses about 150 ft. in length and 20 ft. in breadth. We may infer, therefore, that the size of the vessel was not exactly in proportion to her length. Fortresses necessarily have been some space in the dock houses, on either side and at both ends. Allowing 2 ft. on either side for passage room, and 10 ft. at either end, we should have room for a vessel of about 130 ft. in length including the beam, and of about 16 ft. beam. If the 2 cubic "intercalium," the rowing space in the trireme (31 by 3) for the upper tier would equal 93 ft. Allowing 6 ft. for bows and 15 for stern, and 10 for beam, we have 130 ft. as the aggregate length of the war vessels of three banks of oars. This, of course, is conjectural, but we submit that it is a reasonable conjecture fom the evidence which we possess. There was indeed very reasonable evidence that these vessels were used as ramming ships, of course consistent with their necessary requirements, and it is to be remembered that it was constantly being hauled up on shore for the night and launched again in the morning. Again, as to "intercalium," it does not appear to exist in older treatises, yet it certainly appears in later Athenian writing. In the Egyptian dragon boats, which are 73 ft. long and under 5 ft. beam, and have each 54 rowers or paddlers, it does not exceed 2 ft. 6 in. An oarsman whose feet rest on a level below that of his seat, is not likely that the ancient oarsman, who, according to Polybius, rarely rose to the top of the man-of-war's cutter. All the Attic triremes appear to have been built on the same model, and their gear was interchangeable. The Athenians had a peculiar system of girding the ships with long cables (μυμπάλαι), the lower ends of which reached to the stern-post, ran all round the vessel lengthwise immediately under the waling-pieces. They were fastened at the stern and tightened up with levers. These cables, by shrinking as soon as they were wet, tightened the whole fabric of the vessel, and in action, in all probability, relieved the hull from the weight of the oars; the whole of which was done by the waling-pieces convergent in the beaks. These rope-girdles are not to be confused with the process of undergirding or frapping, such as is narrated of the vessel in which St Paul was being carried to Italy. The trireme appears to have had two masts. The Greeks did not use sails, and everything that could be lowered was stowed below. The mainmasts and larger sails were often left ashore if they were not necessary. The crew of the Attic trireme consisted of from 200 to 225 men. In all of these were rowers—54 on the lower bank (θαλαμίται), 54 on the middle bank (γυγίται), and 62 on the upper bank (θριαντίται), giving the upper oars more numbers because of the contraction of the space available for the lower tiers near the bow and stern. Besides the rowers were about 10 marines (ετεράδες) and 20 seamen. The officers were the triarch and next to him the helmsman (κυλιόμενος). The vessel was about 120 ft. short of the trireme of the period of the Peloponnesian War. It was such that, Cicero remarks, there was not room for one man more. The improvement made in the build of their vessels by the Corinthian and Syracusean ships, with which the rowers were so much strengthened that they were able to meet the Athenian attack stem on (προφεδἀθρος), caused a change of tactics, and gave an impetus to the building of larger vessels—quadriremes and quinqueremes—in which increased oar-power was available for the propulsion of the heavier weights. The improvement was only of the trireme, so far as the disposition of the rowers was concerned, but the speed could not have increased in proportion to the weight, and hence arose the variety of contrivances which superseded the long voting or the days of Phormio. In the century that succeeded the close of the Peloponnesian War victory of building big vessels became prevalent. We hear of various numbers of banks of oars up to sixty (εθέαρηχιάς)—the big vessel of Demetrius Poliorcetes. The famous tesseraconters or forty-banked vessel of Ptolemy Philopator, if it ever existed except in the imagination of Callixenus, was in reality nothing more than a costly and ingenious toy, and never of any practical use. The story, however, of its construction indicates the perfection to which the shipwright's art had been carried among the ancients. The Romans, who developed their naval power during the First Punic War, though it is clear from the treaty with Carthage, 509 B.C., that they had had some maritime interests and adventures before that great struggle began, were deficient in the art of naval construction. A Carthaginian quinquereme, which had drifted ashore, served them for a model, and with crews taught to row in a framework set up on dry land they manned a fleet which was launched in sixty days from the time that the trees were felled. Their first attempt was, as might have been expected, a failure. But they persevered, and the invention of the corvus, by means of which boarding were opposed to ramming tactics, gave them under Darius (200 B.C.) victory at Mylæ, and eventually the command of the sea. From that time onwards they continued to build ships of many banks, and seem to have maintained their predilection for fighting at close quarters. The larger vessels with their "turrets," or castles, fore and aft, deserved Horace's description as "alta navium propugnaculum." The "corvus" and the "dolphin" were ready in action to fall on the enemy's decks, and in Caesar's battle with the Veneti off the coast of Gaul the "falces," great spars with which the steel heads like a sickle, moved through the rigging and let down the sails on which alone the foe depended for movement. But the fashion of building big ships received a severe shock at the battle of Actium (31 B.C.), when the light Liburnian "biremes," eluding the heavy missiles of the larger vessels, swept away their banks of oars, leaving them crippled and unable to move, till one by one they were burnt down to the water's edge and sank. After this experience the Romans adopted the Liburnians as their principal model, and though the building of vessels with many banks continued for some centuries, yet the Liburnian type was so far dominant that...
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the name was used generically, just as the name of trireme had been used before, to signify a man-of-war, without reference to the size of vessel or the number of banks of oars.

Meanwhile, with the peace of the Mediterranean ensured, for piracy was kept in check by the imperial power, and with increased commercial activity, the building of large merchant vessels naturally followed. These were propelled by sails and not by oars, which, however, continued to furnish the principal motive power for the ship of war until the necessity for increasing its carrying power began to make it too unwieldy for propulsion by rowing.

The great corn ships, which brought supplies from Egypt to the capital, were, if we may take the vessel described by Lucian as a typical instance, 120 cubits long by 30 broad and 20 deep. The ship in which St. Paul and his companions were wrecked carried 276 souls besides cargo. Even larger vessels than these were constructed by the Romans for the transport of marbles and great obelisks to Italy. These huge vessels carried three masts, with square sails, and on the main mast a topsail, which the corn ships from Alexandria alone were allowed to keep set when coming into the Italian port. All other merchant vessels were compelled to strike the supparum.

But while the construction of large vessels for commercial purposes was thus developed, the policy of keeping the war-vessel light and handy for maneuvering purposes prevailed, and, therefore, vessels of three, four or even five banks were still built, the great majority did not rise above two banks. In the war with the Vandals (A.D. 440-470) we hear of ships of a single bank, with decks above the rowers. These, we are told, were of the type which at a later date were called Dromons (δρόμους) in allusion to their speedy qualities, a name which generally superseded the Liburnian, as indicating a man-of-war. During the following centuries the Mediterranean was the scene of constant naval activity. The rise of the Musulman power, which by A.D. 825 had mastered Crete and Sicily, made the Mediterranean the stage for the rivalry of the Western and Southern emperors of the East, and as the Arab invasion became more threatening, and piracy more rife, so the necessity of improving their galleys as regards speed and armament became more and more pressing. It was during this period, and that very largely by the Arabs, that a great advance was made in the employment of what we should call artillery. The use of Greek fire and of other detonating and combustible mixtures, launched by siphons or in the form of bombs thrown by hand or machinery, led to various devices by way of protective armour, such as leather or felt caisng, or woollen stuffs soaked in vinegar, and all such contrivances were put to use to alter the character as well as the equipment of the war vessel.

During the same period the rise and growth of the Venetian republic mark the entrance on the scene of a new seafaring and shipbuilding power.

Meanwhile, the northern seas were breeding a new terror. In the 5th century the Roman fleet which guarded the narrow entrance into the British Channel had disappeared. The Frankish power gradually established itself in Gaul. But behind the Franks still fiercer races, born to the use of oar and sail, were rising for the invasion of the west and south. For a while it seemed as if the empire consolidated by Charlemagne would be able to withstand their inroads. Yet even in the year of his coronation (A.D. 800) the piratical Northmen had carried their ravages as far as Aquitaine. Charlemagne organized a naval force at Boulogne and at Ghent. But, though in alliance with the kings of Mercia and Wessex, he had not that control of the Channel which the possession of both shores had given to the Romans. The ships of the Vikings, propelled by oar and sail, were seagoing vessels of an excellent type. They were of various sizes, ranging from the shado of about 50 oars to ask or skid with 64 oars and a crew of 240, and to the still larger dreki or dragon boats, and the famous snekkur or serpent, said to be represented on the Bayeux tapestry. Of these vessels we have fortunately, though of the smaller class, a typical instance in the well-known Viking ship discovered in 1880 in a tomb-mound at Gokstad near Christiania, of which the dimensions are given as: length 78 ft., beam 16 ft. 7 in., depth 5 ft. 9 in., with high stem and stern; clinker-built of oak throughout, with 16 oars on either side. Of this type were vessels large and small which had by the 9th century or even earlier found their way into the Mediterranean. Such were the fleets which continually infested the northern and western coasts of Gaul, carrying swarms of the fierce Northmen who eventually came to stay, and gave their name to the portion of Neustria which they had wrested from the Frankish king (p.12).

If, as is probable, the Danes who invaded England used the same class of vessel, Alfred the Great must, according to the Saxon Chronicle, be credited with improvements in construction, which enabled him to defeat them at sea (869). He built, we are told, vessels twice as long as those of the Danes, swifter, steadier and higher, some of them for 60 oars, and after his own design, not following either the Danish or Frisian types.

While the northern seas were thus full of activity and conflict, there was little repose in the Mediterranean. The emperors of the West do not seem to have maintained their fleets or naval stations as they had been of old. Ravenna and Misenum were born of their ancient glories. But in the East things were different. There, as we have said, it was fully perceived that the maintenance of the empire depended upon sea power. The Tactics of the Emperor Leo (886-911), followed by Constantine Porphyrogenitus (915-99), give us full details as to the composition of a Byzantine fleet and its units. Dromons of two sizes and of two banks of oars are described, and, besides these, smaller Dromons of great speed are referred to as "galleys or single-banked ships." In all these the rule was still "one oar, one man," but the way was being prepared for improvements by which the medieval galley, still preserving a comparatively low freeboard, was enabled to equal or to surpass the many-banked vessel in speed, while it was gradually adapted to carry greater weight and more powerful means of offence.

The "man-of-war" (μαχητης), the first vessel of war properly so called, in which the merchant vessel (μυκοφορος), but the use of longer oars or sweeps took the place of the smaller paddling oars of the ancient vessel, and altered greatly the angle at which the oars reached the water. It was the increase in the length and weight of the oar, requiring for its efficiency greater power than that of one man, which led to the employment of more than one man to an oar. With the longer oar the necessity arose of placing the weight at a greater distance from the power applying the lever. This was gained by the invention of the apotis, which was practically a framework standing out on each side of the hull and running parallel to a strong external timber, in which the thowls, again when the oars were rowed, were set. By this means it became possible not only to arrange the oars horizontally, in sets of three or more of different lengths (αλλα σεμελη), instead of in banks one above the other obliquely, but still further to make an innovation, unknown to the ancients, which, while greatly increasing the length and substance of the oar, and its leverage, applied the strength of three or four men (or even up to seven with the larger galleys and gallasses) for the motive power of each blade. As time went on oars of from 30 to 50 ft. came into vogue, the inboard portion of which was about one-third of the length, and furnished with handles (manettes) attached to the boom, while the men for each oar were arranged in steps (αλλα σαλοειει). It must not be imagined that these developments took place all at once, or that any improvements in building, or in the method of propulsion, were generally adopted but by slow degrees. Moreover, as commerce increased and merchant vessels gained in size, the necessity of being able to defend themselves against piratical attacks became more and more cogent, a necessity which ultimately led the way to the supersession of the galley by the sailing vessel. Yet the galley for centuries, especially in the Mediterranean, maintained its place as the ship of war par excellence, even when mixed fleets of galleys and sailing vessels were not uncommon. In the Atlantic and northern seas it was less en evidence, though even with the Spanish Armada some galleys and galasses were included in the invading fleet.
The period of the Crusades was one of great activity in shipbuilding, in which the Venetians and the Genoese were the leaders in the Mediterranean, but the enterprise of England under Richard Coeur de Lion (1189-1190) shows that in the northern seas great efforts were being made in the same direction, with the undoubted result that the English vessels built for the purpose were more familiarized with the sea, and more eager for maritime adventure. Richard's fleet which sailed from Dartmouth consisted of 110 vessels, and its total in the Mediterranean after reinforcement amounted to 230 vessels. Among these were Busses, or Dromons of large size, with masts and sails, ships of burden and triremes. Nor were the Saracens without great vessels, if the story of Richard's destruction of a three-masted vessel, carrying reinforcements to Acre, on board of which there were no less than 1500 men, be true. The attack of a swarm of galleys upon the great ship as she lay becalmed was exactly like the attack of a swarm of torpedoes upon a disabled battleship to-day.

The whole period of the Crusades was, as regards naval matters, one of mixed fleets, in which the sailing vessels were mostly merchant vessels armed for fighting purposes. The effect of the Crusades upon the seafaring races of northern Europe was that the revelation of the East and its traffic quickened their desire for adventure in that and other directions. Hence rivalries between them and the Mediterranean sea powers, and consequent improvement in sea-going vessels and in seamen-ship. The steering side-paddle gradually disappeared, and the rudder became the usual means of directing the vessel's course. The merchant vessels when prepared for war have fore-castles and stern-castles (compare the Roman *turrest*) erected on them, of which the one survives in name, and the other in the quarter-deck of modern times. But a change was at hand which was destined to affect all classes, from the galley with its low freeboard to the *alta poppugnaculum* of the great sailing vessels.

The invention of gunpowder, and the consequent use of cannon on board ship, was the cause of many new departures in building and armaments. In the galleys we find guns mounted in the bows, and broadside on the upper deck, *en barbette*, firing over the bulwarks. Soon, however, the need of cover suggested portholes cut for the guns, just as in the ancient galleys they had been cut for the oars. The desire to carry many guns led to many alterations in build, such as the tumble-home of the sides, and the desire for speed to many improvements in rig, as well as to an increase in the number of masts and consequently larger spread of sail. About 1370-1380 French, Venetians and Spaniards are using the new artillery in action, and the policy of maintaining a navy composed of sailing vessels, particularly built for the purposes of war, and not merely of armed merchant ships impressed for the emergency, soon began to take effect.

In England Henry V. (1413) built large vessels for his fleet, "great ships, cogs, carracks, ships, barges and ballingers," some of which were of nearly 1000 tons, but the generality from 420 to 520 tons. In the list of his fleet no galleys seem to be included. Meanwhile in the south the type of vessel called "caravel" was being developed, in which Portuguese and Spaniards dared the Atlantic and made their great discoveries. It was a vessel which ranks kind the stern became the usual means of steering, and which was able to reach the Indies by a western route.1 She was but little over 230 tons when fully laden. Her forecastle overhung the stern by nearly 12 ft. Aft she had a half deck and a quarter deck. Her total length was 128 ft., her beam nearly 26 ft. She had three masts and a bowsprit. Her fore and main masts were square-rigged, but the mizen had a lateen sail. The vessels in which Vasco da Gama first doubled the Cape of Good Hope (1497) were of the same type but larger. The ship of John Cabot (1497) in which he discovered Newfoundland must have been much smaller, as he had a crew of only eighteen men.

Among the results of these world-famous voyages and discoveries was naturally a great increase in maritime adventure.

1 See Sir G. V. Holmes, *Ancient and Modern Ships*, i: 87, to which the writer is indebted for many of the details concerning modern vessels.

In England during the Tudor times a great advance in shipbuilding is observable. Henry VII. with his new ships, the "Regent" and the "Sovereign," and Henry VIII. with his "Henry Grace à Dieu," or "Great Harry," both came abreast of their times, but it is worthy of notice that the French then, as well as at an earlier date, were providing the best models for naval architecture. These big ships were armed at first with "serpentines," and later with cannon and culverins. The representations of them show several tiers of guns, four or even five masts, and enormous structures by way of forecastles and deck-houses aft. As regards merchant vessels, the Genoese and the Venetians during the 15th and 16th centuries carried out great improvements. The "carracks" of the 16th century often reached as much as 1600 tons burden. There is a record of a Portuguese carrack captured by the English, of which the dimensions reached 165 ft. in length. She carried 32 pieces of brass ordnance and between 600 and 700 passengers. The Spanish Armada (1588) was composed of 132 vessels, of which the largest was about 1300 tons and 30 under 100 tons. Four galleys and four gallasses accompanied the fleet. The opposing fleet consisted of 197 vessels of which only 34 belonged to the royal navy. Of these the largest was the "Triumph" of about 1000 tons. The "Ark," the flagship of the English admiral, was of 800 tons, carrying 35 guns. Among the armed merchant vessels employed with the fleet was the "United" consisting of 230 tons. The English vessels were built of oak, and were 230 tons. In the men-of-war the lower tier of guns, which, as in the galleys, had been carried dangerously near the water-line, began to be raised. This improvement, however, does not seem to have been adopted in the English ships till after the Restoration. Meanwhile, in the Mediterranean the galley was still in vogue, being only partially superseded by the great galleasses, six of which are recorded to have taken part in the battle of Lepanto (1571), in which the Venetians and their allies employed no less than 208 galleys with single banks and long sweeping oars. The contrast between the galleasses of the Mediterannian and the large English voyaging vessels and those engaged in the case of the Spanish Armada is interesting and instructive as typical of the different development of naval power in the inland and the open seas.

During the 17th century the expansion of trade and the increase of mercantile enterprise were incessant. The East India Company organized its fleet of armed vessels of about 600 tons, and fought its way through Portuguese obstruction to the Indian coast. The Dutch were also competing for the trade of the East and the West, and formed similar companies with this object in view. The struggle between the French, the English, the Dutch, the Venetians and the Genoese was incessant, and international jealousies were inevitable. Hence in the British navy the construction of large vessels such as the "Prince Royal" and the "Sovereign of the Seas" (see RIGGINS) which may be considered as among the earliest types of the modern wooden men-of-war. English oak afforded the best timber for shipbuilding, and skillful naval architects, such as Phineas Pett, succeeded in constructing the kind of sea-going war vessel which eventually gave England the superiority in its struggle with other naval powers in this and the following century. This, however, was by no means equally gained. The Dutch and the French were not slack in the building of merchant vessels and men-of-war. The capture of vessels from time to time on either side served to enlarge the area of improvement and to assist in the progress of the art of construction. The French navy especially, under the fostering care of Colbert, was greatly strengthened. During
the 18th century it was constantly found that the dimensions of French ships exceeded those of British ships of the same date, and that French vessels were superior in speed. This led from time to time to an increase of the dimensions of British vessels, and so of the class of vessels in the British navy. These were now rated according to the number of guns which they were constructed to carry.

A 90-gun ship of the line at the beginning of the 18th century averaged 164 ft. in length of gun deck, 47 ft. beam, and about 1570 tons, while the frigates now ran to 120 ft. with 34 ft. beam and from 600 to 700 tons. These dimensions, however, were not always maintained, and towards the middle of the century the Admiralty seem to have recognized the consequent inferiority of their vessels. The famous and ill-fated “Royal George” launched at Deptford in 1756, was the result of an effort to improve the line-of-battle ship of the period. She was 178 ft. in length, 52 ft. in beam, was of over 2000 tons, and carried 100 guns and a crew of 750 men. The “Victory,” Nelson’s flagship, was built nearly ten years later. Her dimensions were 186 ft., 52 ft., 2162 tons, and she carried 100 guns. During the same period frigates, which were cruisers carrying their armament on one deck, were built to carry 32 or 36 guns, but in this class also the French cruisers were superior in speed and of larger dimensions. The remainder of the 18th century and the beginning of the 19th witnesses the rigging in proportion to the dimensions of the French and Spanish models being constantly ahead of the British in dimensions and armament. In the American war (1812) the same disparity as regards dimensions became apparent, and the English frigates, and sloops used as cruisers, were generally outclassed, and in some instances captured, by American vessels of their own rate. This as usual led to the construction of larger vessels with greater speed, and though, after the conclusion of the long war, the activity of the royal dockyards slackened, yet the great three-deckers of the last period, before the adoption of steam power, had reached a length of over 260 ft., a beam of 60 ft., and over 3000 tons.

Meanwhile the mercantile navies of the world, but more especially of England, had largely increased. The East Indian, as the armed vessels of the East India Company were called, really performed the functions of merchant vessel, passenger ship, and man-of-war. But, where there was no monopoly, competition soon quickened the development of trading vessels. The Americans with their fast-sailing “clippers” again taught the English builders a lesson, showing that increased length in proportion to beam gave greater speed, while admitting of lighter construction by the adoption of wooden hulls and the adoption of sail. But, as regards the number of men required to work the ship.

The English shipyards were for a long time unequal to the task of producing vessels capable of competing with those of their American rivals, and their trade suffered accordingly. But after the repeal of the Navigation Laws in 1850 things improved, and we find clipper ships from Aberdeen and from the Clyde beginning to hold their own on the long voyages to China and elsewhere.

At this epoch steam power appears in use on the scene, and the period of great wooden vessels closing with iron and steel taking their place in the construction of the hulls, while the sail gives way to the paddle and the screw.

II. History since the Introduction of Steamships

Before steam was applied to the propulsion of ships, the voyage from Great Britain to America lasted for some weeks; at the beginning of the 20th century the time had been reduced to about six days, and in 1910 the fastest vessels could do it in four and a half days. Similarly, the voyage to Australia, which took about thirteen weeks, had been reduced to thirty days or less. The fastest of the sailing tea-clippers required about three months to bring the early teas from China to Great Britain; in 1910 they were brought to London by the ordinary P. & O. service in five weeks. Atlantic liners now run between England and America which maintain speeds of 25 and 26 knots over the whole course, and in approximately three weeks before the introduction of steam. The accommodation in the modern passenger ships is palatial compared with that in the corresponding wooden sailing ships of the middle of the 19th century.

The changes from sail power to steam power for propulsion, and from wood to iron and steel for constructional purposes, proceeded together, though at first very slowly. The marine steam engine was at first a very imperfect motor, and the services upon which steamships could be used to advantage were, in consequence, much restricted. There was, moreover, a national prejudice against the substitution of iron for the wooden Walls of Old England.

It is recorded that an iron boat, intended apparently for passenger service, was built and launched on the river Foss, in Yorkshire, in 1777, and shortly afterwards iron was used for the ship plating of lighters for canal service. One of these, having its shell constructed of plates five-sixteenths of an inch thick, was built near Birmingham in 1787. About the same time parts of wooden ships began to be replaced by iron, the first being beam knees. Early in the 19th century iron “diagonal riders” for providing the longitudinal stiffness, were introduced by Sir Robert Seppings, and from this period dates to the present day iron strengthenings for resisting both transverse and longitudinal strains have been generally used in wooden ships. The introduction of iron as a recognized material for ship construction is often given as dating from 1818, when the lighter “Vulcan” was built on the Monkland canal, near Glasgow.

Among the early objections were: (1) from its weight iron could not be expected to float, and was therefore unsuitable for the construction of a floating body; (2) when a ship constructed of this material grounded and was exposed to bumping on a shore, the bottom would be easily perforated; (3) the bottom could not be preserved from fouling by weeds and barnacles; and (4) the iron affected the compass, making it untrustworthy, if not useless. Gradually, however, the material made its way, and the objections to it proved to be for the most part untenable. Objection (1), although often repeated, was proved to involve a fallacy. With regard to objection (2) it was found that iron ships might ground and be subjected to a great deal of bumping and rough usage without being destroyed, and that, on the whole, they were better off in this respect than wooden ships. On more than one occasion when iron and wooden ships were stranded together on the same shore and in approximately the same circumstances, the iron ships were got off, and, apart from local injury, were found to be little the worse for the grounding, while the wooden ships were either totally wrecked, or, if got off, were strained to such an extent as to be beyond repair. The power of resistance of iron ships to the strains produced by grounding received, in 1846-1847, a remarkable confirmation in connexion with the grounding of the “Great Britain,” the first large screw steamer built entirely of iron. This ship had been initiated by, and built under the supervision of, Mr. J. K. Brunel, who had bestowed much attention upon the details of her construction. In 1846 she ran ashore in Dundrum Bay, in Ireland, and settled on two detached rocks; and although she remained aground for eleven months, including a whole winter, she was subsequently got off and repaired, and afterwards did good service. As regards (3), the fouling of the bottom, this evil, although not preventable,
can be lesened materially by frequent cleaning and repainting, provided, of course, that docks are available. The fourth objection, the effect of iron on the compass, was very serious. After experimenting with the "Rainbow" at Deptford and the "Ironside" at Liverpool, Sir G. B. Airy in 1839 read a paper on the subject before the Royal Society, and the rules which he gave for the correction of the error caused by the iron and steel on board were thus modified. Besides the above, a further objection was raised which applied only to warships, namely, the nature of the damage which would be done to an iron ship by the enemy's shot: this also was found to be less serious, when proper appliances were supplied, than the damage done in the same circumstances to a wooden ship. Thus during the Chinese War in 1854 the "Nemesis," an iron vessel, was able to repair her damage from shot in twenty-four hours at the scene of the fight, while some wooden ships had to go to Bombay, the nearest port at which repairs could be made.

Steel, as a material for shipbuilding, was introduced under modern conditions of manufacture during the years 1820-1875.

It is a homogeneous metal, stronger than iron, and of a more uniform and more trustworthy character.

Its quality is to a considerable extent independent of the skill of those employed in its manufacture, whereas iron is produced by a laborious and unhealthy process, and is largely dependent for its quality on the skill of the workmen.

Among the advantages which have proved iron and steel to possess over wood for the purposes of ship construction are: (1) the weight of the latter is less; (2) it has greater durability; (3) the requisite general and local strengths are much more easily obtained.

The importance of the first of these advantages can scarcely be overstated. The primary object of a particular ship is to carry cargo or passengers, or both, from place to place, at a given speed (in the case of a warship, the armament, ammunition, and crew, of course, are factors), and the maximum draught at which the vessel can properly and safely proceed on her passage the total weight of vessel, cargo, &c., complete, must be a definite quantity, namely, the weight of the water displaced by the ship, it follows that the less the weight required for the structure of the ship, the greater is that available for the cargo, &c.

As to durability, in wooden ships the chief source of deterioration is dry-rot, in iron or steel ships the wasting of the surfaces, especially of such portions of the outer surfaces of the bottom plating as are frequently left bare of paint and exposed to the sea, and of the inner surfaces of the ships' hulls, the inner planking, &c., the life of the wooden ship will be lengthened; so also will the life of the iron or steel ship if the surfaces can be kept covered with paint, to prevent the corrosive action of air and water. With both wood and the metal, however, if the inner planking is once a

and the life of the iron or steel ship if the surfaces can be kept covered with paint, to prevent the corrosive action of air and water. With both wood and the metal, however, if the inner planking is once a

ated and removed, this is usually worth doing when the deterioration is only local. At the end of the 18th century the preservation of wood was not so well understood as it is now; the invariable practice seemed to be to remove all theirable of woods, was, in Great Britain at least, little known. The ships for the Royal Navy as then constructed were only expected to be available for service some fifteen or twenty years. The ships built for the East India Company, made, on an average, four voyages, which occupied eight years. This at one time was considered the vessel's life, so far as the Company's service was concerned; but subsequently, if on examination at the expiration of that time they appeared worth repairing, this was done, and they were allowed to make two more voyages. It was unusual for one of these ships to make more than six voyages; after this they were sold or broken up.

In certain cases, however, ships lasted a considerable length of time; a number of vessels built in the 17th century continued in the service of the Royal Navy until the beginning of the 18th century, though with a reduced number of guns, and specimens of the old wooden battleships which served in the fleet in the earlier part of the last century are still to be found in the naval and other public vessels. Among these is the "Victory" (fig. 1, Plate XIII.). Laid down in 1759, she had been at least 40 years before she took part in the battle of Trafalgar, and to-day she is the only ship of the Royal Navy which is a direct descendant of the old wooden vessel. The examples is Nelson's "Victory,"(1) (fig. 1, Plate XIII.). Laid down in 1759, she had been about 40 years before she took part in the battle of Trafalgar, and to-day she is the only ship of the Royal Navy which is a direct descendant of the old wooden vessel. The examples is Nelson's Nautical Archi

dimensions of the last vessel are: length, 88 ft. 8 in.; breadth, 21 ft. 2 in.; depth of hold, 14 ft. 7 in.; and her gross tonnage, 211. The "Chinese schooner" was a small wooden sailing vessel built in 1723 and still employed in the coasting trade of Denmark. This vessel is 52 ft. 6 in. long, 14 ft. 8 in. breadth, and 9 ft. 2 in. depth. These figures are, however, as given in the "Nautical Almanac."

In the cases of these very old wooden vessels it should be remembered that many portions of the original structures have been replaced by continual repairs. We have less experience concerning steel vessels. That ships of iron or steel have been and still are extremely strong, is well known. Many of these vessels have been condemned and broken up only because they were obsolete; but after twenty or even forty years' service, those parts which by accident remained in a sound condition were found very little the worse for wear. Thus the inner surface of the outside plating of such vessels, coated with cement, have been found to be in as good condition as when the ships were first launched. The hulls of iron and steel vessels still afloat are known to be in excellent condition. The "Himalaya," an iron vessel of 3453 tons and 700 h.p., length 340 ft. 5 in., breadth 46 ft. 2 in., depth 24 ft., built by Mare of Blackwall in 1853 for the F. & O. Steam Packet Co., and purchased by the Admiralty, was actively employed, chiefly as a troop-ship, until 1896, when she was converted into a coal depot, it being found that her plating and framing were still as good as new. Known as "C. 60," she seems to have survived for many years in her new service. The "Warrior"—the first British iron battleship, built in 1861, was converted into a floating workshop forty years later at Portsmouth, where in 1910 she was used as a dry dock. The "Disraeli" and the "Dreadnought" were then practically as sound as when first put together. Experience up to 1910 with vessels built of mild steel indicates that this is more liable to surface corrosion than iron, especially where exposed to the action of brackish water, but mild steel vessels are generally more strong, and consequently little loss of strength, and great local strength can be provided in very little space.

For some purposes, and in some markets, wood is still in favour. In scientific research, for instance, when it is necessary to avoid any disturbance of the compass, this can be ensured by constructing the vessel of wood, with metal fastenings. The "Fram," built in 1892 for Nansen's Arctic expedition, was of wood, her outside planking, in three thicknesses, amounting to the aggregate to from 24 in. up to 28 in.; she was 117 ft. long, rigged as a three-masted schooner, and provided with auxiliary machinery working a water-tight airtight frame. When the expedition reached the North Pole, an old Dundee whaler (the "Esquimaux"), and was reported to be still a "stout" ship with timbers as sound as on the day they were put in twenty-six years before. She is 157 ft. long, 85 ft. beam, and 6 ft. deep. The ship has a nominal horse-power of 100, and she has a lifting screw. In 1901 the "Discovery," a wooden vessel, 172 ft. in length, was built at Dundee for Antarctic exploration, under Captain Robert Scott, R.N., and a vessel specially designed for similar service was constructed in Germany, and in 1910 the "Terra Nova" (Plate I., fig. 2), a wooden Dundee whaler, 187 ft. long, barque-rigged and fitted with auxiliary steam power, which had already served on the Far South, embarked for the Antarctic regions an expedition also led by Captain Scott. Some wooden sailing vessels are still built in the United States and employed in the coasting and other trades. One of these, the "Wyoming," the largest wooden sailing vessel ever built, was launched in December 1909 at Bath. She was a six-masted schooner 350 ft. long, 50 ft. wide and 30 ft. deep. Wood is also in favour for most of the large and palatial river steamers of the Western states of America.

Some progress had been made in the introduction of steam propulsion before the end of the 18th century, but Steamships the advance became much more rapid in the 19th. The early steam vessels paddle-wheels only were used for propulsion.

In 1801-1802 the "Charlotte Dundas," one of the earliest steam vessels, was constructed by Symington in Scotland. She proved her capability for towing purposes on the Forth and Clyde Navigation. Fulton had made his first steam boat in 1807; and after visiting Scotland and witnessing the success of the "Charlotte Dundas," constructed the "Clermont" on the Hudson river in America in 1807. The engines for this vessel were obtained from Boulton & Watt, of Birmingham.

A very complete account of this vessel was given by her designer, Mr. W. E. Smith, C.B., in the Transactions of the Institution of Naval Architects (1905).
SHIP

All the vessels just named were propelled by paddle-wheels. The screw propeller had been advocated as a means of propulsion by many inventors in England, France and America during the latter half of the 18th and the early part of the 19th century; a number of experiments had been made, but these had not been brought to a successful issue, as no suitable steam engine was available for driving the propeller. Benjamin Franklin, in 1775, drew attention to the inefficiency of side paddle wheels as a means of propulsion, and proposed as an alternative to set the steam engine to pump water in at the bow and force it out at the stern, the water passing along a trunk. In 1782 a boat 80 ft. long, fitted with this means of propulsion by James Rumsey, was driven at 4 m. an hour on the river Potomac, and a number of other vessels similarly fitted followed. In 1839 Dr. Ruthven took out a patent for this method of propulsion in which the piston pump was replaced by a centrifugal pump; and in 1865 the “Nautilus,” a vessel of this type, so impressed the British Admiralty of the day that an armed gunboat—the “Waterwitch”—was provided with this system of propulsion. She was built of iron, 162 ft. long, 32 ft. broad, 13 ft. 9 in. deep, was double-ended and fitted with bow and stern rudders, but was otherwise similar to the armed gunboat “Viper” built at the same time and fitted with a screw propeller. Many trials were carried out with the “Waterwitch” and “Viper,” but the system adopted in the former was not repeated for similar reasons, and the great advances made in connexion with the screw propeller.

Many useful experiments appear to have been carried out by Colonel John Stevens in the United States in the early years of the 19th century, but, although some beautiful models of propellers made by him still remain the system was not generally adopted until its commercial possibilities were more successfully demonstrated by Captain John Ericsson—formerly an officer in the Swedish army—and F. P. Smith of England. Smith took out his patent for the propulsion of ships by means of a screw fitted in a recess formed in the deadwood, in May 1836, and in July of the same year Ericsson, then practising as a civil engineer in London, took out his patent. Small vessels were built and fitted by both inventors and both were tested in the Thames. In 1838 Captain Robert F. Stockton, on behalf of the U.S. Navy, ordered two iron boats of Messrs. Lairds of Birkenhead, to be supplied with steam engines and screw propellers of Ericsson’s design. The first boat was named the “Robert F. Stockton,” and arrived at New York under sail early in 1839, with her machinery on board. The machinery was fitted in her at Bordentown, and under the name of “New Jersey” the boat afterwards served a time as a steamer on the Delaware. She was 70 ft. long, 10 ft. broad, and 6 ft. 9 in. draught, and was designed for 130 miles per hour. Ericsson had the satisfaction of seeing his plans very largely adopted in the American Navy, but the mercantile marine adhered with great pertinacity to the paddle-wheel.

Fincham, writing in 1851, says that in English engineers were reluctant to admit the success of the screw propeller, and adds: “A striking instance of prevailing disinclination to the screw propeller was shown on the issue of a new edition of the Encyclopaedia Britannica, in which the article on steam navigation contained no notice whatever of the subject.”

Smith, however, persevered, and with the assistance of some influential people of the day—namely Messrs. Rennie & Co.—formed the Ship Propeller Company, and in 1858 built the “Archimedes,” a vessel of 237 tons burthen, to illustrate the value of the plan. The length of the vessel was 106 ft. 8 in., breadth 21 ft. 10 in., depth in hold 15 ft., draught of water 9 ft. 6 in., h.p. 80 nominal, but only 66 could be developed. A speed of about 7½ knots could usually be maintained, but on one run of 30 m. under very favourable circumstances a speed of 10-9 m. was reported. In 1860 she was placed at the disposal of the Admiralty for experiment, and the trials were favourably reported on. She afterwards passed into the hands of Brunel, who was so satisfied with the results of further trials that he modified the design of the “Great Britain” steamship then
in hand (1843), and fitted her with a screw propeller instead of paddle-wheels as originally intended. The success of this and other vessels was sufficient to largely influence public opinion in favour of the propeller, and the Admiralty took the important step of building the "Rattler," a vessel of 888 tons and 200 H.P., to test the system. She was practically a repeat of the "Alceto," as far as her hull and the power of her machinery were concerned, but she was propelled by a screw propeller, whereas the "Alceto" was propelled by paddle-wheels. These vessels were tested together at sea in March 1845 when the "Rattler" proved the faster vessel; but the great test took place on Thursday, April 18, when the two vessels were secured stern to stern, and it was found that with the engines of both ships working at full power the "Rattler" towed the "Alceto" astern at a speed of 2½ knots. In a few years the screw almost entirely superseded the paddle-wheel for war vessels, and in 1854, during the war with Russia, Great Britain possessed a screw steam fleet, including all classes of ships, built of wood.

The performances of the Great Western and other vessels had demonstrated that ships could be more than doubled, or even trebled, in the work by steam power alone, but great advance had to be made in the marine engine before the ordinary trade could be carried on by its means with economy. In the early marine engines only one cylinder was provided, and various means were employed for transmitting the power to the paddle shaft; later came the oscillating cylinder engine and the diagonal engine, the latter being the type of paddle engine now most frequently adopted in Great Britain. With the introduction of the screw propeller the arrangements became much modified. At first experiments were run at comparatively low speeds, as in paddle-boats, gearing being supplied to give the screw shaft the number of revolutions required, but direct-acting two-cylinder engines gradually replaced the geared engines. The compound engine was first adapted successfully to marine work by John Elder in 1854, and in time direct-acting vertical engines, with one high and one low pressure cylinder, became the common type for all ships. The boiler pressure, moreover, in 1854, had been raised to 42 lb per sq. in.

The further change, accompanying still higher pressures of steam, from compound to triple-expansion engines was, like many other changes, foreseen and in some measure adopted by various workers at the same time, but the first successful application of the principle was due to Dr. A. C. Kirk. In 1854 he fitted a three-crank triple-expansion engine in the Preponitis. The boiler used proved a failure, but in 1882 he fitted a similar set of engines in the Aberdeen, with a boiler pressure of 125 lb, and the result was entirely successful.

Continuous improvements have enabled engineers to produce machinery of less and less weight for the same power, and at the same time to reduce the spaces required for its accommodation, the vibration due to the working of the engines, and the consumption of fuel per horse power. For engines of high power, quadruple expansion has sometimes been adopted, while scientific methods of balancing have been employed, improved qualities of steel and bronze have been introduced, the rate of revolution has been increased, and forced lubrication fitted. In the boilers higher steam pressures have been used, superheating in some cases being resorted to; the rate of combustion has been accelerated by supplying air under pressure in the stokehold or in the furnaces, and in some cases by placing fans in the exhaust to draw the air and products of combustion more rapidly through the fires; the former being known as forced draught and the latter as induced draught. In the Navy, with the view of saving weight, water-tube boilers have been adopted, but boilers of this type have not yet been generally fitted in the mercantile marine. Steam pressures now in common use vary from 100 to 180 lb per sq. in. in cargo ships; from 140 to 220 lb in passenger ships, including the large Atlantic liners; from 210 to 300 lb in large warships where water-tube boilers are used; while in destroyers and other classes of warships in which small tube water-tube boilers are used it varies from 180 to 250 lb per sq. in.

A century ago the reciprocating steam engine was slowly making its way as a means of propulsion as an auxiliary to, or as a substitute for sail power—the steam being obtained by burning wood or coal. In 1815 nine small steam vessels, having an aggregate tonnage of 786 tons, were built and registered in the United Kingdom; in 1825 24 steam vessels were built, having an aggregate of 5003 tons; in 1835 86 vessels were built, having an aggregate of 10,924 tons. In 1910 the reciprocating steam engine was so widely adopted as to comprise the principal form of propulsion, with a degree of perfection and universal adoption, as being large and powerful. While the turbine, coal was being replaced to a considerable extent by oil as a fuel for raising steam, and steam itself was being challenged as a motive agent by the development of the internal combustion engine.

III. STATISTICS

For some years before 1870 the total tonnage of sailing ships built each year in the United Kingdom had been about equal to that of steam ships, but then a great change took place; in 1871 541 sailing vessels, amounting to 123,910 tons, were entered for the register of the United Kingdom, while 433 steam vessels, amounting to 66,572 tons, were entered for the register of steam tonnage thus added being nearly three times that of sailing vessels. A uniform rate of increase of production of steam vessels was on the whole maintained through the year 1882, will be seen by referring to Table I. and fig. 3, considerable fluctuations have occurred, the falling off in steam tonnage being simultaneous with increases of sailing tonnage and vice versa down to 1895. The details are shown in fig. 3, where it will be seen for 50 years of sailing and steam tonnage separately and combined. Roughly speaking, it may be said that from 1860 to 1895 the output of sailing tonnage fell from about 200,000 tons per annum to 100,000 tons; during the later nineties the falling off was more rapid, and between 1900 and 1910 the output varied between 15,000 and 30,000 tons.

The average tonnage of the sailing vessels built in the United Kingdom in 1860 was 206 tons; this increased with a fair degree of regularity to 532 tons in 1890, 749 tons in 1891 and 963 tons in 1892, after which a rapid decrease took place, and by 1896 the average size had fallen to 75 tons; there were fluctuations after this date, but the average never rose above 163 tons; and these vessels are practically restricted to the coasting trade and pleasure purpuses.

The average size of steam vessels has remained almost constant. The figures of the ships built abroad have continued to increase. Under the influence of the shipbuilding depression that prevailed from 1895 and 1902 something like 150 sailing vessels of from 2000 to 3500 tons each were built, but few since. In Germany and in America a few large sailing vessels continue to be built.

The increasing Register tonnage of the "Steam Vessels belonging to England, Scotland and Ireland in the years 1814 to 1899," which shows that in 1839 there were 720 vessels of a total tonnage of 79,426 tons owned in the United Kingdom. Between 1860 and 1866 considerbable numbers of steam ships were built for various services, and the production from 1860 is shown by fig. 3 and Table I. The tonnage added to the Register in 1860 amounted to 93,590 tons, rising over four years to 203,140 tons in 1865; after a gradual decline extending over two years to 100,000 tons it again rose till 1872, when nearly 500,000 tons were added. In 1876 it had fallen to about 200,000 tons; then came the great rising tendency to 1883, when it reached a maximum of 885,495 tons. A rapid decrease followed, and in 1886 it had fallen practically to what it had been ten years before. In another three years it had become again what it had been in 1883; after another period of fluctuating the numbers were again with much smaller fluctuations than previously, great increases were maintained. In 1906 a maximum of 1,458,793 tons was reached, when another rapid fall occurred over two years—the minimum reached being 600,000 tons in 1908.

The fluctuations in output, shown by fig. 3, synchronize approximately with the improvements and depressions in trade. The average tonnage of British steam vessels rose slowly from 890 tons in 1845 to 1870, when it had reached a maximum of 1,515 tons in 1883, and then again it fell slowly till 1889, reaching a maximum of 1,442 tons in 1882. During the next four years it fell gradually to 986 tons, rising again to 1215 tons in 1890, and the average tonnage remained with a small amount of fluctuation, nearly 1500 tons. These figures may be taken as roughly representing the average tonnage of the ships produced throughout the whole of this period. In the years immediately following these vessels are included, the vast increase in the numbers of large-sized vessels which have been built, especially during recent years, is not adequately represented. Of the vessels built in 1890 only 1% exceeded 8000 tons in displacement, whereas the vessels of over 8000
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<th>Year</th>
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<th>Iron.</th>
<th>Steel.</th>
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<td>7,017</td>
<td>196</td>
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<td>4,931</td>
<td>142</td>
<td>9,850</td>
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<td>1909</td>
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<td>3,362</td>
<td>92</td>
<td>3,880</td>
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<td>382</td>
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</tbody>
</table>

¹ As no actual returns are available for the gross tonnages for the years from 1860 to 1879 inclusive (only net tonnages having been recorded), the gross for these years are only approximate, and are based on the relation of gross to net for the years 1883 and 1900.

The above table is based upon information supplied to Lloyd’s Registry by the Registrar-General of Shipping.
<table>
<thead>
<tr>
<th>Flag</th>
<th>Grand Total</th>
<th>Sailing.</th>
<th>STEAM VESSELS.</th>
</tr>
</thead>
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<td>59,518</td>
<td>613,834</td>
</tr>
<tr>
<td>Colonies</td>
<td>19</td>
<td>59,518</td>
<td>613,834</td>
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<td>Samoa</td>
<td>8</td>
<td>59,518</td>
<td>613,834</td>
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<td>59,518</td>
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<tr>
<td>American</td>
<td>13</td>
<td>202,061</td>
<td>1,063,039</td>
</tr>
<tr>
<td>*Northern Lakes</td>
<td>16</td>
<td>202,061</td>
<td>1,063,039</td>
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<tr>
<td>(United States)</td>
<td>26</td>
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<td>1,063,039</td>
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<tr>
<td>Total</td>
<td>259,061</td>
<td>1,471,875</td>
<td>1,969,793</td>
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</tbody>
</table>

* Excluding Vessels trading on the Caspian Sea, and Wooden Vessels trading on the Great Lakes of North America.
† In the absence of satisfactory information numerous small sailing vessels (belonging chiefly to Greece, Turkey, Southern Russia and the Dutch East Indies) are not included.
‡ Excluding Japanese sailing vessels of under 300 tons net.

**Table II.—Shipping owned in each Country in the World (extracted from Lloyd's Register of British and Foreign Shipping for 1901-1901). Number, Tonnage and Description of all Vessels (exclusive of War Vessels) of 100 Tons and upwards.**
tons built in 1900 made up 12 % of the whole tonnage. In 1890 there were no vessels built whose displacement exceeded 9000 tons; in 1900 such vessels constituted 11 % of the whole, and about 4 % of the whole were over 16,000 tons. The year 1908 was notable for the number of large vessels launched; 10 British and 4 German

vessels were launched whose tonnage averaged about 15,000 tons each, their displacements being about 50 % greater. In 1910 there were almost more than 80 vessels exceeding 12,000 tons, and having an average tonnage of more than 15,500 tons each (see Table XI, page 885). Six of these vessels were over 20,000 tons, and had an average gross tonnage of 25,640 tons each. The tonnage of the largest vessels has almost continuously increased, and vessels with a tonnage of 45,000 tons are now being built, the fully loaded displacement of the vessels being more than 50,000 tons.

Fig. 4 shows the tonnage of wood, composite, iron and steel vessels added to the Register year by year since 1860, and figures for a number of the years are given in Table II. The tonnage of wood and composite vessels added in 1860 was 161,180, increasing to 166,210 tons in 1865 and then falling away at a fairly uniform rate until in 1880 only 19,238 tons were reported, and since that date practically no increase in output of this class of tonnage has taken place. The tonnage of iron ships produced in 1860 was about 63 % of that of wood ships; while wood shipbuilding fell off, iron shipbuilding increased, and in 1870 the tonnage of iron ships was more than five times that of wood and composite ships. The output of iron ships increased until 1883, when a maximum of 866,990 tons was reached. Steel had now come into use, and iron shipbuilding fell away rapidly, amounting only to 50,579 tons in 1888; this figure fell to 10,679 tons in 1895, and since then very few vessels have been built of iron. Steel, which had been used in shipbuilding to a limited extent for special purposes for some eight years, came into use for the hulls of merchant ships in the later 'seventies. In 1880 the tonnage built—38,164 tons—was 41 % of that of iron ships, but by 1885 the ratio was 60 %, and in 1890 the tonnage of steel ships, 913,484 tons, was just 20 times that of iron ships. From that date the statistics of steel shipbuilding are practically those of steam vessels above given.

From Table II, which gives the distribution of ownership of existing merchant vessels and other vessels, excepting warships, it appears that the total tonnage of the world's shipping, excluding vessels under 100 tons and the wood vessels on the Great Lakes of America, is about 42 millions. Of this total, rather less than one-ninth is in sailing vessels, and the remainder in steam vessels. Taking the number of ships instead of their aggregate tonnage, the sailing vessels are 27 % of the whole. Out of the 42 millions, Great Britain and her colonies own about 19 millions, or 45 % of the whole, 18 millions being steamers and 1 million sailing vessels.

Danmark each with about 1.8 %. The leading particulars as to the distribution of ownership of the merchant shipping throughout the world for 1893, 1890 and 1910 respectively are represented graphically in the block diagrams given in Fig. 5, which have been constructed from particulars given in Table II, and similar tables for the other years. The tonnage owned in each of these years, excluding vessels under 100 tons and wood vessels on the Great Lakes of America, is represented by squares drawn to scale, in duplicate, and divided up amongst the principal countries owning shipping in proportion to their ownership. Parts of each holding are shaded in the squares on the right so as to show what portion is sailing tonnage and what steam tonnage, and in the squares on the left so as to show the distribution of the total as regards materials of construction in each country. The total tonnage owned is given for each country, namely, the number of tons, and the percentage of the various countries are tabulated between the pairs of squares.

The tonnage of the shipping of the world has advanced at an increasing rate for many years; the character of this advance may be gathered from the data given in Fig. 5. In 1873 Great Britain and her colonies owned 43.25 %, and in 1890 52.35 %; but although the advance in the shipping of Great Britain and her colonies has continued approximately at the same uniform rate, such has been the increasing rate of the advance of the world's shipping that the percentage owned by the British Empire fell to 40.7 % in 1900 and to 45.4 % in 1910. This is represented in the block diagrams of the tonnage of the world's shipping is shown by Table III. The remarkable rate at which the shipping of the United States and Germany has advanced will also be seen.

Table III.—Rate of Increase of the World's Shipping.

<table>
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<tr>
<th>Year</th>
<th>1873</th>
<th>1890</th>
<th>1900</th>
<th>1910</th>
</tr>
</thead>
<tbody>
<tr>
<td>World's tonnage (tons)</td>
<td>17,545,563</td>
<td>22,151,651</td>
<td>29,043,728</td>
<td>41,914,765</td>
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<tr>
<td>World's tonnage taking 1873 as 100</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average rate of increase per annum from 1873 to 1900</td>
<td>1.5 %</td>
<td>2.4 %</td>
<td>3.8 %</td>
<td></td>
</tr>
<tr>
<td>Average rate of increase per annum from 1890 to 1910</td>
<td>4.35 %</td>
<td>5.25 %</td>
<td>4.53 %</td>
<td></td>
</tr>
<tr>
<td>Average rate of increase per annum from 1900 to 1910</td>
<td>14.27 %</td>
<td>8.23 %</td>
<td>9.47 %</td>
<td>12.06 %</td>
</tr>
<tr>
<td>Proportion owned by Britain</td>
<td>58.8 %</td>
<td>7.08 %</td>
<td>9.13 %</td>
<td>10.34 %</td>
</tr>
<tr>
<td>Proportion owned by Germany</td>
<td>9.88 %</td>
<td>10.97 %</td>
<td>11.06 %</td>
<td>11.08 %</td>
</tr>
</tbody>
</table>
| Table IV, gives the output, for the year 1909, of merchant and other vessels throughout the world, excluding warships, all ships of less than 100 tons and the wood vessels of the Great Lakes of North America. The block diagrams in Fig. 6 are constructed in the same way as the diagrams in Fig. 5, and are arranged to show the output of the principal shipbuilding countries of the world in 1900 and in 1909, the reference square for scale representing one-tenth the amount of that of Fig. 5. The total output for the year 1900 was 5,435,854 tons, of which 1,599,837 tons, or 65 % of the whole, was built in the United Kingdom; 303,339 tons or 13 % was built by the United States of America; 9.4 % by Germany and 5.4 % by France. In 1909 the total output was 5,551,532 tons, of which 971,113 tons or 63 % was built in the United Kingdom; 178,402 or 11.5 % was built in the United States of America; Germany built 8.1 %, France only 3.3 %, the output of Holland and Belgium has risen from 1.38 % in 1900 to 4.34 % in 1909; and Japan appears with 2.08 % instead of about 0.6 % in 1900.

American Shipping.—Under the Registration Laws of the United States, vessels are required to be registered, and those vessels, the tonnage of which is more than 100 tons, are required to be entered. By (a) the using of a British flag, or (b) being enrolled, or (c) licensed. The proportion of vessels coming under these three headings as given by the United States Commissioner of Navigation, 30th June 1909, is shown in Table V.

It will be seen that the Registered Tonnage includes only vessels engaged in the Foreign Trade and in Whaling Fleets, and excludes fishing vessels, which number some in the total to 10,330 vessels. The total registered tonnage is 887,505 tons and include the smallest vessels crossing the St Lawrence equally with ocean liners. Two hundred and twenty-seven of the registered vessels are less than 100 tons, and only nine are over 10,000 tons. Namely, the "Minnesota," "Manchuria," "Mongolia," "Siberia," and "Korea" on the Pacific, and the "St Louis" and "St Paul," "New York" and "Philadelphia" on the Atlantic routes. The Enrolled Tonnage includes vessels engaged in the coasting trade and local fisheries which are over 20 tons; and the Licensed Tonnage vessels similarly engaged, but of a size not exceeding 20 tons. The whole of the tonnage included is officially described as tonnage.
<table>
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<tr>
<th>Country to which Built</th>
<th>Whether Sail or Steam</th>
<th>Wood and Composite</th>
<th>Total No. Tonnage</th>
<th>Steel</th>
<th>Total No. Tonnage</th>
<th>Grand Total</th>
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<td></td>
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<tr>
<td>Total No. Tonnage</td>
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</tr>
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</table>

*Excluding wood vessels built on the North American lakes.
†Excluding Japanese sailing vessels under 300 tons net (if any) built in Japan.

Note.—The above figures for sailing vessels are based on net tonnage, and those for steam vessels on gross tonnage.
FIG. 5.—Distribution of ownership of merchant shipping throughout the world. The tonnages are gross steam and net sailing as given in Table II. for 1910. The tonnages for 1900 and 1890 are prepared on the same basis, while those for 1873 are gross steam and gross sailing.
TABLE V.—Showing the Tonnage of the United States Shipping, 30th June 1909.

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<td>(a) Registered:</td>
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<td>Foreign trade</td>
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<td>Whale fisheries</td>
<td>25</td>
<td>5,682</td>
<td>8</td>
<td>3,300</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>470</td>
<td>238,058</td>
<td>498</td>
<td>578,526</td>
<td>665</td>
</tr>
<tr>
<td>(b) Enrolled:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coasting trade</td>
<td>3799</td>
<td>1,391,965</td>
<td>6,342</td>
<td>4,099,087</td>
<td>745</td>
</tr>
<tr>
<td>Cod and mackerel fisheries</td>
<td>341</td>
<td>1,336,333</td>
<td>91</td>
<td>7,179</td>
<td>745</td>
</tr>
<tr>
<td>Total</td>
<td>4140</td>
<td>1,425,197</td>
<td>6,418</td>
<td>4,107,666</td>
<td>745</td>
</tr>
<tr>
<td>(c) Licensed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coasting trade</td>
<td>4672</td>
<td>50,986</td>
<td>4,241</td>
<td>58,470</td>
<td>156</td>
</tr>
<tr>
<td>Cod and mackerel fisheries</td>
<td>439</td>
<td>3,835</td>
<td>484</td>
<td>5,162</td>
<td>156</td>
</tr>
<tr>
<td>Total</td>
<td>5102</td>
<td>54,821</td>
<td>4,725</td>
<td>63,632</td>
<td>156</td>
</tr>
<tr>
<td>Grand Total</td>
<td>9712</td>
<td>1,711,076</td>
<td>11,641</td>
<td>4,749,224</td>
<td>745</td>
</tr>
</tbody>
</table>

Lloyd's Register for 1909-1910 gives the following figures for United States shipping, excluding all vessels under 100 tons and all wooden vessels on the Great Lakes:

<table>
<thead>
<tr>
<th></th>
<th>Number.</th>
<th>Tons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Sea Coasts</td>
<td>2899</td>
<td>2,791,282</td>
</tr>
<tr>
<td>Northern Lakes</td>
<td>583</td>
<td>2,118,276</td>
</tr>
<tr>
<td>Philippines</td>
<td>108</td>
<td>44,254</td>
</tr>
<tr>
<td></td>
<td>3590</td>
<td>4,953,512</td>
</tr>
</tbody>
</table>

Large numbers of American vessels are not included in the American Returns—such as yachts, boats and lighters employed within the

DOCUMENTED in the United States, and the division is based on the trade on which the vessels are employed, and not as in the United Kingdom on the character of the vessels and their fitness to engage in trade to distant countries or on more local service.

By the United States Navigation Laws all trade between American ports no matter how far they are separated—such as New York to San Francisco, or from either of these ports to Honolulu or Manila—is declared to be coasting trade. None but United States vessels are allowed to engage in this trade, which in recent years has developed so rapidly as to employ the main part of the American Mercantile Marine; it demands large numbers of ocean-going vessels, and many vessels have been transferred from the Foreign Trade to meet the demand.

![Diagram](image-url)
The distribution of the total documented shipping on the coasts of the United States in 1909 is shown by Table VI. The Atlantic Coasts employ 69% of the number and 47% of the tonnage; the Great Lakes 12% of the number and nearly 38% of the tonnage. The total includes a great number of wooden sailing vessels as shown by Table VII, which also shows that the coasting trade employs over 1,000,000 tons of wooden steamers and over 3,000,000 tons of steel steamers (Enrolled and Licensed vessels), while the steamers in the Foreign Trade only reach a total of over 500,000 tons (Registered Vessels).

Though the American Mercantile Marine has greatly varied in the rate of its growth (see Table VIII), very great increases have taken place from time to time, and after 1880 the average rate of increase was very considerable, in thirteen years amounting to 3,300,000 tons or 50%, while in the nine years 1900-1909 the increase was 2,220,000 tons, which is more than 40% of the total in 1900. The increase of the general commerce of the United States in these periods was, however, so vast that, notwithstanding the great increases of tonnage, increasing proportions of the tonnage were absorbed by the home or coastwise trade, and the percentage of United States shipping carrying United States commerce to foreign ports was steadily reduced, as shown in Table IX.

From 1893 to 1908 very great progress was made in the output of ships in the United States; in 1901 a maximum of 483,689 tons was reached; decreases occurred until 1905, when a minimum of 330,316 tons was reported, but a rapid recovery took place; and in 1908 the unprecedented American total of 614,216 tons was made. In 1909 reached 694,429 tons, built and documented during the year ending June 30, 1909.

Table IX.—Additions to and Employment of United States Shipping.

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Tonnage of Ships built per annum in the United States.</th>
<th>Average percentage of United States Commerce carried in United States Ships.</th>
<th>Average percentage of United States shipping in United States Ports.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1810</td>
<td>102,452</td>
<td>86,977</td>
<td>51,977</td>
</tr>
<tr>
<td>1810-1820</td>
<td>89,797</td>
<td>90-2</td>
<td>87-2</td>
</tr>
<tr>
<td>1820-1830</td>
<td>89,372</td>
<td>87-1</td>
<td>87-2</td>
</tr>
<tr>
<td>1830-1840</td>
<td>118,060</td>
<td>83-0</td>
<td>81-0</td>
</tr>
<tr>
<td>1840-1850</td>
<td>185,500</td>
<td>78-1</td>
<td>66-6</td>
</tr>
<tr>
<td>1850-1860</td>
<td>366,003</td>
<td>71-2</td>
<td>65-4</td>
</tr>
<tr>
<td>1860-1870</td>
<td>299,090</td>
<td>51-4</td>
<td>50-4</td>
</tr>
<tr>
<td>1870-1880</td>
<td>253,100</td>
<td>15-2</td>
<td>21-0</td>
</tr>
<tr>
<td>1880-1890</td>
<td>220,197</td>
<td>11-5</td>
<td>22-5</td>
</tr>
<tr>
<td>1890-1900</td>
<td>239,098</td>
<td>11-2</td>
<td>21-2</td>
</tr>
<tr>
<td>1900-1903</td>
<td>406,547</td>
<td>8-0</td>
<td>22-2</td>
</tr>
<tr>
<td>1903-1906</td>
<td>374,668</td>
<td>11-5</td>
<td>22-3</td>
</tr>
<tr>
<td>1906-1907</td>
<td>471,332</td>
<td>10-6</td>
<td>22-0</td>
</tr>
<tr>
<td>1908-1909</td>
<td>614,216</td>
<td>9-8</td>
<td>22-0</td>
</tr>
<tr>
<td>1909-1910</td>
<td>238,090</td>
<td>9-5</td>
<td>22-0</td>
</tr>
</tbody>
</table>

1 Maximum recorded. 2 Lowest for ten years.

61,000 tons consisted of barges and canal boats, nearly 30,000 tons consisted of sailing vessels, 798 vessels of 47,353 tons are classified as fishing vessels, 17,000 vessels of over 2,000 tons; Great Lakes vessels, and only 6 steam vessels of 16,427 tons were built for ocean trade, while no vessel was registered as built for the foreign trade.

Japanese Shipping.—Recent years have shown a considerable development of shipbuilding in Japan. Several small vessels were built previous to 1895, but in that year the "Hitachi Maru," a steamer of 6000 tons, was built by the Mitsubishi Bishi Works.

Lloyd's Register Reports show that in the five-year period 1895-1899 there were launched 61 ships with a tonnage of 45,661; in 1900-1904, 279 ships (tonnage 138,052); and in 1905-1909, 414 (tonnage 253,512).

IV. Merchant Vessels

Sailing Ships.—Generally speaking, so far as the distribution of sails is concerned, except as regards the abolition of studly-sails, the sailing ships of to-day differ little from those which existed in the middle of the 19th century, and in the main of many types at a much earlier period. The change from wood to iron and steel resulted, of course, in some changes
in rig, to suit the longer and larger vessels; and steel masts, with wire rope standing rigging and various labor-saving appliances, have been introduced. The larger ships also carry steam winches for various purposes, steam windlasses, and steel steering gear, but the general appearance of the vessels has changed very little.

Ships.—Rivers and canals abound with barges of various types, such as the Thames barge, the Tyne wherry or keel, and the Dutch galjoen. Thames barges have been built since the 16th century, and the most characteristic and distinctive vessel of this class, has a length of from 70 to 80 ft., and a carrying capacity of from 100 to 120 tons on about 6 ft. draught. Like the Dutch galjoen, she is provided with lee-boards, and is fore-and-aft rigged. This type of vessel is still largely adopted in the merchant service for small vessels, usually called smackens, of a length, say, from 60 to 90 ft., and a displacement from 150 to 200 tons. These small vessels are square-rigged, with fore-and-aft sails only, and fitted with a running bowsprit; they have no standing jib stay. Such vessels were at one time generally used for coasting passenger traffic. The term "cutter" is also applied to a small sailing boat carried on board ship.

Schooners, Brigs and Brigantines.—A schooner (fig. 7, Plate I.) is usually a two-masted vessel, with yards only on the foremost and foremast. These vessels are generally not fitted with square-rigged sails, but is set flying. In some cases there are no yards at all and the schooner is then called a fore-and-aft schooner, a schooner with yards being sometimes called a square-rigged schooner. Before the days of the large and powerful steamers, schooners were the only ships that survived the introduction of steam as a motive power. They were beautifully modelled craft, and very fast under canvas. A brig is a two-masted vessel having yards on both masts, or square-rigged on both masts. A brigantine is a two-masted vessel having the foremost square-rigged, as in a brig, the main being rigged as in a schooner. Much of the coasting trade of the world is carried on by schooners, brigs and brigantines. These vessels were formerly employed in the Baltic, and to some extent in the West Indies and the Mediterranean. Schooners such as the above are usually from 80 to 100 ft. long, 20 to 25 ft. broad, 10 to 15 ft. deep, and have a gross tonnage of 130 to 200 tons, and may occasionally be as large as 350 tons. If from 90 to 110 ft. long, from 24 to 30 ft. broad, and from 12 to 18 ft. in depth of hold. Brigantines usually occupy, as to size, a position intermediate between schooners and brigs.

Vessels somewhat larger than two-masted schooners and brigs, but of a similar form, are often rigged as three-masted schooners and as the so-called barquentines. The formation of a line in use, many a third or mizen mast added, this being rigged fore and aft, as is the main mast. The latter resembles a brigantine with a third mast added, which is also fore-and-aft rigged. The two rigs thus very nearly resemble each other; both types are square-rigged on the foremost, and fore-and-aft rigged on the main and mizzen; while in the former the foresail is set flying, in the latter it is bent to the yard.

Larger vessels than these are sometimes fitted with four, five, six and even seven masts, as fore-and-aft schooners. A large number of vessels fitted in this manner are much in favour for the coasting trade. The barquentine "Maine," built in 1900 by the Fore River Ship and Engine Co., Quincy, Massachusetts, of steel, 368 ft. long, 50 ft. beam, 34 ft. draft, of 10,000 tons displacement, is a remarkable example of the type. A barquentine has been built for sailing only. She was recently wrecked on the Scilly Isles.

Barques and Ships.—Vessels intended to sail to all quarters of the globe are sometimes rigged as barques; ships; but, as indicated above, these rigs are very far from being universal, as others are very common. A barque is a three-masted vessel, square-rigged on the foremost and main masts, and fore-and-aft rigged on the mizen mast. A ship (a rigging vessel) has three masts, each of which is square-rigged. These were the rigs employed in vessels of new passing away, if indeed they have not already done so. The present day is a time of transition, and need was the quality chiefly aimed at, and carrying power was of secondary importance. For instance, the "Phoenician," built in 1852, had a length of 307 ft., and a displacement of 1900 tons, and the "Taeping," built in 1862, was 217 ft. long and her tonnage 1292. The former made the quickest run on record, up to 1852, from Sydney to London, accomplishing the distance in 83 days; and the latter made a round trip to the China coast in 1863 in only 90 days. Ships of this type were employed on the coast of China, in the United States for the rapid conveyance of early teas from China to London. The American builders had for some years been more successful than their British competitors in the construction of large ships. The formernouned the American ships in speed, and it was, moreover, claimed for her that she delivered her cargo in better condition than the American ships. She was 215 ft. long, and her tonnage was 1290 old measurement, or 938 new measurement. The "Witch of the Wave" on her best voyage made the passage from Whampoa to Dungeness in 90 days, the best day's run being 338 knots in 24 hours, a very remarkable performance. Later, in 1866, the "Lord of the Isles" beat the Whampoa-Plymouth record. The "Armada," a four-masted ship, was built to Great Britain, one of them only by a few minutes; her length was 183 ft., and her tonnage, new measurement, 630. It is noteworthy that such vessels were sometimes fitted with a stem and stern, and sometimes started between British and American ships, was carried on subsequently between British ships alone. In the memorable race of 1866 from Foo-Chow to London, five ships, the "Ariel," "Taeping," "Princess Victoria," "Percy," and "Hampden," each three left Foo-Chow the same day—the "Ariel" first, followed 20 minutes later by the "Taeping" and "Serica" together. The four remaining vessels were due to arrive at the reach of the English Channel, when the "Ariel" and "Taeping" had got abreast, and crossed to the Downs, the former arriving some ten minutes before the latter, the "Serica" reaching the Downs a few hours later. These three vessels took the race, each vessel being responsible for the voyage, and occupied in the above voyages was beaten in 1869 by the "Thermopylae" and "Sir Lanceolot," both British ships and of composite build; the times occupied by the vessels were respectively 90 days from Foo-Chow to Dungeness for the former, and 88 days from Foo-Chow to Deal for the latter, each taking one day more to get into the docks. The dimensions of the "Thermopylae" were 212 ft. by 36 ft. by 21 ft. depth of hold, and of the "Sir Lanceolot" 197 ft. by 331 ft. by 21 ft. The best day's run of the "Sir Lanceolot" was 354 knots in 24 hours. Shortly before the above voyage the "Thermopylae" made the passage from London to Melbourne in an unprecedented time of only 103 days and 4 hours. This ship was built to Fort Philiip harbour. With the opening of the Suez Canal and the general introduction of steam, the demand for exceptionally fast ships for some purposes of service considerably diminished, and, indeed, almost ceased to exist. The type of ship most usually met with to-day is better illustrated by fig. 9 (Plate I.), which represents the "Victoria Regina," built of iron in 1851 at Southampton; she was the largest ship ever designed for the British market.

Ships with four and five masts were employed by several countries during the 19th century. Sometimes, in the case of four-masted ships, these were square-rigged on the fourth or mizen mast, and sometimes fore-and-aftrigged; in the latter case they were called four-masted barques, and fitted out for the sailing of grain, and sometimes for the transport of wool and furs. The American name for the type was "brigantine," and the term was also applied to any type of boat, and the same type of boat, and the same type of vessel, were also called "brigantines," and had a single mast, with yards only on the foremost and foremast, and fore-and-aft rigged on the main and mizen; while in the former the foresail was set flying, in the latter it was bent to the yard.

A five-masted vessel is described in the same number of the "Nautical Chronicle" which was square-rigged on the foremost and fore-and-aft rigged on the main and mizen; while in the former the foresail was set flying, in the latter it was bent to the yard.

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The full-rigged four-masted ship, 332 ft. long, 451 ft. beam, 26 ft. moulded depth, gross tonnage 3292, and intended to carry 1,500,000 gallons of oil in cases of 10 gallons each from the Union Steamship Company of Shandon, Passages. The vessels consist of hemp, &c. The masts and yards of this vessel, as well as the hull, are of steel. The five-masted German barque "Potosii", built in 1895, which is 366 ft. long, has an 840-ton revenue gross and a deck beam of 40 ft. 6 in. She has a splendid record of quick passages, one reducing the record from Portland Bill to Iquique to 62 days. In 1902 the five-masted ship-rigged vessel "Pfeiffen", of 5864 tons gross, was built of steel, and followed in 1906 by the five-masted barque "R. C. Rickmers" of 5548 tons gross, 441 ft. long over all, 53 ft. 5 in. beam, 30 ft. 5 in. deep, having 487,000 sq. ft. of canvas. Her gross weight is about 10,000 tons, of which 8000 tons are cargo. She carries 50,000 sq. ft. of canvas, and on her first voyage reached a speed of 15 knots for a short time under sail alone, maintaining 13 knots for long periods. Another barque, "Salamanca", of 1856; the "Lizard", 153 days; and the "Triumph" were famous in their day. As a world, "the Lizard", 88 days; "R. C. Rickmers", 71 days; and the "Triumph", 69 days, are the shortest passages, which, together with 88 days, are the results of the steam-sailing ships. As such, the "Salamanca" was a fine performance, and 71 days was the record of the "Triumph"; both vessels being barques.

Although alterations in the rigs of ships have not caused much difference in their appearance over a very long period, a number of changes have been made, mostly for the purpose of saving labour. The mechanical reefing of topsails and top-gallants was introduced about 1858, but only remained in favour for a few years; double topsails, on the other hand, first used in the four-masted American shipentine clipper "Great Republic", have held their own, and double top-gallant sails have since been adopted. Until about 1875 almost all ships carried studding-sails, but since this date they have been gradually discontinued, and at present are usually only to be found in training vessels, and now and again in square-rigged yachts. As already stated, wire rope has been adopted for standing rigging, and deadeyes and lanyards have given place almost universally to rigging screwed in place. The masts of ships have been made of iron for many years, and more recently of steel, and the lower masts and top masts have in a number of cases been made in one length; when constructed in this manner the mast is termed a pole mast. This arrangement is very common in America, where the latest steel sailing ships are so fitted. Most large sailing ships carry a steam boiler or boilers, and engines are provided for all sorts of purposes, for which hand labour used to be commonly employed. The result of this and other labour-saving arrangements has been to effect a very considerable reduction in the number of hands required to man the ship. The change in the character of the crew has taken place, it may be mentioned that whereas a 1000-ton ship of the East India Company in the middle of last century had a crew of 80 all told, a modern four-masted barque of 2500 tons has a total complement of 33 only.

As to the employment of sailing ships, there can at the present day be seen at most large shipping ports a number of sailing ships of various types and sizes. Some of the largest ships are employed in the jute trade of India, the grain trade of California, British Columbia, the nickel ore trade from New Caledonia and the nitrate trade of Chile. From Great Britain herself come a number of vessels, which, however, low freights may be, may in nearly all cases be relied on. Sailing ships are sometimes provided with auxiliary steam propelling machinery of low power to save cost of tugs in getting in and out of harbour, to make headway when becalmed, and to increase the safety of the vessel. In the early days of steam, all sea-going vessels retained their rig, and the machinery fitted was only regarded as auxiliary. In the "Savannah" — the first steam vessel to cross the Atlantic, the paddle-wheel vessel — they were not used long and packed up on board in case of bad weather or when attempting a long voyage, but were replaced and used for getting into port after crossing the Atlantic. The screw propeller was found preferable in such cases, as it offered less obstruction than paddle wheels when the sails were set and the engines stationary; but the resistance offered by the screw when not in use led to various devices for either lifting it completely out of the water, or for "feathering" the blades and fixing them fore and aft, so as to offer less obstruction in going through the water. Auxiliary power is of great advantage to vessels engaged in seal or whale fishing as it enables them to avoid ice floes, and to proceed through open channels in the ice as opportunity offers. In 1902, six such vessels — all barque rigged, and one fitted with a lifting propeller — hailed from Dundee, and a few others hailed from Norway, from Newfoundland and from New Bedford, U.S.A. Several navies have employed vessels fitted with auxiliary steam power for training purposes, such as the Chilean training ship "General Baquendo" built in 1899 of steel, sheathed with teak and coppered; she is 240 ft. long, 452 ft. broad, and of 2500 tons displacement on a mean draught of 16 ft. She has a 500-horsepower screw propeller, and her speed is equal to a speed of 13 knots. In recent years the internal combustion motor has been adopted in some cases in place of the steam engine as a source of auxiliary power, especially in the smaller classes of sailing ships, and in many cases it has made the employment of such vessels remunerative once more. Should the heavy oil engines introduced in 1910 prove sufficiently simple and reliable for auxiliary power in the larger vessels, vessels so fitted might compete successfully with tramp steamers in certain trades.

Steamships — Of merchant steamships, vessels of all sizes are to be met with, from a small launch to the stately Atlantic liner of over 50,000 tons gross and 25 to 26 knots speed, and the huge cargo ship of over 20,000 tons gross and 15 knots speed. They are employed on every service for which sailing ships are used, and upon others for which sailing ships are not employed, and they monopolize nearly the whole of the passenger traffic of the world. The passenger vessel is provided with airy and spacious accommodation for her living freight above water, while the upper part of the cargo vessel is cut down as much as possible consistent with due provision for safe navigation at sea. The passenger ship thus becomes a lofty vessel, especially amidships, while the cargo ship appears long and low lying. Apart from this broad difference, the various sizes of merchant steamships have in general no bold characteristic features like sailing ships; they possess different deck structures and certain differences in form, but, to the ordinary eye, a photograph of a vessel of, say, 1000 tons, apart from details of known size that may serve to fix the scale, may often be taken to represent a vessel of even ten or twenty times the size.

Types of Steamships — A steam vessel may be little more than an open boat with the boiler and engines placed amidships if intended for river use, and may be of any shape necessary to suit local conditions and fulfil the services required. Vessels which proceed to sea must be decked over to prevent them from being "swamped" and built of a suitable form to make them otherwise seaworthy; the height of the forecastle, quarter-deck, or the "beakhead", will be determined by the type of vessel, and the height of the superstructure, or "gallows", and of sufficient height above the upper deck to be serviceable for accommodation forward is called a top gallant forecastle, and aft a poop. It is frequently desirable to build up cabins or other accommodation across the middle of the ship beneath the bridge, forming
what is called a bridge house. Instead of fitting a turtle back or hood aft, a break is sometimes made in the upper deck and the after portion is raised a step higher than the midship portion, the after portion is then called a raised quarter deck. If a poop be extended forward to join the bridge house it is called a long poop. In very many cases when a top gallant forecastle is fitted, the gap which occurs between this forecastle and the bridge house is partly shut in at the sides by the ship's topside plating; the space so formed is then called a well, and the ship a well-decked ship.

Vessels arranged as above described are illustrated by figs. 10, 13, 14, on Plate II.; they include most of the vessels in the coasting trades of Europe, and many of the smaller and medium sized ocean-going cargo vessels. In larger vessels the forecastle, bridge and poop decks are frequently joined to form a light continuous structure. The vessel is then termed a shade-decked vessel—if the ship's sides up to this level are not completely closed in. In still larger ships the sides are completely built in, the thwarts stronger, other decks or deck houses are fitted above it, and the ship is called an awning decked, spar decked, shelter decked or three decked vessel—according to the details of her construction. Above these strong steel decked light promenade decks, sun decks and boat decks are built according to the requirements of the accommodation for passengers, etc.

Barges. The simplest cargo steamer is the steam barge or lighter, often merely a long narrow box of wood or steel made small enough in section to pass through locks and canals, with the ends fashioned more or less abruptly, and spaces allotted aft for the machinery and forward for the crew. For service on rivers and estuaries they are made larger and wider as the circumstances of draught and dock or wharf accommodation permit, the bottoms being generally flat in order that they may ground safely in tidal waters; they are used for transferring cargoes of sea-going vessels to or from warehouses, and are frequently fitted so that they can tow one or more dumb barges.

Many sea-going vessels are built to carry a particular cargo on one voyage and a general cargo on the return voyage. This usually results in their having certain features which adapt them for the special cargo, and do not interfere materially with their carrying a general cargo at remunerative rates. Ordinary cargo ships, or "Ocean Tramps" as they are called, do a very large portion of the world's cargo-carrying. They are mostly built of steel, and their usual speed is from 10 to 11 knots. In the early nineties well-decked vessels formed a large proportion of the total number; but ten years later comparatively few of this type were being built, and these were principally intended for the coal trade, or were comparatively small vessels for coasting purposes. Partial awning-decked steamers, again,

FIG. 11.—General arrangement of ore-carrying steamer "Vollrath Tham."

1. Hold.
2. Discharging trunk.
4. Skip, or bucket.
5. Discharging doors.
6. Crew's space.
7. Officers' quarters.
8. Stores.
10. Coal bunker.
11. Loading hatch.
12. Slopes to discharging doors.

structure. In order to accommodate the maximum cargo possible in vessels of convenient size, the lines of the vessels have been filled out, giving block co-efficients which are frequently over 80 % and in some of the Great Lake freighters have reached 88 %.

Such portions of the ship above the water as do not contribute usefully to carrying cargo, but would be measured for registered tonnage, are cut down to the smallest amount consistent with the provision of sufficient reserve of buoyancy and stability.
3. To provide for a return journey without a cargo, in addition to the double bottom and peak tanks, large water ballast tanks are provided. The excavation is made at the foot of the slope that when ballasted down the metacentric height of the vessel is not excessive. Much of the ballast is carried in side or wing tanks extending to the upper or main deck, or in triangular side ballast tanks, the latter being arranged so that the tanks may be emptied by gravity when practicable.

Hatches have been cleared of obstructions—such as pillars, hold beams and web frames—so that the stowage space for the cargo is unbroken, the necessary strength being given by a heavier system of framing of the ship and by the construction of the side tanks.

5. To facilitate rapid handling of cargo, hatches have been increased in size and number, and special appliances fitted for rapid loading and unloading the vessel—particularly, numbers of derricks or cranes, with convenient steam or electric winches.

Several well-known types of cargo vessels have thus been produced, such as the "Mancunia" built by Messrs W. Gray & Co. at West Hartlepool in 1898, with side-ballast tanks on McGlashan's patent; cantilever-framed vessels by Messrs Rayiton Dixon & Co. on Harrowby and Dixon's patents; trink-deck vessels by Rayner & Co., and trink-deck vessels by Messrs Dows & Co. of Sunderland. Fig. 10 (Plate II.) is a photo of a turret-deck steamer.

Her dimensions: length 439 ft. 8 in., beam 51 ft. 7 in., gross tonnage 3955 and net tonnage 3794. She is of a much superior type of arrangement of being good dead-weight carriers, and the shelf on each side of the central trunking can very conveniently be used for carrying timber and for other purposes.

The "Mancunia" was built by Raynor & Co., and loaded with coal, is an example of a modern cantilever-framed deep-decked vessel. She is 404 ft. long overall, 56 ft. beam, 23-6 ft. moulded depth. On a draught of 23 ft. 9 in. her displacement is about 12,000 tons and dead-weight capacity is 10,000 tons. The machinery is in two engines, which, with a capacity of 3000 h.p., enable her to make 11 knots.
fitted with Diesel motors of 360 H.P. More recently the "Emanuel Nobel" and "Karl Hagelin" have been built for the same firm; they are fitted with Diesel motors of 1200 H.P., are 380 ft. long, combined, and is fitted with one deck, but has two tiers of beams. B (fig. 14, Plate II.) is a vessel with a top-gallant forecastle, bridge-house and poop, and a single deck. C is an awning-decked vessel

**Table X.** Types of Cargo Carrying-Steamers.

<table>
<thead>
<tr>
<th>Type of Vessel</th>
<th>Well-decked</th>
<th>With Top-gallant Forecastle, Bridge House and Poop</th>
<th>Awning-decked</th>
<th>Shelter-decked</th>
<th>American Lake Steamer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Built in 1881</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Built in 1894</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Built in 1897</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Built in 1900</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Built in 1909</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| | | | | | |
| | | | | | |

and one steamer carrying mails and passengers as well as a large cargo. A is a well-decked vessel (fig. 13, Plate II.), having a top-gallant forecastle with a long raised quarter-deck and bridge-house

The block "coefficients" corresponding to the load conditions are given in Table IV., in order to show the fullness of form commonly adopted in these vessels. The block coefficient is the ratio of the
well-decorated large must considerable, in. Another Details the 8 The These and the called in. Ferry 7 A double-ended, Compound one 330 extends passengers wood-paved loaded 12 (see woodwork, found itself; the MERCHANT 68. The Ferry the numerous vessels extends to a considerable width beyond the body of the hull beneath to give large deck areas; the main deck being about 6 ft. above water and 55 ft. wide. Cart tracks are arranged along the midship portions of the deck with passenger saloons, &c., at the sides. A light shade deck extends forward and aft and carries a pilot house near each end. Water-tube boilers and three cylinder compound engines of 600 H.P. are fitted beneath the deck amidships and drive a propeller at each end of the boat. The "Oakland," "Berkeley" and "Newark" running at San Francisco are much larger than the "Hampton," and have a seating capacity for 2000 people each, with a fine promenade deck above the upper deck. The first two are fitted with beam engines driving side paddle-wheels, while the third has a screw propeller at each end of the vessel driven by vertical triple expansion engines. Each of them burns oil fuel only. River and Sound Steamers.—For service on rivers, harbours and estuaries where the traffic is considerable, paddle-wheel vessels of limited speed are usually preferred, as possessing great maneuvring power, and therefore the capability of being brought alongside the landing-places with rapidity and safety. The paddle-wheel steamer

ment, except in case D in which the machinery and the passenger accommodation absorb much weight. British vessels may not be loaded deeper than a certain mark, known for many years as the Plimsoll mark, which has to be placed on the sides of all merchant vessels. The mode of measuring tonnage is based on the Act of 1894, which embodies preceding legislation and subsequent Acts (see Tonnage).

The numerous varieties of passenger steamers may for convenience be taken in the following order—Ferry; River and Sound; Passenger steamers. Cross Channel; and Ocean Steamers; although it must be understood that in many cases a hard and fast line cannot be drawn between steamers for the several services.

Ferry Steamers.—Ferry steamers ply the rivers and harbours in the United Kingdom; they perform important services in transporting passengers and road traffic across sheltered waters where bridges are not available; and others are built in the United Kingdom for service in all parts of the world. The "Guamuchalan," a double-ended steel vessel built by Messrs Cammell, Laird & Co., for ferry service on Havana Bay, is 140 ft. long overall, breadth moulded 36 ft. depth moulded amidships 18 ft., beam 18 ft., and has a steam output of 1250 I.H.P., and is intended to carry 150 passengers. A number of ferry-boats have been built by Messrs Thornycroft for service in India; they are 105 ft. long overall, of 20 ft. beam, 10 ft. moulded depth and 5 ft. draught;

their machinery of 900 I.H.P. is placed amidships and gives a speed of 12 knots; two saloons are arranged forward and two aft with access to a promenade deck from each, accommodation for 200 passengers with luggage being provided. A light wooden awning extends over all. These vessels are built of steel and divided into eight water-tight compartments; they were built and put together at Southampton, then taken to pieces, packed and shipped abroad, re-erected and completed at Calcutta.

The largest ferry-boats are to be found in America, and an interesting example is the "Hampton" built in 1906 by the New York Shipbuilding Company. She is 168 ft. long overall, 38 ft. beam, 8 ft. 6 in. draught, 625 tons displacement. A feature of this vessel is that all details are arranged with the view to making the vessel practically fireproof, wood fittings being reduced to a minimum. The vessel is double-ended, carries over a thousand passengers and a large number of horses and vehicles on one deck. As in many American river vessels, the upper works extend to a considerable width beyond the body of the hull beneath to give large deck areas; the main deck being about 6 ft. above water and 55 ft. wide. Cart tracks are arranged along the midship portions of the deck with passenger saloons, &c., at the sides. A light shade deck extends forward and aft and carries a pilot house near each end. Water-tube boilers and three cylinder compound engines of 600 H.P. are fitted beneath the deck amidships and drive a propeller at each end of the boat. The "Oakland," "Berkeley" and "Newark" running at San Francisco are much larger than the "Hampton," and have a seating capacity for 2000 people each, with a fine promenade deck above the upper deck. The first two are fitted with beam engines driving side paddle-wheels, while the third has a screw propeller at each end of the vessel driven by vertical triple expansion engines. Each of them burns oil fuel only.

River and Sound Steamers.—For service on rivers, harbours and estuaries where the traffic is considerable, paddle-wheel vessels of limited speed are usually preferred, as possessing great maneuvring power, and therefore the capability of being brought alongside the landing-places with rapidity and safety. The paddle-wheel steamer
Excursion steamers working round the coast are frequently of smaller size than this vessel, but of less length and less extensive open promenade decks. A popular south coast pleasure steamer, built in 1900, is the paddle boat "Bournemouth Queen," shown in fig. 17 (p. 5). She is 227 ft. long, 24 ft. beam, 8 ft. 6 in. moulded depth, tonnage 355 tons gross, 139 tons net; she can carry 610 passengers on a No. 3 certificate and 704 on a No. 4 certificate. Her displacement at 5 ft. 2 in. load draught is 406 tons, and her speed 22 5/8 knots. Her engines, which began to ply on the Clyde in 1901, are 250 ft. long, 30 ft. wide, 10 ft. 6 in. deep to the main deck, and 17 ft. 9 in. to the promenade deck. They are the first passenger and cargo pumping steam turbine. Her speed is 20 knots. A second turbine steamer, the "Queen Alexandra," began to run on the Clyde in 1902; she is generally similar to the "King Edward," but larger and faster. She has an iron hull of the same length, beam and depth. The absence of vibration. They have been followed by others such as the "Kingfisher" on the Thames and the "Atalanta" on the Clyde. The latter being 227 ft. long, 27 ft. beam, depth 10 ft. 6 in., draught 5 ft. 2 in. (p. 5). Her engines, which are compound, but those employed elsewhere are usually built of steel. The "Hendrick Hudson" (fig. 18, Plate III.), built of steel in 1901, one of the most prosperous river boats of America, carries 500 passengers, for whom five decks, which have a breadth of 82 ft.—the full width over the paddle-boxes—are set apart. She is 380 ft. long, 45 ft. breadth moulded, 13 ft. 5 in. moulded depth, draught 8 ft. 6 in., freeboard amidships 5 ft. 2 in., tonnage gross 2817 tons. The old walking-beam type of arrangement of engines, for many years a distinctive feature of American river steamers, is in this vessel replaced by inclined, three-cylinder, compound, direct acting engines; her feathering paddle wheels are 24 ft. in diameter and 16 ft. 6 in. wide, and her speed is 22 knots.

Some of the boats of the Fall River Line are larger than the "Hendrick Hudson"; the "Priscilla," is 422 ft. long, of 7500 tons gross, and 4650 tons gross; the "Priscilla," built in 1904, is very similar to the "Puritan," but is 440 ft. long and 203 ft. depth moulded; her moulded breadth is 281 ft. and her decks extend to an extreme breadth of 28 ft.; the side wheel diameters are 35 ft. in diameter and 14 ft. wide, driven by inclined engines of 8900 I.H.P., and running at about 24 revolutions per minute maintain a speed of about 25 knots on service, still larger vessel of the same type, the "Commonwealth," which is 456 ft. overall, breadth of hull 55 ft., breadth of decks outside guards 96 ft., horse power 11,000. The "Puritan," "Priscilla," and "Commonwealth" run on night service only to Fall River through Long Island Sound, and the accommodation provided is very large; the "Priscilla," for instance, can sleep 1500 persons besides her crew of over 200. In these vessels the freeboard is carried to one deck higher than in the "Hendrick Hudson" and other passenger vessels, considerable care having been bestowed on their passage with safety; and they form a link between the fast river steamer and the fast cross-channel steamer. Similar passenger vessels of a similar type, "The Great Eastern Steam Packet of Cleveland" (fig. 19), built in 1908, of the following dimensions: length overall 404 ft., breadth hull proper 54 ft., width over paddle-boxes 92 ft. 6 in., depth 22 ft.; tonnage 4566 tons gross, 2403 tons net. She is fitted with divisional and fireproofing water-tight compartments and fitted with a cellular double bottom, and has a water chamber of 100 tons capacity to check rolling in a sea way. The engines are compound, three-cylinder, inclined, connected directly to cranks on the paddle-wheel shaft, the diameters of the cylinders being one of 54 in. and two of 82 in., and the stroke 8 ft.; eight single-ended cylindrical boilers fitted with Howden forced draught fans, and a single engine, 28 ft. 8 in. long, of 1250 I.H.P. attained 20 m. or 17-5 knots per hour without difficulty, developing about 6000 I.H.P. at 28 revolutions per minute.

Cross-Channel Steamers.—Cross-channel steamers are of a heavier type than those just described and have a higher freeboard and better sea-keeping qualities to be able to make passages across more exposed waters in all weathers. Over 200 such vessels are employed carrying mails, passengers, luggage, cattle and merchandise between Great Britain and Ireland, the Isle of Man, and continental ports. The mail service between Holyhead and Kingstown has for many years employed a number of splendid vessels of this class. The four paddle boats are: "Mary-i," "Mary-ii," "Mary-iii," and "Mary-naught;" built in 1860, were 337 ft. long, 35 ft. broad and 19 ft. deep; their speed was 18 knots with 6000 I.H.P. A vessel of the same type, but larger, named the "Ireland," was added to the fleet in 1862. In 1875, two more of the same new type were built, and received the same names as the four vessels built in 1860, which they have replaced. Their length is 350 ft., breadth 41 ft. 6 in., draught 14 ft. 6 in., displacement 2230 tons at 14 ft. 6 in. load draught. Their engines are of 9000 I.H.P. and sea-going speed 23 knots, over 24 knots having been reached on trial. They have sleeping-berths for 238 first-class and 124 second-class passengers, and large dining and other public rooms for general accommodation.

In recent years large numbers of very fine vessels of the cross-channel type have been built for other services. In 1903 the "Queen," the first turbine vessel for the Dover-Calais service, was built by Messrs Denny of Dumbarton; she is 310 ft. long and obtained 212 knots. In 1905 the "Invicta" was built of the same dimensions and her first trial by means of her turbines the speed was increased to 23 knots. In the same year the Midland Railway Company ordered three vessels each 330 ft. long, 42 ft. beam and 25 ft. 6 in. moulded depth; and a fourth similar but a foot wider. Two of these vessels, the "Antrim" and "Donegal," were fitted with four-cylinder triple-expansion engines driving twin screws; the third and fourth, the "Londoner I." and "Manxman," were fitted with turbines of 6000 and 8000 I.H.P. respectively. The cylinder and cylinders of the same dimensions. The "Antrim" did better than the "Donegal" and obtained a speed of 21-86 knots with very remarkable economy of turbine. The "Londoner I." built by Messrs Denny, is built by the "Manxman," driven by 23-12 knots, cross proving more economical than the "Antrim" at all speeds above 14 knots.

Other successful vessels of this class are the "St. George" and three sister vessels, 350 ft. long, 2500 tons displacement, 11,000 H.P. and 225 knots speed, built for the Great Western Railway Company for service from Fishguard to Rosslare; and the "Princess Elisabeth," of 24 knots, employed on the Dover-Ostend service. But all these vessels were surpassed by the "Ben-my-Chree," built at Barrow for the Isle of Man Steam Packet Company. She is 375 ft. long, 46 ft. beam, 18 ft. 6 in. moulded depth, carries 2549 passengers on a No. 2 certificate, and displaces 3353 tons at 13 ft. 5 in. draught. In trial she attained 255 knots on the measured mile, and maintained 241 knots for over 6 hours; on service she averages 24 knots at sea and 23 knots between the Liverpool landing stage and Douglas pier. Numbers of cross-channel steamers are owned by continental companies, among which the "Princesse Juliana" (fig. 20, Plate III.) and her two sister vessels, belonging to the Zeeland Steamship Company of Holland, run on the night service between Queenboro' and Barmouth. They are 350 ft. long, 42 ft. 6 in. beam, 16 ft. 4 in. depth, tonnage 2885 tons; they have four-cylinder triple-expansion engines of 10,000 H.P., and attained 224 knots on the mile, and 22 knots on a six hours run; they have excellent accommodation for 520 passengers.

For services on which relatively large cargoes and fewer passengers are carried smaller vessels of less speed are built, such as the "Kowant," built by Messrs D. & W. Henderson & Co. for the Laird Line serving between Glasgow and Dublin. She is 204 ft. long, 38 ft. beam, 17 ft. 6 in. depth moulded, has sleeping accommodation for 200 passengers, triple-expansion engines, and a speed of 16 knots.

In America a number of vessels of the cross-channel type have recently been built. One of these, the "Governor Cobb," 290 ft. long, 54 ft. broad, 20 ft. 6 in. moulded depth, 14 ft. draught loaded, was the first merchant vessel in America to be driven by turbines. She was followed by the "Harvard" and "Yale" of the same type, 407 ft. overall, 65 ft. extreme breadth, 16 ft. draught loaded; they carry 500 passengers and 600 tons freight on a night service between New York and Boston; turbines of 10,000 H.P. give them a speed of 25 knots. "Governor Cobb" is the first of the fast cross-channel vessels on the American coast.

The "Prince Rupert," "Princess Charlotte," &c., recently built for service on the Canadian coast, belong to this section. The first-cruiser (fig. 21, Plate III.) is 306 ft. long, 42 ft. beam, 24 ft. moulded depth. At 15 ft. draught her displacement is 3160 tons, of which 1000 tons is cargo; she is of 3370 tons gross, 6000 H.P. and her speed is 23 knots. The "Prince Rupert" and "Princess Charlotte" has obtained 19-2 knots on trial at 13 ft. 3 in. draught and 2622 tons displacement; both vessels can carry 220 first-class and a
Fig. 18.—American River Steamer Hendrick Hudson.

Fig. 20.—Cross-Channel Steamer Princes Juliana.

Fig. 21.—Canadian Coasting Steamer Prince Rupert.
FIG. 22.—Early Cunard Steamer Persia.

FIG. 23.—Inman Liner City of Rome.

FIG. 24.—Cunard Liner Campania.
large number of second-class passengers. The "Princess Charlotte" is of 36,000 tons and 20 knots speed.

The table has built and engined five two-channel vessels, which maintain a service between Japan and Korea. They are 335 ft. long, 45 ft. beam, gross tonnage 3200, displacement, at 17 ft. draught, 3880 tons. Parson's turbines of 8,500 H.P., made in Japan, are fitted and give a speed of 20 knots.

OCEAN LINERS.—The article on STEAMSHIP LINES gives an account of the rise of the great shipping companies. The steampships of 12,000 tons and upwards, given in the table on page 873, are shown in Table XI.

TABLE XI.—Vessels of 12,000 Tons and upwards built June 1910.

<table>
<thead>
<tr>
<th>Name</th>
<th>Gross Tonnage</th>
<th>Name</th>
<th>Gross Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>British</td>
<td></td>
<td>German</td>
<td></td>
</tr>
<tr>
<td>Mauretania</td>
<td>31,938</td>
<td>George Washington</td>
<td>25,570</td>
</tr>
<tr>
<td>Lusitania</td>
<td>31,592</td>
<td>Kaisers August Victoria</td>
<td>24,591</td>
</tr>
<tr>
<td>Adriatic</td>
<td>24,541</td>
<td>Amerika</td>
<td>26,622</td>
</tr>
<tr>
<td>Baltic</td>
<td>23,876</td>
<td>Kronprinzessin Cecilie</td>
<td>19,503</td>
</tr>
<tr>
<td>Cedric</td>
<td>21,035</td>
<td>Kaiser Wilhelm II</td>
<td>19,366</td>
</tr>
<tr>
<td>Celtic</td>
<td>20,994</td>
<td>President Lincoln</td>
<td>18,658</td>
</tr>
<tr>
<td>Caronia</td>
<td>19,678</td>
<td>President Grant</td>
<td>18,072</td>
</tr>
<tr>
<td>Carolina</td>
<td>19,524</td>
<td>Berlin</td>
<td>17,334</td>
</tr>
<tr>
<td>Oceania</td>
<td>17,274</td>
<td>Friedrich Wilhelm</td>
<td>17,085</td>
</tr>
<tr>
<td>Arctic</td>
<td>15,801</td>
<td>Cleveland</td>
<td>16,960</td>
</tr>
<tr>
<td>Laurentine</td>
<td>14,892</td>
<td>Deutschland</td>
<td>16,020</td>
</tr>
<tr>
<td>Megantic</td>
<td>14,874</td>
<td>Cincinnati</td>
<td>15,975</td>
</tr>
<tr>
<td>Nymphe</td>
<td>13,954</td>
<td>Kronprinz Wilhelm</td>
<td>15,393</td>
</tr>
<tr>
<td>Saxoula</td>
<td>13,481</td>
<td>Kaiser Wilhelm Grosse</td>
<td>14,349</td>
</tr>
<tr>
<td>Empress of Ireland</td>
<td>14,191</td>
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<td></td>
</tr>
<tr>
<td>Empress of Britain</td>
<td>14,189</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivernia</td>
<td>14,087</td>
<td></td>
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</tbody>
</table>

25 other vessels of 12,000-14,000 tons 317,358

42 vessels. Total 644,303

<table>
<thead>
<tr>
<th>Country</th>
<th>Ships in No.</th>
<th>Gross Tonnage</th>
<th>Average Tonnage</th>
</tr>
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<tbody>
<tr>
<td>British</td>
<td>42</td>
<td>344,303</td>
<td>8019</td>
</tr>
<tr>
<td>German</td>
<td>22</td>
<td>364,776</td>
<td>16578</td>
</tr>
<tr>
<td>Dutch</td>
<td>5</td>
<td>78,969</td>
<td>15793</td>
</tr>
<tr>
<td>Belgian</td>
<td>4</td>
<td>53,928</td>
<td>13482</td>
</tr>
<tr>
<td>American</td>
<td>3</td>
<td>47,996</td>
<td>15999</td>
</tr>
<tr>
<td>French</td>
<td>2</td>
<td>27,353</td>
<td>13676</td>
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<tr>
<td>Mongola</td>
<td>2</td>
<td>26,880</td>
<td>13440</td>
</tr>
<tr>
<td>Grand Total</td>
<td>80</td>
<td>1,243,932</td>
<td>15549</td>
</tr>
</tbody>
</table>

W. L. ["Titanic", launched October 10, 43,500 tons.]

* Sister vessel "Dakota" was lost on Japan coast March 1907.

A third vessel of same size was being completed.
TABLE XII.—Showing Dimensions, &c., of Famous Atlantic Liners, 1819-1910.

<table>
<thead>
<tr>
<th>Name of Ship</th>
<th>Owner</th>
<th>When Built</th>
<th>Where Built</th>
<th>Material</th>
<th>Length between perpendiculars (Feet)</th>
<th>Breadth (Feet)</th>
<th>Depth (Feet)</th>
<th>Displacement (Tons)</th>
<th>Gross Tonnage</th>
<th>Speed</th>
<th>How Propelled</th>
<th>Steam Pressure per Square Inch</th>
<th>Horse-Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannah</td>
<td>Captain Stevens</td>
<td>1819</td>
<td>New York</td>
<td>Wood</td>
<td>150.0 x 40.0 x 14.5</td>
<td></td>
<td></td>
<td>3200.0</td>
<td></td>
<td>6</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Royal Sovereign</td>
<td>I. M. Rawlinson Co.</td>
<td>1838</td>
<td>Liverpool</td>
<td>Iron</td>
<td>145.0 x 37.0 x 10.5</td>
<td></td>
<td></td>
<td>2100.0</td>
<td></td>
<td>5.5</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>America</td>
<td>Captain Stevens</td>
<td>1843</td>
<td>New York</td>
<td>Wood</td>
<td>140.0 x 35.0 x 12.0</td>
<td></td>
<td></td>
<td>2500.0</td>
<td></td>
<td>6</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Great Western</td>
<td>Captain Stevens</td>
<td>1854</td>
<td>Liverpool</td>
<td>Iron</td>
<td>130.0 x 30.0 x 10.0</td>
<td></td>
<td></td>
<td>1800.0</td>
<td></td>
<td>5.5</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>British Queen</td>
<td>Captain Stevens</td>
<td>1856</td>
<td>Liverpool</td>
<td>Iron</td>
<td>125.0 x 28.0 x 9.0</td>
<td></td>
<td></td>
<td>1500.0</td>
<td></td>
<td>5.0</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Britannia</td>
<td>Captain Stevens</td>
<td>1857</td>
<td>Liverpool</td>
<td>Iron</td>
<td>120.0 x 26.0 x 8.0</td>
<td></td>
<td></td>
<td>1200.0</td>
<td></td>
<td>4.5</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cunardian</td>
<td>Captain Stevens</td>
<td>1859</td>
<td>Liverpool</td>
<td>Iron</td>
<td>115.0 x 24.0 x 7.0</td>
<td></td>
<td></td>
<td>1000.0</td>
<td></td>
<td>4.0</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Great Eastern</td>
<td>Captain Stevens</td>
<td>1860</td>
<td>Liverpool</td>
<td>Iron</td>
<td>110.0 x 22.0 x 6.0</td>
<td></td>
<td></td>
<td>800.0</td>
<td></td>
<td>3.0</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Great Eastern</td>
<td>Captain Stevens</td>
<td>1861</td>
<td>Liverpool</td>
<td>Iron</td>
<td>105.0 x 20.0 x 5.0</td>
<td></td>
<td></td>
<td>600.0</td>
<td></td>
<td>3.0</td>
<td>Paddles</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>City of Paris</td>
<td>Captain Stevens</td>
<td>1862</td>
<td>Liverpool</td>
<td>Iron</td>
<td>100.0 x 18.0 x 4.0</td>
<td></td>
<td></td>
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<td>Captain Stevens</td>
<td>1863</td>
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<td>Iron</td>
<td>95.0 x 16.0 x 3.5</td>
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<td>Liverpool</td>
<td>Iron</td>
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<td>Iron</td>
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<td></td>
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<td>3.0</td>
<td>Paddles</td>
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<td>Liverpool</td>
<td>Iron</td>
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<td>Paddles</td>
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<tr>
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<td>1870</td>
<td>Liverpool</td>
<td>Iron</td>
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<td>3.0</td>
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<td>Captain Stevens</td>
<td>1871</td>
<td>Liverpool</td>
<td>Iron</td>
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<td>3.0</td>
<td>Paddles</td>
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The Cunard Company, which was started in 1825, was in control of the Atlantic Transport Company, which was typical of vessels on the Atlantic route carrying a large cargo together with a limited number of passengers. One class of thirty-two first-class passengers, and carried with excellent accommodation. When fully loaded the displacement was over 26,000 tons and the speed 16 knots; the horse-power required being only a sixth of that of the fast Cunarders. To large numbers of passengers the additional period on the voyage is no disadvantage, while the transport of a large cargo at the relatively high speed of 16 knots is a great advantage. **Canadian Liners.**—With the increasing trade between Europe and Canada the direct Canadian liners increased in numbers and in importance, and now bear favourable comparison with the ships running between Europe and the United States. The "Victorian" and "Virginian" of the Allan line, built in 1894 and 1905 and plying between Liverpool and Montreal, were the first ocean liners to be fitted with Parsons' turbines; they are 520 ft. long, 55 ft. beam, 38 ft. moulded depth and 10,629 tons gross; and they can carry 1,500 passengers and a large cargo of a speed at 17 knots. They were ordered in 1893 by the Empress of Britain "and Empire of Ireland," built by the Fairfield Company for the Canadian Pacific Railway Company; they are 570 ft. long over all, 54 ft. between perpendiculars, 56 ft. 6 in. beam, 36 ft. 8 in. depth moulded, tonnage 14,080. The large Canadian lines have been provided with quadruple-expansion engines of 18,000 I.H.P. fitted and a speed of over 20 knots was obtained on trial. Excellent accommodation is provided for 1,850 passengers; and a considerable quantity of meat can be carried in insulated holds provided with refrigerating arrangements, besides a large general cargo, a total of 6,500 tons
FIG. 25.—Hamburg-American Liner *Deutschland*.

FIG. 30.—White Star Liner *Oceanic*.
FIG. 26.—North German Lloyd Liner Kronprincessin Cecilie.

FIG. 27.—Cunard Liner Mauretania, with Turbinia alongside.
of cargo being carried in addition to the coals, water and stores required for the passage across the Atlantic.

In 1908 the "Laurentic" and "Megantic," were built by Messrs Harland & Wolff. Each holds 41,570 tons dead-weight, 41,475 tons gross, 215 ft. long, 58 ft. 4 in. beam, 36 ft. 7 in. moulded depth, and 12,173 tons of iron. They are fitted with reciprocating engines of 50,000 I.H.P. and 600 ft. long, of 12 cylinders, and 22,900 l.h.p. supplied by 2 sets of Parsons turbines of 7,500 H.P., each, by the Northumberland Shipbuilding Company. They were built in 1908 and are 459 ft. long, breadth 60 ft., depth 38 ft., tonnage 11,150 tons gross, displacement 15,000 tons at 22 ft. 6 in.draught. Parsons turbines of 18,000 H.P. are fitted, driving three screw propellers of 20 ft. 1 in., while 18 ft. has been maintained by the "Royal Edward" from Bristol to Quebec. Accommodation is provided for over 1000 passengers. Still larger and faster vessels were being arranged for in 1910.

**Emigrant Vessels.**—Many vessels on the Atlantic Service are fitted up for carrying emigrants either with or without other passengers; they are known as 'emigrant' or 'emigrant and cargo' ships. Those built for such services include the "Germania," built by the Northumberland Shipbuilding Company in 1909 for Austrian owners. Her length is 415 ft., breadth 58 ft., depth 38 ft., tonnage 18,600 tons. The "Hunter" built in 1908 for the Italian emigrant trade to Canada, is 454 ft. long over all, beam 54 ft., depth 29 ft., she is 7900 tons gross and can carry 8600 tons dead-weight as well as over 1000 emigrants. The "Ancona," built in 1908 by Messrs. Workman, Clark & Co. for the Italian emigrant trade to the United States, is 500 ft. long, 8188 tons gross, 7500 I.H.P.; she can carry 2500 emigrants and a large cargo, and in addition 60 first-class and 150 second-class cabins on a continuous deck. Some of the finest vessels carrying emigrants are the ships of the "Cleveland" type belonging to the Hamburg-American Company. The "Cleveland" is 555 ft. long, 65 ft. breadth moulded, 46 ft. 8 in. depth, 27,000 tons displacement on a draught of 30 ft. 8 in. 13,000 tons dead-weight capacity, about 17,000 tons gross and 10,000 tons net, with machinery of 9300 I.H.P., and 16 knots speed. She can carry 250 first-class, 392 second-class, 494 third-class and 2064 fourth-class or emigrant passengers, making with a crew of 360 a total of 3560 persons, and has cold storage spaces of 10,000 cub. ft. for provisions, and 30,000 cub. ft. for cargo.

**Lines on other Routes.**—Only a few typical vessels engaged on other routes can be mentioned here. The Royal Mail Company’s "Avon," (fig. 33, Plate VIII), trading to the West Indies and round South America to the Pacific coasts, is 520 ft. long, 62 ft. 4 in. beam, 27 ft. 9 in. moulded depth, 18,470 tons displacement at 28 ft. draught, 12,079 tons gross, and obtains 18-76 knots on trial with 13,700 I.H.P. 1150 passengers can be carried as well as some 7000 tons of cargo. The Malaja," which in 1910 was being built for the P. & O. Company, is a larger ship than the "Oriental," 540 ft. long, 62 ft. 4 in. breadth, 12,500 tons gross displacement at 26 ft. draught, 7000 tons dead-weight, and carries 6,000 passengers and 3000 tons of cargo.

**Special Vessels.**—Many vessels are built for special and exceptional purposes, and cannot be classed with either ordinary cargo or passenger vessels. Amongst these may be included dredgers, train-carrying ferry-boats, ice-breakers, surveying vessels, lightships, fishing-vessels, trawlers, and cruisers. The "Eider," of 1490 tons gross, built for the coastguard in 1899, was fitted up with refrigerating machinery, insulated holds and cooling appliances so as to keep the fruit, vegetables or meat at the required temperature, and at the same time maintain a proper degree of humidity of the air. The number and size of vessels engaged in these trades continue to increase, and the enormous volume of the trade may be indicated by the fact that the "Eider" carried 10,000 tons of frozen fish in 1899. The list of vessels fitted for that particular trade.

A typical vessel is the "Highland Laddie," built for the Argentine trade in 1909, 420 ft. long, 56 ft. beam, 37 ft. 6 in. moulded depth to shelter deck, 7907 tons gross displacement at 28 ft. 6 in. draught, 12,500 I.H.P., and carries 1150 passengers in well-fitted and comfortable apartments amidships, and has insulated cargo-holds of 343,000 cub. ft. capacity. To control the temperature of the chilled beef or frozen mutton in these holds she is fitted with powerful refrigerating machinery, and cooled brine is circulated through tubes lining the sides and ceilings of the holds, some 20 miles of pipe being so used. The "Ruahine," built in 1909 for the New Zealand trade, is similarly fitted; she is 480 ft. long, 60 ft. broad, 44 ft. depth moulded, speed on trial 15-9 knots. The "Port Royal" of the Elder Dempster Line has a speed of 15 knots, and is fitted to carry 4000 tons of cargo as well as provisions, besides pineapples, oranges and other tropical and semi-tropical fruits. The fruit is kept at the desired temperature by means of large volumes of cold dry air circulated through the holds, and the air is maintained at 40° Fahrenheit, and the temperature of the fruit is kept below 60°, and the equipment is of the latest design. The "Tortuga," a vessel 390 ft. long, 48 ft. beam, 29 ft. 6 in. depth, 4200 tons gross, built for Messrs. Swan, Hunter & Wigham Richardson, has a storage capacity of 24 of these "Port Royal."
a distance of 16 m. Fig. 36 shows the profile and deck plans of this vessel, for which, with other particulars of the Danish ferries, we are indebted to International Marine Engineering. Particulars of the most important Danish train-carrying vessels are given in Table XIII.

The longest ferry, from Gjøder to Warnemünde, traverses a distance of 48 m. across the lower part of the Baltic Sea, and on this ferry the "Prinsesse Alexandrine" and "Prins Christian", are employed. Two other vessels belonging to the Prussian government also work on this ferry, and the great success of the service led to the Swedish and German governments undertaking a direct ferry service between Sweden and Germany from Trelleborg to Sassnitz, a distance of 65 m. For this service the "Drøtning-Victoria" (fig. 37, Plate IX.) was built by Messrs Swan, Hunter, Wigham Richardson & Co. Her dimensions are: length 370 ft. over all, 350 ft. between perpendiculars, breadth extreme 53 ft. 6 in., 3050 tons gross, displacement 4270 tons dead-weight capacity, 600 tons at a draught of 16 ft. 6 in., 5400 I.H.P. and speed 16½ knots. Two rail tracks are provided, the trains are shipped at the stern and are completely protected from the weather when on board, the bows of the ship being completed as usual for a sea-going vessel; ten full-sized passenger or sleeping carriages can be taken, or eighteen

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Table XIII.

| Name of Ferry | Type | Lengths | Breadth | Depth | Draught | Displac- | Tonnage | Speed | Revolu- |
|---------------|------|---------|---------|-------|---------|ment- | Gross | Knots | tions per |
|               |      | Over all | On L. W. L. | Moulded | Over Guarded | Tons |        |        | minute. |
| Christian IX. |      | 293' 9" | 290' 0" | 48' 6" | 58' 0" | 18' 7" | 12' 6" | 2600 | 1504 | 598 | 13-0 | 36 |
| Prinsesse     |      | 333' 6" | 333' 6" | 36' 0" | 61' 6" | 18' 9" | 12' 6" | 2425 | 1733 | 686-4 | 13-8 | 124 |
| Alexandrine   |      | 284' 9" | 281' 0" | 41' 6" | 57' 9" | 22' 6" | 14' 5" | 2065 | 1824 | 686-0 | 13-75 | 33 |
| Prins Christian|    | 252' 6" | 250' 0" | 34' 0" | 58' 0" | 16' 0" | 9' 6" | 1267 | 971-0 | 436-0 | 12-25 | 36 |
| København     |      | 278' 0" | 272' 0" | 34' 0" | 58' 0" | 16' 9" | 10' 0" | 1455 | 1091| 425-0 | 12-5 | 36 |
| Helsingborg   |      | 180' 0" | 177' 0" | 32' 0" | 43' 0" | 14' 6" | 10' 3" | 720 | 530-0 | 187-0 | 0-10 | 138 |
| Marie         |      | 204' 6" | 199' 3" | 31' 6" | 43' 0" | 13' 0" | 9' 0" | 950 | 500-0 | 250-0 | 0-10 | 125  |
| Valdemar      |      | 144' 0" | 140' 0" | 31' 6" | 43' 0" | 13' 0" | 9' 0" | 550 | 361-0 | 129-0 | 0-10 | 134  |
| Lille Bælt    |      | 140' 6" | 139' 0" | 26' 0" | 44' 0" | 11' 6" | 8' 0" | 399 | 306-0 | 125-0 | 8-0 | 34  |
| Ingeborg      |      | 168' 9" | 167' 0" | 26' 0" | 44' 0" | 12' 0" | 7' 0" | 440 | 343-0 | 136-0 | 10-25 | 37  |
Fig. 29.—American Liner St. Paul.

Fig. 31.—White Star Liner Adriatic.

Fig. 32.—Hamburg-American Liner Kaiserin Auguste Victoria.
PLATE VIII.

SHIP

Fig. 33.—Royal Mail Steamer Avon.

Fig. 34.—Union-Castle Liner Kenilworth Castle.

Fig. 35.—Orient Liner Osterley.
goods wagons. Ballast tanks are provided, and powerful centrifugal pumps fitted, so that the trim of the vessel can be adjusted as necessary while embarking and disembarking to keep her, as built specially for the purpose, so that she can be driven through ice during the winter months.

In 1883 the "Solano," a large train ferry 406 ft. long, was built by Messrs Harlan & Hollingsworth of Wilmington, Delaware, to run between Bernicia and Porto Costa in connexion with the Central Pacific railway. In 1899 the American railways employed nearly 200 ferries, with an aggregate capacity of over 2000 large wagons, and by the end of the year the capacity of the ferries placed in service had increased to about three times those amounts, on Lake Michigan alone nine such ferries being at work.

Two other interesting examples of train ferries were built on the Tyne by Sir W. G. Armstrong, Whitworth & Co., Ltd., in 1895 and 1896, the former for service on the river Volga, and the latter for service on Lake Baikal in Siberia. The Volga has a rise and fall of no less than 40 ft. between spring and midsummer, and the ice upon it in winter is usually 2 ft., and sometimes 3 ft., thick, thus the problem presented considerable difficulties, which were increased by the fact that the locks of the Marinsky canal system, through which all vessels bound for the Volga must pass, are of such dimensions that it was impossible for vessels of sufficient size to be got through in one piece. It was decided to use two vessels to do the work, the first to act only as an ice-breaker, and the other to act only as a train-carrier. The ice-breaker was built in two pieces, the parts being at the longitudinal middle-line plane of the vessel. This was satisfactorily carried out by means of a double longitudinal middle-line keel, at the whole of the vessel was divided into halves, and the ice at the canal she was divided into halves, and was joined up again after passing through the last of the locks. Her dimensions were: length 147 ft. 6 in., beam 55 ft. 6 in., depth 16 ft. 1 in., fitted with compound engines and twin screws. The ferry steamer itself (fig. 38, Plate IX.) was 252 ft. long, of 55 ft. 6 in. beam, and of 14 ft. 6 in. depth. Four lines of rails were laid upon her deck, sufficient to accommodate eight sets of trucks or carriages, which are shown in position in the figure. The difficulty presented by the great difference in the river level was overcome by an arrangement of hydraulic hoists, placed at the bow, by which two trucks could be lifted at the same time, and the ice broken, and by having lines of rails at the landing-stages at two levels. The vessel was fitted with twin screws and compound engines, which gave her a speed of 9 knots. It was found necessary to divide her into four parts for the passage through the canal locks; the divisions were made at the longitudinal middle-line plane, and the parts were also divided when the parts were aloft.

The Lake Baikal Ferry was built for carrying trains across the lake in connexion with the Siberian railway. For more than half the year the lake is frozen over to a considerable thickness, and in this case the vessel must of necessity be herself a powerful ice-breaker as well as a ferry steamer. Her dimensions are: length 290 ft., beam 57 ft., draught under ordinary conditions 18 ft. 6 in., and displacement 4700 tons. The hull is closely subdivided for additional safety in case of perforation. She has three sets of triple-expansion engines, working three independent screw propellers, two placed fore and one aft in ordinary twin-screw ships, and one placed at the forward extremity for the purpose of disturbing the water under the ice, thus assisting the heavy cast-steel stem and armoured bow to break up the solid field-ice which the vessel has to encounter. The complete structure was: first erected on the Tyne, then taken to pieces and shipped to St. Petersburg; from thence its numerous parts were carried to what was at that time the terminus of the railway on the Volga, thence they were conveyed on sledges, and there the ship was re-erected and launched. The boilers constituted the heaviest individual pieces thus transported, as the weight of each could not be reduced below 20 tons.

An interesting example of a modern river train ferry is the "Fabius," built by Messrs G. Rennie & Co., Greenock, in 1909, for service in southern Nigeria, where the river is 2 m. across. She is similar in form to the Lake Baikal vessels, except that she has a top speed of 6 in., depth 10 ft., draught 5 ft. 6 in., speed 7 knots. She can carry six railway carriages and freight and passengers up to a total of 200 tons.

Ice-Breakers.—Steamboats for breaking a passage through frozen waters date from an early period; one is spoken of as early as 1831. The "Ermack" (fig. 39, Plate IX.), built in 1897, was specially intended for the Arctic regions. Her dimensions are: length 320 ft., breadth 71 ft., depth to the upper deck 42 ft. 6 in., and displacement 8000 tons; her engines develop 8000 I.H.P., giving her a speed of 15 knots.

Her general outline is shown in fig. 40, from which it will be seen that her bow slopes upwards from below, so as to enable her to run up on to the ice and bring her weight to bear in breaking it. The "Ermack" is specially intended for the Arctic regions, and was the first vessel of her class to work in the winter of 1898-1899, when she steamed through the Baltic to Kronstadt, crushing the ice with comparative ease.

In many places round the coast the safe navigation of ships is assisted by vessels called lightships, moored in positions where lighthouses cannot well be built. Around the southern portion of Great Britain these vessels are maintained by the Trinity Corporation (see LIGHTHOUSE).

Fishing Vessels.—It is not many years since a few old paddle tugs were fitted up with fishing appliances. They proved very profitable, and the experiment led to the building and fitting out of steam vessels specially designed for such employment. Screw steam trawlers (see TRAWL) or other fishing-boats are among the vessels most frequently met with round the British coasts.

The "Ermack" was built in 1897 by Messrs Vickers, Sons & Maxim for the Pacific Railway Company as an ice-breaker for the Siberian railway, but her engines were of 8000 I.H.P., giving her a speed of 15 knots. A screw steam vessel laid down in 1895 was the "Siberian Queen," 230 ft. long, 5500 tons, displacement, 71 knots speed, purchased by the Admiralty in 1895, and employed in Eastern waters. The vessels built for the purpose are the "Wong," 145 ft. long, 415 tons displacement, 10 knots speed, built in 1892; and the "Egerton," 155 ft. long, 545 tons displacement, 10 knots speed, built in 1888; both these vessels are propelled by paddle wheels, and both are composite build. The "Dart," a steel yacht 130 ft. long, 500 tons displacement, 71 knots speed, purchased by the Admiralty in 1888, was in 1910 employed by the New South Wales government. The Canadian government has provided vessels such as the "Cartier," a twin-screw steel vessel, built in 1899, 164 ft. long, 29 ft. beam, 648 tons gross and 117 knots speed, for survey work on the coast of British Columbia; the British government had the steel single-screw vessel "Investigator" built by Messrs Vickers, Sons & Maxim for survey of Indian waters; she is 204 ft. long, 33 ft. beam, 15 ft. 3 in. moulded depth, has a displacement of 1700 tons and a speed of 13 knots.

The United States government has provided the screw steam vessel "Carnegie," 128 ft. long, 35 ft. beam, 12 ft. 7 in. draught, 568 tons displacement.

Lightships.—In many places round the coast the safe navigation of ships is assisted by vessels called lightships, moored in positions where lighthouses cannot well be built. Around the southern portion of Great Britain these vessels are maintained by the Trinity Corporation (see LIGHTHOUSE).
SHIP

The coastguard cruisers not only watch the coast but proceed to the fishery grounds to act as international marine police. They are controlled by an admiral, with headquarters at 66 Queen Victoria Street, London, who in 1910 had at his disposal the torpedo gunboats "I," "II," "John Player," "Compagnie des Ponts et Chaussées" "Ringdove," and "Thrush;" the vessels "Colleen," "Jula," and "Fanny," purchased and fitted up for the purpose. The "Fanny" is 28 ft. long by 10 ft. beam, and is specially built for the service. The "Colleen," a wooden vessel built in 1869 and propelled by horizontal trunk engines of 250 I.H.P., is 145 ft. long and 415 tons displacement, and at one time the engines gave a speed of 15 knots. The "Fanny," built by M. and S. White, has a length of 150 ft., beam of 18 ft. 10 in., draught 12 ft., and gross tonnage 230 tons; and the "Norma," built in 1909, is 154 ft. long, 44 ft. 6 in. beam, and 457 tons displacement. In 1908 the Irish Fisheries Board procured the small cruiser "Helga," built by the Dublin Dockyard Co., 155 ft. long, 24 ft. 6 in. beam, 13 ft. 3 in. moulded depth; she obtained a speed of 14.1 knots on trial with a total deadweight of 140 tons carried.

Salvage and Fire Vessels.—Several private companies maintain special vessels which are available for assistance of vessels in distress, salvage work both in and out of port, and work at sea. Some are fitted with derricks and winches for hoisting out cargo and ships fittings, and provided with powerful steam or electrically driven pumps and special hoses for pumping out flooded compartments of vessels. Others are fitted with pumps capable of delivering 5000 gallons a minute for salvage and wreck-raising; others have been built and fitted for salvage and fire-fighting.

A fireboat at Elswick is 45 ft. long, 11 ft. beam and 3 ft. draught; she is fitted with a Merryweather quick-steaming boiler, and engines arranged to drive the boat at 8 knots, or as an alternative to pump out vessels on either side, or to pump from the river for fire purposes and deliver up to 1500 gallons a minute. Many small vessels of this character are provided for harbours, docks and shipbuilding works. One of the most powerful in England is that built for the Manchester Ship Canal. This boat is 90 ft. long, and is fitted with high speed salvage pumps capable of clearing 9000 gallons a minute as well as independent fire service pumps capable of delivering 4000 gallons per minute at a pressure of 150 lb per square inch. Fire and salvage work is of course carried on by the ships of the Pacific Marine of San Francisco, New York and Chicago. Two fireboats of special design were built in 1908 for Chicago. They are 120 ft. long over all, 28 ft. beam, 15 ft. moulded depth, and 9 ft. draught. Powerful turbine pumps are driven by two Curtis steam turbines on the same shafts, which also carry 275-volt 200-kilowatt electric motors for operating the propeller motors. The pumps can be worked so as to deliver 4500 gallons per minute at 300 lb per sq. in., 9000 gallons at 100 lb per sq. in. and 13,000 gallons at 60 lb per sq. in. The speed of the turbines and pumps is 1700 revolutions per minute. Twin screws are fitted and each is driven by a motor arranged to develop 2000 horse-power. In this boat, as well as in the "Ocean," a steam electric light, search-light, and steam steering gear. New York has ten powerful fireboats, several of which can throw over 10,000 gallons of water per minute. The "Beta" of the London Fire Brigade is the only steam fireboat ever fitted with electric signalling equipment. It is 75 ft. long, 27 ft. 4 in. beam, 11 ft. draught, 615 tons displacement, 1400 I.H.P., giving 131 knots with twin screws. The latest paddle tugs of the "Grappler" type are 152 ft. long, 28 ft. beam moulded, 53 ft. by 22 ft. amidships. The power for the 1250 I.H.P. is developed by inclined compound engines fitted with means to work the wheels independently or together as desired. 1250 I.H.P. gives a speed of 12 knots. The "Grappler" is of the following dimensions: length over all 170 ft., beam 27 ft. 6 in., depth of hold 13 ft. 9 in., displacement 576 tons, registered tonnage 334 tons gross, 227 tons net, and Thames moulded depth, and displaces 795 tons at a draught of 12 ft. 41 in.; a single screw driven by triple-expansion engines of 1370 I.H.P. gave a speed of 13 knots on trial. (See LIFEBOAT.)

Coal-Bunkers.—When dry docks and large workshops are often employed for towing, and small tugs are also built for this purpose, but on swift, large rivers the tugs are often of considerable power. The tug "Little John," built by Messrs Yarrow for service on the river Hooghly, is 300 ft. long, 40 ft. beam, and 13 ft. 6 in. moulded depth, and displaces about 160 tons. Two screws are fitted working in tunnels, and this little vessel has towed five barges, weighing with their loads 247 tons, at a speed of 5 knots. A river tug of this kind is the "Shooting Star," 3 bes. 6 ft. 8 in. by 13 ft. 6 in., which works in the waters of the Upper Yangtze, and named the "Shutting," is 150 ft. long, 15 ft. beam, with a depth of 6 ft. 6 in., fitted with compound engines developing about 400 I.H.P., and has a displacement of about 95 tons in tunnels (as the draught of the vessel is very limited) and giving a speed of about 11 knots. After trial at Southampton the tug was taken to pieces, the sections shipped to China, with sections of a large barge, and put together and completed at Kiangan. This was the first steamer to attempt regular passages in these troubled waters, and steamer and consort performed their first voyage with success. The American river tug "Spragge" is 318 ft. long overall, 64 ft. 8 in. width, depth amidships 7 ft., displacement 2200 tons, registered tonnage 1479. She is fitted with a stern wheel 40 ft. in diameter and 40 ft. in width, driven by two screws 24 ft. by 22 ft. 4 in. driving force 600 I.H.P. The "Schuyler" was 280 ft. long, 63 ft. in. diameter; and at 93 revolutions per minute her horse-power is estimated at 1500 I.H.P. In 1907 she towed on one occasion 56 coal boats, each 180 ft. long and 26 ft. wide, loaded with 380 tons each, and average speed was 10 miles an hour. On the American rivers the superiority of the screw propeller is, however, now realized, and shallow-draft tow-boats with two screws are in general use. Such tugs have been built by Messrs Cox & Co. of Falmouth for work in the North-Eastern Railway Docks on the Tyne. Great power in small length was required, and engines of 1000 I.H.P. are installed in vessels 75 ft. long, 26 ft. beam, 12 ft. 6 in. deep, having a displacement of 120 tons; twin screws set widely apart being provided to give manoeuvring power. Tugs in common use in harbour and coasting services are often 90 ft. to 120 ft. in length, 20 to 25 ft. beam, 10 to 12 ft. draught, with 800 to 1200 I.H.P. The "Baird's Buoy" is 100 ft. long, 26 ft. beam, 10 ft. draught, 200 I.H.P., and has some 10,000 tons displacement. The "Baird's Buoy" is a steel tug built by the Bath Iron Works for the American coal trade is 165 ft. over all and 1045 tons displacement, with triple-expansion engines of 900 I.H.P. The "Cornell" is one of the largest America sea-going tugs; when towing she has developed 1300 I.H.P. at 97 revolutions, and when running light 1900 I.H.P. at 135 revolutions and a speed of 15 knots. The "Hearty," built to go out under her own steam to work in the Humber estuary and W. of the Thames, is 182 ft. long, 30 ft. 4 in. beam, 11 ft. draught, 1000 I.H.P., giving 133 knots with twin screws. The latest paddle tugs of the "Grappler" type are 152 ft. long, 28 ft. beam moulded, 53 ft. by 22 ft. amidships. The 1250 I.H.P. is developed by inclined compound engines fitted with means to work the wheels independently or together as desired. 1250 I.H.P. gives a speed of 12 knots. The "Grappler" is of the following dimensions: length over all 170 ft., beam 27 ft. 6 in., depth of hold 13 ft. 9 in. displacement 576 tons, registered tonnage 334 tons gross, 227 tons net, and Thames
Fig. 38.—River Volga Train Ferry.

Fig. 37.—Sea-going Train Ferry Steamer Dröttning Victoria.

Fig. 39.—Ice-breaking Steamer Ermack.
yacht measurement 532 tons; she is rigged as a three-masted schooner; her original sail area, 9200 sq. ft., has recently been reduced to 7950 sq. ft.; her hull is composite, the frames being of iron and the planking of steel. She was built in 1900. Vessels of this class have been built in this country from 1900 to 1943, totalling 2098 tons. Thames Y.M., built in 1910; and 1607 tons gross and 1571 tons Thames, M.Y., built in 1908. These two vessels and many others of similar types are American-owned. The yacht "Emerald," of 750 tons yacht measurement, was built in 1913, had a longer speed, and was fitted with triple-screw propulsers and was built in 1939, and was the first turbine steamer to be classed in any registry. The "Atalanta" (ex Lorenz), of 1398 tons Y.M., built in 1902, was similarly fitted. The "Caribbean", of 888 uniform, was chartered by the U.S. Navy in May 1933, and was the first turbine steamer to be classed in any registry. These two vessels, the "Atalanta" and "Caribbean", were the first to be fitted with turbines and to be completed.

The royal yachts of European sovereigns are the largest yachts yet built. They include the "Empress of Russia" (fig. 2, Plate XII), of 3720 tons and 5600 H.P., built in 1888; the imperial German yacht "Hohenzollern" (fig. 43, Plate XI), of 3773 tons Y.M. and 2950 H.P., built in 1891; the "Impatience," of 1664 tons Y.M., built in 1894; the imperial Russian yacht "Standart," of 4534 tons Y.M. and 11,000 H.P., built in 1895; and the British royal yachts, "Victoria and Albert," of 5005 tons Y.M. and 4900 H.P., built in 1901, and the "Minesty," of 2157 tons Y.M. and 4500 H.P., built in 1907.

Propulsion by Electricity.—In 1888 Messrs Siemens & Co. fitted a launch, 40 ft. 6 in. long, 5 ft. 6 in. beam, and 5 ft. 9 in. deep, with an electric motor capable of giving a speed of eight knots. The "Ravenscroft," of 12 tons, was also driven by the electric motor and operated by a battery of secondary cells, and at a displacement of 5 tons a speed of 9 knots was obtained. A launch 25 ft. long, provided with an electric motor capable of giving a speed of 5 knots, was supplied by Messrs "Victoria and Albert" in 1903. A number of other electric launches similarly fitted have been built chiefly for river service, the batteries being recharged from shore stations from time to time; but the method has not been extensively adopted, except in submarines. In most cases the submarine's secondary battery has been used for propulsion on the surface as well as when submerged, being recharged from shore by being set aside. These small vessels they are used only for propulsion when submerged, the engines fitted for propulsion on the surface being arranged to drive dynamos for recharging the cells. In a number of small vessels and oil-tank steamers electric motors are fitted for driving the propeller and supplied with current from dynamos driven by steam turbines or internal combustion engines.

Propulsion by Naphtha Engines.—In 1888 several launches were being built in the United States which petroleum spirit was used for fuel in place of coal, and also as an expanding agent for driving the propeller machinery in place of steam. A number of these boats were afterward built in England and America as launches for the British and American navies. Further particulars of these boats will be found in a paper read by Mr Yarrow before the Institute of Naval Architects in 1888.

Propulsion by Internal Combustion Engines.—Experiments have been made at various times with machinery in which the fuel is burnt or exploded in the engine itself without having recourse to the transfer of energy by means of an expanding and condensing agent, such as steam or naphtha, and by these experiments the modern internal combustion engine has been slowly evolved and adapted for marine propulsion. In 1680 an engine was patented in which gunpowder was exploded, and the engine was operated by the vacuum produced by the cooling of the gases; in 1794 an engine was patented in which the explosion of turpentine spirit drove the pistons forward, and about 1823 a gas-driven vessel was run on the river Thames. In 1837 Mr. H. Maudslay fitted a gas engine for use in factories, &c., on shore, and petrol engines for driving motor cars, &c., and since the beginning of the present century similar engines have been developed and produced in considerable numbers, especially in the United States, some of the vessels being as large as 800 tons gross. Such vessels may be considered in three groups. (1) High-speed racing boats, pleasure boats of various sizes for service on river and in harbours, fireboats, patrol boats and launches for river work, yachts' tenders and sea-going yachts of light scantlings, in which highly volatile and readily exploded fuels such as gasoline, petrol, paraffin, and illuminating oil are used. (2) Engines in which the weight of the engine is of no great importance, such as barges for use on rivers and canals, ferry-boats, small tug-boats, slow-speed cargo vessels, trawlers, and similar vessels. (3) Engines using kerosene or paraffin, as well as oil fuels of greater specific gravity, and of higher flash-point and requiring a higher temperature for evaporation; in some cases these low-speed vessels have been fitted with engines using gas produced from anthracite coal, prepared charcoal and heavy oil. (3) Vessels in which auxiliary propelling machinery of low power is fitted; they include a large number of fishing vessels, smaller numbers of coastering sloops, lifeboats and a few large vessels; in these both light and heavy oils and gas have been employed. As examples of class (1), there have been mentioned the racing boats "Ursula," built at Cowes in 1908, 49 ft. 6 in. long, 5 tons total weight, fitted with petrol engines of 800 H.P., driving twin screws at about 920 revolutions, and giving a speed of 38½ knots; and "Crescent," built at Cowes in 1909, 45 ft. 6 in. long, 5½ tons displacement, fitted with two petrol engines of 300 H.P., giving 26 ft. long, 65 H.P. and over 30 knots speed; the American yacht "Kalinda," 83 ft. long, 14 ft. 3 in. beam, 3 ft. 9 in. draught; the "Quicksilver," 41 ft. long, 11 ft. beam, 38 tons gross, 5 ft. draught and 160 H.P.; and the "Cleopatra," 41 ft. long, 11 ft. beam, 38 tons gross, 5 ft. draught and 160 H.P., built at Cowes in 1905 and navigated under her own power to St Petersburg.

Examples of class (2) are the double-ended ferry-boat "Miss Virginia," built at New York in 1886, with two engines of 500 H.P., each driving a screw, 9 ft. deep, 9 ft. draught, 150 tons displacement, fitted with two petrol engines each of 75 H.P.; the yacht "Bronzeving" (fig. 45, Plate X), built at Sydney in 1908, 110 ft. long, fitted with thirty 20-h.p. petrol engines, each driving a single screw; the "Modewna" of Glasgow, a barque-rigged sailing yacht of 400 tons, fitted with petrol engines of 200 H.P., giving a speed of 91 knots, the "Cromarty," of 200 tons, fitted with petrol engines of 200 H.P., which is fitted with gas engines of 150 H.P., driving twin screws; and the yacht "Lady Evelyn," of 366 tons Y.M. fitted in 1910 with heavy oil engines of 500 H.P.

The power of individual internal combustion engines completed up to 1910 was somewhat limited, and great difficulties had been encountered in the use of heavy oil fuels; but great advances and improvements had been made which were opening up the way for the more extensive adoption of motors of large power using heavy oil fuels. An ocean-going motor-driven cargo vessel of 9000 tons and 12 knots was speed in 1910 being built in Germany for the Hamburg-Amerika line, and fitted with heavy oil engines of 2000 H.P. driving twin screws; and the engines of 10,000 H.P. were also being manufactured.

V. WAR VESSELS

The adoption of iron and steel as the material for shipbuilding, and the development of the steam engine, have influenced warship construction in the same manner as they have influenced the construction of ships for the mercantile marine; but, in addition, the introduction of armour for the protection of ships, the great advances made in its manufacture, and, above all, the marvellous improvements in the means for converting mechanical energy into propulsive energy, have changed the conditions of naval warfare, and called for corresponding changes in the design of warships. Those who are concerned in such questions may refer with advantage to an interesting comparison between the old "Victory" (fig. 1, Plate XIII), and a modern battleship initiated by Sir Andrew Noble in his address to the Mechanical Science Section of the British Association in 1896. Sir Andrew Noble's remarks in this connexion are the more weighty, coming as they did from the director of the great arsenal of Sir W. G. Armstrong, Whitworth & Co., and from one whose scientific research has included a year's study of the advances in naval armament, and the great improvements of guns and torpedoes, have changed the conditions of naval warfare, and called for corresponding changes in the design of warships.

The most improved battleships of the period just anterior to the Crimean War differed from the type I have just described mainly by the addition of steam power, and for the construction of these engines the country was indebted to the great pioneers of marine engineering, such as J. Penn & Sons, Maudslay, Sons & Field, Ravenhill, Miller & Co., Rennie Bros., &c., not forgetting Messrs Humphreys & Tennant, whose reputation and achievements now stand as a monument to their skill and ingenuity. (2) The "Duke of Wellington," completed in 1853, as the type of a first-rate just before the Crimean War, her length was 240 ft., her breadth 60 ft., her displacement 2580 tons, her indicated horsepower 899, and her speed on the measured mile 9-80 knots. Her armament consisted of 131 guns, of which thirty-six 8-in. and 32-pdr.s were mounted on the lower deck, a similar number on the middle deck, thirty-eight 32-pdr.s on the main deck, and twenty short 32-pdr.s and one 68-pdr. pivot gun on the upper deck. Taking the "Caesar" and the "Hogue" as types of second- and third-rate line-of-battle
ships, the former, which had nearly the displacement of the "Victory," had a length of 207 ft., a breadth of 56 ft., and a mean draught of 21 ft. She had 1420 indicated horse-power, and her speed on the measured mile was 10.3 knots. Her armament consisted of twenty-eight 9-in. guns and sixty-two 32-pdr.s. carried on her lower, main and upper decks. The "Hogue" had a length of 184 ft., a breadth of 48 ft. 4 in., a mean draught of 22 ft. 6 in.; she had 797 indicated horse-power and a speed of 81 knots. Her armament consisted of two 68-pdrs. of 95 cwt., four 12-in. guns, twenty-six 8-in. guns, and twenty-eight 32-pdr.s. of 50 cwt.—sixty guns in all.

"Vessels of lower rates (I refer to the screw steam frigates of the period just anterior to the Crimean War) were, both in construction and armament, so closely analogous to the line-of-battle ships that I will not fatigue you by describing them, and will only allude to one other class, that of the paddle-wheel steam frigate, of which I must make mention of the "Terrible," as a type. This vessel had a length of 226 ft., a breadth of 43 ft., a displacement of about 3000 tons, and an indicated horse-power of 1950. Her armament consisted of seven 68-pdr.s. of 95 cwt., four 10-in. guns, ten 8-in. guns and four light 32-pdr.s."

The warships which existed at the beginning of the latter half of the 19th century were, with the exception of special vessels, divided roughly into three classes—ships of the line, frigates and gun-vessels. For many years the corresponding types of iron and steel vessels were known as battleships, cruisers and gunboats, but recently we have seen the power of the cruiser increased to that of the battleship, and new types have been produced such as the torpedo boat, the torpedo boat destroyer and the scout, the latter developing into the fast cruiser of continually increasing size; while the submarine torpedo boat has become a recognized sea-going vessel rival in speed and endurance in size with the gun-vessel or the small cruiser. It is proposed to refer to these in the order named. (See also NAVY.)

**Battleships.**—The destruction of the Turkish fleet at Sinope (30th November 1853) by the Russian fleet, the latter alone being armed with shell guns, and the combined experience of the British and French fleets before Sevastopol when engaging Fort Constantin, demonstrated conclusively that for ships of the line armour protection had become essential. The French government immediately began to build five armoured-plated vessels, or batteries, as they were called, for service in the Black Sea; and eight similar vessels were begun shortly afterwards by the British government for the same service.1 The British vessels did not arrive in time to take any part in the war; but three of the French batteries did, and were very favourably reported on by Admiral Bruat after an engagement with the Kinburn Forts on the 17th of October 1855. With the exception of these three French batteries, the whole of the fleets employed in the operations were composed of unarmed wooden ships, and a large number of them were sailing line-of-battle ships. As the result of the engagement with the Kinburn Forts, the French began to armourplate sea-going vessels, and the first ship in this class was taken by the celebrated French naval architect M. Dupuy de Lôme, who razed the "Napoleon," a wooden two-decker, and fitted her with a complete belt of 5-in. armour on a backing of 26 in. of wood. This work was completed in 1859, and the ship, renamed "La Gloire," became the first sea-going armour-clad. Two other vessels of the same design, the "Invincible" and "Normandie," were also laid down, and with the "Magenta," "Solférino" and the "Couronne," a few years later, formed the first fleet of French armoured-clads.

In June 1859 the armour-plated iron frigate "Warrior" was commenced by the British government. Others quickly followed, including the "Black Prince," which was a sister ship to the "Warrior," and four other vessels, the "Achilles," the sister ships "Minotaur" and "Agincourt," and the "Northumberland." The distribution of the armour and other features of these vessels are shown in fig. 47. The "Warrior" and "Black Prince" were 380 ft. long and of 8830 tons displacement, had engines of 6000 I.H.P. and a speed of 141 knots; they were designed to carry thirty-six 68-pdr. 100-cwt. guns, but during construction the 7-in. 61-ton gun was introduced into H.M. Service, and the ships when completed for sea carried an armament of 28 of these 7-in. guns. They had a central citadel 213 ft. long, protected with 43-in. iron armour extending from a few feet below the water-line to the height of the upper deck. Their outline was similar to the outline of the wooden frigates of the day, and their rudder-heads and steering-gear were above water and unprotected against injury by shot and shell. In the four vessels which immediately followed, which were from 500 to 1500 tons more displacement, the overhanging bow, as will be seen from fig. 51, was given up, bows adapted for ramming were introduced, and some protection was afforded to the steering-gear by water-line belts of armour which extended the whole length of the vessel. In 1861 the British government began the construction of eleven armour-clads, six of which, including the "Hector" and "Valiant," sister ships of 6750 tons displacement and 3500 I.H.P., were iron vessels, and five, the "Caledonia," "Royal Oak," "Ocean," "Prince Consort," and "Royal Alfred," were wooden vessels of rather over 4000 tons.

The reconstruction of the British fleet was taken in hand in earnest in 1863, when Mr (afterwards Sir) Edward J. Reed was placed at the head of the Construction Department at the Admiralty, with Messrs Barnaby, Barnes, Crossland, Morgan and Wright—the last-named (afterwards Sir James Wright) holding the position of engineer-in-chief—as...
Fig. 42.—Sailing Yacht, with Auxiliary Steam Power, Sunbeam.

Fig. 43.—Imperial German Steam Yacht Hohenzollern.

Fig. 44.—The Royal Steam Yacht Alexandra.
his immediate assistants. Various types of vessels were devised, with arrangements of armour and dispositions of guns, to provide for the new conditions which had been introduced; and, in addition, great advance was made in the structural arrangements of ships, which up to this period had been considerably influenced by the old systems of construction in use in wooden ships. In investigating the qualities of ships, Sir Edward Reed had the good fortune to secure the co-operation and assistance of Mr William Froude, F.R.S., who had been the first to demonstrate the theory upon which the behaviour of ships in a seaway depends. Mr Froude's experimental investigations on the forms of ships and kindred matters, begun in 1870 on behalf of the Admiralty and continued till his death in May 1879, had a most important bearing on the improvement of ships and on the science of naval construction generally. It is not too much to say that nearly the whole of the accurate information as to the best forms of ships and their resistance at various speeds, in the possession of naval architects to-day, is the direct result of Mr Froude's work, and that of his son, Mr R. E. Froude, F.R.S., who continued the work after his father's death.

Among the considerations which Reed had in view in the reconstruction of the navy may be enumerated the following: (1) Steadiness of ship as a gun platform, with ample stability in all conditions of lading to enable her to keep the sea in all weathers, and sufficient stability in a partially loaded condition to enable her to keep the weather in a seaway. (2) Protection by armour of the vital parts of the ship, and of the heavy-gun positions, especially against shell fire. (3) The carrying of guns of power sufficient to penetrate the armour of any possible enemy. (4) Mounting the guns sufficiently high above the water-line to enable them to be fought in bad weather. (5) Simultaneous all-round fire, with concentration of as many guns as possible on any given point of the compass. (6) Speed to overtake or get away from an opponent or an enemy. (7) Proper provision for the berthing of officers and crew. (8) Laid down in June 1866 as a sea-going turret ship. She was launched in May 1868, her dimensions being: length 320 ft., breadth 57 ft. and draught 26 ft.; her I.H.P. was 8000, giving her a speed of about 15 knots, and she was protected by a broadside of 10-in. armour, the thickness of which was 2 inches. The "Hercules," launched in 1866, was a vessel of 7550 tons displacement, 6600 I.H.P., 14 knots speed, and 300 ft. long. Her armament consisted of ten 9-in. 14-ton and five 7-in. 63-ton guns. Her water-line was wholly protected by 6-in. armour, and she was provided with a central battery 98 ft. long, protected with armour of the same thickness. She carried a considerable spread of canvas, and she was fitted with a balanced rudder. The "Hercules," completed in 1866, was a much more important ship, her dimensions being: length 325 ft., breadth 59 ft., draught 26½ ft., displacement 8680 tons. Her engines of 8500 I.H.P. gave her a speed of about 14½ knots. She had two 9-in. guns mounted one forward and one aft on the main deck behind 6-in. armour, and eight 10-in. guns, mounted in a central battery on the main deck. Her water-line was protected by armour 9 in. thick amidships, reduced to 6 in. at her ends, and her highest armament point was 6½-in. armour. The "Sultan," completed in 1871, was in many respects a similar ship but larger, having a displacement of 9300 tons, 2 ft. more beam and 1 ft. more draught; she attained a speed of upwards of 14 knots. Her main-deck battery carried the same guns as the main-deck battery of the "Hercules," but the 9-in. guns at the extremities of the vessel on this deck were dispensed with, and she carried, in addition, an upper-deck battery, placed over the after-end of the main-deck battery, in which four 9-in. guns were carried. Both batteries were protected by 6-in. armour; elsewhere the armour followed that of the "Hercules."

A number of low-freeboard turret vessels of the "Monarch" class, without masts and sails, were built for the British navy at this time, mostly for coast defence. Amongst these, the "Cerberus" for Australia and the "Abyssinia" and "Magdala" for India were completed in 1870. The "Abyssinia" had a displacement of 12,000 tons and a speed of about 9½ knots; her dimensions were: length 225 ft., beam 42 ft., draught 14½ ft., and her armament consisted of four 10-in. 18-ton guns. The other two vessels had the same armament, but were somewhat larger, being of 3400 tons displacement; and the thickness of their side-armour was 8 to 6 in., against 7 to 6 in. in the "Abyssinia." Several vessels of this type were also built for home service, including the single-turret vessels "Glatton" of 4910 tons and "Heispur" of 4010 tons, each carrying two
18-in. 25-ton guns, and the "Cyclope," "Gorgon," "Heate" and "Hydra," each of 3650 tons and provided with two turrets carrying two 10-in. 18-ton guns. They were protected with armour from 8 to 12 in. thick, and their speed was from 10 to 12 knots.

The "Devastation," commissioned in 1869, represented Reed's conventional view of what a turret ship should be. Low sides were adopted, but not in combination with rigging and sails. She was the first sea-going battleship in the British navy which depended wholly on steam power for propulsion. She was 285 ft. long, 62 ft. 3 in. broad, 27 ft. mean draught and 9330 tons displacement. Her sides, which, except right forward, rose only to a height of 4 ft. 6 in. above water, were protected with armour 12 in. thick. Her armament consisted of five aft, four stern, and four bow guns, mounted in pairs in two turrets, one at each end of a raised breastwork or redoubt which extended about 150 ft. along the middle of the upper deck. The guns were thus elevated to the height of some 14 ft. above the surface of the water. The turrets were protected by armour 12 in. and 14 in. thick, and the breastwork or redoubt by armour 10 in. and 12 in. thick. A forecastle extended forward from the fore-end of the breastwork at a height of 9 ft. 3 in. above the water-line; but in wake of this forecastle the side armour dropped to a height of only 4 in. above the surface of the water, at which level there was an armoured deck. She was provided with twin-screw machinery of 7000 I.H.P., which gave her a speed of 14-2 knots, and she carried a large coal supply. After the loss of the "Captain," a special committee, including many of the highest professional and scientific authorities in the United Kingdom, was appointed to examine into the design of such vessels. Of the "Devastation" they reported that "ships of this class have stability amply sufficient to make them safe against the rolling and heaving action of the sea"; they agreed, however, in recommending a plan which the constructors of the Admiralty had proposed, with the view of increasing her range of stability and the accommodation of the crew. This consisted in the addition of side superstructures formed by continuing up the ship's side with light framing and plating as high as the level of the top of the breastwork, and carrying the breastwork deck over to the sides. The structures were continued aft on each side some distance beyond the breastwork, providing two spacious wings, which added largely to the cabin accommodation. A good idea of her general appearance may be obtained from fig. 49 (Plate XII). The "Devastation" was followed by the "Thunderer" of the same dimensions, and the "Dreadnought" of 12,670 tons displacement, 8000 I.H.P. and 14 knots speed; a vessel of higher freeboard, plated with 14 in. of armour and carrying four 12-in. guns; she was the most powerful and best protected vessel of her day. Sir Edward Reed retired from the Admiralty a short time before the "Captain" founderd at sea. During his seven years' term of office some forty iron armour-clads of various sizes and types, besides iron cruisers and numerous other vessels, had been added to the British navy, the adoption of armour for the protection of the vital parts of ships has become established, and especially had the importance of utilizing armour in such a manner as to exclude projectiles from the region of the water-line become recognized. The change from the widely-distributed armament of the first broadside armour-clads to the highly concentrated armament of the turrets, and from the high freeboard ship with sail-power to the low freeboard turret ship without sails, had also been effected; so that when Sir Edward Reed retired in 1879, the latest type of battleship was entirely different from that which existed when he took office; and although the construction of broadside ironclads had not been discontinued, "the wooden walls" had practically ceased to exist. Sir Edward Reed was succeeded by a Council of Construction composed of his immediate assistants, with Mr Barnaby (afterwards Sir Nathaniel Barnaby) as its president; but three years later this council was dissolved, and Sir N. Barnaby was placed at the head of the Construction Department.

The sea-going qualities of the "Devastation" had successfully demonstrated that the battleship of the future might depend wholly on steam propulsion; and although many naval officers and others continued to hold the view that sea-going ironclads must of necessity be rigged ships, in the designs which immediately followed sail power was omitted. In the "Inflexible" (fig. 50, Plate XII), and the sister ships "Ajax" and "Agamemnon," the offensive power was concentrated mainly in two pairs of heavy guns, as it was in the "Devastation" and other turret ships which preceded them; but in them the armour defence also was concentrated over a comparatively small space amidships, the unprotected ends being formed into what was called raft bodies by belts of cork, within which was placed a portion of the ship's coal, &c. Thus the buoyancy was secured by a Citadel amidships which could not be penetrated, and by ends which might be riddled but (it was contended) not be destroyed. The arrangement shown in fig. 51 represents the "Ajax" and "Agamemnon." The "Inflexible" was similar but larger. Sir N. Barnaby described the design of the "Inflexible" in 1874 before the Institution of Naval Architects thus:

"Imagine a floating castle 110 ft. long and 75 ft. wide, rising 10 ft. out of the water, and having above that again two round turrets planted diagonally at its opposite corners. Imagine this castle and its turrets to be heavily plated with armour, and that each turret has within it two guns of about 80 tons each—perhaps in the course of a few years guns of twice 80 tons each. Conceive these guns to be capable of firing, all four together, at an enemy ahead or on either beam, and in pairs towards every point of the compass.

"Attached to this rectangular armoured castle, but completely submerged, every part being 6 ft. to 7 ft. under water, there is a hall of the ordinary form, with a powerful ram bow, with twin screws and a submerged rudder and helm. This compound structure is the fighting part of the ship. Seaworthiness, speed and sharpness in turning would be wanting in such a structure if it had no additions to it; there is therefore an unarmoured structure lying above the submerged ship and connected with it, both before and abaft the armoured castle; and as this structure rises 20 ft. out of the water,
from stem to stern, without depriving the guns of that command of the horizon already described, and as it moreover renders a flying deck unnecessary, it gets over the objections which have been raised against the low freeboard and other features in the "Devastation," "Thunderer" and "Fury." These structures furnish also most luxurious accommodation for officers and seamen. The step in advance has therefore been from 14 in. of armour to 24 in., from 35-ton guns to 80-ton guns, from two guns ahead to four guns ahead, from a height of 10 ft. for working anchors to 20 ft., and this is done without an increase in cost, and with a reduction of nearly 3 ft. in draught of water, &c.

The dimensions of the "Inflexible" were: length 320 ft., beam 75 ft., mean draught 26 ft. 4 in., and displacement 11,880 tons, and her speed was 14 knots. The dimensions of the "Ajax" and "Agamemnon," begun in 1876, were: length 310 ft., beam 66 ft., mean draught 24 ft. 9 in., and displacement 8,660 tons. They carried four 12-in. guns; their citadels were 104 ft. long, protected with 18-in. armour, their turrets being protected by 16-in. armour; and their speed was 12 knots. The "Edinburgh" and "Colossus," begun three years later, were of the same type, but were built of steel and were of 9480 tons displacement. Their citadels were longer, and their speed was 14½ knots. Compound armour, adopted generally appearance is obtained from fig. 53 (Plate XII.), which represents the "Camperdown." The "Victoria" and the "Sans Pareil," built a few years later, were, with the "Benbow," the only ships of the British navy built to carry 110-ton guns, the former having them in pairs in a turret heavily armoured, and the latter singly in barbettes.

Among the last of the battleship designs undertaken by Sir N. Barnaby was that of the "Trafalgar" and "Nile," which was completed by Messrs. F. K. Barnes and H. Morgan after his retirement. These vessels, laid down in January and April 1886, were the largest ships thus built for the British navy. They were 11,940 tons displacement, 345 ft. long, 73 ft. beam, and 28 ft. 10 in. mean draught; had engines of 12,000 I.H.P. and a speed of 16¾ knots. Their armour-protection consisted of a belt 230 ft. long and 20 in. thick, with bulkheads 18 in. and 14 in. thick. Above the belt was an armoured redoubt of 18-in. compound armour which enclosed the turret bases. The turrets themselves had 18-in. armour, and between the turrets was an octagonal battery of 3 in. to 5 in. of steel containing the 4-7-in. Q.F. guns. The thickness of the protective deck was 3 in. The disposition of armament originated in the "Collingwood" was adopted in these vessels, but the heavy guns were placed in turrets instead of in barbettes. The armament

Fig. 52.—The "Collingwood." A, communicating tubes; B, boiler-rooms; D, water-chambers; E, engine-room; M, magazines and shell-rooms; P, patent fuel packing; W, water-ballast tanks.

in these two ships for the first time, gave them a great advantage in defensive power.

The "Collingwood," begun in 1880, was the first of the battleships of a new type known as the "Admiral" class. In these vessels the main armament consisted of four heavy guns mounted in pairs on the middle line of the ship, in fixed heavily protected gun-positions called barbettes, one at each end of the ship; this main armament was supplemented by a secondary armament of lighter and more rapid-firing guns mounted on the broadsides between the barbettes. This arrangement of the armament, which is illustrated in fig. 52, continued, with small modification, to be adopted in the battleships of the British navy down to 1903.

The principal features of the "Collingwood" were: length 325 ft., beam 68 ft., mean draught 27 ft., displacement 9500 tons. She carried 18-in. armour on her sides, 16-in. on bulkheads, 11½-in. on barbettes and 12-in. coating turrets. Her armament consisted of four 12-in. 45-ton guns, six 6-in. guns, and a number of smaller guns. Her speed was 16½ knots, and she carried 900 tons of coal, with capacity for 1200. She was followed two years later by the "Rodney," "Howe," "Benbow," "Camperdown," and "Anson," which were of the same type, but larger. These six ships constitute what is known as the "Admiral" class. A good idea of their

1 The "Fury" was modified and renamed "Dreadnought" before being launched.

2 The "Victoria" was accidentally rammed and sunk by the "Camperdown" during the Mediterranean manoeuvres of 1893.
introduction of compound armour and the adoption of steel instead of iron for the building material, both of which date from his time, allowed of greater armour protection and of other advantages, including increased speed, &c.

Sir Nathaniel Barnaby was succeeded in October 1885 by Mr W. H. White (afterwards Sir W. H. White, F.R.S.). The battleships then building were of four different types and included two of the "Colossus" class, six of the "Admiral" class, two "Trafalgar," and the "Victoria" and "Sans Pareil.". Their completion proceeded very slowly, and no new battleships were laid down till 1889, when the Naval Defence Act resulted in a reconsideration of the subject by the Board of Admiralty.

Before coming to a decision various designs were discussed, and the First Lord convened a meeting, not only of the members of the Board, but of a number of distinguished and experienced naval officers as well as the Director of Naval Ordnance and the Director of Naval Construction. Subsequently the Board issued instructions for the preparation of detailed designs embodying the features which were agreed upon as being most desirable; and on these designs the seven barbette battleships of the "Royal Sovereign" class and the turret ship "Hood" were built.

The general arrangement of guns and armour in the vessels of the "Royal Sovereign" class is shown in fig. 54. They were 380 ft. in length, 75 ft. beam, 27 f. 7 in. draught, 14,150 tons displacement, 13,000 I.H.P., and 17 f. 8 in. speed. The coal bunkers hold 1,450 tons, of which 900 tons is included in the above displacement. For three-fifths of the length amidships the side is protected by an 18-in. belt of armour, a horizontal 3-in. protective deck being worked across the ship at the middle or belt deck; between the belt deck and main deck 4-in. side armour is worked. Before and abaft the belt curved protective decks 2½ in. thick were worked, extending down to the ram forward and covering the steering gear aft. Four 14½-in. B.L. 67-ton guns were fitted in pairs in pear-shaped barbettes forward and aft, protected by 17-in. armoured barbettes extending down to the belt deck; ten 6-in. Q.F. guns were fitted, four being on the main deck in 6-in. armoured casemates, which were adopted in these vessels for the first time; sixteen 6-pdr. and twelve 3-pdr. Q.F. guns were fitted, and seven torpedo tubes. The "Royal Sovereign" was laid down at Portsmouth in September 1889, floated in February 1891, and completed in May 1892. (The six upper-deck 6-in. guns were protected by 5-in. casemates added 1901 to 1903.)

The "Hood" was similar in displacement, armament, armour, horse-power, speed and general dimensions, but was of less freeboard, the heavy guns being fitted in turrets revolving on armoured redoubts of reduced heights.

The "Centaur" and "Barfleur," laid down in 1890, were designed as sheathed second-class battleships for service in distant waters; they were 360 ft. in length, 70 ft. beam, 25 ft. 6 in. mean draught, 10,500 tons displacement, 15,000 I.H.P., and 16½ knots speed. They were armed with four 10½-in. B.L. guns in circular barbettes of 9-in. armour, ten 4½-in. and twenty-two small Q.F. guns, and five torpedo-tubes, four of the 4½-in. guns being on the main deck in amidships and 4 in. thick on the sloping sides above the deck; a broad belt of 9-in. Harveyised armour was fitted, rising to the main deck. The barbettes were protected by 14-in. armour, and all the 6-in. guns were protected by 6-in. casemates. The "Majestic" was laid down at Portsmouth on the 5th of February 1894, floated on the 31st of January 1895, and completed in December 1895.

Nine vessels of the same class were built, the last being the "Hannibal" (fig. 56, Plate XIV.), completed in April 1898. In two of the vessels, "Caesar" and "Illustrated," the barbettes were made circular, central revolving hoists being fitted and the guns arranged to load at any angle of training, a system which was adopted in the heavy gun mountings of all the later British battleships.

The "Formidable" and "London" classes, laid down from 1898 to 1901, differ very slightly from each other, and for all practical purposes may be taken as identical, the main difference being in a rearrangement of the armour protection to the bow in the later ships. The former class consists of the three battleships "Formidable," "Irresistible" and "Implacable," and the latter of the five battleships "London," "Bulwark" (fig. 57, Plate XV.), "Venerable," "Queen," and "Prince of Wales." These classes represent a development of the "Majestic" class, being 400 ft. long, 75 ft. beam, 26 ft. 9 in. draught, and 15,000 tons displacement, the belt being of the same general thickness and extent as in the "Majestic," but of Krupp steel, protection being given to the bow by 2-in. side-plating. In the "Formidable" the protective deck proper was formed as in the "Majestic," but thinner, being 2 in. to 3 in. thick, and a second protective deck, 1 in. thick, was formed at the main deck, giving a flat top to the citadel formed by the side belt and the full bulks. In the "London" class the lower protective deck was thinner and the upper one thicker than in the "Formidable" class, the protection being extended forward by thinner material, tapering to 2 in. at the bow, and the forward transverse armour bulkhead being omitted. The 12-in. guns in both classes were casemates of 5-in. armour; the armour belt was 12 in. thick, the protective decks 2 in., and the side armour between belt and arm, 3 in. thick. They were re-armed and improved in 1902-1903.
longer and heavier than in the ships of the "Majestic" class, and were in barbettes 12 in. thick; in addition, there were twelve 6-in. Q.F. guns—all in casemates—sixteen 12-pdrs. and four torpedo tubes. These eight battleships were each provided with 20 Belleville boilers, developed 15,000 H.P., and had a speed of 18 knots. They carried 900 tons of coal at their normal displacement.

boilers; they had 20 Bellevilles, developed 13,500 H.P., and had a speed of 18 1/2 knots. They carried 1000 tons of coal at normal load, and had bunkers for 2300 tons. The ships of the "Duncan" class were longer and larger than those of the "Canopus" class. They were begun in July 1899, were of 14,000 tons displacement, 405 ft. long, 75 ft. 6 in. beam, 26 ft. 6 in. draught. They had a belt of Krupp steel, 7 in. thick amidships, tapering to 3 in. at bow, and two protective decks, as in the "Canopus"; they had two barbettes, 11 in. thick, for four 12-in. guns, and carried twelve 6-in. Q.F. guns in 6-in. casemates on the main and upper decks; also a number of smaller guns and four submerged torpedo tubes. They were provided with 24 Belleville boilers, would develop 18,000 H.P., and attain a speed of 19 knots. Their normal coal supply was 900 tons, and they had bunker capacity for 2000 tons. Six of these ships were built, one of them, the "Montagu," being lost on Lundy Island in 1906. Vessels of similar type had been built abroad, but there was a tendency to provide in them a more powerful secondary armament. In 1901 France built the "République" with eighteen 6-5-in. guns as her secondary armament; Italy laid down the "Regina Elena," carrying twelve 8-in. guns as her secondary armament; and Germany the "Braunschweig," carrying fourteen 6-7-in. and twelve 3-4-in. guns as her secondary armament. In 1902 the United States followed with the "Georgia," carrying a secondary armament of eight 8-in. and twelve 6-in. guns, while two English vessels, the "Libertad" and "Independencia," laid down for Chile, carried no less than fourteen 7-5-in. guns as their secondary armament.¹ In 1902 the "King Edward VII." (fig. 58, Plate XIV.), the last battleship for which Sir William White was responsible, was laid down, carrying four 12-in. guns, with a secondary armament of four 9-2-in. and ten 6-in. guns. She may be considered as an enlarged "Duncan," with the main-deck guns increased from eight to ten in number and enclosed in a battery having sides and ends protected by 7-in. armour, with the backs of the casemates replaced by splinter bulkheads 1 to 2 in. in thickness, and with the four 6-in. guns in casemates on the upper deck replaced by four 45-calibre 9-2-in. guns, protected by enclosed revolving armour shields. The

¹ These two vessels were afterwards purchased by the British government and became the "Swiftsure" and "Triumph" (fig. 69, Plate X VIII.).

² The gun and armour diagrams and many particulars of modern vessels are taken by permission from Brassey's Naval Annual.
The displacement of the "King Edward VII." was 16,350 tons, the length 432 ft., beam 28 ft., draught 26 ft.; the H.P. 18,000, while the designed speed was 18½ knots. Eight vessels of this class were built, five being ordered in 1902 and three in 1903.

The principal changes to be noted in the development of the battleship type from 1885 to 1902 are:—(1) The successive improvements in armour by the introduction of the Harvey and Krupp processes, which enabled either a saving of weight to be effected for the same degree of protection, or a greater degree of protection to be provided for the same weight. (2) The belt armour was extended longitudinally, shielding a greater portion of the hull and giving increased protection to the stability and to the secondary armament of the vessel. (3) Improvements in guns and explosives, by which more effective gun-fire was obtained with guns of smaller calibre and less weight than those previously in use. (4) The growth in importance of the secondary armament. (5) Improvements in machinery—the adoption of higher steam pressures, lighter and faster-running engines, and of water-tube boilers—which effected great savings in weight for a given power, and enabled increased speed to be obtained in successive ships. Sir William White held office for nearly seventeen years, and during that period a very large number of vessels of various classes were added to the British navy. He retired in February 1902, and was succeeded by Mr. Philip Watts, F.R.S. (b. 1850), who was knighted in 1905.

In 1903 the design of the vessel which afterwards became the "Lord Nelson" was approved, her armament then including four 12-in. and twelve 9·2-in. guns, all of 50 calibre and all mounted in pairs in gun-houses above the upper deck. It was, however, decided to build the three additional "King Edwards" above referred to, in order to complete the squadron of eight vessels of the same type. In the "Lord Nelson," as afterwards laid down in 1905, the conceptions of the early vessels of this class showed to be capable of being developed. In existing docks at Chatham and Devonport led to the reduction of the secondary armament to ten 9·2-in. guns, instead of twelve 9·2-in. guns. Only two vessels of the class were built, the "Lord Nelson" and the "Queen Victoria," by the yards of Brown, Stephen & Co. (XIV.) By Beardsmore & Co. They are 410 ft. long, 79½ ft. beam, 27 ft. draught, 16,500 tons displacement, 17,500 I.H.P. and 18½ knots speed. The general arrangements of the guns and armour are shown in fig. 61; the 12-in. guns are carried in pairs at each end of the ship in gun-houses upon barbettes protected by 12-in. armour, and the ten 9·2-in. guns are carried in gun-houses on the broadside, the midship gun-houses having single and the others pairs of guns instead of each having a pair of guns as originally contemplated. The gun-houses carry 8-in. and 7-in. armour, and the bases of the gun mountings are protected by a Citadel of 8-in. armour rising to the upper deck level. The barbette frames are also twenty-four 12-pdr. anti-torpedo-boat guns carried upon superstructures and a hurricane deck. The water-line is protected by 12-in. armour amidships, tapering to 6 in. forward and 4 in. aft, associated with a side protection of 12-pdr. ammunition. The recommendations were approved in 1903 by the Board and embodied in the designs of the "Dreadnought" type of battleships, and the "Invincible" type of cruiser, as well as in new types of torpedo-boat destroyers.

The principal features of the "Dreadnought" design were as follows (Parl. Paper C. 30 of 1906):—

**Armament.**—Ten 12-in. guns and twenty-four 12-pdr. Q.F. anti-torpedo-boat guns. It is unnecessary to enlarge upon this point. It is obvious that the number of these guns is the result of the limitation of the displacement of the vessel, and not of technical necessities. It is obvious that the close grouping of these guns is the result of the limitation of the displacement of the vessel, and not of technical necessities. It is obvious that the close grouping of these guns is the result of the limitation of the displacement of the vessel, and not of technical necessities.

**Dreadnought Type.**

In arranging for a uniform armament of 12-in. guns it became at once apparent that a limitation to the number of guns that could be usefully carried was imposed by considerations of the blast effect of the shot at ranges of the order of those of those which are effective on the range. It is obvious that it is impossible to place the guns in such relative positions that the blast of any single gun on any permissible training should very seriously hamper the use of one or more of the remaining guns.

"While it is recognized that broadside fire is held to be the most important in a battleship, all-round fire is also considered of great importance, since it lies in the power of an enemy to force an opponent, who is anxious to engage, to fight an end-on action. In the arrangement of armament adopted, six of the guns are mounted in pairs on the broadside, and four or possibly six, 12-in. guns (or 60% of the main armament) can be brought to bear simultaneously to fire broadside. In view of the potentialities of modern torpedo craft, and considering especially the chances of torpedo attack towards the end of a battle, it is considered advisable that the super-structure of the torpedoboat guns as widely as possible from one another, so that the whole of them shall not be disabled by one or two heavy shells. This consideration led the Committee to recommend a number of small torpedo-boat guns arranged in pairs for the purpose of defending the new design and greater power than those hitherto carried for use against torpedo craft.

**Freeboard.**—In order to give the ship good sea-going qualities and to ensure the continued use of the forward gun for fire control is provided giving the ship a freeboard forward of 28 ft.—a higher freeboard than has been given to any modern battleship.

**Machinery.**—The main armament has a maximum thickness of 11 in., tapering to 6 in. at the forward and 4 in. at the after extremity of the vessel; the redoubt armour varies in thickness from 11 in. at 8 in.; the turrets and foreconning tower are 11 in. thick. The after part of the upper deck is 6 in. thick; the protective deck varies from 4½ in. to 24 in. in thickness.

**Special attention has been given to safeguarding the ship from destruction by under-water explosion. All the main transverse bulkheads below the main deck are provided with double parapet lines (which will stop any under-water explosive).**

**Speed.**—Mobility of forces is a prime necessity in war. The greater the mobility the greater the chance of obtaining a strategic advantage. This mobility is represented by speed and fuel endurance. Superior speed also gives the power of choosing the range of fire. To gain this advantage the speed designed for the "Dreadnought" is 21 knots.

**Armour-Machinery.**—The question of the best type of propelling machinery to be fitted was also most thoroughly considered. While recognizing that the steam-turbine system of propulsion has at present some disadvantages, yet it was determined to adopt it for the "Dreadnought," as it seemed to provide a better safety factor for the propulsion machinery, and to be more economical than the orthodox reciprocating type. It was determined that all requirements promise to be fully met by the adoption of suitable, turbine machinery, and that the exposing capabilities of the ship when engaged with a fleet or when working in narrow waters, will be quite satisfactory.

The necessary stopping and astern power will be obtained by astern turbines on each of the four shafts. These astern turbines will be arranged in series, and they will have a low pressure astern turbine on each side of the ship, and in this way the steam will be more economically used when going astern, and a proportionally greater astern power obtained than in the 'Eden' and 'Amethyst.'

**Accommodation.**—Considerable attention has been devoted to the arrangements for the accommodation of the officers and men. In view of the increasing length and greater power of modern ships it became necessary to adopt a super-structure which is the result of the tendencies to increase the length of the ship, and to increase the amount of space thereon, and the amount of space above the water-line. The idea of increasing the amount of space above the water-line is becoming more and more open to objection. Up to the present the principal officers have been bertheted at the farthest possible distance from the engines and machinery, and during the most important duties are performed. It has been decided that in this ship the admiral's and captain's quarters shall be placed on the main deck forward, near the conning tower; also that the officers' messrooms shall be placed on the upper deck, in the fore part of the ship. Ample accommodation is provided above the main deck.
Fig. 1.—H.M.S. Victory.

Fig. 64.—H.M.S. Dreadnought.
Fig. 56.—H.M.S. Hannibal (Majestic Class).

Fig. 58.—H.M.S. King Edward VII.
for the remainder of the crew is available on the main and lower decks aft."

The tabulated particulars given in Parl. Paper Cd. 3048 for the designs approved are shown in Table XIV.

It is interesting to note that the distribution of armament finally adopted in the "Dreadnought" was nearly that of a design considered by Sir Nathaniel Barnaby at the Admiralty in 1874, which was a combination of the "Devastation" and "Inflexible" designs. The armament was an all-one-calibre big gun armament of 16-in. 80-ton guns carried in pairs in turrets above the upper deck, one pair being placed at each extremity on the middle line, and two on the broadside en échelon, having training on each broadside as well as ahead and astern, thus giving a fire of six guns ahead, six astern and eight on each broadside. The scheme was considered inadmissible on account of the great displacement involved, 16,000 tons. The arrangement of eight heavy guns then contemplated was actually adopted in the "Invincible" design, but it was not considered that four pairs of 12-in. guns was a sufficiently heavy armament for the battleships of the "Dreadnought" class; a proposal to place a fifth pair of guns on the middle line between the broadside guns and the aftermost pair of guns was finally adopted, the turrets on the broadside being placed abreast of each other instead of en échelon on account of the great increase of length and displacement involved.

The main features in which the "Dreadnought" differed from the "Lord Nelson" are:—(1) The all-one-calibre big gun armament in place of the mixed armament of 12-in. and 9-2-in. guns. (2) The increase of 3 knots in speed. (3) The height of freeboard provided forward to enable the vessel to fight her bow guns at high speed in a sea way. (4) Great increase in manœuvring power due to fitting twin rudders behind propellers.

The weight of the armament of the "Dreadnought" is the same as that of the "Lord Nelson"; it is 30% greater than that of the "King Edward VII." the 1,400 tons increase of displacement (about 8% of the displacement of the "Lord Nelson" and "King Edward VII.") being used in obtaining the increase of 3 knots of speed.

The general arrangements of guns and armour of the "Dreadnought" are shown in fig. 63, and on Plate XIII., fig. 64, a photograph of the vessel is given. She was built and tested as rapidly as possible, her keel was laid on the 2nd of October 1905, she was launched on the 10th of February 1906, King Edward VII. himself performing the christening ceremony and starting the vessel down the ways; and she went to sea, for steam, gunnery and torpedo trials, on the 1st of October 1906, one year after the laying of the keel. The whole of the trials were completed in a short time, and the machinery realized the expectations as to power and smoothness of running, and a speed of 21-6 knots was obtained on the measured mile, with an expenditure of power well within the capacity of the boilers. She left England for a long experimental cruise on the 5th of December 1906.

Immediately after the trials of the "Dreadnought," three other vessels, the "Bellerophon," "Temeraire" and "Superb," of 18,600 tons were begun, the additional 700 tons in displacement being absorbed in additional armour protection and an improved anti-torpedo-boat armament consisting of sixteen 4-in. guns. In 1907 and 1908 the "St. Vincent," "Collingwood" and "Vanguard" of 19,250 tons displacement were begun, in which further additions to the armour protection were made. These were followed by the "Neptune," "Hercules" and "Colossus," of about 20,000 tons displacement, laid down in 1909, the additional 800 tons lengthening the ships and enabling the 12-in. guns on the broadside to be placed en échelon and the second pair of guns from aft to be lifted high enough to fire over the aftermost pairs of guns; the whole of the main armament being thus able to fire on either broadside and eight guns to fire astern. Each of these vessels was completed in two years from the date of laying the keel. See Table XV.

On the 29th of November 1909 the "Orion," the leading vessel of what in 1907 was the most recent group of
"Dreadnoughts," was laid down at Portsmouth, and the following vessels of the group (the "Thunderer," "Monarch" and "Conqueror") were ordered to be built in the private yards of the Thames Iron Works, Sir W. G. Armstrong & Co. on the Tyne, and Beardmore & Co. on the Clyde a few weeks later. In these vessels there is a considerable increase in displacement, amounting to 2500 tons or 123% beyond that reached in the preceding group, their displacement being 22,500 tons on a length of 45 ft. between perpendiculars. The additional displacement has allowed the whole of the turrets to be placed on the middle line, the side armour to be raised to the upper deck, and heavier guns to be carried.

Great Britain thus had in 1910 fourteen "Dreadnoughts" built and building, not including the "Dreadnought" cruisers described later on under cruisers.

In the first seven vessels—Dreadnought, Bellerophon, Temeraire, Superb, St. Vincent, Collingwood and Vanguard—six 12-in. guns could fire directly ahead and six the British navy, elicited some hostile criticism. Its justification lay in the fact that all the world followed the lead. The 22,500 tons of the "Orion" was not acceptable in 1904, but her design was practically that advocated by Lord Fisher when he took office as First Sea Lord in October 1904 after certain modifications had been made as the result of investigations at the Admiralty.

The general growth of the fleets of British and foreign powers is dealt with in the article NAVY. Some details may be given here of foreign battleships.

United States—In 1886 the "Texas," designed by the late Mr. William John, was laid down. On a displacement of 6315 tons she carried an armament of two 12-in. and six 6-in. guns at a speed of 17 knots—the 12-in. guns being mounted in two turrets placed directly astern, and eight could fire on the broadsides. In the next three—Neptune, Colossus and Hercules—six 12-in. guns could fire ahead, eight could fire astern, and the whole ten could fire on either broadside. In the last four—Orion, Thunderer, Monarch and Conqueror—four guns could fire ahead, four astern and the whole ten on either side.

She was launched on the 20th of August 1910.

TABLE XV.—Particulars of British Battleships of Dreadnought Type.

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Date of Launch</th>
<th>Material</th>
<th>Length</th>
<th>Masts</th>
<th>Type</th>
<th>Load Displacement</th>
<th>Speed</th>
<th>Horse Power</th>
<th>No. of Screw</th>
<th>Machinery</th>
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<tbody>
<tr>
<td>Dreadnought</td>
<td>1906</td>
<td>Steel</td>
<td>400.0</td>
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<td>32</td>
<td>18,000</td>
<td>21.5</td>
<td>3,500</td>
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<td>32</td>
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<td>Babcock &amp; Wilcox</td>
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<td>1906</td>
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<td>500.0</td>
<td>42.0</td>
<td>32</td>
<td>20,000</td>
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<td>4,000</td>
<td>4</td>
<td>Yarrow large tube</td>
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<td>32</td>
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<td>21.1</td>
<td>4,000</td>
<td>4</td>
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<tr>
<td>Vanguard</td>
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<td>Steel</td>
<td>500.0</td>
<td>42.0</td>
<td>32</td>
<td>20,000</td>
<td>21.1</td>
<td>4,000</td>
<td>4</td>
<td>Yarrow large tube</td>
</tr>
<tr>
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<td>Steel</td>
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<td>42.0</td>
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<td>21.1</td>
<td>4,000</td>
<td>4</td>
<td>Yarrow large tube</td>
</tr>
</tbody>
</table>

1 Estimated.

2 From the "Trafalgar" to the "Royal Sovereign," and from the "Duncan" to the "King Edward VII," increases in each case of 17% were accepted.
Fig. 57.—H.M.S. Bulwark.

Fig. 81.—Norwegian Norge.

Fig. 98.—Chilean Chacabuco.
Fig. 66.—U.S.A. Illinois.

Fig. 70.—German Kaiser Frederick III.
The first two American " Dreadnoughts," the " Michigan " and " South Carolina," were laid down in 1906; they are 450 ft. long, 80 ft. 3 in. beam, displacement 16,000 tons and draught 24 ft. 6 in. when carrying 900 tons of coal, increasing to 17,620 tons and 27 ft. draught when fully loaded. Length is increased for 18-5 knots, and the armament consists of eight 12-in. guns mounted in four pairs, two pairs forward and two pairs aft, all on the middle line and arranged so that the guns of the second pair sweep over the turrets of the first and vice versa. Four 8-in. guns are mounted in one turret: an anti-torpedo boat armament of twenty-two 14-prd. guns is provided, but no secondary armament. The sides and barbettes are protected by Krupp steel, and the protective deck is of 2O,000 I.H.P.; on trial the " Delaware " developed 28,578 I.H.P. and recorded a speed of 21-56 knots, while the " North Dakota " reached 31,826 I.H.P. and 22-25 knots. Parsons turbines were adopted for the four battleships laid down. The first two, the " Florida " and " Utah," commenced in 1909, are very similar to the " Delaware," but of 21,825 tons displacement and 28 ft. 6 in. mean draught. The second pair, the " Arkansas " and " Wyoming," begun in 1910, are of much greater displacement, 40,000 tons; 8100 tons greater than the Dreadnoughts and 3500 tons greater than the " Delaware." Both are designed with the main batteries, 12-in., in the central line, and have a beam of 93 ft. and the same mean draught of 28 ft. 6 in. have been accepted. Turbines of 33,000 H.P. are provided for a speed of 20-5 knots, four propellers being as in H.M.S. " Dreadnought." The coal to be carried on trial has been increased to 47,000 tons, and the vessels are to be provided for 10,000 tons in preceding vessels. Twelve 12-in. and twenty-one 5-in. guns are carried on the main deck and in the turrets above, and the forward and after pairs are provided with ten 3-in. guns each. The machinery is of 19,000 I.H.P., provided for a speed of 19 knots, and both were exceeded on the trials of the vessels. They carry 900 tons coal on the trial draught, and when fully loaded with 1900 tons have a draught of 26 ft. This comparatively shallow draught is a distinctive feature of all the early United States battleships, but in later years a notable increase of draught was accepted. Between the "Kearsarge" and the " Georgia " were built in 1869-1898 the " Alabama " and " Illinois " (fig. 66, Plate XVI.), and " Wisconsin," somewhat similar to the " Kearsarge," carrying four 13-in. guns and fourteen 6-in. guns, and in 1890-1901 the second "Maine," the " Missouri " and " Ohio," which more nearly resembled the " Georgia," as they carried 12-in. guns for their main armament. The " Georgia " class was followed by two much larger vessels the "Connecticut " and " Louisiana," laid down in 1901; they were 450 ft. long, 26 ft. 10 in. beam, 17,000 tons displacement and 24 ft. 6 in. draught when loaded with 1000 tons coal, and 26 ft. 9 in. draught when loaded with full complement of ammunition and stores and 2200 tons coal; and they mounted a great advance in fighting power. While retaining four 12-in. guns for the main armament, they carried eight 8-in. and twelve 7-in. guns as a secondary armament, and they were well protected, guns and armour being arranged as in the previous class. They were the last of the "Preussen" class and were started for 19,000 I.H.P., were provided for a speed of 18 knots, and both were considerably exceeded on trial. In these and later American vessels tall towers of open lattice-work, somewhat resembling the Eiffel Tower, were fitted instead of hollow steel masts for supporting signal and fire-control arrangements.

While the vessels of the "Connecticut " class were building in 1904, two other very similar but smaller vessels, the "Idaho " and "Mississippi," were also laid down, of 13,000 tons with reduced armament and armour and less speed.

In 1895 Germany had one first-class battleship, the "König Wilhelm," of 967 tons displacement, and four smaller vessels, the "Baden," "Baden II.," "Sachsen," and "Württemberg," of 7400 tons each. The "Kaiser" and "Deutschland," central-battery ships designed by Sir Edward Reed, and two turret ships, the "Freiheit," and F. der Grosse," followed shortly afterwards. The "Kaiser" and "Deutschland" were laid down for a displacement of 7600 tons, 8000 I.H.P. and 14 knots speed; were armed with eight 22-ton guns and one 18-ton gun, and had side armour of a maximum thickness of 10 in. The vessels of the "Preussen " class were large ships of the "Monarch " type, 308 ft. in length and of 6750 tons displacement and 14 knots speed, with belt armour of a maximum thickness of 91 in. and turret armour 81 in.

In 1891 an advance was made by laying down the "Brandenburg " class of 9901 tons, carrying six 11-in. guns in three barbettes, one forward and one aft, and one on the middle line amidships. They were followed by the five first-class "Preussen " class vessels, the last of which, the "Kaiser Friedrich II. " (fig. 70, Plate XVI.), was finished in 1900. They are of 10,000 tons displacement, length 377 ft., beam 66 ft. 10 in., draught 25 ft. 9 in., 13,500 I.H.P. and 18 knots speed. They have belts of Krupp steel extending from the after
barbette to the stem, with a maximum thickness of 12 in., tapering to 6 in. at the bow; there is no side armour above this belt. The main armament consists of four 5-9-in. guns, placed in pairs in barbettes, one forward and one aft, protected by 10-in. armour. On the main deck they have four 5-9-in. Q.F. guns in 6-in. armoured casemates, two on each side; and on the upper deck they have eight similar guns, protected in like manner, and six others in turrets—three each side; in all, eighteen 5-9-in. guns, besides twelve 3-5-in. and smaller guns. There are five vessels of the "Wittelsbach" class, a development of the "Kaiser Friedrich III."; they have 700 tons more displacement, 15 ft. longer and 11 ft. more beam, but are of shallower draught. They have engines of 15,000 H.P., and a speed of 19 knots, or a knot more than their predecessors. Their armament is the same, but the 9-4-in. guns are better protected. The main armour belt is somewhat longer, but in other respects the thicknesses and general disposition of the protection are similar to the "Kaiser Friedrich III." class.

In the next five vessels, the "Braunschweig" class, laid down in 1901-1902, the 9-4-in. guns were replaced by 11-in. guns for the main armament; and the eighteen 5-9-in. guns were replaced by fourteen 6-7-in. guns for the secondary armament. The displacement was increased to 12,988 tons, the speed of 18 knots was maintained, and the armour protection practically as in the preceding vessel.

**FIG. 67.—Arrangement of Guns and Armour of U.S. "Connecticut."**

The "Nassau," the first of the German "Dreadnoughts" laid down in 1907, was 455 ft. in length and of 18,200 tons displacement, and carried an armament of twelve 11-in., twelve 5-9-in. and sixteen 3-4-in. guns, had an armour belt of Krupp steel 11 in. in thickness, 1.1 H.P. 22,000 for 19 knots and speed on trial 20-7 knots. Fosen (fig. 71, Plate XVII.), "Rhönland" and "Westfalen" of the same type were also laid down in 1907 and were built and completed for sea with extraordinary rapidity. The "Westfalen" attained 20-25 knots on trial with 26,792 H.P.

The next three vessels, "Thüringen," "Helgoland" and "Östfriesland,” laid down in 1908, are provided with twelve 11-in. guns arranged as in H.M.S. "Neptune"; they are of 22,130 tons displacement and 25,000 I.H.P. for 19-5 knots speed (probably at continuous sea speed; a measured-mile speed of 21 knots is expected); they are protected by 12-in. Krupp steel armour; their dimensions are: length 480 ft., beam 98 ft., draught 27 ft. 6 in. These vessels laid down in 1910 were said to be still larger.

**France.**—For many years the French designers favoured the placing of the four heavy guns of their battleships in separate barbettes—a 12-in. gun at each end and a 10-8-in. gun on each side of the vessel amidships, intermediate positions being arranged for the smaller guns. Such vessels as the "Carnot," "Charles Martel," "Jaureguy-Berry," "Masséna," "Bouvet" approximating to 12,000 tons displacement, and built in the nineties, were so arranged. These were followed by a series of vessels in which the 12-in. gun alone was accepted for the main armament, and two pairs were fitted, one forward and one aft as in British vessels; the "Gaulois," "Charlemagne," "St. Louis" and "Suffren" were so arranged. The "Suffren," commenced in 1899 (displacement 12,728 tons, length 410 ft., beam 70 ft. and draught 27 ft. 6 in.), had a complete water-line belt of Harveyized steel armour of 11 in. maximum thickness, and above this, up to the main deck, similar armour, 5 in. thick, extending from the after turret to the bow; she also had a short armoured battery on the main deck which enclosed the funnel and was connected to the main armament by one twin and one single gun, each carrying two 12-in. guns, and six arranged three on each broadside, each carrying a 6-4-in. gun. The armament of the largest turrets was of the same thickness as the armour belt, namely, 11 in., and that of the smaller turret 9-5 in. guns on the superstructure, and also had twenty-two smaller guns and four torpedo tubes, of which two were submerged. She was named the "L'Impératrice." The "République," laid down in 1901, and the "Patrice," laid down in 1902, were superior in speed and armament to any British battleships then building. They had a displacement of 14,856 tons, and were of 439 ft. length, 79 ft. 6 in. beam, and 29 ft. 9 in. draught. They had three screws, and a nominal I.H.P. of 17,500 for a speed of 18 knots; but on trial these were considerably exceeded. The "Patrice" reporting 19,000 I.H.P. and 19-47 knots. They carried four 12-in. B.L. guns in pairs on the midship line, as in the British ships, twelve 6-4-in. Q.F. guns in pairs in turrets on the upper deck, six additional 6-4-in. Q.F. guns in casemates on the main deck, twenty-six 3-pdr., three above-water and two submerged torpedo tubes. There was a complete water-line belt of a maximum thickness of 12 in., the bow was protected by 4-in. armour and there was a partial 4-in. belt above the 12-in. belt. The protective deck was 4 in. thick on the slopes, and the armour of the main turrets 12 in., the whole armour being of Harvey quality. Four later vessels of the class, "Justice," "Démocratie," "Liberté," and "Vérité," were given a still more powerful secondary armament of 7-6-in. guns—six placed in well-protected turrets at the bow, at the after part of the deck, and four in casemates between the decks. Six vessels, the "Courbet," "Danton," "Hatsuse," "Diderot," "Mirabeau," "Vergniaud" and "Voltaire," were laid down in 1907. All had Parsons turbines of 500 I.H.P., and a speed of 19-25 knots, and their main armament consisted of four 12-in., and twelve 9-4-in. guns, as shown above. The later French ships, "Courbet" and "Jean Bart" carry twelve 12-in. guns in six pairs, two forward and two aft on the middle line, one pair training over the other, and one pair on each side amidships as in "Dreadnought." They are of 23,000 tons displacement and 20 knots speed, and have an anti-torpedo boat armament of twenty-two 5-5-in. guns, all in casemates of 7-in. armour.

**Japan.**—Previous to the Russo-Japanese War Japan had provided herself with a number of excellent battleships built in Great Britain, such as the "Fuji" of 12,450 tons displacement, four 12-in. Guns Ironworks in 1894, the "Hatsuse," built at Elswick, the "Asahi," built at Clydebank, and the "Shikishima," built at the Thames Ironworks, all of about 15,000 tons displacement and laid down in 1897-1898. The dimensions of these vessels were: length 400 ft., beam 75 ft. 6 in., mean draught 27 ft. The I.H.P. was 15,000, giving a speed of 18 knots. The armouerbelt extended the full length of the ship at the water-line, and had a maximum thickness of 9 in.; between the top of the belt and the main deck, for a length of some 220 ft., was an upper belt 6 in. thick, which was continued by oblique bulkheads to the sides of the heavy-gun barbettes. The turrets were all twelve 6-4-in. guns, and one each side amidships and one aft, had armour 14 in. thick, and the conning-tower also was 14 in. thick. The armament consisted of four 12-in. 49-ton B.L. guns, two mounted in each barbette and loading in any position of training; fourteen 6-4-in. Q.F. guns in casemates on the main deck and six on the upper deck; and twenty 3-pdrs., besides smaller guns and four submerged torpedo tubes. The "Mikasa," laid down at Elswick, is a development of the "Hatsuse" class design, being 200 tons heavier and 6 in. more in draught. The principal difference was that the eight 6-4-in. Q.F. guns on the main deck were increased to ten in number, and instead of being in the casemates below, in a 6-in. armoured central battery, with 2-in. divisional screen bulkheads. The "Hatsuse" was destroyed in the war by a mine explosion; and the "Mikasa" was seriously damaged by mines. After the war she was accidentally sunk on the 10th of September 1905; she was, however, refloated on the 8th of August 1906, repaired and recommissioned. The Japanese fleet in 1910 contained
several vessels which were captured from Russia during the war, such as the “Iwami” of 15,515 tons (late “Orel”), the “Hizen” of 12,275 tons (late “Retvizan”), the “Segami” of 12,790 tons (late “Perevez”), the “Suwo” of 12,997 tons (late “Pobeda”), the “Tango” of 10,960 tons (late “Poltava”), and the “Iki” of 9700 tons (late “Imperator Nikola I”). The “Suwo”

24,000 H.P. are provided for a speed of 20 knots. It is noteworthy that this vessel was laid down on the 15th of May, 1905, while the “Lord Nelson” of 16,400 tons was not laid down until the 18th of May, 1905 and the “Dreadnought” of 17,900 tons not until the 2nd of October, 1905. The “Aki” also exceeds in displacement the “St Vincent,” laid down in 1907-1908, and her tonnage was not reached in Great Britain until 1909, when the “Neptune” was laid down. The “Aki” was followed by still larger vessels, the Kawachi and “Settsu,” both of 20,800 tons. The “Kawachi” is thus 900 tons greater than the Neptune, and she was laid down one day before that vessel. The general arrangement of armament and guns of these large vessels is shown in fig. 74: they are protected by armour of 12 in. to 5 in. in thickness, and in addition to twelve 12-in. guns they carry ten 6-in., twelve 4-7 in. and four 3-5 in.

Russia maintained in 1910 two fleets, one being in the Black Sea, prevented by treaty from passing through the Dardanelles, and the other, the main Russian Fleet, in the Baltic.

In 1882 three remarkable vessels were laid down for the Black Sea Fleet, the “Catherine II,” “Tchesma,” and “Sinope.” They were barbette ships of 10,180 tons displacement, with a compound armour belt of a maximum thickness of 16 in., armed with six 12-in. B.L. guns mounted in pairs on the upper deck in a large pear-shaped barbette, and seven 6-in. guns on the main deck; and having a speed of 16 knots. Other vessels built for this fleet were the “Twelve Apostles” of 8709 tons, the “George the Victorious,” 11,032 tons, the “Three Prelates,” 13,318 tons, the “Rostislav,” of 8800 tons laid down in 1895 and the “Panterleimon” of 12,682 tons laid down in 1897. The latest vessels built on the Black Sea are the “Ioann Zlatoust” and “Evstafi,” of 12,849 tons and 16 knots, carrying four 12-in., four 8-in., twelve 6-in., fourteen 12-pdr. and six 3-pdr. guns; both were laid down in 1903.

Of the main Russian Fleet outside the Black Sea only a few battleships survived the Russo-Japanese War; these included the “Pastorevich” of 13,000 tons, built in France in 1899, carrying four 12-in. guns in two barbettes, and twelve 6-in. guns in pairs in turrets; also the “Slava,” laid down on the Neva in 1902, 370 ft. long, of 13,516 tons displacement, 16,000 I.H.P. and 18 knots speed, her hull protected by armour of 9 in. to 4 in. in thickness. The “Slava” carried four 12-in. guns in barbettes having 10-in. armour, and twelve 6-in. guns in turrets having 6-in. armour.

In January 1903 Russia laid down the “Imperator Pavel I.” a larger and more powerful vessel than any then building by any other power, being of 17,400 tons displacement—almost that of the
“Dreadnought,” but laid down 2½ years earlier; she carries four 12-in. and fourteen 8-in. guns as well as twelve 4-7-in. guns arranged as shown in fig. 75, from which it will be seen that an attempt was made to protect almost the whole of the vessel above water with armour varying from 8¾ in. to 3 in. in thickness. Engines of 17,600 I.H.P. are provided for 18 knots speed. A sister vessel, “Andrei Pervozvannii,” was also laid down in 1903, but neither vessel was completed in time to take part in the war. In 1909 four vessels were laid down, which were again larger than any then building for any other power, viz. the “Sevastopol,” “Petropavlovsk,” “Gangut,” and “Poltava,” of 23,000 tons displacement, with Parsons turbines of 42,000 H.P. for 23 knots speed, 600 ft. long, 89 ft. beam, 27 ft. 3 in. draught, protected by 11-in. armour, armed with twelve 12-in. and sixteen 4-7-in. guns, the 12-in. guns being carried in four three-gun turrets placed at considerable distances apart on the middle line.

Italy.—The Italian navy has always contained interesting vessels embodying the independent thought and skill of her own designers. The “Duilio,” launched in 1876, and the “Dandolo,” launched in 1878, were 340 ft. in length, 16,400 tons displacement, and carried four 100-ton M.I. rifled guns, mounted in two turrets and capable of penetrating 22-7 in. of iron at 1000 yds. They had a central citadel 107 ft. in length, protected by 21½ in. of steel armour, with 18-in. armour on the turrets. Their engines were of 7900 I.H.P., giving a speed of 15 knots. In the “Italia” and “Lepanto,” launched in 1880 and 1883 respectively, side armour was dispensed with, a curved 3-in. armour deck, with its sides 5½ ft. below the water-line, being fitted from stem to stern, with armour glacis protection to the funnel openings, &c. This, in this deck; they carried four 100-ton breech-loading guns mounted in two barbettes arranged so as to permit all four guns to fire ahead, astern or on either broadside as in “Inflexible”; their displacement was 13,500 tons, their length 400 ft., and they had engines of 15,000 I.H.P. designed to give a speed of 18 knots. They were followed by three of the “Andrea Doria” class of 11,000 tons, launched in 1885, 1886, and 1887 respectively, with four 105-ton breech-loaders, and protected by an 18-in. belt of compound armour; and by the “Re Umberto,” “Sicilia,” and “Sardegrina” of 13,250 tons, launched 1888 to 1891, and armed with four 67-ton B.L. guns having a penetration of 27 in. of iron at 1000 yds. In 1897 Italy launched the second-class battleships “Ammiraglio di Saint Bon” and the “Emanuele Filiberto” of 9800 tons and 18 knots speed, carrying four 10-in., eight 6-in. and eight 4-7-in. guns and armoured with 10-in. to 4-in. armour. These were followed by the “Regina Margherita,” laid down in 1898, and the “Benedetto Brin,” laid down in 1899, two vessels of 13,426 tons displacement and 20 knots speed, of good freeboard, carrying an armament similar to that of the “Duncan” and in addition four 8-in. guns; the 12-in. guns are protected by 10-in. armour, the 6-in. guns and the ship’s sides by 6-in. armour with 3-in. side plating forward and aft. Four very notable vessels were next laid down—the “Regina Elena” (fig. 76, Plate XVII.) and “Vittorio Emanuele III.” in 1901, and the “Napoli” and “Roma” in 1903, each one a displacement of 12,625 tons, carrying two 12-in. and twelve 8-in. guns and carrying 17½ in. of armour; they were armed with a large number of small quick-firing guns; their machinery of 20,000 I.H.P. is provided for 16 knots speed, and their hulls are cut down, giving reduced freeboard as compared with “Benedetto Brin,” and the hulls and machinery are built as lightly as possible. For several years no new design was adopted, but in 1909 the “Dante Alighieri” was laid down of 18,700 tons displacement, an increase of 50% over that of the preceding vessels. She was reported to be 492 ft. long, 79 ft. beam, carrying twelve 12-in., eighteen 4-7-in. and sixteen 3-1-in. guns, turbines of 30,000 I.H.P. being provided for a speed of 23 knots, and side armour fitted 9 in. thick amidships tapering to 6 in. forward and 4½ in. aft. Three later vessels, the “Conte di Cavour,” “Giulio Cesare” and “Leonardo da Vinci,” are of 22,000 tons, 35,000 I.H.P., 23 knots, and carry thirteen 12-inch guns.

Austria.—Until quite recently Austria has made no attempt to maintain battleships of the first class. Three small battleships, the “Monarch,” “Budapest” and “Wien,” were laid down in 1893-1894, of 5550 tons displacement and 17½ knots speed, carrying four 9-4-in., six 6-in. and twelve 3-pdr. guns, with armour 10½ in. to 4 in. in thickness. In 1899 four more vessels, the “Habsburg,” (fig. 77, Plate XVII.), “Arpad” and “Babenberg,” were begun, of 8340 tons displacement and 19 knots speed, carrying three 9-4-in., twelve 6-in. and several smaller Q.F. guns and well armoured. In 1901 it was decided to build the “Erzherzog Karl Friedrich” and “Ferdinand Max,” of 10,600 tons and 19 knots, carrying four 9-in., and small Q.F. guns as well as the “Monarch,” but with the secondary armament increased to twelve
Fig. 79.—Brazilian Minas Geraes.

Fig. 69.—H.M.S. Triumph.

Fig. 68.—U.S.A. Michigan.
<table>
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<tr>
<th>Vessel</th>
<th>Date of Launch</th>
<th>Hull Material</th>
<th>Length</th>
<th>Breadth</th>
<th>Masts</th>
<th>Armoured: Throat to Deck</th>
<th>Speed</th>
<th>I.H.P.</th>
<th>Engines</th>
<th>Rollers</th>
<th>Armament (including Machine Guns)</th>
<th>Heavy Guns when mounted</th>
<th>Thickest Armour</th>
<th>Cost (excluding Guns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrior</td>
<td>1860</td>
<td>Iron</td>
<td>Ft. 380</td>
<td>Ft. 58</td>
<td>0</td>
<td>Ft. 26, 7</td>
<td>8,830</td>
<td>10,600</td>
<td>6,000</td>
<td>10 rectangular 22 lb pressure</td>
<td>68-7 61 ton guns</td>
<td>Broadside 48</td>
<td>£355,963</td>
<td></td>
</tr>
<tr>
<td>Agincourt</td>
<td>1865</td>
<td></td>
<td>400</td>
<td>59</td>
<td>3</td>
<td>28, 2</td>
<td>10,000</td>
<td>5,000</td>
<td>10 rectangular 22 lb pressure</td>
<td>17-32 10 ton M.L.R.</td>
<td>Broadside 51</td>
<td>£400,906</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bellerophon</td>
<td>1865</td>
<td></td>
<td>300</td>
<td>56</td>
<td>2</td>
<td>60, 0</td>
<td>7,550</td>
<td>6,500</td>
<td>1 Horizontal, trunk, surfacecondensing 1 expansion 1 set of 2 cylinders, total x 48</td>
<td>Rectangular 48 lb pressure</td>
<td>10-10 20 ton and 5-61 ton guns</td>
<td>Central battery 80</td>
<td>£447,618</td>
<td></td>
</tr>
<tr>
<td>Moosach</td>
<td>1869</td>
<td></td>
<td>330</td>
<td>57</td>
<td>6</td>
<td>20, 0</td>
<td>8,300</td>
<td>7,500</td>
<td>1 Horizontal, surfacecondensing 1 expansion 1 set of 2 cylinders, total x 48</td>
<td>Rectangular 314 lb pressure</td>
<td>4-42 35 ton, 2-7 12 ton, 26 smaller guns</td>
<td>Turrets 10, Sides, 7</td>
<td>478,937</td>
<td></td>
</tr>
<tr>
<td>Sultan</td>
<td>1870</td>
<td></td>
<td>325</td>
<td>61</td>
<td>2</td>
<td>65, 0</td>
<td>9,300</td>
<td>7,700</td>
<td>1 Horizontal, trunk, surfacecondensing 1 expansion 1 set of 2 cylinders, total x 48</td>
<td>Rectangular 420 lb pressure</td>
<td>8-28 20 ton and 4-12 20 gun</td>
<td>Central battery 0</td>
<td>£485,355</td>
<td></td>
</tr>
<tr>
<td>Devastation</td>
<td>1871</td>
<td></td>
<td>285</td>
<td>61</td>
<td>4</td>
<td>27, 0</td>
<td>10,600</td>
<td>7,000</td>
<td>2 Horizontal, surfacecondensing 2 expansion 2 sets of 2 cylinders, total x 39</td>
<td>8 rectangular 30 lb pressure</td>
<td>4-42 35 ton and 10 smaller guns 2 torpedo tubes</td>
<td>Turrets 14 Sides, 12</td>
<td>£430,746</td>
<td></td>
</tr>
<tr>
<td>Inflexible</td>
<td>1879</td>
<td></td>
<td>320</td>
<td>75</td>
<td>2</td>
<td>65, 0</td>
<td>12,800</td>
<td>8,000</td>
<td>2 Vertical, 2 expansion 2 sets of 3 cylinders, total x 24</td>
<td>8 single-ended, oval 4 double 60 lb pressure</td>
<td>4-60 80 ton and 6-4 22 cwt. guns 4-44 torpedo tubes</td>
<td>Turrets 24</td>
<td>£951,406</td>
<td></td>
</tr>
<tr>
<td>Beabow</td>
<td>1885</td>
<td>Steel</td>
<td>330</td>
<td>68</td>
<td>6</td>
<td>28, 0</td>
<td>10,600</td>
<td>11,500</td>
<td>2 Vertical, 2 expansion 2 sets of 3 cylinders, total x 48</td>
<td>12 oval</td>
<td>2-165 120 ton, 10-6 and 15 smaller guns 5 torpedo tubes</td>
<td>Barbettes 10</td>
<td>£774,701</td>
<td></td>
</tr>
<tr>
<td>Royal Sovereign</td>
<td>1892</td>
<td></td>
<td>380</td>
<td>75</td>
<td>0</td>
<td>27, 6</td>
<td>14,150</td>
<td>17,3 13,000</td>
<td>2 Vertical, 2 expansion 2 sets of 3 cylinders, total x 48</td>
<td>8 single-ended return tube 148 lb pressure</td>
<td>4-134 67 ton, 10-6 and 38 smaller guns 5-18 trumpet tubes</td>
<td>Barbettes 12</td>
<td>£872,458</td>
<td></td>
</tr>
<tr>
<td>Majestic</td>
<td>1896</td>
<td></td>
<td>300</td>
<td>75</td>
<td>0</td>
<td>27, 7</td>
<td>14,000</td>
<td>17,5 13,000</td>
<td>2 Vertical, 2 expansion 2 sets of 3 cylinders, total x 48</td>
<td>8 single-ended return tube 20 Belleville, with economical 190,000, 12-60 and 26 smaller guns 4 18 trumpet tubes</td>
<td>Barbettes 12</td>
<td>£1,022,745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formidable</td>
<td>1898</td>
<td></td>
<td>400</td>
<td>75</td>
<td>0</td>
<td>26, 9</td>
<td>15,000</td>
<td>18,0 15,000</td>
<td>2 Vertical, 2 expansion 2 sets of 3 cylinders, total x 48</td>
<td>20 Belleville, with economical 240,000, 12-60 and 26 smaller guns 4 18 trumpet tubes</td>
<td>Barbettes 12</td>
<td>£1,022,142</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duncan</td>
<td>1901</td>
<td></td>
<td>405</td>
<td>75</td>
<td>6</td>
<td>26, 6</td>
<td>16,000</td>
<td>19,0 18,000</td>
<td>2 Vertical, 2 expansion 2 sets of 4 cylinders, total x 48</td>
<td>24 Belleville, with economical 4-12, 12-60 and 26 smaller guns 4 18 trumpet tubes</td>
<td>Barbettes 10</td>
<td>£840,474</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swiftsure</td>
<td>1903</td>
<td></td>
<td>436</td>
<td>71</td>
<td>4</td>
<td>24, 7</td>
<td>11,800</td>
<td>20,0 18,500</td>
<td>2 Vertical triple expansion 2 sets of 4 cylinders, total x 48</td>
<td>Yarrow large tube 4-10, 14-75, 13-6 12 pr. and 6-8 pr. and machine guns</td>
<td>Barbettes 10</td>
<td>£840,474</td>
<td></td>
<td></td>
</tr>
<tr>
<td>King Edward VII.</td>
<td>1903</td>
<td></td>
<td>425</td>
<td>78</td>
<td>0</td>
<td>26, 9</td>
<td>15,350</td>
<td>18,2 18,000</td>
<td>2 Vertical triple expansion 2 sets of 4 cylinders, total x 48</td>
<td>Babcock and Wilcox and cylindrical 4-12, 4-9, 12-6 pr. and 17-5 pr. and machine guns 4 torpedo tubes</td>
<td>Barbettes 12</td>
<td>£1,383,843</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lord Nelson</td>
<td>1906</td>
<td></td>
<td>410</td>
<td>70</td>
<td>6</td>
<td>27, 0</td>
<td>16,500</td>
<td>18,5 16,500</td>
<td>2 Vertical triple expansion 2 sets of 4 cylinders, total x 48</td>
<td>15 Yarrow large tube 4-12, 10-95, and 24-12 pr. and 5 machine guns 5 torpedo tubes</td>
<td>Barbettes 12</td>
<td>£1,560,889</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dreadnought</td>
<td>1906</td>
<td></td>
<td>490</td>
<td>82</td>
<td>6</td>
<td>20, 6</td>
<td>17,900</td>
<td>21-6 23,000</td>
<td>4 Parsons turbines</td>
<td>Babcock and Wilcox 10-12, 24-12 pr. and machine guns 5 torpedo tubes</td>
<td>Barbettes 12</td>
<td>£1,693,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emperor Pavel I. (Russian)</td>
<td>1907</td>
<td></td>
<td>490’9”</td>
<td>79</td>
<td>9</td>
<td>28, 6</td>
<td>17,400</td>
<td>18,0 17,600</td>
<td>2 Vertical triple expansion</td>
<td>Belleville 4-12, 14-85, 12-7 and 14 smaller, light and machine guns 5 torpedo tubes</td>
<td>Barbettes 12</td>
<td>£1,170,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peres (German)</td>
<td>1908</td>
<td></td>
<td>455</td>
<td>88</td>
<td>6</td>
<td>26, 6</td>
<td>18,300</td>
<td>20-6 20,000</td>
<td>3 Vertical triple expansion 4-cylinder 2 Vertical triple expansion</td>
<td>Schulz-Therny-croft 12-117, 12-99, and machine guns 6 torpedo tubes</td>
<td>Barbettes 12</td>
<td>£1,010,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE XVI. (Continued).—Development of some of the Leading Features of Notable Armoured Battleships from 1860 to 1910.

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Date of Construction</th>
<th>Hull Material</th>
<th>Length</th>
<th>Beam</th>
<th>Draft</th>
<th>Armament (including Machine Guns)</th>
<th>Heavy Guns when mounted</th>
<th>Thickened Armour</th>
<th>Cost (excluding Guns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erzerzog Franz Ferdinand (Austrian)</td>
<td>1908</td>
<td>Steel</td>
<td>459 ft</td>
<td>96 ft</td>
<td>26 ft</td>
<td>4-12&quot;, 8-9, 20-30, 5/2 lb., and 4 machine guns 3 torpedo tubes</td>
<td>Barbettes</td>
<td>12</td>
<td>1,831,400</td>
</tr>
<tr>
<td>Minas Geraes (Brazilian)</td>
<td>1906</td>
<td>Steel</td>
<td>500</td>
<td>93</td>
<td>25</td>
<td>19,821 27,712 2 Vertical triple expansion Babcock and Wilcox</td>
<td>12</td>
<td>15,130</td>
<td>193</td>
</tr>
<tr>
<td>Delaware (United States)</td>
<td>1900</td>
<td>Steel</td>
<td>510</td>
<td>85</td>
<td>27</td>
<td>20,000 18,578 2 Vertical triple expansion Babcock and Wilcox</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danton (French)</td>
<td>1900</td>
<td>Steel</td>
<td>470</td>
<td>84</td>
<td>27</td>
<td>18,035 19,723 22,500 4 Parsons turbines</td>
<td>12</td>
<td>2,068,000</td>
<td></td>
</tr>
<tr>
<td>Kawasaki (Japanese)</td>
<td>1910</td>
<td>Steel</td>
<td>520</td>
<td>81</td>
<td>27</td>
<td>28,500 20,500 20,16,500 4 Curtis turbines</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alfonso XIII (Spanish)</td>
<td>1914</td>
<td>Steel</td>
<td>415</td>
<td>78</td>
<td>25</td>
<td>15,460 15,500 4 Parsons turbines</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moreno (Argentine)</td>
<td>1918</td>
<td>Steel</td>
<td>578</td>
<td>95</td>
<td>27</td>
<td>28,000 31,900 21,500 21,500 4-12&quot;, 11-9, 10-6, 5-2, 2, 16-4, 16-3, 16-2, 10 smaller guns 2-21&quot; torp. tubes</td>
<td>12</td>
<td>2,700,000</td>
<td></td>
</tr>
</tbody>
</table>

7.4 in. guns all well protected, while the next step was to vessels of a type very similar to the "King Edward VII." class, but of greater gun power and higher speed, with somewhat thinner armour and smaller coal capacity. These vessels, "Erzerzog Franz Ferdinand, " "Rădetzky" and "Zrini, " were being completed in 1910. Their arrangements of guns and armour are shown in Fig. 78. Battleships of far greater fighting value were laid down by Austria; of 20,000 tons displacement, 25,000 H.P., and 22 knots speed, mounting ten 12-in. guns, protected by 11-in. armour, and costing about 21 million sterling each.

Brazil.—For several years by mutual arrangement no battleships were added to the South American navies, but in 1906 Brazil ordered three vessels of 19,281 tons, 1380 tons heavier than the "Dreadnought", and finished; the two older of this class carry twelve 12-in. guns in place of the ten of the "Dreadnought", and can fire ten guns on either broadside, eight ahead and eight astern; they also carry fourteen 4-7-in. guns behind 9-in. armament on main deck, and eight behind thinner armour on the upper deck. The ship's side, barbettes and gun mountings are protected by 9-in. armour, the belt armour tapering to 4-in. forward and aft. The vessels are 500 ft. long, 83 ft. beam and 25 ft. draught; engines of 23,500 H.P., being provided for 21 knots. The leading vessel, the "Minas Geraes" (fig. 79, Plate XVIII.), was built at Elswick; she obtained about 21 knots on trial, and passed through all her severe gun trials with great success. Fig. 80 shows the general arrangements of guns and armour. The second vessel, the "Sao Paulo," was built at Barrow, and was also completed to the same design. The third vessel, the "Rio de Janeiro," which in 1910 was being built by the Elswick firm, has been redesigned to be 655 ft. in length over all, 92 ft. beam and 32,000 tons displacement on a draught of 26 ft. Her armament was to be twelve 14-in. guns, with a secondary armament of fourteen 6-in. guns, an anti-torpedo armament of fourteen 4-in. guns, as well as a number of smaller guns, and three submerged torpedo tubes. She was fitted with four screws and turbines of 45,000 H.P. to drive her at 225 knots. Her cost was reported to be almost £2,000,000, and in 1910 she was by far the largest vessel on the stocks.

Argentine Republic.—Early in 1910 the Argentine Republic ordered two vessels, the "Moreno," and "Rivadavia," of 28,000 tons, armed with twelve 12-in. guns, twelve 6-in. and sixteen 4-in. guns, to be built by the New York Shipbuilding Co. and the Forc River Shipbuilding Co., respectively. Their displacement is much greater than that of the largest battleships building at the time they were ordered, although they are 4000 tons smaller than the "Rio de Janeiro." They are 578 ft. long, 96 ft. beam, 274 ft. draught, and tonnage of 40,000 H.P. for speed on 80,000 tons, only second to the two vessels as in "Minas Geraes," but with the midship barbettes arranged so that the guns can fire on either broadside, giving a fire of twelve guns on either broadside, eight ahead and eight astern. The ship's side and the heavy guns are protected by 12-in. armour, and the 6-in. guns by...
SHIP

have entirely disappeared. When the final adoption of iron led to the remodelling of the details of construction by Sir E. J. Reed, the new system of construction was applied to the cruisers of the day, but no attempt was made till much later to give these cruisers any protection, nor was the question of their armament given the importance which it afterwards came to have. Lord Armstrong was one of the first to recognize the importance of developing this class of vessel. He considered the essential features of a cruiser to be high speed, protection without the use of side armour, a powerful armament and minimum size and cost; and his views were adopted by the Elswick firm in a large number of cruisers built for foreign Powers down to the introduction of high explosives, when side armour was advocated in place of, or in addition to, the armour deck. The cruisers built for the British navy prior to 1886—of which the principal types were such vessels as the "Inconstant," of 5780 tons (1866); the "Active," of 3080 tons (1867); the "Raleigh," of 5000 tons (1871); and the faster despatch vessels "Iris" and "Mercy," of 3730 tons (1875)—had been almost entirely unprotected; and although the "Comus" and "Leander" enabled more efficient protection to be provided with a much thinner belt than had previously been possible. The Elswick cruiser "Esmeralda" (second), built for Chile in 1893, was one of the first in which the use of side armour was revived. She was followed by other vessels of the armoured type built by the same firm for the Chilean and Japanese navies. In 1898 the "Cressey" class (fig. 84, Plate XXII.) was begun for the British navy, and since this date all cruisers of 9000 tons and above for the British navy have been provided with side armour.

In the United States the adoption of armour belts of the new material for cruisers came somewhat earlier than it did in the British navy, the "Brooklyn" (fig. 84, Plate XXII.), built in 1895, being so protected; and the development of the type has been very marked in recent years, the tendency being to go to larger displacements, in order to provide greater protection and heavier armaments, with each new class of vessel. Indeed, the first-class armoured cruiser of 1910 might be very well described as a high-speed battleship.

In the British navy, as might be expected, the demand for vessels to meet the varied and diverse requirements that necessarily arise in a fleet of such magnitude has led to the production of a number of types, each adapted to its own special duties. They may be classified as (1) unprotected cruisers; (2) protected cruisers of first, second, and third classes; and (3) armoured cruisers. Unprotected cruisers have neither side armour nor other protection against loss of buoyancy from injury by shot and shell. Protected cruisers have vertical side armour, but they have horizontal armour decks with strong sloping sides in the vicinity of the water-line, upon which coal is carried in minutely divided bunker compartments. Armoured cruisers have side or vertical armour in addition to protective decks. Each of these classes includes a number of groups of sister ships, but we shall confine ourselves to describing the main features of a representative ship in a few of the most important groups.

The protected cruiser of medium displacement affords a convenient starting-point, as the latest vessels of this type in 1910 were of about the same displacement as the largest first-class cruisers of thirty years before, and a comparison of representative ships of these classes illustrates the great advances made in thirty years in ships of approximately the same size; while a further comparison of these second-class cruisers (as the vessels of medium displacement are styled) with the first-class protected cruisers of the present day shows the growth in size and power of the largest units of the cruiser type during the same period. It should, however, be noted that while some second-class cruisers reached such a displacement (5600 tons) as to allow of this comparison being made, the great bulk of the vessels of this class were smaller. The "Mersey" is an early example of a vessel of this class which has been considered as service. Began in 1883, her principal dimensions are: length 300 ft., beam 46 ft., mean draught about 20 ft., and displacement 4050 tons. Protection to the vital parts of the ship is provided for by means of a protective deck a little above the level of the water-line, 2 to 3 in. in

classes had been given a partial protective deck, the Elswick-built "Esmeralda" (1883) (fig. 82, Plate XXIII.) may be quoted as the first vessel in which the important features of a complete protective deck and good protection to the guns were combined with high speed and a powerful armament. On the other hand, the "Impéria" and "Warspite," completed in 1885, of much greater displacement than the "Esmeralda," were provided with a partial belt of 10-in. compound armour in combination with a protective deck. Thus the necessity for protecting cruisers led to the introduction of two types—the "protected" cruiser, of which the "Esmeralda" may be taken as the pioneer, and the "armoured" cruiser, of which the "Impéria" and "Warspite" are early representatives; but while in the British navy the "protected" cruiser type was repeated and developed, the "armoured" type was discontinued, and with the exception of the "Orlando" class, built shortly afterwards, the whole of the cruisers built for the British navy for another fifteen years were of the "protected" type. In France and Russia, however, the armoured cruiser continued in favour, the "Dupuy de Lôme" of 1890, for the former, and the "Rurik" of 1892, for the latter, being vessels of this type.

The reintroduction of side armour in British-built cruisers came about when the improvement of armour by the development of the Harvey and Krupp processes of manufacture

Fig. 80.—Arrangements of Guns and Armour of "Minas Geraes."
thickness, in combination with a system of coal-stowage in bunkers along the water-line. She carried two 8-in. and ten 6-in. B.L. guns and four torpedo tubes. Her horse-power was 6000 (forced draught) and her displacement, 5800 tons. She could keep going at 12 knots, with a draught, with capacity for 900 tons of coal. The "Astraea," begun in 1899, may be taken as representing the second-class cruisers of that date. She is built of steel, sheathed and coppered, 450 ft. long, 53 ft. 8 in. beam, 25 ft. 6 in. mean draught, and carries two 6-in. Q.F. guns and eight 4.7-in. Q.F. guns, all on the upper deck and protected by shields, together with four torpedo tubes, two 10-in. and two 8-in. arc, and two cofferdams, which project through this deck, are shielded by 5-in. sloping coamings. The coal bunkers in the neighborhood of the water-line are minutely subdivided, and the stowage is arranged in such a way that in case one section should develop 9000 H.P. (under forced draught) and her speed is 19 knots.

Her coal stowage is 1000 tons.

The "Hermes" (fig. 85, Plate XX.) is one of the largest second-class cruisers in the world. She is 350 ft. long, 54 ft. beam, 20 ft. 6 in. mean draught, and 6500 tons displacement. She presents a striking contrast compared with the "Inconstant," built in 1866, of almost the same displacement. The "Inconstant" was fully rigged, and sailed almost as fast as she steamed; while the "Hermes" has no sail, and steams 20 knots, or 6 knots faster than did the older vessel. The "Inconstant" was entirely unprotected, except the 6-in. sides, whilst the "Hermes" is fully protected by a steel deck 1 ft. 3 in. thick, besides having coal protection. The "Inconstant"'s" main armament consisted of ten 9-in. and six 7-in. guns, and one 6-in. Q.F.; the "Hermes" of twelve 6-in. Q.F. guns, firing probably ten rounds to one of the "Inconstant"'s 9-in., and with a perforation of wrought iron of about one-third as much again. The "Hermes" is built of steel, sheathed and coppered. She carries also eight 4.7-in. Q.F. guns, and two 3-pdr.s, and two submerged torpedo tubes. She has Belleville boilers, developing 10,000 H.P., and giving her a speed of 20 knots.

She is a beautiful ship. The "Hermes," in external appearance, the four vessels of the "Arrogant" class (fig. 86, Plate XX.) possess certain features of special interest which distinguish them from all other second-class cruisers, in which class they are usually included. They are divided into three decks instead of two; the 320 ft. length, 25 ft. 8 in. beam, 15 ft. 6 in. mean draught, of which the "Diadem," built in 1895, is of 11,000 tons displacement, 435 ft. length, 69 ft. beam, 25 ft. 3 in. mean draught, and is adopted as the basis of the "Arrogant" class. That vessel consists entirely of 6-in. Q.F. guns, of which there are sixteen, twelve being protected by 5-in. casemates of Harveyzed steel, and the others disposed, two on the forecastle as bow chasers, and two on the quarter deck as stern chasers, all armament is protected by a steel deck 1 ft. thick, upon which is stowed the 1000 tons of coal which the vessel ordinarily carries, the full coal capacity being 2000 tons. She is provided with 32 water-tube boilers of the Belleville type, and her machinery develops 16,000 H.P., giving her a speed of 20.5 knots. The Canadian cruiser "Niobe" is one of the first four; in the last four ships the casemates are 6 in. thick, and the machinery is of greater power, viz. 18,000 H.P., giving a speed of a quarter of a knot faster.

Third-class protected cruisers included vessels varying in displacement from 1500 to 3000 tons. With a reduction of displacement comes a reduction in cost. Fifth-class cruisers, intended mainly for the protection of merchant ships, cost about $100,000 each, with a crew, a shorter time for building, and the many advantages attendant upon reduced size and draught of water. It has been found possible to embody in a ship of about 2000 tons displacement many of the features of the cruiser, and a large number of vessels of this class have been added to the fleet. Among these may be mentioned the "Barham," a typical small cruiser, which was built in 1889 of steel, of 1830 tons displacement; she is 280 ft. long between perpendiculars and 36 ft. 9 in. beam, and 12 ft. 8 in. draught of water. As originally completed, this vessel had cylindrical boilers and a H.P. of 4700, giving a speed of 17.5 kts. In 1898, her machinery was improved by being reboilered with water-tube boilers of the Thornycroft type, and with these a H.P. of 6000 is obtained, and the vessel reaches a speed of nearly 20 knots. The protection afforded by this is considered remarkable. The "Arrogant" class, two 10-in. Q.F. guns, one 8-in. Q.F., one 6-in. Q.F., and one 4.7-in. Q.F., all on the flat, and sloping sharply downwards near the water-line, where the thickness is increased to 2 in.; and above this deck the coal stowage is stowed in small ventilated bunkers. She carries an armament of six 4.7-in. Q.F. guns in shielded casemates, four torpedo deck, four 3-pdr.s, two machine guns and two above-water torpedo tubes. She carries 140 tons of coal in her normal condition, and her machinery develops 16,500 H.P., giving her a speed of 20 knots. The "Barham" was followed by several vessels of the "Tauranga" class, built for service in Australian waters, and the "Pearl" class for service in other waters, all of 2500 tons displacement, 19 knots speed, and 2500 H.P. for each vessel. In 1866-1869 nine smaller and faster cruisers were laid down, known as the "Pioneer" class, which might be taken to include the "Astraea" and the "Diadem" class, with the differences between them being small. These two classes were built in succession, the "Pioneer" class being 245 ft. long, 36 ft. 9 in. beam, 13 ft. 6 in. mean draught and of 2200 tons displacement. She has water-tube boilers of the small-tube type.
and engines of 7000 H.P., giving her a speed of 20 knots. She carried 2500 tons above the displacement, and has stowage for 550 tons. She has eight 4-in. Q.F. guns, eight 3-pdr.s, and two above-water torpedo tubes, and a 2-in. protective deck.

This type of cruiser reached its final development in the four vessels of the "Drake" class, laid down in 1902-1903, which were the last third-class cruisers designed by Sir William White. Three of the vessels, "Diamond," "Sapphire" and "Topaze," were fitted with compound engines of 9800 I.H.P. for 22 knots, and in the fourth, the "Amethyst," Parsons turbines were fitted. All were 360 ft. long, 40 ft. beam, 14 ft. 6 in. draught, and carried twelve 4-in. and eight 3-pdr. Q.F. guns. On trial the "Topaze," reached a maximum speed of 22 knots, while the "Amethyst," obtained 23-65 knots, an advantage of 1-38 knots per hour for the turbine with practically the same coal consumption, and with a distinctly lower rate of coal consumption at equal speeds for all speeds above 14 knots. This performance was regarded as a great success for Parsons turbines, and materially influenced the question of their adoption in succeeding vessels at home and abroad.

The "Drake," of 26,700 tons displacement, viz., the "Pathfinder," "Patrol," "Sentinel" and "Skirmisher," of about 2900 tons displacement, and 25 knots speed; 370 ft. long, with engines of 17,000 I.H.P., and carrying ten 12-pdr. and eight 3-pdr. Q.F. guns as well as two torpedo tubes. Two others laid down in 1903 were named "Forward" and "Foresight," and carried fourteen 12-pdr.s, and two 3-pdr.s, and obtained the 25 knots with 15,000 I.H.P.

The last two of the series — "Adventure" and "Attentive" (Fig. 89, Plate XIX.) — of 16,000 I.H.P. and 26 knots, were laid down at Elswick in 1904; they were 374 ft. long, 38 ft. 3 in. beam, 15 ft. 6 in. draught, and 2670 tons displacement, 16,000 I.H.P., carried ten 12-pdr.s and eight 3-pdr.s.

Four vessels, named "Boadicea," "Bel- longa," "Blanche" and "Blonde," were laid down in 1907-1909, of slightly larger dimensions, the "Blonde" being 385 ft. long, 41 ft. 6 in. beam, 13 ft. 6 in. draught, 3360 tons displacement, 18,000 I.H.P., 25 knots, and armed with ten 4-in. Q.F. guns and two torpedo tubes.

In 1909 five vessels of 45,900 tons displacement, 22,000 I.H.P., 25 knots speed, carrying two 6-in. and ten 4-in. Q.F. guns, with two torpedo tubes, were laid down and known as second-class protected cruisers of the "Drake" class. They are 430 ft. long, 60 ft. beam, 21 ft. 3 in. draught and protected by a 1-in. steel deck with 2-in. slopes. Fig. 90, Plate XIX., shows the "Newcastle," a vessel of this class built at Elswick. Four other vessels, the "Hannibal," "Hercules," "Hastings" and "Hastings," laid down six months later, were very similar, but slightly larger to give one knot more speed. The navy estimates for 1910-1911 provided for laying down five larger vessels of this type. The Australian cruisers "Melbourne" and "Sydney" are of the "Hannibal," class, while the new Canadian cruisers are of the later type.

Between 1870 and 1881, several armoured cruisers were laid down for the British navy, the most notable being those in England being the Armoured cruisers. "Chanak," of 5390 tons and 12 kts., laid down in 1873, the "Nelson" and "Northampton," of 2670 tons and 13 kts., laid down in 1874, and the "Impérieuse" and "Warspite," laid down in 1881. The two last-mentioned ships were provided with masts and a good spread of sails, and were the last large vessels to be so fitted for the British navy. The sails were not found to be of much service and were removed. These vessels were of 6400 tons displacement, 315 ft. long, and were protected by a partial belt amidships of 10-in. compound armour over a length of about 140 ft., with a protective deck above it 1 1/2 in. thick and transverse bulkheads at the ends of the belt 9 in. thick, the protective deck from the bulkheads to the ends of the ship being 3 in. thick. They had machinery of 10,000 H.P. and a speed of 16 1/2 knots. They carried four 9-2-in. B.L. guns in separate barbettes—one forward, one on each quarter—the bow barbette being armed with four smaller and machine guns, and six torpedo tubes. They were sheathed with wood and coppered, in order to be able to keep the sea for a long period without docking. The next vessels of the type were the "Drake," class, begun in 1885. Seven of these were launched in 1886 and 1887. They were much smaller than the laid down in 1899, were for several years the largest and fastest armoured cruisers afloat. They are of 14,100 tons displacement, 380 ft. long, 71 ft. beam, and 26 ft. mean draught. They are unarmoured, are protected by a Krupp steel 6-in. belt extending from barbette to barbette, and from 6 ft. below water to the height of the main deck, completed at the after end by a 5-in. bulkhead, and carried forward to the bow by 2-in. plating extending right up to the upper deck. There are two protective decks, the lower, being 5 in. to 2 in. in thickness, and the main deck, which is 1 in. thick. Their armament consists of two 9-2-in. B.L. guns in barbettes and gun-houses 6 in. thick on the middle line forward and aft, twelve 6-in. Q.F. guns in 6-in. casemates, and twenty-five 12-pdr.s, and larger guns, with two submerged torpedo tubes. Their H.P. is 21,000 with natural draught, steam being supplied by 30 Belleville boilers, and their speed is 21 knots. They carry 800 tons of coal at normal draught, with capacity for 1600 tons.

The four vessels of the "Drake" class (see Fig. 91, Plate XXIV.), "Impérieuse," being only 5600 tons displacement, 300 ft. long and 56 ft. beam, and 22 ft. 6 in. draught. They had a water-line belt of compound armour, 10 in. thick and nearly 200 ft. long; extending over the top of this, and sloping down forward and aft to the ends of the ship, was a deck 3 in. to 3 1/2 in. thick. Their armament consisted of two 9-2-in. B.L. guns—one forward and one aft instead of the four carried in the "Impérieuse" and "Warspite," but in other respects the same armament as the latter ships. They had engines of 4500 H.P. and a speed of over 18 knots. These vessels were all built from the designs of Sir N. Barnaby.

As already stated, between 1885 and 1898 no armoured cruisers were laid down for the British navy. The "Cressy" (Fig. 83, Plate XXIV.) class, commenced in 1894, consists of six vessels of 12,000 tons displacement, 440 ft. length, 69 ft. 6 in. beam, and 26 ft. 3 in. mean draught. They are built of steel, sheathed and coppered, have a belt of Harvized steel 11 ft. 6 in. wide, 250 ft. long, and 6 in. thick, with bulkheads 5 in. thick and 2 in. protective plating on the sides from the forward bulkhead to the stem. They carry two 9-2-in. B.L. guns in barbettes and gun-houses 6-in. thick, mounted on the middle line forward and aft, twelve 6-in. Q.F. guns in 6-in. casemates, and twenty-five 12-pdr.s, and smaller guns, with two submerged torpedo tubes. Their H.P. is 21,000 with natural draught, steam being supplied by 30 Belleville boilers, and their speed is 21 knots. They carry 800 tons of coal at normal draught, with capacity for 1600 tons.
great sea-keeping power and were superior in all respects to the vessels which caused them to be built. The first set comprised ten vessels of the "Monmouth" class, laid down in 1900 and 1901. Fig. 93 (Plate XXI.) gives a view of the "Cornwall," which may be taken as typical of the class. They are of 9800 tons displacement, length 440 ft., beam 66 ft., mean draught 24 ft. 6 in. They are armoured with a belt of 6 in. of Krupp steel over the main part of the length, diminishing in thickness towards the extremities; they carry fourteen 6-in. Q.F. guns, of which ten are in 4-in. casemates, and the others mounted in pairs in turrets and gun-houses 4 in. thick, forward and aft; they also carry ten 12-pdr., eleven small and machine guns and two submerged torpedo tubes. Their horse-power is 22,000, giving them a speed of 23 knots.

They were followed by six vessels of the "Devonshire" class, laid down in 1902, which were given greater gun power and better armour protection to meet the corresponding advances in foreign vessels. They were of 10,850 tons displacement, 21,000 H.P. and 23 knots speed; were armed with four 7-5-in. and six 6-in. Q.F. guns protected by 6-in. armour, and the armour belt was increased from 4 in. to 6 in. in thickness. These were the last armoured cruisers designed by Sir William White.

The next armoured cruisers built for the British navy, the six vessels of the "Duke of Edinburgh" type, laid down in 1903-1904, were of much greater power, of 13,550 tons displacement, 23,500 I.H.P. and 23 knots speed, and have a main armament of six 9-2-in. guns, mounted singly in barbettes. The secondary armament consists of ten 6-in. Q.F. guns in the first two vessels of the class, but in the remaining four vessels the ten 6-in. guns are replaced by four 7-5-in. guns. They also carry from twenty-five to twenty-nine 3-pdr.s and machine guns and three torpedo tubes. The guns and ship's side are protected by 6-in. armour. In 1903 the "Minotaur" class (fig. 94, Plate XXI.) was laid down, consisting of three vessels of 14,600 tons displacement, 27,000 I.H.P. and 23 knots speed, carrying an armament of four 9-2-in. guns mounted in pairs in 7-in. barbettes forward and aft, and ten 7-5-in. guns all on the upper deck in shallow barbettes of 6-in. armour, with 6 in. enclosed shields. The belt armour is 6 in. thick amidships, tapering to 4 in. forward and 3 in. aft. These vessels are 490 ft. long, 74 ft. and 75 ft. beam, 25 to 26 ft. mean draught, and are the last large cruisers to be propelled by reciprocating engines, or to be armed with 9-2-in. guns. They carry 1000 tons of coal on the load draught, and can stow 2000 tons of coal besides 700 tons of oil fuel.

The next cruisers to be built were the "Invincibles," which might have been classed as battleships on account of their heavy armament and substantial armour protection; the former greatly exceeding in power the armament of any battleship before the "Lord Nelson," and the latter exceeding that provided in any armoured cruisers. Their most striking feature, however, is their great speed, previously only reached by torpedo boats and torpedo boat destroyers, in which everything was sacrificed to obtain the highest possible speed. They were named "Invincible" (fig. 95, Plate XXI.), "Indomitable" and "Inflexible," and were laid down in 1906 at the yards of the Elswick, Fairfield and Clydebank Companies respectively. Their dimensions were:—length 530 ft., breadth 78 ft. 6 in., draught 26 ft., displacement 17,250 tons. They were armed with eighteen 15-in. guns mounted in pairs in four barbette turrets placed as already stated in describing the development of the "Dreadnought" design (see Table XIV. and fig. 96). Thus three pairs of guns can fire directly ahead, three directly astern, and the whole armament can fire on either broadside. In the "Invincible," built at Elswick, all the heavy guns are worked by electric power; in the other vessels they are worked by hydraulic power as usual in H.M. Navy. An anti-torpedo boat armament of sixteen 4-in. guns is provided. The 12-in. guns are protected by 8-in. armour, and a broad belt of side armour is fitted 7 in. thick amidships, and 4 in. forward and aft, associated with thick protective decks. All are fitted with Parsons turbines of 41,000 H.P. and obtained over 27 knots on trial without pressing the boilers. The high steaming power of these ships was shown by the "Indomitable," which conveyed King George V. and Queen Mary (then prince and princess of Wales) to Canada and back in 1908, and steamed on her return journey across the Atlantic—from Belleisle to the Fastnet—at an average speed of 25-13 knots, a record speed at the time for a transatlantic voyage.

It is interesting to compare the "Indomitable"'s performance on the voyage referred to above with that of the "Hero"—a screw line-of-battle ship of 91 guns and 600 nominal horse-power, when employed on a similar errand. This ship was considered a crack ship of her class in 1860, and in that year was selected to convey King Edward VII. (then prince of Wales) on a visit to Canada; she made the passage from Plymouth to St John's in 13 days under steam and sail, and this was considered an exceedingly good performance for a line-of-battle ship in those days.

In 1909 the "Indefatigable" of 18,750 tons displacement was laid down at Devonport; she is very similar to the "Invincible," with the same armament and certain minor improvements. She was followed in 1910 by the "Lion" at Devonport and "Princess Royal" at Barrow, each 660 ft. long, 88 ft. 6 in. beam, and of 26,300 tons displacement on a draught of 28 ft. Parsons turbines of 70,000 H.P. are provided to give a sea speed of 28 knots. Table XVII. contains further particulars of the British "Invincibles," from which it may be seen that the Australian cruisers "Australia" and "New Zealand" are similar to the "Indefatigable."

With regard to cruisers of other navies than the British, it may be said that the vessels constructed at Elswick exercised considerable influence in their development as well as of those of the British navy. The "Esmeralda" (fig. 82, Plate XXIII.) of 1883, built for the Chilean government, but bought by Japan in 1895 and renamed "Idzumi," was of 2900 tons displacement, had 600 H.P. and 19-3 knots speed, was protected by complete 1-in. steel deck, and carried the very heavy armament of two 10-in. B.L. guns, six 6-in. Q.F., two 6-pdr.s, seven smaller guns and three torpedo tubes. The "Piemonte" (fig. 97, Plate XXIV.), built for the Italian navy in 1888, had a displacement of only 2640 tons, but was of 13,000 H.P. and had a speed of nearly 22½ knots. She was protected by a steel deck of 3 in. maximum thickness, and carried six 6-in. Q.F., six 4½-in., ten 6-pdr.s, eleven smaller guns and three torpedo tubes, an armament which, as pointed out by Lord Armstrong, was capable of discharging in a given time twice the weight of shot and shell that could be fired by the largest war vessel then afloat.? The "Buenos
Fig. 104.—French *Leon Gambetta*.

Fig. 103.—French *Montcalm*.

Fig. 99.—Japanese *Idzumo*.

Fig. 82.—Japanese *Idzumi* (ex *Esmeralda*).
Fig. 91.—H.M.S. Drake.

Fig. 97.—Italian Piemonte.

Fig. 105.—French Jules Michelet.
Aires," built in 1895 for the Argentine Republic, is 396 ft. in length and of 4800 tons displacement, her machinery developing 13,500 H.P., with special stokehold, and giving her a speed of 23 knots. She is protected by a complete deck 1½ in. to 3 in. thick, and carries a powerful armament of quick-firing guns, consisting of two 8-in., four 6-in., six 4½-in., twenty-two smaller guns and five torpedo tubes. The normal coal supply is 350 tons, and she can carry 1000 tons in her bunkers. Rather smaller than the "Buenos Aires," but of still later build (1901), is the Chilean cruiser "Chacabuco" (fg. 98, Plate XV.). She is a characteristic Elswick cruiser in design and general appearance, with a heavily armed upper deck and of moderate displacement. Her dimensions are: displacement 4500 tons, length 360 ft., breadth 46 ft. and draught 18 ft. She carries an armament of six 8-in., four 6-in., three 5½-in., four 4½-in., two 3½-in. guns, ten 15-pdr. guns, and two 47-in. torpedoes. She is protected by a strong armoured deck 1½ in. thick from flat to 40 in. to the slope, and by the 1000 tons of coal which forms her normal supply. Her engines develop nearly 16,000 H.P., and her speed is 23 knots.

In the matter of armoured cruisers also Elswick has taken a leading place—among the cruisers built by this firm being the "Esmeralda" (second), of 7000 tons, in 1895 for Chile; the "O'Higgins," of 8800 tons, in 1896 for the same state; the "Asama" and "Koishiki," of 8800 tons, in 1897 for Japan; and the "Kawakami" and "Iwate," in 1899, also for Japan. The "Idzumo" (fg. 99, Plate XXIII.), is 9750 tons displacement, 400 ft. long, 68 ft. 6 in. beam, 24 ft. 3 in. draught. She has 16,000 H.P. and a speed of 22 knots; is protected by a complete belt of Krupp steel 37½ in. thick tapering to 36 in. at the ends, a 24½-in. steel deck with a citadel above it 5 in. thick, and carries an armament of four 8-in., six 6-in., fourteen 4½-in., twelve 13-pdr., seven smaller guns and four torpedo tubes. Her protective belt and upper deck are of 1½ in. to 3 in. thick, and she has a casemate belt 3½ in. thick. Her engines develop 8800 H.P., and her speed is 19½ knots. In the armoured cruiser class the "protected" cruisers is smaller than in the British navy, as the "armoured" type established itself at an earlier date. The "Philadelphia," begun in 1888, may be taken as an example of the U.S. practice in the matter of armoured cruisers. The 14½-in. guns have twin screws and a horse-power of 8800, giving her a speed of 19-6 knots. She is protected by a steel deck 2½ in. to 4 in. thick, and carries twelve 6-in. B.L. guns (later converted to Q.F.), seven double 5-in. guns, twelve 4½-in. guns, and a number of smaller guns. They are protected by heavy steel decks and thin side armour. The "Columbia" developed 18,500 I.H.P. and 22-8 knots on trial, while the "Minneapolis" reached 20,860 I.H.P. and 23 knots; these powers and speeds were at that date the highest recorded for such vessels. The "Columbia" crossed the Atlantic at 18-4 knots in 1895, but the type has not been repeated in America although followed by the large cruiser (8,600 tons) of 1899 (Plate XVII.) the "Brooklyn." (fg. 84, Plate XXII.), begun in 1893, is of the "armoured" type. She is of 9215 tons displacement and 400 ft. long, has twin screws and develops 16,000 horse-power with forced draught, giving a speed of 19 knots. She is protected by a steel belt for two-thirds of her length 8 ft. broad and 8 in. to 3 in. thick, and a complete steel deck 6 in. to 3 in. thick. She carries eight 8-in. B.L. guns in pairs in 15-in. barbettes—disposed one forward, one aft, one on each beam, and a number of smaller guns. She has a steel conning tower, twenty smaller guns and five torpedo tubes. Her normal coal stowage is 900 tons, and she can stow 1650 tons in her coal space.

1903-1904 there were launched six armoured cruisers of the "California" class, of 13,700 tons, and in 1904-1905 three of the "St Louis" class, of 9700 tons. The former are vessels 60 ft. in beam and have not yet been brought up to speed, developing 23,000 indicated horse-power, and a speed of 22 knots. The latter are 424 ft. in length, 66 ft. beam and 23 ft. 6 in. draught, with engines of 21,000 indicated horse-power, and the same estimated speed, namely, 22 knots. Both classes have fourteen 6-in. Q.F. guns, but the larger vessels have in addition four 8-in. guns in two 6-in. turrets besides a heavy battery of smaller Q.F. guns. The "California" class are completely belted with armour having a thickness of 6 in. over the length amidships and 3½ in. to the ends, and a battery of 5-in. armour enclosing the 6-in. Q.F. guns, and extending to the upper deck. The "St Louis" class have a water-line belt for about one-half the vessel's length, with a similar battery above it, the whole of the armour being 4 in. thick of Krupp gun-steel. The "California" class is practically the English "Monmouth," with about a knot less speed, bow-plating omitted and a 4-in. battery added.

In 1903 two small armoured cruisers, the "Mississippi" or "Indiana," were laid down. The speed of 22 knots was retained, but the armament consisted of four 10-in., sixteen 6-in., twenty-two 14-pdr., twelve 3-pdr., &c., with four 21-in. submerged torpedo tubes. The armoured cruiser class were of 2650 tons displacement, but spread over a greater area, giving 5 in. uniformly on the belt and in 3 in. forward and aft; the citadel and casemates remain 5 in. thick, but the protection of the heavy guns is increased to 9 in.; in addition, the 14-pdr. battery on the upper deck is protected by 2-in. plating. The displacement is 14,500 tons. Two similar vessels, the "North Carolina" and "Montana," were laid down in 1905, but up to 1910 the United States had not proposed to lay down any cruisers corresponding in power and speed to the "Invincible." Germany.—Germany for many years built a number of small cruisers of moderate speed for service on distant stations, &c., and subsequently a series of very successful third-class and second-class cruisers of increasing power and speed. Seven vessels of the "Gazelle" class were launched in 1898-1900. The "Gazelle" was of 2588 tons, 6750 I.H.P. and 19½ knots speed; the "Niobe," a sister vessel of the same displacement, and 1½ knots slower, was of 2608 tons; several developed nearly 9000 I.H.P. and obtained 21½ to 22½ knots speed. The "Undine," "Arcona," and "Frauenlob," were of 2650 tons displacement, and all these vessels were all sheathed with wood and coppered. Seven vessels of the "Hamburg" class were laid down in 1902-1904, of 3200 tons displacement, having the same protection as the preceding vessels and carrying the same armament. The "Hamburg" was of 3550 tons displacement, but spread over a greater area, giving 5 in. uniformly on the belt and 3½ in. forward and aft; the citadel and casemates remain 5½ in. thick, but the protection of the heavy guns is increased to 9 in.; in addition, the 14-pdr. battery on the upper deck is protected by 2½-in. plating. The displacement is 14,500 tons. Two similar vessels, the "North Carolina" and "Montana," were laid down in 1905, but up to 1910 the United States had not proposed to lay down any cruisers corresponding in power and speed to the "Invincible."
Ship

In 1897 Japan commenced a new series of large and powerful Cruisers, the "Bliticher" (fig. 101, Plate XXII.), the first of the series, being of 15,500 tons displacement, an increase of more than 4000 tons beyond that of the preceding German vessels. She carries 8-2-in., eight 5-9-in., six smaller guns, and four submerged torpedo tubes, and is protected by 7-in. armour. Guns of 3200 L.H.P. were used. The beam was increased one foot to 98 ft., and the speed was increased to 25 knots. In the second vessel, the "Von der Tann" (fig. 102, Plate XXII.), the main armament was increased to eight 11-in. guns; she is 560 ft. long, 85 ft. beam, 27 ft. draught and 18,700 tons displacement. The trial speed was 25 knots, the 0.5-knot speed, and both power and speed were exceeded on trial.

The third vessel, the "Moltke," is of 25,000 tons displacement, 26 knots speed, armed with 12-inch, 11-inch guns, and cost 7,000,000.

France.—In France the line of development of the cruiser has been similar to that in Great Britain. In 1897 four third-class cruisers were built, of which the "Forbin" may be taken as a type: she was 312 ft. long, 30 ft. beam, 16 ft. draught, 1950 tons displacement, 8500 I.H.P. and 20 knots speed, protected by a 11-in. deck and a belt of 5-5-in. guns, and with a thickness of eight 3.5-in., five 5-in. and five torpedo tubes. These were followed by "Lavoisier," of about 2300 tons in 1893, and the "Estrées" and "Infanterie" in 1897. The latter were 321 ft. long, 39 ft. beam, 17 ft. draught, 4000 tons displacement, armed with two 5-5-in. and eight 3.5-in., four 5.5-in. and two 3-pdr. guns and three torpedo tubes; 8000 I.H.P. was provided for 21 knots speed.

In 1899-1900 France laid down the armoured cruiser "Dupuy de Lôme," of 6300 tons, 14,000 I.H.P. and 20 knots speed, carrying two 7-6-in., six 6-4-in. and several smaller guns; a protection deck 11 in. thick was fitted, and the whole side of the ship covered with a thickness of 5-5-in. armour. She was 22,000 tons displacement, armed with four 6-10.5-in. guns, four 4-7-in., and two 3-pdr. guns in two torpedo tubes; and was laid down in 1899 and completed in 1903.

Of armoured cruisers she possessed in 1910 only two, the "Taureg" ("ex. Pallada") and "Soya" ("ex. Varyag"). The "Taureg" was built at St Petersburg in 1899, of 6630 tons, 11,600 I.H.P., 20 knots speed, fitted with eight 6-in., twenty-two 25-cwt. and several smaller guns, and protected by an armoured deck 1 to 2 in. thick. The "Soya" was built at Philadelphia in 1899, of 6500 tons, 20,000 I.H.P., 23 knots speed, fitted with eight 6-in., twelve 25-cwt. and smaller guns, and protected by an armoured deck 1 to 2 in. thick. There is a somewhat similar to the above, "Schelewig-Holstein" (fig. 100, Plate XXIII.), laid down at Bremen in 1900, but with slightly less power and speed. She is 7000 tons displacement, 17,000 I.H.P., 21 knots, carrying two 8-in., eight 6-in. and a number of smaller guns, and protected by 8-in. armour.

In Japan, United States, and Russia were laid down the "Yukumo," and "Taikei," 440 ft. in length, 13,750 tons displacement, 22,700 I.H.P., and of 21 knots speed.
SHIP

These were the first cruisers laid down to carry the guns of a first-class battleship. Their armament includes four 12-in. guns mounted in pairs in two barbettes, one forward and one aft, twelve 6-in., guns in casemates and twelve 4.7-in. guns, and they have a complete armour belt 7 in. in thickness and 7 in. of armour on the barbettes (fig. 106). They were followed by the 22-knot cruisers "Kurama," laid down in 1905; and the "Ibuki," laid down in 1906, which are 10 ft. longer, of about 900 tons greater displacement, and 4500 more I.H.P., launched in 1899, are of 7400 tons displacement, 13,500 I.H.P., 20 knots speed; they are armed with one 10-in., two 8-in., fourteen 6-in., and a number of smaller guns, and are protected by armour disposed as shown in fig. 107; the belt, battery, and protection are all 6 in., the belt tapering to 4 in. in thickness at the bow and stern.

In 1905 Italy commenced a series of enlarged "Garibaldi" of 9830 tons and 22½ knots, carrying four 10-in. guns in barbettes forward and aft with a secondary armament of eight 7-in. guns in turrets on the upper deck amidships, the bases being extended to the fore. The four larger Garibaldi and the Amalfi and Pisa have the general arrangement of guns and armours in the Garibaldi, and were built as follows:—

I. Sloops.

II. Gun-vessels and Gunboats.

III. Torpedo-boats, Torpedo Gunboats and Torpedo-boat Destroyers.

The "Wild Swan" class, the first of which was launched in 1876 for the British navy, represents one of the earliest of the sloop type. The second-screw composite-built vessel of 1130 tons displacement and 170 ft. length, with a speed under steam of 10

![Fig. 106.—Arrangement of Guns and Armour, Japanese "Ibuki" and "Kurama."](image)

than in the "Tsukuba" type. The armament is also more powerful, twelve 6-in., guns being replaced by eight 8-in. guns mounted in pairs in barbettes, while the 4.7-in. guns are increased to fourteen in number. The "Ibuki" is fitted with turbines of 27,000 H.P., the "Kurama" with reciprocating engines of 22,500 I.H.P. The disposition of guns and armour are as shown in fig. 106. In 1910 Japan ordered of Vickers Co. an armoured cruiser of 27,000 tons and 72,000 H.P.

Russia.—Before the Russo-Japanese War, Russia had provided herself with a great variety of fast, well-armed cruisers of various sizes, including some very notable vessels. Of those which remained in 1910 may be mentioned the protected cruiser "Zhemchug," of 3100 tons, 17,000 I.H.P., 24 knots, carrying eight 4.7-in. guns; the "Askold," built at Kiel in 1900, 4500 tons displacement, 20,000 I.H.P. and 23 knots speed, armed with twelve 6-in., twelve 12-pdr. and other smaller guns; the "Diana" and "Aurora," of 6630 tons and 20 knots; the "Bogaty" and similar vessels launched 1901-1903, of 6675 tons displacement, 20,000 I.H.P., 24 knots speed, armed with twelve 6-in., twelve 12-pdr. and several smaller guns, and having a protective deck 1½ in. in thickness. The armoured cruisers, "Russia," of 12,200 tons and 20 knots, and "Cromotol," of 13,220 tons, 15,500 I.H.P. and 20 knots speed, carry four 8-in., twenty-two 6-in. and other smaller guns, and are protected by 6-in. armour. Since the war several vessels of this type have been built, including three of a new "Bayan" class, 7900 tons displacement, 19,000 I.H.P., 22 knots, armed with two 8-in., eight 6-in., twelve 12-pdr. and other smaller guns, and protected by 6-in. armour; and the "Rurik," built at Barrow in 1906, 490 ft. in length, 15,190 tons displacement, 19,100 I.H.P. and 21½ knots speed, armed with four 10-in. guns mounted in pairs in barbettes forward and aft, eight 8-in. and twenty 4.7-in. guns, and protected by a complete belt of armour 12 ft. deep, 6 in. thick amidships, tapering to 4 in. forward and 3 in. aft.

Italy.—Italy possesses several protected cruisers of the "Fiumente" type already described as well as a number of smaller vessels. She was in 1910 building scouts of the "Quarto" type of about 3500 tons displacement and 27 knots, armed with 4.7-in. and 12-pdr. guns. The most notable Italian cruisers are, however, those of the "Garibaldi" class, which are heavily armed, well armoured and of moderate speed. They have been developed from the "Marco Polo" type, which comprises three vessels; the "Marco Polo," launched in 1892, of 4500 tons, 19 knots, armed with six 6-in., ten 4.7-in. and several smaller guns, and protected by a 4-in. armour belt as well as a steel deck; the "Vettor Pisani" and the "Carlo Alberto," which are of 6400 tons, carry twelve 6-in., six 4.7-in., fourteen 6-pdr. and other smaller guns. The "Giuseppe Garibaldi," "Varese" and "Francesco Ferruccio," and other duties special vessels have been built. These types, and those included in the torpocraft-cnt division, may be conveniently grouped under three headings, as follows:—

![Fig. 107.—Arrangement of Guns and Armour, Italian "Giuseppe Garibaldi."](image)
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Figure 108.—Arrangement of Guns and Armour, Italian "Amalfi" and "Pisa.

Displacement, 180 ft. long, steamed at 13½ knots and carried an armament of six 4-in. Q.F. guns, four 3-pdr.s, and two machine-guns. They were launched in 1895. The screws, built of steel, sheathed and coppered. The "Condor" class, which comprises six vessels built between 1898 and 1901, are very slightly modified "Torchers," having the same displacement and 6 in. more beam, with the same length.

They were designed specially for service on rivers in hot climates; their draught is limited to 8 ft.; their sails are reduced to a very light fore-and-aft rig, and they are fitted with a complete shade deck of teak and felt. They were still on active service in 1910, but no new vessels had been laid down since 1897.

A number of gun-vessels have been designed for special services, among which may be mentioned the "Mosquito" (fig. 111, Plate XXVI.) and "Herald," two stern-wheel steamers for the Zambesi built by Messrs. Yarrow in 1899. They are of 80 tons displacement and 77 ft. long, having a speed of 10½ knots and carrying an armament of four 3-pdr.s and eight machine-guns. They are built in sections, each of which forms a separate pontoon, so that the whole vessel can be readily taken to pieces for transport and easily put together in the water. These two gun-vessels were ordered over to the Colonial authorities on the river Zambesi. Built for somewhat similar service, but of different design, are the four shallow-draught river gunboats of the "Sandpiper" class, which were built in 1897, also by Messrs. Yarrow. They are 88 tons in displacement, 100 ft. long and 20 ft. broad, and carry an armament of two 6-pdr.s and four machine-guns. Their speed is 9 knots, and they draw only 2 ft. of water, their screws working in arched tunnels, the summits of which are above the water-level outside. These arches always remain full of water, and serve the double purpose of enabling sufficiently large screws to be fitted for the economical propulsion of the vessel without increasing the draught, and of protecting them from damage. The "Woodcock" and "Woodlark" are larger vessels of the same type, designed for service on the rapid and shallow rivers of China. They were built by Messrs. Thornycroft in 1897, are 120 tons in displacement, 145 ft. long, 23 ft. beam and 2 ft. draught of water. They have twin screws, also carried in arched tunnels, and their speed is 15 knots. They carry the same armament as the "Sandpiper" class. In 1901 the "Teal" and "Moorhen," designed for service in China, were also constructed in sections, but are considerably larger than either the "Mosquito" or the "Woodcock," being about 186 tons displacement. They are twin-screw vessels, the propellers being in tunnels, as in the "Woodcock," and their speed is over 13 knots. Their furnaces will burn wood. They carry two 6-pdr.s and four machine-guns. The latest vessel of this type in 1910 was the "Widgeon," of similar construction, built by Messrs. Yarrow in 1904, and carrying the same armament. She is 160 ft. long, 24 ft. 6 in. beam, 2 ft. 5 in. draught, 195 tons displacement, 800 i.h.p. and 13 knots speed.

The gunboats of this class are generally light-draught gunboats. The only light-draught gunboat of the "Sultan" class, of which several have been built for service on the Nile. She has a displacement of 140 tons, a length of 143 ft., a beam of 24 ft. 6 in., a draught of only 2 ft. 8 in. and a speed of 12½ knots. Her armament consists of one 12-pdr., one howitzer, and four Maxima, and she is protected by a 4-in. bullet-proof breastwork.

The gunboats of other navies are generally similar to those described above. The Brazilian " Condor, " built in 1892, of steel, sheathed with teak and coppered, was

![Figure 108](image_url)

FIG. 113.—Plan of Nile Gunboat "Sultan.

165 ft. long and 800 tons displacement, and attained a speed of 14½ knots. She had an armament of four 4-in. guns, three 6-pdr.s, and four machine-guns, and carried a considerable spread of service weapons.

In torpedo gunboats and torpedo craft generally, possibily the last thirty years of the 19th century showed more development and greater diversity than in any other type of war vessel then existing. The first small high-speed boat we have any record of is the
Fig. 117.—Turbinia.

Fig. 120.—U.S.A. Bainbridge.

Fig. 121.—Japanese Niji.
"Miranda," built by Messrs Thornycroft in 1871. She was built of light steel, in 1871, and 21 ft. 10 in. long, and attained a speed of 16-4 knots with a single screw, the engine running at 355 revolutions per minute and indicating 58 H.P. The results obtained with her attracted much attention. In 1873 Thornycroft launched for the Norwegian government a somewhat larger boat, armed with a spar torpedo, which attained a speed of 15 knots. Owing to the introduction of machine-guns in warships as a defence against torpedo-boat attack, it was recognized that there was a very slight chance of a boat approaching sufficiently near to a vessel to successfully attack her by means of a towing or a spar torpedo, and the Whitehead torpedo fired from a revolving tube on the deck was accordingly adopted as the armament of future torpedo-boats. This rendered it unnecessary for the torpedo-boat to approach nearer than say 400 yds., and also enabled the torpedo to be fired without stopping the boat, a point of great importance. The first torpedo-boat for the British navy was built by Messrs Thornycroft four years later; she was called the "Lighthorse," was 75 ft. in length and 34 tons displacement, and engines giving nearly 500 H.P., and obtained a speed of 19 knots. She was armed with a single torpedo tube. The boats which followed varied somewhat as regards size and speed, but on the whole pursued the usual course of growing larger and more powerful with each new design. By 1885 the length had gone up to 150 ft., the displacement to 125 tons and the speed to 20 knots. This last was not the highest that had been obtained, some of the earlier and smaller boats having reached 211 knots; but the boats of 1885 carried a heavier armament, consisting of six 3-pdr., and three torpedo tubes, and were more serviceable and seaworthy craft. A very notable boat of this date was the "Swift," launched in 1885, afterwards known as No. 81, built by J. S. White of Cowes; she marked a great advance in seaworthiness and fighting power in combination.

Messrs Yarrow built for the Austrian navy in 1886 the "Falke," 135 ft. in length and 95 tons displacement, which obtained a speed of 22-4 knots on trial, and a similar boat for the British navy of 105 tons displacement, armed with a torpedo tube and three 3-pdr. guns, which attained a speed of 23 knots on trial. About the same time Messrs Thornycroft built the "Ariete" and "Royo" for the Spanish navy. These vessels had twin screws and water-tube boilers. The former attained a speed of 26 knots on the measured mile and 24-9 knots on a 2 hours' run, and the latter 25-5 knots on the measured mile and 24-6 knots on the 2 hours' run. In 1893 M. Normand built the torpedo-boat "Fortun" for the French navy, which attained a speed of 31-2 knots on trial, and the boats of the Normand type which followed her attained equally remarkable speeds. The maximum speeds for the British torpedo-boats up to the end of the 19th century, are given in Table XVIII. In these as before, the 33 to 34 knots, for the Normand and faster types of torpedo-boats were constructed. These boats were 160 ft. to 165 ft. in length, 17 ft. to 18 ft. beam, 83 ft. draught, 180 to 200 tons displacement, 2900 I.H.P., attained a speed of 25 knots and were armed with three torpedo tubes. In 1890 to 1900 boats of a new and still faster type were built with turbine machinery and burning oil fuel instead of coal. These boats, 36 in number, vary from 166 to 185 ft. in length, and from 173 to 185 ft. in beam, 51 to 61 ft. draught and 243 to 308 tons in displacement. They have engines of 3600 to 4000 H.P. giving speeds of 26 and 27 knots, and are armed with two 12-pdr. guns and three torpedo tubes. First ordered in 1899 at a cost of £50,000, as Coastal Torpedo-boat Destroyers, and given names such as the "Cricket," "Gaffly" and "Mayfly." They are now numbered throughout, i.e. from 1 to 36. The prefix O has been added to the number of such of the boats originally bearing these numbers as are still in existence, to distinguish them from the new type boats, vessels, the first of the English torpedo gunboats, came closely after her. The "Rattlesnake" was launched in 1886, with 525 tons displacement, and had a speed of 191 knots. She carried a more powerful armament than the torpedo-boats, namely, one 4-in., six 3-pdr., and 4 torpedo tubes. She was followed in 1888 by the "Sharpsword," with ten sister vessels, still larger and more heavily armed. They were 230 ft. long and 735 tons displacement, had engines developing 3500 H.P., giving a speed of 19 knots, and carried two 4-7-in. Q.F. guns, four 3-pdr., and two torpedo tubes. France built six vessels of the "Bombe" class and the "Legere" (a slightly larger vessel), and in 1891 to 1896 built five other torpedo gunboats of about 900 tons and 21 knots. The last was named La Hire, and was 241 ft. long, 27 ft. 6 in. beam, 12 ft. 9 in. draught, 900 tons displacement; was armed with six 9-pdr. and six 3-pdr. Q.F. guns and was provided with engines of 6400 I.H.P. for 23 knots. These vessels have no torpedo tubes. The torpedo cruiser "Fleurus," laid down in 1891, was armed with four torpedo tubes as well as five 3-9-in. and six 3-pdr. guns. She was also protected by a 13-in. protective deck and fitted with a belt of cellulose 3 ft. thick in the vicinity of the water-line. Her dimensions were: length 230 ft., beam 29 ft., draught 15 ft., displacement 1300 tons, I.H.P. 4000, and speed 18 knots.

"Cyclone" class. This class included eleven vessels (fig. 114, Plate XX.), were repeats of the "Sharpsword," except that they carried an additional torpedo tube and three machine-guns, with certain hull additions and more durable machinery, the displacement being increased to 810 tons, and the speed being reduced by a quarter of a knot. In 1893 a fourth series of this class of vessel was begun, known as the "Dryad" class, and considerably larger than the "Nigeras," being 250 ft. long and 1270 tons displacement. They are of 3500 I.H.P., have a speed of 18½ knots, and carry an armament of two 4-7-in. Q.F. guns, four 6-pdr., and three torpedo tubes. Five vessels of this class were built, the difference between their general appearance and that of the preceding classes being illustrated by fig. 115 (Plate XX.), which shows the "Hazard," which in 1910 was employed on special service in connexion with the reception and trials of British submarine vessels. In these ships the chief demands on the torpedo gunboat class the elements of strength and seaworthiness are developed at the expense of speed, and they combine in themselves some of the functions of the torpedo-boat with many of the most important features of the small cruiser. The most important increases of displacement are very largely due to additions to the hull, giving greater habitability and trustworthiness for continuous work at sea. It was thought that the speed shows a continuous falling off; but the "Sharpsword" class and subsequent vessels have been fitted with water-tube boilers in lieu of the locomotive boilers originally fitted, and some of them are in addition re-engined, with the result that the speed of 20 knots has not been obtained; but the ordinary weather met with at sea, would probably enable them to overtake craft of lighter types possessed of considerably greater smooth-water speed. These vessels have not been repeated, many of them have been sold, but all those remaining are actively employed on a variety of subsidiary but important services.
Torpedo-boat Destroyers were primarily, as their name implies, intended to meet and destroy torpedo-boats, their larger size, greater coal capacity, heavier armament, and higher speed enabling them to overtake such boats before they could complete their attack; but it soon became evident that these additional powers also enabled the destroyer to perform the duties of the torpedo-boat more efficiently than the latter was enabled with the advent of the destroyer the production of the smaller boat declined.

The pioneers of this type of vessel were the "Daring," "Decoy," "Havock," and "Hornet," the construction of which was entered upon in July 1892, the two first completed at Messrs Thornycroft, the other two at Messrs Yarrow's. They were thus contemporary with the "Dryad," the last of the torpedo gunboats. The success of these early ships was followed by a marked interest in the torpedo boats, and the following year (1893) six others were begun. One of these, the "Boyer," built by Thornycroft, attained a speed of 29-2 knots. A much greater number of destroyers (32 in all), nearly the whole of which were of 27 knots speed, were laid down in 1894, and the ensuing year (1895) saw a great advance in size, power and speed, thirteen destroyers being laid down, for each of which the contract speed was 30 knots. Similar vessels were constructed by various firms in England for foreign powers, and abroad by Messrs Schichau in Germany and M. Normand in France; the "Sokol" being constructed by Messrs Yarrow for the Russian navy. Over sixty destroyers of the 30-knot type were built for the British navy between 1895 and 1905, and in only three vessels with reciprocating engines—the "Albatross," the "Express," and the "Arab"—were speeds exceeding 30 knots contracted for. In 1896 an attempt was made to realize greater speeds, but it was found that the lift which the body of the ship could offer to the wind was insufficient to bear up the vessels against the wind, and, therefore, the speed of over 30 knots was not laid down in the contract.

Experience with the 30-knot destroyers led to a decision to order boats of greater speed and better sea-keeping qualities. In them the turn-back forward was replaced by a lofty forecastle, and it was laid down that the trials should be run with the boats more heavily loaded and more closely approaching their ordinary loaded condition on service. These changes were embodied in the "River" class, in which a trial speed of 35 knots under the modified conditions was provided for.

In 1902-1904 thirty-four destroyers of the "River" class were ordered and are provided for the following dimensions, &c.:

<table>
<thead>
<tr>
<th>Vessel's Name</th>
<th>Country</th>
<th>Where Built</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daring</strong></td>
<td>Great Britain</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Swordfish</strong></td>
<td>Great Britain</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Sokol</strong></td>
<td>Russia</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Cook</strong></td>
<td>Russia</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Chamois</strong></td>
<td>France</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Greyhound</strong></td>
<td>France</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Giay</strong></td>
<td>France</td>
<td>Messrs Yarrow, London.</td>
</tr>
<tr>
<td><strong>Albatross</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Cot</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Oak</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Sailor</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Bean</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Skelton</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Babette</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Beige</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Sue</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>Mameluck</strong></td>
<td>France</td>
<td>Messrs Thornycroft, London.</td>
</tr>
<tr>
<td><strong>San Luis</strong></td>
<td>Argentina</td>
<td>Messrs Callender, Laide.</td>
</tr>
</tbody>
</table>

In 1908-1909 eight ocean-going destroyers of 33 knots of the "Tribal" class were ordered, ranging from 970 to 1045 tons displacement and armed with two 4-inch guns and two 18-inch torpedo tubes. In 1908-1909 sixteen ocean-going destroyers of the "Beagle" class were ordered, ranging from 1070 to 1205 tons displacement and armed with two 4-inch guns and two 18-inch torpedo tubes. In 1909-1910 twenty more ocean-going destroyers of the "Acorn" class, designed by Sir Philip Watts, were laid down; in these oil was again adopted for fuel and a speed of 36 knots obtained. These vessels are of 780 tons displacement, 240 ft. long, 25 ft. beam, 71 ft. draught, 13,500 turbine H.P., and carry two 4-in., four 12-pdr. guns and two 18-inch tubes. The new destroyers are fitted with Parsons turbines.

The chief particulars of the new destroyers are given in the following table:—

<table>
<thead>
<tr>
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<td>Argentina</td>
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</tr>
</tbody>
</table>
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been added to the fleets of foreign navies, the boats built by Messrs Schichau of Germany and Normand of France having especially achieved success in the attainment of high speeds on trial. The "Rainbridge" class (fig. 120, Plate XXV.), built for the U.S. navy in 1901, are 245 ft. long, 23 ft. 7 in. wide, draw 6 ft. 6 in. of water, and have a displacement of 420 tons. Their sea-going speed is 29 knots, and their armament consists of two 18-in. torpedo tubes, two 3-pdr. Q.F. guns, and five 6-pdr. The destroyers building in 1910 are of 472 tons with a speed of 29½ knots.

German destroyers are numbered consecutively, the numbers being prefixed by letters indicating the yard where built. Thus, S for Schichau works, Elbing; G, Germania works, Kiel; V, Vulcan works, Stettin. Numbers below 90 are appropriated for torpedo-boats. Two destroyers only have names, viz. S. 97, which also bears the name "Steipliner," and is fitted to serve as the emperor's yacht; and one without a number named "Taku," late "Hai-jing," taken from China in 1900, but built at the Schichau works in 1898. (The British navy list also contains the name of a destroyer "Taku," built at the same works in 1898, and also taken from China in 1900.) The German torpedo-boat flotilla is divided up into sections, each section led by a division boat of much larger size than the others. These division boats increased in size, from 226 tons displacement, 1800 I.H.P. and 21 knots speed in 1887, to 374 tons, 5500 I.H.P. and 28 knots speed in 1898. Division boats are numbered D 1 to D 10, and of these two bear names, D 1 that of "Carmen," armed with two 3.9-in. and four 9-pdr. guns and four torpedo tubes; Russia was building vessels of about 1000 tons and of 35 knots speed.

Submarine Boats.—About 1880 much attention began to be paid by several of the naval powers to the development of the submarine boat, the United States and France in particular.

The history of the subject goes back at least 300 years, but the first undoubted success with a submarine vessel was achieved by David Bushnell in America in 1775. It was worked by one man, for whom it provided just sufficient room; its general appearance, according to Bushnell's own description, bore some resemblance to two upper-tortoise shells of equal size joined together, the entrance to the vessel being represented by the openings in the swellings of the shells at the animal's head; the body of the vessel was constructed of wood. The operations on board were entirely manual. By an oar in form of a screw with its spindle passing through the top the boat was sunk or raised, by another oar at the after end it was propelled; a rudder was used for guidance, and in some cases for propulsion; valves admitted water when submergence was required, and hand pumps discharged this water when it was desired to come to the surface, and a detachable weight of 200 lb. was also supplied for emergency use. The air in the boat was capable of supporting the operator for thirty minutes; and as soon as he brought the boat to the surface, two air pipes, for discharge of foul and supply of fresh air, opened automatically. A compass, a pressure-gauge, and a sounding-line and lead were among the fittings. Behind the vessel was a large magazine containing 170 lb. of powder, and a time-control for exploding it. From the magazine was led a rope to a wood screw at the fore part of the crown of the boat, and this screw, being worked from within, could be driven into the object to be destroyed in such a manner as to keep the magazine required for the explosion in position after it had been detached from the boat. During the War of Independence the boat was submerged beneath the British warship "Eagle," and the operator attempted to attach the wood screw to her bottom planking; in this he failed, apparently simply because he did not let go his detachable weight and so get enough upward pressure to drive the screw into the plank. The magazine was released and exploded an hour afterwards, but at some distance from its intended position.

The problem of submarine navigation received the practical attention of Fulton during the time that he was making his experiments upon steam propulsion, and even at an earlier

FIG. 118.—Torpedo-boat Destroyer "Swift."

2. Crew space. 7. Fresh-water tank. 11. Engine-room.
5. Paint-room.
SHIP

period. He constructed two submarine boats in France, and one in America. One of the former, the "Nautilus," was built with the direct encouragement of Napoleon in 1801. It was supplied with compressed air for respiration, and with it Fulton conducted a series of experiments under the direction of a commission of naval officers. He descended to a depth of 25 ft., and remained under water for fully four hours, placing below a vessel provided for the purpose a torpedo by which it was blown into fragments. As with his steam engine, so too with his submarine boats, the report of the commission charged with investigating him was not unfavourable that Fulton was much discouraged, and though he afterwards continued his labours in this direction, the results achieved by him were practically lost. Fulton’s boat, like Bushnell’s, was propelled by manual power, two horizontal screws being employed for propulsion, and two vertical screws for descending and ascending: it was built of wood with iron ribs, and was sheathed with copper.

The substitution of mechanical for hand power came later, and one of the first mechanically driven boats was the "Plongeur," built in France in 1863 from the designs of Charles Brun. This boat was a length of 46 ft. and a diameter of 12 ft., and was propelled by an 80-horse-power compressed-air engine. During the American Civil War the Confederates built a number of iron cigar-shaped boats; some were propelled by steam engines and some by hand. Each was armed with a torpedo containing 50 to 70 lb. of powder carried at the end of a spar. These boats were known as "David's," from their diminutive size as compared with the size of the ships attacked, and in 1864 one of the hand-worked boats, 50 ft. long, manned by a crew of nine men, successfully attacked the Federal ship "Hornet." and sank her by means of a spar torpedo, but in so doing was herself sunk. It is claimed that the loss of the boat was due to faulty handling and not to inherent defect. Against the protest of her builder, she was immersed only to the hatch coaming; and the cover being left open, she was swamped and sunk by the wave thrown up by the explosion.

About the same time another hand-worked submarine, called the "Intelligent Whale," 26 ft. in length and 9 ft. in diameter, attracted some attention in America. An officer with two other persons dived with her in water about 16 ft. deep; the officer, in diver’s dress, left the boat through a manhole in the bottom, placed a torpedo under a scow and blew the latter to pieces.

In 1875 Mr. J. P. Holland produced his first plan for a submarine vessel, and in 1877 he constructed a small experimental boat, which embodied features now accepted as essentials in American design. His plan ensured that when, for the purpose of diving, water was admitted into compartments of limited size, the total weight of the boat and its contents should still be a little less than the total buoyancy. Immersion was maintained by the action of horizontal rudders, which gave a downward tendency so long as the boat had any forward motion, and there always remained enough surplus buoyancy to bring the boat to the surface on the stoppage of her propelling machinery. Any weight consumed on board was automatically compensated for by admission of water, so that the total weight remained fixed and constant; while the confinement of the water to small compartments further secured a fixed centre of gravity. The securing of these qualities of fixed weight and fixed centre of gravity is essential, and the want of them has been a cause of failure in many other designs.

With the necessarily slight longitudinal stability possessed by a submarine boat, any change of centre of gravity in the fore-and-aft direction has a no able effect on the angle of trim; and such a change may readily occur, for instance, from the surging of water in a large ballast-tank not completely full.

An unintentional alteration of trim when the submarine boat is being propelled involves several possible dangers: in extreme cases the crew or some of the fittings may be thrown out of position, but in any case the path of the submarine is altered, and may tend either to too great immersion on the one hand, or to breaking the surface of the water on the other. From the risk of these dangers it is claimed by Mr Holland that his design is free. The first of his boats now under discussion was steered down and up inclines by her horizontal rudders, and motive-power was obtained from a petroleum engine. The tests to which she was subjected showed that inefficiency of the engine, difficulty of vision and trouble with the compass tended to destroy the boat’s usefulness.

In 1883 Mr Nordenfeldt, famous as an inventor in many directions, built a submarine boat at Stockholm. She had a length of 64 ft., a main diameter of 9 ft. and a displacement of 60 tons; she was propelled by a compound surface-condensing engine indicating 100 H.P., and on a measured-mile trial, not being submerged, attained a speed of 9 knots. Steam was supplied by an ordinary marine return-tube boiler, worked under forced draught, which could be fired as long as the boat was at the surface. Storage of steam was effected at the surface, and the steam thus stored was used to drive the engine in the submerged condition. To store sufficient steam two large tank reservoirs or cisterns were connected with the boiler, and the contents of boiler and tanks (8 tons of water in all) were raised to a temperature corresponding to 150 lb. pressure. In preparing for submergence the firing of the boiler was stopped, and the steam given off by the heated water in boiler and tanks sufficed to propel the boat for a period. The smoke was driven out through two channels, which passed round the hull and pointed astern. The material of the hull was mild steel, the frames being 3 in. by 3 in. by ½ in., and the plating ⅜ in. 10 ft. in thickness; the depth to which she could safely descend was about 50 ft. When ballasted ready for a descent on trial, the boat showed only a very small domed for observation above the level of the water, the reserve buoyancy represented by this dome being but 1 cwt. To overcome this reserve two propellers working on vertical shafts were fitted in sponsons, one on each side of the boat, nearly amidships. These propellers were driven by a 6-horse-power engine, and drew the boat under water to the desired depth; an automatic contrivance, set in motion by the water pressure outside the boat, closing the throttle-valve when the safety limit of depth was approached. On coming to rest, the reserve buoyancy brought the boat again to the surface. When propelled by the main engines in the submerged condition, the boat was kept horizontal by means of two bow rudders operated by a plumb weight. The crew consisted of three men only, this small number rendering unnecessary the employment of artificial means of maintaining a pure atmosphere. The scheme of attack was to approach the hostile ship running at the surface until the danger of discovery was imminent, then to descend to the "awash" condition with only the dome above water, and finally to go below the surface and advance to striking distance entirely submerged, rising if necessary once or twice to allow the direction to be adjusted by observations made from the dome "dawsh." The weapon of offence employed was a Whitehead torpedo, carried outside on the bow and discharged mechanically. Several larger boats were subsequently built from Mr Nordenfeldt’s designs; they all involved the same principles, but were in some details made more efficient both for attack and defence.

The three main points insisted upon by Nordenfeldt were: (1) that his method of storing energy gave him a reservoir which was not liable to get out of order, could readily be repaired if broken, and if damaged the knowledge of so much less than that possessed by an ordinary engineer; (2) that for submergence he relied on mechanical means easily controlled, adding, as a criticism upon the alternative method of descending by steering downwards, "I need only point out the great risk of allowing an object 100 ft. long and of great weight to proceed in the downward direction even at a small angle, as the impetus gained would very easily carry it beyond a safe depth so quickly that they might not have time to check it"; (3) that the bow rudders always secured a horizontal position when the boat was running submerged, which position he had found to be a sine qua non for a submarine boat.
FIG. 122.—Holland Submarine.

FIG. 123.—Holland Submarine.

FIG. 124.—Holland Submarine.

FIG. 125.—Holland Submarine.

FIG. 128.—French Submersible Vendémiaire.
Fig. 129.—British Submarine C 32.

Fig. 130.—British Submarine D 1.

Fig. 131.—British Submarine Flotilla at Portsmouth.
In response to an invitation for proposals for submarines, made by the U.S. government in 1887, designs by Holland and Nordenfeldt were submitted. After much consideration the proposals of the former designer were accepted, and formed the basis of the designs for the "Plunger" and the "Holland" and the six vessels of the "Adder" class. From what has been already stated, the criticism of Admiral Hichborn (chief constructor of the U.S. navy) will be understood when he characterizes Holland's method as a "steering-tender" or "diving" device, and Nordenfeldt's as a "down-haul" or "sinking" design. The great majority of modern boats are worked by the Holland method. The "Plunger" was authorized in 1903; she has a length of 85 ft., diameter 11 1/2 ft., light displacement 154 tons and load displacement 168 tons; she is of sufficient strength for a submerge of 75 ft., and when wholly submerged has a margin of buoyancy of 1 ton. In addition to her horizontal rudders for diving, she has two down-haul screws, fitted in opposition to Mr. Holland's recommendations; she may therefore be said to be a combination, for diving purposes, of both the Holland and the Nordenfeldt designs. The "Plunger" main engines are used for propulsion when she is navigated at the surface of the water. As originally designed they were triple-expansion steam engines, driving triple screws, but have since been altered to gasoline internal-combustion engines driving a single screw. These engines are also used for charging electric accumulators, from which alone motive-power can be obtained when the boat is submerged. The current for charging the accumulators is obtained from a dynamo of 70 H.P., which can always be run in the awash condition to keep the accumulators fully charged. In the awash condition, when the boat is otherwise air- and water-tight, communication is kept up with the outer air by means of ducts and a smoke-pipe, the former bringing in air for combustion and respiration, and the latter carrying off deleterious products of all kinds. For submerge special fittings are used to close these ducts and pipes, and to stop the gasoline generator. The main engine is then no longer available, and for propulsion power is drawn from the accumulators, the dynamo thus becoming a motor which derives current from the accumulators and itself drives the screw-shaft. As was the case with Mr. Holland's earlier boats, great attention is given to automatic control of weights, and water-ballast is admitted to compensate for any change such as would be produced by the discharge of a torpedo. With her original machinery the "Plunger" was to have had a surface speed of 15 knots; her anticipated speed awash or submerged is now 8 knots. To assist in determining the boat's direction a camera lucida is ordinarily provided, but for correcting this Mr. Holland prefers trusting to observations made during occasional rises to the surface; for this purpose the boat is provided with a conning tower 4 ft. high, protected with 4-in. steel. The "Plunger" is armed with Whitehead torpedoes, and has two tubes for discharging them. After many trials it was at last decided to build a repeat of the "Adder" to take her place, and this second "Plunger" was completed in 1903. The "Holland" is a smaller boat, having a length of about 54 ft., and was purchased in 1900. The official report on this vessel is that "she has shown herself capable of such perfect control in the vertical plane that she may be kept whilst moving within a few inches of any desired depth, and that she may be brought to the surface and submerged again in a very short time." A good idea of the general form of the "Holland" may be obtained from figs. 122, 123, 124 and 125 (Plate XXVII.), the last three of which represent this vessel when undergoing 125 ft. of submergence by her diving device.

The design of the six submarines of the "Adder" class is shown in fig. 126. They are of the following dimensions: length 63 ft. 4 in., diameter 11 ft. 9 in.; displacement for surface running 104 tons; submerged displacement 120 tons. The main features of this class are the same as for the "Plunger." The shell-plating is 7/8 in. in thickness, and the frames 33 in. by 3 in., with a spacing of 18 in. The main machinery is a four-cylinder single-acting balanced Otto gasoline engine, which at 360 revolutions will develop 160 H.P. and give the boat a speed of about 8 knots. For propulsion in the submerged condition an electric motor is used, working at 800 revolutions, and giving a speed of 7 knots, a single left-handed propeller being employed. The current for the motor is provided by storage batteries capable of supplying 70 H.P. for four hours; and these batteries are charged by the main engine. The requisite air supply is obtained when the vessel is at the surface, and is stored under a pressure of 2000 lb. by a pump driven by gearing off the main engine or main motor. Air at a pressure of 50 lb. is used for the expulsion of torpedoes, and the same agent, at various degrees of pressure, works the trimming and ballast tanks and some parts of the apparatus for respiration. Air from the storage tanks is taken off for the purpose of ventilation. The vessel is fitted with power and hand-steering gear, and there are automatic devices for securing a constant depth during submerge. Five Whitehead torpedoes, 45 cm. (about 18 in.) in diameter and 11 ft. 8 in. long, are provided, and there is an expulsion tube placed forward about 2 ft. below the light water-line.

The French submarine boat "Plongeur" has already been mentioned. A further advance in this direction was made in France in 1881, when a small submarine was completed by M. Goubet at Paris. An inspection of this vessel led to a system of the engineer for the Russian government, and several sets were built and delivered early in 1885. The length of a boat constructed by M. Goubet in 1885 was 16 ft. 5 in.; it had an oval section 5 ft. 9 in. in depth and 3 ft. 3 in. in breadth, and tapered to a point at each end. A longitudinal section of the boat is represented by fig. 127. The main portion of the hull was of bronze, cast in one piece, and at the centre of its length it was surrounded by a large dome having seven glazed openings. There was just sufficient room for an officer and a man seated back to back within it, their eyes in this position being level with the glass windows of the dome. All valves and other mechanism requiring regulation were brought within reach of these occupants, so that no movement on their part was required which might affect the trim and proper adjustment of the boat for any purpose. The reason of the domed arrangement was the means of respiration, and an air-pump removed the vitiated atmosphere. The motive-power was furnished by accumulators, the electric energy stored therein driving a screw propeller by means of a motor. No means of recharging these accumulators when exhausted was provided on board. Submersion was effected by admitting water into tanks divided by transverse bulkheads at sufficient intervals to prevent the surging of the water in the fore and aft directions. A pump expelled this water again when desired, and a safety weight attached to the bottom of the boat was ready for detachment in the presence of danger. A pressure gauge indicated the depth, and the air was regulated by the officer, who could regulate the opening of the inlet valves or the action of the pumps to maintain or vary this depth as desired. For controlling the boat in a horizontal direction a specially devised pendulum was employed, by means of which the boat was moved, of sufficiently running shaft was thrown into gear with a pump as soon as the boat departed appreciably from the horizontal plane. The action of the pump was reversible.
SHIP

and the clutch engaged it always in such a way that it drew water from a tank at the low end of the boat, and delivered it to a tank at the high end. Several other devices of great ingenuity were employed in the boat; notably a special form of universal joint introduced into the line of shafting. At the after end, close to the propeller, this universal joint was fitted in such a way that the screw could be set at an angle to the line of motion, and steering effected without the aid of a vertical rudder. A torpedo containing 100 lb. of dynamite or other explosive was carried outside the hull, and secured by a catch joint. This torpedo, on the submarine boat being manoeuvred into position, could be thrown off and allowed to rise and attach itself, by means of spikes, to some vulnerable part of the ship doomed to destruction. Retiring then to a safe distance, the submarine boat could explode the torpedo by the agency of an electric current.

Working in the light of his now considerable experience, M. Goubet built several other boats. These were of larger dimensions, having a length of 27 ft.; their material was also bronze, and they were cast in three pieces, the centre one having a thickness of 1 in., while the others were reduced to a little more than ½ in. at the ends. Possessing to a large extent the same contrivances as their predecessor, these improved boats were fitted also with an automatic apparatus for regulating the depth of submersion. In this regulator a piston is moved along a cylinder by the rotation of a rod with a screw thread cut in it, and so increases or diminishes the amount of water in the cylinder. The movement of the piston is effected by a small motor, and the direction of action of the motor is regulated by a commutator placed in juxtaposition to a pressure gauge. When the depth of submersion is too small, current is supplied to the piston so as to admit more water; when depth is too great, current is supplied in the opposite direction, and water is expelled. The speed attained by this boat was from 3 to 6 knots. Smaller boats of this type have been built for propulsion by manual power, but, however perfect the mechanism, the range of action of a submarine dependent on man-power for propulsion is very limited. Recent Goubet boats are being built, with motive-power, which is proposed to carry on board ship and lower from davits when required.

The "Gymnote" was constructed at Toulon in 1888. She is a steel vessel, with a length of 59 ft. and a displacement of 30 tons; being of an experimental character only, she has no weapon of attack. The maximum speed obtainable is 8 knots. The designs of the "Gustave Zéde" and of the "Morse" were both based on those of the "Gymnote," the former having a length of 148 ft. and a displacement of 263 tons. In both of these the hull is of bronze; one great advantage of this metal being that, like the bronze of the Goubet boats, it is non-magnetic in character, and cannot therefore disturb the equilibrium of the compass. With their large dimensions they were intended to formidible engines of war, and were furnished for attack with Whitehead torpedoes; of these latter they each carry three of 45 cm. (nearly 18 in.) diameter, discharging them by means of a torpedo tube. The "Morse" and the "Gustave Zéde," like the "Gymnote," possess only electric means of propulsion, the power being derived from batteries of accumulators. No power is provided in the vessels by which the accumulators can be recharged, so that the radius of action of these boats is necessarily very limited. The "Naval," designed by M. Laubeuf, and the outcome of a general competition in 1897, has a length of 112 ft. and a total displacement of 200 tons. She was built at Cherbourg in 1899, and is furnished with a triple-expansion steam engine, obtaining its steam from a water-tube boiler, heated by oil. As in the American submarines, this engine propels the boat when at the surface, and also drives a dynamo which recharges accumulators, the latter giving the reserve power for use in the submerged condition. A steam pipe supplies the torpedo, on the surface, and 8 knots when submerged. A new departure in the "Naval" is her double hull, the inner shell of which is of steel plate of sufficient thickness to resist any water-pressure to which the boat may be subjected. The inner shell, which is kept in the same position from the inner part, forms a protection to the inner against attack. An armoured dome surmounts the boat, cutting through the external shell, and is surrounded by a short and narrow telescopic funnel, which, as in the case of the American boats, must be withdrawn preparatory to diving. Control in this type is vertical only; by means of rudders, when diving, the use of two pairs of horizontal rudders, placed symmetrically—one pair forward, the other aft—was adopted. In the above arrangement it is claimed that the horizontal direction of the boat is ensured, the American course of inclining the axis is a telescope with the optical axis twice bent through a right angle by totally reflecting prisms or mirrors; and under diverse forms and various names, such as periscope, cleptoscope, hydroscope, optical tube, etc., it affords the principal means by which objects on the surface of the water can be seen at a distance from the interior of a submerged vessel. The problem of providing means for seeing at a distance through the water still awaits solution, although many different arrangements have been proposed, and will enormously add to the power of submarine boats as weapons of war.

By far the greater number of submarine boats in existence in 1910 were developments through a process of continuous experiment and improvement of the "Gymnote" and of the early Holland boats, although the process of evolution had been so rapid and extensive that the parentage of these modern boats is hard to recognize. There are, however, a considerable number of submarines built by the Lake Submarine Boat Co. of Bridgeport, U.S.A.; in the service of various naval powers. These boats are designed by Mr Simon Lake, who was also a pioneer in submarine boat construction, contemporary with Mr J. P. Holland in the United States of America. His earliest boat, the "Argonaut," was intended rather for running along the bottom in shallow water at a speed of 3 knots, and for sending out divers rather than for discharging torpedoes. For this purpose it was fitted with wheels for running along the bottom and with an air-right chamber having a hatch at the bottom which could be opened under water. The area of the bottom was made equal to that of the water outside. These features are still retained in many of the modern Lake boats, though these boats are now constructed like all other submarines, primarily for the purpose of submarine war.

Other boats which should be mentioned as having claims to distinctive features in matters of detail are those built by the Fiat San Giorgio Company of Milan, those built by the Seri di Lenore, and those built by the Germania Werft of Kiel, which are understood to embody the patents of M. d'Equerville. The Russian government also possesses several boats generally regarded as of a distinctive type designed by Professor Drnectrov.

Perhaps the most outstanding distinction between different submarine boats is the amount of their submerged displacement which is devoted to carrying water ballast. This, of course, ensures their reserve of buoyancy in the surface condition, which in different
 examples of boats varies from as little as 5% to as much as 60% of their surface displacement. It is obvious that the more water ballast carried, the less of some other weight of machinery or equipment can be carried on a given submerged displacement, and the weight carried ballast will itself impose some additional requirements which will best meet the requirements of the service for which the boat is intended. This fact has sometimes been lost sight of in discussions on this subject, which have tended somewhat to localize the whole of the difference character between boats of high reserve of buoyancy and those of low reserve, even to the extent of giving them the different names of "submersible" and "submersion." It is a task of the designer of submarines which has frequently been the subject of non-technical discussion, the desirability of this or that type of "low-rudders" or "hydroplanes." This question depends on the form of the boat, and the manner in which the problem is approached, is unsuitable for discussion except in relation to the ascertained tendencies of a particular form under the vertical hydrodynamical forces which are set up by its propulsion system.

Similar considerations apply to the questions whether a submarine boat should have a separate means of propulsion for surface-running distinct from that fitted for submerged propulsion, and if so, whether it should consist of steam or internal-combustion engines. On account of the very limited capacity of even the best modern electric accumulators, any submarine which is intended to have a considerable radius of action must necessarily have heat engines of some description for surface propulsion and for charging batteries.

As to the type of heat engine, France was the only country in which it used the internal-combustion engine in any great number of built submarines; and the general tendency was undoubtedly to use internal-combustion engines, of which those burning heavy oil are much less expensive in working than those using gasolene.

In the United States, in the boats which these engines are now fitted, there has been some improvement in the design of the agricultural design, in the design of the internal combustion engine. It is characteristic of all countries to keep secret the really important details of their submarine boats, to an even greater extent than those of ordinary warships. Some particulars, however, of the War vessels of the Royal Navy are given below, principally to illustrate the progress in size and power.

In France, in 1901, M. Romazzini, already referred to as the designer of the "Morse" and "Gustave Zédé," produced two other boats, the "François" and "Alégria," similar to the "Morse," four vessels of the "Sirène," "Triton," "Silure" and "Espadon," of a modified "Naval" type, were built from M. Laubeuf's designs in 1903. From 1904 to 1905, "Cigogne," a boat, of 175 tons surface displacement, were built in 1904, and two other still larger boats, the "Cercé" and "Calypso," in 1905. These boats each have a length of 181 ft., beam of 16 ft., depth of 10 ft.; have a submerged displacement of 450 tons on the surface, 480 tons submerged. Two Diesel heavy oil engines are fitted to give 111 knots speed on the surface and two electric motors for use when submerged. Four boats of the class "Morse," 180 in. in length, were completed in 1805. In 1901 twenty small submarines of the "Narada" type were constructed to M. Romazzini's design; they are 76 ft. in length and 280 tons displacement, and have a surface speed of 8 knots and a speed of 4.5 knots when submerged. Their motive-power is electrical both for surface and submerged propulsion, except in the case of two boats, the "Marseilles," which were fitted with Diesel engines for surface work. From 1905 to 1909, 34 boats of the "Pluviôse" type of twin-screw submarines designed by M. Laubeuf were laid down; they have a displacement on the surface of 392 tons, and have engines of 700 H.P. for surface work. They have a submerged speed of 16 knots and a speed of 7.5 knots when submerged. Eighteen boats of the class have triple-expansion engines, and each of the remainder has two Diesel heavy oil motors for submerged propulsion, while all have electric motors for use when submerged. Some of the steam-driven boats have traversed 730 m. in 82 hours, while the "Papin" with oil motors ran 1200 m. from Rochefort to Oran in six days without calling at ports. One genuine speedy boat of the same class is shown in the "Vendémiaire," one of the boats of this class. The twin-screw submarines of the "Emeraude" class, six in number, designed by M. Maugus and laid down in 1906, are of approximately the same size as the "Pluviôse," the "Sirene," and the two boats of the same class at have a submerged speed of 90 m. Sec. XXVIII., gives a view of C32, while fig. 130 shows D1 under weigh on the surface, and fig. 131 a flotilla in Portsmouth Harbour.

<table>
<thead>
<tr>
<th>Name or Class of Boat</th>
<th>Year of Completion</th>
<th>Length</th>
<th>Breadth</th>
<th>Submerged Displacement</th>
<th>Horse Power of Engines</th>
<th>Speed on Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>1903</td>
<td>100</td>
<td>11'9&quot;</td>
<td>206</td>
<td>350</td>
<td>10'</td>
</tr>
<tr>
<td>A2</td>
<td>1904-1905</td>
<td>99</td>
<td>12'8&quot;</td>
<td>205</td>
<td>400</td>
<td>10'</td>
</tr>
<tr>
<td>A3</td>
<td>1905-1906</td>
<td>99</td>
<td>12'8&quot;</td>
<td>205</td>
<td>400</td>
<td>10'</td>
</tr>
<tr>
<td>A4</td>
<td>1905</td>
<td>100</td>
<td>11'9&quot;</td>
<td>206</td>
<td>350</td>
<td>10'</td>
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<tr>
<td>A5</td>
<td>1905</td>
<td>100</td>
<td>11'9&quot;</td>
<td>206</td>
<td>350</td>
<td>10'</td>
</tr>
<tr>
<td>A6</td>
<td>1905</td>
<td>100</td>
<td>11'9&quot;</td>
<td>206</td>
<td>350</td>
<td>10'</td>
</tr>
<tr>
<td>B1</td>
<td>1905</td>
<td>135</td>
<td>13'6&quot;</td>
<td>314</td>
<td>500</td>
<td>11'</td>
</tr>
<tr>
<td>B2</td>
<td>1905</td>
<td>135</td>
<td>13'6&quot;</td>
<td>314</td>
<td>500</td>
<td>11'</td>
</tr>
<tr>
<td>C2</td>
<td>1905</td>
<td>135</td>
<td>13'6&quot;</td>
<td>314</td>
<td>500</td>
<td>11'</td>
</tr>
<tr>
<td>D1</td>
<td>1905</td>
<td>150</td>
<td>13'6&quot;</td>
<td>320</td>
<td>500</td>
<td>12'</td>
</tr>
</tbody>
</table>

Gasolene engines for surface propulsion. D1, which also has heavy oil engines, was completed in September 1909, and was the first of a new series of boats for the design of which Sir Philip Watts was personally responsible. She passed through her trials, and seven of the class were in 1910. On the surface, she is driven by 375 H.P. gasolene engines, and 6 knots submerged, and armed with one torpedo tube. The large boats of the "Lake" type are driven by engines of 1200 H.P., and are stated to carry an armament of two 3-in. guns and two machine guns. The boats of the Germania class, the "Ostfriesen," of the Russian submarines under construction in 1910, are of 500 tons displacement on the surface.

Germany did not build submarines until 1910, when it was launched at the Germania Works, Kiel. It is 139 ft. long, 11 ft. 9 in. beam, 7 ft. 9 in. Draught and 240 tons on the surface, being...
SHIPBUILDING

When ships were built of wood and propelled by sails their possible sizes and proportions were limited by the nature of the structural material, while the type of structure had been evolved by long experience and was incapable of any radical modification. Speed depended so much on circumstances independent of the design of the vessel, such as the state of the wind and sea, that it was impossible to include a definite speed over a voyage or measured distance as one of the essential requirements of a design; and the speed actually obtainable was low even under the most favourable conditions when judged by modern standards. Stability depended principally on the amount of ballast carried, and this was determined experimentally after the completion of the vessel. Under these conditions there was no room for any striking originality of design. One vessel followed so closely on the lines of another, that the qualities of the new ship could be determined for all practical purposes by the performance of an almost identical vessel in the past. The theoretical science of shipbuilding, the object of which is to establish quantitative relations between the behaviour and performance of the ship and the variations in design causing them, was generally neglected.

With the introduction of iron, and later of steel, as a structural material for the hulls of ships, and of heat engines for their propulsion, the possible variation of size, proportions and propelling power of ships was enormously increased. In order to make the fullest use of these new possibilities, and to adapt each ship, as closely as may be, to the special purpose for which it is intended, theoretic knowledge has become of paramount importance to the designer. He has been forced to investigate closely those branches of the abstract physical sciences that bear specially on ships and their behaviour, and these mathematical and experimental investigations constitute the study of Theoretical Shipbuilding. It embraces the consideration of problems and questions upon which the qualities of a ship depend and which determine the various features of the design, having regard to the particular services that the ship will be required to perform; i.e. the requirements that must be fulfilled in order that she may make her various passages economically and with safety in all conditions of wind and sea, the best form for the hull with regard to the resistance offered by the water and the engine power requisite in order to attain the speed desired, the nature of waves and their action upon the ship, and the structural arrangements necessary in order that she may be sufficiently strong to withstand the various stresses to which she will be subjected. The determination of the most suitable dimensions to fulfil certain conditions involves the consideration of a different set of circumstances for almost every service; and here the experience gained in vessels of similar type, together with the known effect of modifications made to fulfil new conditions of each particular design, can be used as a guide. The requirements of economical working, safety, &c., determine the length, breadth, depth and form. The length has a most important bearing on the economy of power with which the speed is obtained; and on the breadth, depth and height of side, or freeboard, depend to an important degree the stability and seaworthiness of the vessel.

While, however, the importance to the ship designer of mathematical theories based on first principles and experiment can hardly be overrated, it should be observed that the circumstances and conditions postulated are invariably much less complex than those which surround actual ships. The applicability of the theories depends on the closeness with which the assumed conditions are realized in practice. The ultimate guide in the design of new ships must, therefore, still remain practical experience. To this experience theory is a powerful assistance, but can by no means replace it.

THEORETICAL SHIPBUILDING

Stability.

When a ship floats at rest in still water, the forces acting upon her must be in equilibrium. These consist of the weight of the shipbuil
ship acting vertically downwards through its centre of gravity and the resultant pressure of the water on the immersed hull.

If the ship be supposed removed and the cavity thus formed filled with water, then, since this volume of water is in equilibrium under the same system of fluid pressures, the resultant of these pressures must be equal and opposite to the weight of the water in the cavity and will therefore act vertically upwards through the centre of gravity of this portion of water. Defining the weight of water displaced by the ship as the displacement, and its centre of gravity as the centre of buoyancy, it is seen that the fundamental conditions for the equilibrium of a ship in still water are: (a) that the weight of the ship must be equal to the displacement, and (b) that its centre of gravity and buoyancy must be in the same vertical line.

A floating ship is always subject to various external forces disturbing it from its position of equilibrium, and it is necessary to investigate the stability of such a position, i.e., to determine whether the ship, after receiving a small disturbance, will tend to return to its former position, in which case its equilibrium is termed stable, or whether, on the other hand, it will tend to move still farther from the original position, when the equilibrium is termed unstable. The intermediate case, when the ship tends to remain in its new position, is a third state of equilibrium, which is termed neutral.

Of the modes of disturbance possible, it is evident that a bodily movement of the ship in a horizontal direction or a rotation about a vertical axis will not affect the conditions of equilibrium; the equilibrium is also stable for vertical displacements of a ship. The remaining movements, viz., rotations about a horizontal axis, can be resolved into rotations in which the displacement is unaltered, and vertical displacements, the effect of the latter being considered separately. Of the various horizontal axes about which a ship can rotate two are of particular importance, viz., (1) an axis parallel to the longitudinal plane of symmetry, (2) an axis at right angle to the plane, both axes being so chosen that the displacement remains constant; the stability of a ship with reference to rotations about these axes is known as the transverse stability and the longitudinal stability respectively. In the following account the consideration of stability is confined at first to these two cases; the general case of rotation about any horizontal axis whatever being dealt with later.

**Transverse stability.** Let fig. 1 represent a transverse section of a ship, WL being its water line when upright, and W'L' its water line when inclined to a small angle $\theta$ as shown.

Assuming that the displacement is unaltered, if $G$ be the position of the ship's centre of gravity and $B'$ the positions of the centre of buoyancy in the upright and inclined positions respectively, the ship acting on the ship consist of its weight $W$ vertically downwards through $G$ and the resultant water pressure equal to $W$ acting vertically upwards through $B'$. These constitute a couple of moment $W \times GZ$ where $Z$ is the foot of the perpendicular from the horizontal plane of the water line to the vertical through $B'$; the direction of the couple as drawn in the figure is such as would cause the ship to return to its original position, i.e., the equilibrium is stable for the inclination shown.

If $M$ be the intersection of the vertical through $B'$ with the vertical through $G$, the moment of the restoring couple is equal to $W \times GZ \sin \theta$, and $GM \sin \theta$ is termed the righting lever.

If, by moving weights on board, $G$ be moved to a different position on the original vertical through $B$, the original position of the ship will remain one of equilibrium, but the moment of stability at the angle of inclination $\theta$ will vary with $GM$. If $G$ be brought to the position $G'$ above $M$ the moment $W \times GZ'$ will tend to turn the ship away from the original position. It follows that the original position of equilibrium shall be stable for the given inclination if the centre of gravity shall be below the intersection of the verticals through the upright and inclined centre of buoyancy, and the moment of stability is proportional to the distance between these two points.

The inclination $\theta$ is made smaller the point $M$ approaches a definite position, which, in the limit when $\theta$ is indefinitely small, is termed the metacentre.

In ships of ordinary form it is found that for $10$ to $15$ degrees of inclination the inclination of the verticals through the centres of buoyancy $B$ and $B'$ remains sensibly at the metacentre $M$; and therefore within these limits the moment of stability is approximately equal to $W \times G \sin \theta$.

### Small inclinations.

Let $WL$, $W'L'$ (fig. 2) be the traces of the upright and inclined water planes of a ship on the transverse plane; $B$, $B'$ the corresponding position of the centre of buoyancy; $\theta$ the angle of inclination, supposed indefinitely small in the limit, and $S$ the intersection of $WL$ and $W'L'$; join $BB'$. By supposition the displacement is unchanged, and the volumes $WAL'$, $WSW'$, $LSL'$ are also equal. If $dW$ represent an element of length at right angles to the plane of the figure, $\gamma_1$, $\gamma_2$, the half-breathths one on each side at any point in the original water line, so that, if $\gamma_1$, $\gamma_2$, $SL'$, $SL$ be the areas $WSW'$, $LSL'$ differ from $\gamma_1 y_1$, $\gamma_2 y_2$, $\gamma_1 \gamma_2 \theta$ by indefinitely small amounts, neglecting which the volumes of $WSW'$, $LSL'$ are equal to $\int \gamma_1 y_1 dx$ and $\int \gamma_2 y_2 dx$.

Since these are equal we have

$$\int \gamma_1 y_1 dx = \frac{1}{2} \int \gamma_2 y_2 dx = \int \gamma_1 y_2 dx = \frac{1}{2} \int \gamma_2 y_1 dx,$$

i.e., the moments of the two portions of the water plane about their line of intersection passing through $S$ are equal. This line is also the axis of rotation, which therefore passes through the centre of gravity of the water plane. For vessels of the usual shape, having a middle line plane of symmetry and floating initially upright, for small inclinations consecutive water planes intersect on the middle line.

Again if $g_1$, $g_2$ are the centres of gravity of the wedges $WSW'$, $LSL'$, and the volume of either wedge, the moment of transference of the wedges $xg_1 g_2$ is equal to the moment of transference of the whole immersed volume $VBB'$ where $V$ is the volume of displacement.

But $Wxg_1 = \text{moment of wedge $WSW'$ about $S = \frac{1}{2} \gamma_1 y_1 \theta \ dx$,}$ and $xg_2 = \text{moment of wedge $LSL'$ about $S = \frac{1}{2} \gamma_2 y_2 \ dx$.}$ Adding, $\int [\gamma_1 y_1 + \gamma_2 y_2] \theta \ dx = xg_1 g_2 = VBB'$. But $BB'$ = $BM\theta$ to the same order of accuracy and $\int [\gamma_1 y_1 + \gamma_2 y_2] \theta \ dx$ is the moment of the water about the axis of rotation; denoting the latter by $I$, it follows that $BM = \frac{1}{I};$ i.e., the height of the metacentre above the centre of buoyancy is equal to the moment of inertia of the water about a line at right angles to the axis of rotation divided by the volume of displacement.

These quantities, and also the position of the centre of buoyancy can be obtained by the approximate methods of quadrature usual in ship calculations, and from them the position of the metacentre can be found.

If the ship is wholly immersed, or if the inertia of the water plane is negligible as in a submarine when diving, $BM = 0$, and the condition for stability that $G$ should be below $B$, the righting lever at any angle of inclination is then equal to $BG \sin \theta$.

During the process of design the position of the centre of gravity
is determined by the disposition of hull material and fittings, machinery, coal and all other movable weights, the position of which is necessarily fixed by other considerations than those of stability; but the height of the metacentre above the centre of buoyancy varies approximately as the cube of the breadth, and any desired value of GM is readily obtained by a suitable modification in the beam.

The metacentric height in various typical classes of ships at "normal load" is as follows:

<table>
<thead>
<tr>
<th>Class of Ship</th>
<th>Approximate GM in Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First class battleship and cruiser</td>
<td>3½ to 5</td>
</tr>
<tr>
<td>Second and third class cruiser and scout</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Torpedo boat destroyer</td>
<td>1½ to 2</td>
</tr>
<tr>
<td>First class torpedo boat</td>
<td>1 to 1½</td>
</tr>
<tr>
<td>Steam picket boat or launch</td>
<td>8 to 11</td>
</tr>
<tr>
<td>River gunboat (shallow draught)</td>
<td>8 to 10</td>
</tr>
<tr>
<td>Large mail and passenger steamer</td>
<td>5 to 2</td>
</tr>
<tr>
<td>Cargo steamer</td>
<td>1 to 2</td>
</tr>
<tr>
<td>Sailing ship</td>
<td>2 to 6</td>
</tr>
<tr>
<td>Tug</td>
<td>1½ to 2½</td>
</tr>
</tbody>
</table>

The metacentric height adopted in steamships is governed principally by the following considerations:

(a) It should be sufficiently large to provide such a position of G as will give ample stability at considerable angles of inclination and sufficient range.

(b) Where ample stability at large angles is obtained by other means, the stability at small angles, which is entirely due to the metacentric height, should be sufficient to prevent forces due to wind on upper works, movement of weights athwartships, turning, &c., causing large and uncomfortable angles of heel.

(c) It should be sufficient to allow one or more compartments to become opened to the sea, through accidental damage, without risk of capsizing.

(d) It should, if possible, be sufficiently large in the normal condition of the ship to permit the greatest possible freedom in the stowage of a miscellaneous cargo without producing instability.

(e) On the other hand an excessive value causes, rapid and uncomfortable rolling among waves.

A ship having small initial stability is said to be "crank," while one possessed of a large or excessive amount is termed "stiff." The former type is generally found to be steadier and easier in rolling among waves; and for this reason when other circumstances permit, the metacentric height is usually chosen as small as possible consistent with safety and comfort.

The metacentric height is affected by an alteration in displacement or in position of the centre of gravity caused by loading or unloading cargo, fuel and stores. In consequence the stability has to be investigated for a variety of conditions, particularly that in which the metacentric height is a minimum. The change in the position of the centre of gravity can be readily determined from an account of the weights removed, added or shifted; and the height of the metacentre is obtained by calculating its position at a number of water lines, and drawing a curve of heights of metacentre above keel on a base of the draught of water. The results are conveniently embodied in the form of a metacentric diagram; the curves of height of metacentres and vertical positions of centres of buoyancy being set up from a line intersecting the water lines at 45°.

Figs. 3, 4 and 5 are the metacentric diagrams for a battleship, a vessel sharply curved at the bilge typical of a large number of merchant steamers, and a sailing ship of "Symondite" (or peg top) section; it will be observed that in the first and second the M curve is slightly concave upwards, and in the third sharply convex.

The buoyancy curve in all cases is nearly a straight line whose inclination at a particular water plane to the horizontal is equal to tan"Ah/V;" where A is the water plane area, and h the depth of the centre of buoyancy below the surface. The position of the metacentre at an intermediate water line is obtained from the diagram by drawing a horizontal line at the draught required, and squaring up from its intersection with the 45° line to meet the curve of metacentre.

With these curves are associated (though usually drawn separately) two others known as the curves of Displacement and of Tons per inch and expressed by AA and BB respectively in the above figures. These have the mean draught of water as abscissa (vertical), and
the displacement in tons and the number of tons required to increase the mean draught by 1 in., respectively, as ordinates (horizontal). The ordinate of the curve of displacement at any water line is clearly proportional to the area of the curve of tons per inch up to that water line.

The properties of the metacentric stability at small angles are used when determining the vertical position of the centre of gravity of a ship by an "inclining experiment"; this gives a check on the calculations for this purpose in the initial stages of the design, and enables the stability of the completed ship in any condition to be ascertained with great accuracy.

The experiment is made in the following manner:

Let fig. 6 represent the transverse section of a ship; let w, w be two weights on deck at the positions P, Q, chosen as far apart transversely as convenient; and let G be the combined centre of gravity of ship and weights. When the weight at P is moved across the deck to P′, and the published vertical of gravity of the whole moves from G to some G′ so that G′P′ is parallel to PQ′ (assumed horizontal) and equal to hW/W where h is the distance moved through by P′, and W is the total displacement. The ship in consequence heeled a small angle θ, the new vertical through G passing through the metacentre M; also G′M′=GG′ cot θ=hW/W cot θ, the metacentric height being thereby determined and the position of G then found from the metacentric diagram. In practice θ is observed by means of plumb bobs or a short period pendulum recording angles on a cylinder; the weight at P, w, is chosen so as to give a heel of from 3° to 5°, is divided into several portions moved separately to Q′. The weight at Q′ is replaced at the angle θ, or divide through again observed; and the weight at Q similarly moved to P′ where PQ′=hPQ′, and the angle observed; GM is then taken as the mean of the various evaluations.

In the case of small transverse inclinations it has been assumed that the vertical through the upright and the inclined positions of the centre of buoyancy intersect, or, which is the same thing, that the centre of buoyancy remains in the same transverse plane when the vessel is inclined. This assumption is not generally correct for large transverse inclinations but is nevertheless usually made in practice, being sufficiently accurate for the purpose of estimating the moments and ranges of stability of different ships, calculated under the same conventional system; this is all that is necessary for practical purposes.

With this assumption, there will always be a point of intersection (M′ in fig. 7) of the verticals through the upright and inclined centres of buoyancy, and the righting lever is, as before, GZ=GM′ sin θ.

In this case, however, there is no simple formula for BM′ as there is for BM in the limiting case where θ is infinitesimal; and other methods of calculation are necessary.

The development of this part of the subject was due originally to Atwood, who in the Philosophical Transactions of 1796 and 1798, advanced reasons for differing from the metacentric method which was published by Bouguer in his Traité du navire in 1746. Atwood's treatment of stability (which was the foundation of the modes of calculation adopted in England until about twenty years ago) was as follows:

Let WL, WL′ (fig. 7) be respectively the water lines of a ship when upright and inclined at an angle θ, S their point of intersection; B and B′ the centres of buoyancy; and g, g the centres of gravity of the equal wedges WSW, LSL, and h, h the feet of the perpendiculars from g, g on the inclined water line. Draw GZ, BR parallel to and passing through the limit of B′ in Z and R.

The righting lever is GZ as before; if W be the volume of displacement, and t that of either wedge, then

$$V\times BR = Wxh_b$$

also

$$GZ=BR-BG\sin\theta;$$

whence the righting moment or

$$W\times GZ = W\left(\frac{Vxh_b}{V} - BG\sin\theta\right)$$

This is termed Atwood's formula. Since BG, V and W are usually known, its application to the computation of stability at various angles and draughts involves only the determination of Vxh_b. A convenient method of obtaining this moment was introduced by F. K. Barnes, as follows:

In the diagram (fig. 7) it is assumed that the ordinates at θ is the moment of Vh_b with respect to GZ, a vertical line being drawn through GZ.

In the diagram (fig. 8) the principle of moments is applied to the distances of GZ, the righting lever, from the centres of buoyancy of the equal wedges W'TW', L'TL' at the water line W'L'. The moment of either wedge about the line B′B is zero, and the righting moments of W'L'A and W'L'A about B′B are therefore equal; since these volumes are also equal, the perpendicular distances of B′ and B from B′B are equal, or B′B is parallel to B′B.

The projection on the plane of inclination of the locus of the centre of buoyancy for varying inclinations with constant displacement is termed the curve of buoyancy, a portion BB′B″ of which is shown in the figure. On diminishing the angle θ indefinitely so that B″ approaches B′ to coincide, the line B′B″ becomes, in the limit, the tangent to the curve BB′B″, and coincides with the water line W'L′; hence the tangent to the curve of buoyancy is parallel to the water line.
investigated by Bouguer in his *Traité du Navire*. The points M'M'... on the curve are now termed pro-metacentres.

The length of the normal BM' or the radius of curvature of the curve of buoyancy at an angle θ, then \( d\beta d\phi = d\theta d\phi \)

is indefinitely small, \( d\beta d\phi = \theta \). Using Cartesian co-ordinates with B as origin and By, Bz, as horizontal and vertical axes, we have—

\[
\frac{dy}{d\theta} \cos \theta = \frac{dz}{d\phi} \cos \theta, \quad (1)
\]

\[
\frac{dy}{d\phi} \sin \theta = \frac{dz}{d\phi} \sin \theta, \quad (2)
\]

whence

\[
y = \int_0^\phi \cos \theta \, d\phi = \rho \tan \theta,
\]

and the righting lever \( GZ = \rho \sin \theta + (z - BM) \sin \theta \).

The radius \( \rho \) is (as for the upright position) equal to the moment of inertia of the corresponding water-plane about a longitudinal axis through its centre of gravity divided by the volume of displacement; the integration may be directly performed in the case of bodies of simple geometrical form, while a convenient method of approximation such as Simpson's Rules is employed with vessels of the usual ship-shaped type. As an example in the case of a box, or a ship with upright sides in the neighbourhood of the water-line, if \( BM = a \) and \( BM = eD \), then \( \rho = eD \tan \theta \);

whence

\[
y = \int_0^\phi \cos \theta \, d\phi = \rho \tan \theta,
\]

\[
z = \int_0^\phi \sin \theta \, d\phi = \rho \tan \theta,
\]

and

\[
GZ = (a - eD) \sin \theta + \rho \tan \theta \sin \theta;
\]

which relations will also hold for a prismatic vessel of parabolic section. It is interesting to note that in these cases if the stability for infinitely small inclinations is neutral, then, at \( \varphi = a \), the vessel is stable for small finite inclinations, the righting lever varying approximately as the cube of the angle of heel.

The application of the preceding formulae to actual ships is troublesome and laborious on account of the necessity for finding by trial the positions of the inclined water-lines which cut off a constant volume of displacement. To avoid this difficulty the process was modified by Kewich and Risbec in the following manner—Multiply equations (1) and (2) by \( V \phi d\phi \) and integrate;

we then have—

\[
d(Vy) = \rho \cos \theta \, d\phi,
\]

\[
d(Vz) = \rho \sin \theta \, d\phi,
\]

where I is the moment of inertia of the inclined water-line about a longitudinal axis passing through its centre of gravity. These formulae have been obtained on the supposition that the volume \( V \) is constant while \( \theta \) is varying; but by regarding the above equations as representing the moments of transference horizontally and vertically due to the wedges, it is evident that \( V \) may be allowed to vary in any manner provided that the moment of inertia \( I \) is taken about the longitudinal axis passing through the intersection of consecutive water-lines. In particular the water-lines may all be drawn through the point of intersection of the upright water-line with the middle line, and the moments of inertia are then equal to \( \frac{1}{2} \varphi \frac{dV}{dx} \) for both sides of the ship, \( \varphi \) being the half-breadth along the inclined water-line; the increase in volume is the difference between the quantity \( \frac{d}{dx} \frac{dV}{dx} \) for the two sides of the ship.

If \( V_a, V_b \) be the volumes of displacement at angles \( a \) and \( b \) respectively,

\[
V_a - V_b = \int_0^a \frac{dV}{dx} \left( \frac{1}{2} \varphi \right) \, dx,
\]

and substituting in (3) and (4) and integrating,

\[
y = \int_0^a \frac{dV}{dx} \left( \frac{1}{2} \varphi \right) \cos \theta, \quad (6)
\]

\[
z = \int_0^a \frac{dV}{dx} \left( \frac{1}{2} \varphi \right) \sin \theta, \quad (7)
\]

On eliminating \( V_a \) in (5), (6) and (7), \( y \) and \( z \) can be found.

This is repeated at different draughts, and thus \( V_a \) and \( z \) are determined at a number of draughts at the same angle, enabling curves of \( y \) and \( z \) to be drawn at various constant angles with \( V \) for an abscissa; from these, curves may be obtained for \( y \) and \( z \) with the angle \( a \) as abscissa for various constant displacements; \( GZ \) being equal to

\[
y \cos \beta + (z - a) \sin \alpha.
\]

From the foregoing it is evident that the elements of transverse stability, including the co-ordinates of the centre of buoyancy, position of pro-metacentre, values of righting lever and righting moment, depend on two variable quantities—the displacement and the angle of heel. The righting lever \( GZ \) is in England selected as the most useful criterion of the stability, and, after being evaluated for the various conditions, is plotted in a form of curves—(a) for various constant displacements on an abscissa of angle of inclination, (b) for a number of constant angles on an abscissa of displacement. These are known as curves of stability and cross curves of stability respectively; either of these can be readily constructed when the other has been obtained; which process is utilized in the method now almost universally adopted for obtaining \( GZ \) at large angles of inclination, a full description being given in papers by Merrifield and Amsler in *Trans. I.N.A.* (1880 and 1884). The procedure is as follows:

1. The substitution of calculations at constant angle for those at constant interval. A number of water-lines at inclinations having a constant angular interval (generally 15°) are drawn passing through the intersection \( S \) of the load water-line with the middle line on the body plan. Other water-lines are set off parallel to these at fixed distances above or below the original water-line passing through \( S \).

2. The volumes of displacement and the moments about an axis through \( S \) perpendicular to the water-line are determined for each draught and inclination by means of the Amsler-Laffon integrator, the pointer of this instrument being taken in turn round the immersed part of each section.

3. On dividing the moments by the corresponding volumes, the perpendicular distance of the centre of buoyancy from the vertical through \( S \) is obtained, i.e. the value of \( GZ \), assuming \( G \) and \( S \) to coincide.

4. For each angle in turn "cross curves" of \( GZ \) are drawn on a base of displacement.
The slope of the stability curve for small angles, the maximum righting lever with the angle at which it occurs, and the range or the inclination at which the stability vanishes are of particular interest, inasmuch as the curve depends principally on these features; and the effect on them, particulars of variation of freeboard, breadth and position of centre of gravity, is considered below.

The stability curve AA (fig. 12) is drawn for a box-shaped vessel of draught 10 ft., freeboard 10 ft. and beam 30 ft.; with C.G. in the water-plane. The curves EE, FF, GG are drawn for the same vessel, but with freeboard altered to 12$\frac{1}{2}$, 7, and 5 ft. respectively; it will be observed that freeboard has no influence on the stability at small angles, but has a marked effect on the range and maximum righting lever. An increase of freeboard is generally accompanied by a rise in the position of the centre of gravity; this is not included in the curves, but would actually reduce the stability to some extent. The effect of freeboard on the range and on the safety of ships is also illustrated by a comparison between the curves of stability (fig. 13) of the armoured turreted ships "Monarch" and "Captain," the latter of which was lost at sea in 1870. These vessels were similar in construction and dimensions except that the freeboard of the "Monarch" was 14' 0" and that of the "Captain" 6' 6"; the smaller freeboard of the "Captain" was associated with a slightly lower position of the centre of gravity and a greater metacentric height. The stability curve of the "Captain" in consequence rises rather more steeply than that of the "Monarch" up to about 14° when the deck edge is immersed; the righting lever then rapidly declines, and vanishes at 54°, in contrast to the "Monarch’s," where the maximum righting lever is doubled and range augmented 1.3 times by the additional freeboard. For the influence of the range in enabling a ship to withstand a suddenly applied force see "Dynamical Stability."

Again, for the box-shaped vessel previously considered, if the breadth is modified successively from 30 ft. to 35, 35 and 20 ft., other features remaining unaltered, the curves of stability then obtained are represented by BB, CC and DD in fig. 12. It is seen that alteration in beam affects principally the stability lever at moderate angles of inclination, while at 90° inclination the curves all intersect. Since at small angles GZ = GM$\delta$ (in circular measure) approximately, the initial slope of the curve is proportional to GM, and the tangent to this curve at the origin can be drawn by setting by the value of GM as an ordinate to an angle of one radian (57.3°) as abscissa, and joining the point to the origin. (See figs. 10 and 11.) The height of the metacentre above the centre of buoyancy will, ceteris paribus, vary with the cube of the breadth, and an increase of beam will result in a large increase of stability at moderate angles.

Finally, the effect of an alteration in the vertical position of the centre of gravity is illustrated by the three stability curves of a steam yacht in fig. 14, where the centre of gravity is successively raised 1 ft. In the condition corresponding to the fourth and lowest curve, the GM is negative (30 ft.), and so also are the righting levers up to 15° when the curve crosses the axis; from 15° to about 52° the GZ is positive, but above
that value it again becomes negative. In this case the stability is unstable at the upright position, and the ship will roll to an angle of 15° on either side where the equilibrium is stable. This peculiarity is not uncommon in merchant steamers at light draught. Ample stability at large angles and good range is provided in such cases by high freeboard; but, apart from any considerations of safety, water ballast is used to lower the centre of gravity to a sufficient extent to avoid excessive tenderness.

The properties of the loci of centres of buoyancy and of pro-
metacentres were fully investigated by Dupin in 1822, including also
the surfaces into which these curves develop when admitting
involutions, inclinations about transverse and "skew" axes. It
has been shown that the tangent to the curve of buoyancy
at any point is parallel to the corresponding water-line;
and assuming that the ship is only free to turn in a plane perpen-
dicular to the axis of inclination, the positions of equilibrium are
found by drawing from the centre of gravity all possible normals
to the buoyancy curve, or equally, all possible tangents to its evolve,
the metacentric curve, since the condition to be satisfied is, that the
centres of gravity and buoyancy shall lie in the same vertical. Again,

FIG. 15._Metacentric, Buoyancy and Flotation Curves of "Scrapis."

when the curve of statical stability crosses the axis, making an acute
positive angle as at P in fig. 14, the values of GZ on either side of
P are such as to tend to move the ship towards the position at 1,
and the equilibrium at P is stable. Similarly, when the curve
crosses the axis "negatively," as at the origin and Q, the equilib-
rium is unstable. Since the angle of intersection cannot be either
positive or negative twice in succession, on considering rotation in
ever directions, there are two positions of equilibrium of which
the upright only is stable. A self-righting life-boat exactly corresponds
to this condition, the vessel being capable of resting only in the
original upright position. If G is below Q, on the other hand, as at
G, there are again two positions of equilibrium of which the upright
only is stable. A vessel being unstable when upright. If G is at G there are again six positions of equilibrium; the
upright position is unstable, but a stable position is reached at a
certain angle on either side. This phase is often realized in merchant
ships when light, as already stated (side fig. 14). When G is exactly
upon P the curve of the metacentric curve, the equilibrium is
neutral; if it is at M, the ship is stable for finite inclinations, and if it is at a similar position for M1 (except that the neutral state
is then reached at 180°) and for P.

In all the above cases it will be observed that the positions of stable and unstable equilibrium are normal in number and occur
alternately. There are two exceptions:

1. When the moment of inertia of the water plane changes abruptly
so that the B curve receives a sudden change of curvature. This is
possible with bodies of peculiar geometrical forms, and two positions of
M then correspond to one position of the body; if G lies between
them, the equilibrium is stable for inclinations in one direction
and unstable for those in the opposite direction, and is then termed
"mixed."

2. When the equilibrium is neutral, this condition may be regarded
as the coincidence of two or more positions of equilibrium alternately
stable and unstable. The ship may then be either
stable, unstable or neutral for finite inclinations; in exceptional
cases she may be stable in one direction and unstable in the other,
resembling to some extent the condition of "mixed equilibrium."

The curves of buoyancy and flotation and the metacentric curve
for H.M. troopship "Scrapis" are shown with reference to the
section of the ship in fig. 15, and on an enlarged scale for greater

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1 The curves of buoyancy and flotation and the metacentric curve
for H.M. "Scrapis" were obtained by practical investigation by the writer in 1871. The
results showed that Dupin's investigations, which were apparently purely theoretical,
had not fully disclosed certain features of the curves, such as the cusps, &c.
centre of gravity, or, as it is termed, the centre of flotation, the curve of flotation will be the locus of the projections of the centres of flotation on the plane of the figure, which curve touches each water-line.

From consideration of the slope of a ship's side around the periphery of a water-line, Dupin obtained the following expression for the radius of curvature of the curve of flotation,

$$\rho' = f(x) \tan \alpha \cdot dx$$

where $dx$ is an element of the perimeter, $\alpha$ the inclination of the ship's side to the vertical, and $\gamma$ its distance from the longitudinal axis through the centre of flotation. M. Emile Leclert, in a paper read at the Institution of Naval Architects, 1870, proved the equivalence of the above formula to the two following, which are known as Leclert's Theorem:

$$\rho' = \rho + \frac{dp}{dV}$$

where $I$ and $V$ are respectively the moment of inertia of the water-plane and the volume, and $\rho$ is the radius of the curve of buoyancy or $B'M'$. Independent analytical proofs of the formulæ were given in the paper referred to; and (Trans. I.N.A., 1894) a number of elegant geometrical theorems in connexion with stability, given by Sir A. G. Greenhill, include a demonstration of Leclert's Theorem as follows (in abbreviated form):

Let $B$, $B'$ (fig. 17) be the centres of buoyancy of a ship in two consecutive inclined positions, and $F$, $F'$ the corresponding centres of flotation. Draw normals $BM$, $B'M'$, meeting at the centre of metacentre $M$; and $FC$, $F'C'$, meeting at the centre of curvature $C$. Produce $FB$, $F'B'$ to meet $O$, to $OM$, $MC$.

Then $BM$, $CF$ and $B'M'$ are respectively parallel, and similarly also $BB'$, $FF'$; hence the triangles $MBB'$, $CCF'$ are similar and

$$\frac{BM}{BB'} = \frac{OB}{OF}$$

so that $O$, $M$, and $C$ are collinear.

If the displacement $V$ is now increased by $dV$, changing $B$ to $B'$, and $M$ to $M'$, then since the added displacement $dV$ may be supposed concentrated at $F$, $B'$ will lie on $OB$, and $dV$ may be shown similarly as before that $M'$ lies on $OC$. Further, considering the transference of moments, $BB' \times V = BF' \times dV$.

Draw MED parallel to $BF$, then

$$\frac{dV}{BB'} = \frac{ME}{MF} \frac{\rho'}{\rho} = \frac{d\rho}{dV}$$

$$\rho' = \rho + \frac{d\rho}{dV}$$

The curve of flotation resembles the curve of buoyancy in that not more than two tangents can be drawn to it in any given direction, but it differs in that its radius of curvature can become infinite or change sign. It contains a number of cusps determined by $\rho' = \frac{dV}{d\rho' = 0}$. These occur in an ordinary ship's shape at positions: (i) at or near the angles at which the deck is immersed or emerged (four in number); and (ii) at or near the angles of $90^\circ$ and $270^\circ$. There are, therefore, six cusps in the curve of flotation of an ordinary ship; they are shown in figs. 15 and 16 by the points $F_2$, $F_3$, $F_4$, $F_5$, $F_6$, $F_7$.

The following relations between the curves of buoyancy and of metacentres and the curve of statical stability are of interest, and enable the former curves to be constructed when the latter have been obtained. If $GZ'$, $GZ'$ (fig. 19) are the righting levers corresponding to inclinations $\theta$, $\theta + d\theta$, where $d\theta$ vanishes in the limit; $B'$, $B''$, the centres of buoyancy, $M'$ the metacentre; produce $GZ'$ to meet $B''M'$ in $U$.

Then, neglecting squares of small quantities,

$$d(GZ') = V'U = dGZ'$$

or vertical distance of $M'$ above $G = \frac{d(GZ')}{dGZ'}$.

Also $B'' = M'B''$;

$$Z'B'' - Z'B'' = MZ' - MZ'' = Z'U = GZ', \frac{dGZ'}{dGZ'}$$

or

$$GZ' = \frac{d(B''Z')}{dGZ'}$$

i.e. the vertical distance $(B'Z')$ of $G$ over $B$ is equal to $GZ'$.}

It follows that by differentiating the levers of statical stability and finding the slope at each ordinate the vertical distance of $M'$ over $G$ is obtained, and $M'$ may be plotted by setting up this value from $Z'$ above $GZ'$ drawn at the correct inclination; also that by integrating the curve of statical stability and finding its area up to any angle, the vertical separation of $G$ and $B'$ is obtained, and $B'$ may be plotted by setting down this value increased by $BG$ below $Z'$. 

![Diagram](image-url)
The work done in inclining a ship slowly so as to maintain a constant displacement (and avoid communicating any unnecessary movement of disturbance to the water) is given by the expression $W \times f_m \delta \theta$ where $M$ is the moment resisting the inclination. This may be written $\frac{W \times f_m}{G Z \delta \theta}$ and it has been shown above that this is equal to the weight multiplied by the vertical separation of the centres of gravity and buoyancy. This is otherwise evident since the work is the sum of the moments of the forces acting on the ship, viz., the buoyancy in the water and the displacement and the buoyancy; these are respectively equal to $W \times G \delta \theta$, and $W \times \delta \theta$ giving the value $W \left( Z' B' - BG \right)$ as before.

The dynamical stability of a ship at any angle is defined as the work done in inclining or lowering the ship to an equilibrium position; this is conveniently obtained by integrating the curve of statical stability as stated above. The dynamical stability can thus be calculated at various angles and a curve obtained, whose ordinates represent work done in foot-tons. The curve of dynamical stability is drawn for a battleship (normal condition) in fig. 10, and is there shown in relation to the curve of statical stability; it will be seen that the dynamical stability increases continuously until the righting moment vanishes, when it becomes a maximum.

A formula for the dynamical stability of a ship at any angle was given by Canon Moseley in a paper read before the Royal Society. In 1866, however, a model of a ship under his direction at Portsmouth Dockyard showed that the actual work in quickly inclining to a moderate angle agreed closely with that calculated in the case of a model in the position, which was obtained with a model of triangular section owing to the motion of the water set up, and also, probably, to the variation in displacement during the roll.

The presence of large righting couples at moderate angles of heel is of great importance in a sailing ship than in a steamship, since in the former it determines the amount of sail that can be carried unbalanced on either beam, and thereby influences the speed. A sailing ship in motion is subjected to the wind-pressures on the sails and the upper works of the ship, and to the water-pressures on the hull. When the ship is in steady motion, these forces are equal and opposite; and, so far as the stability is concerned, it is sufficient to determine the transverse resultant of the wind-pressure on the sails, and its moment, the water-pressure on the hull affecting only the speed and leeway of the ship.

The pressure on the sails depends on their form and area, their position, and the apparent velocity of the wind, i.e., the velocity relative to the ship. The pressure of the wind on the hull is obtainable similarly to that on the sails, but is usually neglected as the heeling moment is small. Experiments have been made to determine the wind-pressure on plates by Dines, Langley, Eliffet, Stanton and others, and tables giving the pressure on the plate, and thereby the pressure on the hull, have been published.

The normal pressure $R$ in pounds on a plate of area $A$ square feet exposed to face normally a wind of velocity $V$ feet per second is given by the formula $R = KAV$, where $K$ is a coefficient depending on the form of the plate, the wind-velocity, and the character and kind of the plate. In the case $K = 0.00037$, and of about 1 sq. ft. in area $K$ is about 0.0014, corresponding to a pressure of 1 lb per sq. ft. at about 16 knots. The coefficient increases slightly for larger dimensions of the plate. It has also been found that the departure from the square or circular form involving an increase in perimeter for the same area causes an increase in the mean pressure.

An alteration from the plane to the concave, analogous to the "bellying" of sails, is accompanied by a slight increase in the pressure per square foot of projected area; but for any large amount of concavity the increase is more than countera balanced by the decrease in the projected area.

No simple law exists connecting the normal pressure on a plate exposed obliquely to the wind with the angle of incidence; it is found that the results for air exhibit a good agreement with those for water, but the general equation is of the form $R = KAV \cos \theta$ where $	heta$ is the angle between the normal to the plate and the wind. At small angles of incidence up to about 20°, or even 40° (varying with the shape of the plate), the pressure varies directly as the angle; beyond this limit it is slightly diminished, afterwards increasing very slightly to a value which is almost constant for the remaining angles up to and including 90°. The centre of pressure for oblique impact lies between the leading edge and the centre of gravity of the area. In a plate 1 ft. square, it lies 0.34 ft. from the leading edge at 15° inclination and 0.4 ft. at 30° inclination, gradually approaching the centre of the plate as the angle of inclination is increased. A slight curving or concavity of the plate does not appear to have much influence on the normal component of the wind pressure.

The wind-pressure on the sails of a ship cannot be calculated with any degree of precision because existing information is insufficient to give the form of the sail and the variation in the wind in the three (b) the different positions in which the sails may be placed relative to the wind and to each other; and (c) the interference of adjacent sails with each other. On the other hand, conclusions based on these experiments are of value both in assisting in the intelligent appreciation of the effects of changes in the sail areas, sail positions, and in the form of rig, and in forming a comparison between the various sailings of ships and the general behaviour of vessels with which experience has been obtained.

The stability of a sailing vessel is usually estimated by assuming all plain sail to be placed in a fore and aft direction and to be subject to a normal pressure, which is supposed to vary directly to a wind of about 16 knots. The resultant pressure of the wind on the hull, with a normal rig and associated with the pressure due to wind-pressure arising from the fore part of the hull, is supposed to pass through the centre of gravity of the area of the immersed middle line plane (termed the centre of lateral resistance). If $h$ be the vertical distance between the centre of gravity of the ship and the centre of lateral resistance, and $a$ the angle of heel, the moment causing the heel is (on these assumptions)

$$ W \times G \frac{a}{h} $$

and the righting moment is approximately

$$ W \times G \frac{a}{h} $$

Hence

$$ \sin a = \frac{2240}{W \times G} $$

The reciprocal of this quantity or

$$ \frac{2240}{W \times G} $$

is a measure of the capability of the ship to stand up under her canvas spread and is termed the power to carry a sail. The value varies with different sizes and classes of ships and boats. It is relatively small in small boats and small yachts owing to the practicability of reducing the sail to some extent by lowering the mast. The value is also permissible in large yachts on account of their great range of stability. In boats and yachts it varies from 1 to 4 and in full-rigged sailing ships from 15 to 20.

The stability of sailing vessels at large angles of inclination varies considerably with the class of vessel. In racing yachts and other completely decked sailing boats whose ratios of beam to depth and draught are comparatively small, initial stability is obtained by lowering the centre of gravity with ballast fitted on the keel, and the range then extends to considerably over 90°; on the other hand, a number of half-decked or open sailing boats imber their gunwales with water when inclined to a moderate angle. With reference to this, Mr. Dixon Kemp in his Yacht Architecture remarks that the deck edge should not be immersed at an angle of heel less than 20°; some small centre-board boats whose gunwales are awash at 12° or 15° cause anxiety. With full-rigged sailing ships this angle is commonly 20° to 25°.

The effect of a sudden gust of wind on a sailing ship is obtained by equating the work done on the ship by the gust to her dynamical stability; and the angle by which the vessel is heeled over, is assumed to pass through the wind-pressures, the wind-pressures, their inertia and the water, and any change of displacement are neglected; the wind-pressure is assumed constant during the roll, in accordance with this, Mr. Dixon Kemp remarks that the deck edge is supposed less than 50°); the modification of the pressure due to the motion of the sail is also neglected.

Let $QFQ$ (fig. 20) be the curve of statical stability, the ordinates representing moments, and let the heeling couple due to the gust be represented by $OS$. If $N$ be the extreme angle of heel, draw $SPQ$ parallel to the base, cutting the curve at $P$, $Q$, and $PM$, $NQ$ perpendicular to the base. The work done by the wind in the area $OSUN$ and is equal to the dynamical stability of the ship or the area $OPQN$. Hence the areas $OPS$, $PQU$ are equal, and the extreme angle of heel is determined by this equality; the angle, $\phi$, and the pressure at which it is reached, lie on the initial and approximately straight portion of the curve, the extreme angle of heel ON is about twice $\phi$, and the angle of roll being supposed less than 50°; the modification of the pressure due to the motion of the sail is also neglected.

Let $OPQ$ (fig. 20) be the curve of dynamical stability when the wind is blowing with strength corresponding to $OS$; the intercepts of the ordinates below $SPUQ$, done working against the force of the wind, leaving the segments above $SPQ$ available for absorbing the heeling moment of the vessel at the position of the steady heel $PM$. As the strength of the gust is increased the points $P$ and $Q$ travel farther along the curve until $P'$, $Q'$ are reached, such that the areas $P'OQ$, $OT'$ are equal; the vessel will then come momentarily to rest at $Q'$ of $P'$, $Q'$ being unstable equilibrium, an increase in the wind-pressure causing her to capsize. It follows that a ship sailing in a wind of sufficient strength to cause a moderate angle of heel equal to $OM'$ will be on the point of capsizing if the wind should happen to drop and afterwards return suddenly with its
formers. A more dangerous, though improbable, case in which a gust of wind strikes the ship just as she has completed a roll to windward can similarly be investigated; it is found that the safe angle of steady heel under this condition is considerably less than that represented by OM. It thus appears that it is of the greatest importance that sailing vessels should possess large dynamical stability in order to provide against the risk of capsizing due to fluctuations in the wind-pressure. Although the neglect of the wind and water resistances in the above investigation materially modifies the quantitative results, the general conclusions point to the necessity for sufficient range and freeboard however large the righting levers may be at small inclinations.

The centres of effort and of lateral resistance have not the same longitudinal position, consequently a horizontal couple is produced which turns the vessel either into the wind or away from it. In the former condition the vessel is said to be "ardent," and in the latter to be "slack." In order that a vessel may be quick in going about and yet not require too large a helm angle on a straight course, she should be slightly "ardent," i.e., the true centre of effort should be slightly abaft the true centre of lateral resistance. The assumed and true positions of these centres differ to some extent, and on making allowance for this it is found that in the majority of vessels possessing slight ardenity the assumed C.E. lies slightly before instead of abaft the assumed C.L.R. In small sailing boats the points are usually very near together; but in a large number of sailing ships, including H.M. sloops, their distance apart is about 0.05 L, and in yachts about 0.02 L, where L is the length.

It may be noted in this connexion that the area of sail spread and the size of the ship are often connected by the coefficient which is known as the Driving Power. The value for small sailing boats and for yachts is about 200, and for full-rigged sailing ships from 80 to 100 (including plain sail only).

Longitudinal stability. Similar propositions are true in both cases, viz.:

1. Consecutive water-planes intersect an axis passing through the centre of rotation.
2. The height of the longitudinal metacentre M above the centre of buoyancy is equal to the moment of inertia about this axis divided by the volume of displacement of the ship.
3. The righting moment at any small angle of inclination θ (circular measure) is equal to W.G.M.θ.

In fig. 21 let WL be the water-line corresponding to the positions G and B, and conceive a longitudinal movement of a portion of the ship with its mean sea-level plane CD parallel to the horizontal plane EF, the points B and E being in the same vertical line above the water-line at the centre of flotation F.

the weights in the ship causing G to move horizontally to G' if G' be abaft G the ship will after trim by the stern until B moves to B', and vertically downwards until the centre of flotation has descended to W'L', intersecting WL at the centre of flotation F.

If L be the length of the ship between the draught marks, the change of trim (W'L'-4LL') is equal to L.θ, and the moment changing trim is W.G.G'y or W.G.M.θ; the change of trim in inches (other linear dimensions being in feet) is therefore

\[ W.G.G'y = W.G.M.θ \]

which is the moment required to change trim one inch. Since the longitudinal moment of inertia of the water-plane includes the cube of the length as a factor, the longitudinal BM is usually large compared

with BG, and the moment to change trim 1 in. in foot-tons is nearly equal to

\[ \frac{W.X.B.M}{L^2} \]

which is approximately constant for moderate variations of draught.

If a weight of moderate amount is placed at a distance a feet abaft the centre of flotation F, the bodily sinking in inches is

\[ \frac{W.X}{L^2} \]

the moment changing trim by the stern is W-foot-tons, and the change of trim is therefore \[ \frac{W}{T} \] inches, where T is the "tons per inch" and M the moment to change trim 1 in. If b be the distance of F abaft the forward end of the ship, the draughts forward and aft are increased respectively by

\[ \frac{W}{T} \left( \frac{L-2b}{2L} \right) \]

and

\[ \frac{W}{T} \left( \frac{L+2b}{2L} \right) \]

A ship provided with water-tight compartments is liable to have water admitted into any of them on account of damage received, or may require to carry water or other fluid in bulk as ballast or cargo. The effect of this addition on the draught and the stability is therefore of interest. There are three cases:

1. When the water completely fills a compartment;
2. When the water partially fills a compartment up to the level of the water-line, remaining in free communication with the sea; and
3. When a compartment is partially filled with water without any communication with the sea.

In the first case the water is regarded as a weight added to the ship; the mean sinkage is obtained from the displacement curve, the change of trim from the curves of inertia, and the angle of heel from the metacentric diagram, or (for large angles) the cross curves. In general, if the compartment filled is low in the ship, the stability is increased; if high, it is diminished.

In the second case, assume in the first place the compartment to be amidships, so that no heel or change of trim occurs, and to be moderate in size, so that the sinkage is moderate in amount. Let ABCD (fig. 22) be such a compartment bounded by water-tight bulkheads sufficiently high to prevent water reaching adjoining compartments. Let the water-lines be WEFL, W'GHL', before and after bilging; let A, a be the area of the whole water-plane WEFL and of the portion EF within the compartment respectively, in square feet; and let v be the volume contained in EBCF diminished by the volume of any solid cargo in the compartment. The buoyancy is reduced by an amount v by bilging, and the amount added through sinking must be equal to the amount so lost. If x be the sinkage in feet, then

\[ v = x(A-a) \]

so that the mean sinkage is equal to the buoyancy lost divided by the area of the intact water-plane. In the event of the compartment being so situated as to cause heel and change of trim, the total sinkage is found from the trim above as, and the effect of heel and change of trim superposed.

To obtain the heel produced, the position of the centre of flotation for the intact portion of the water-plane is found, and thence the vertical and horizontal positions of the new centre of buoyancy are deduced by taking account of the buoyancy lost through bilging, and then regained by the layer between the two water-planes. The moment of inertia of the intact water-plane is found about an axis through the new centre of flotation and thence the height of the new metacentre M' determined. The heel θ (assumed small) is found by equating the horizontal shift of B to sin θ X the vertical distance of M' above G, both being equal to the moment causing heel divided by the displacement. In a similar manner the change of trim is obtained. If the compartment bilged is large so that considerable changes in its area and that of the ship at the water-line result, the sinkage and alteration in stability are found by a tentative process, closer approximations to the final water-line being successively made.

The determination of the stability when bilged at or near the water-line is of special importance in warships owing to their liability to damage by gunfire in action, with the consequent opening up of a large number of compartments to the sea. Calculations are made of the sinkage and stability when the unarmoured or lightly armoured parts of the ship are completely riddled; the stability should be sufficient to provide for this contingency.

The third case, where the ship is intact but has compartments partially filled with water or other liquid, is of frequent occurrence. Practical illustrations occur in connexion with the filling and
emptying of water-ballast and oil-fuel tanks, and particularly in the case of ships fitted to carry large quantities of oil in bulk.

Let fig. 23 represent the section of a vessel fitted with a tank PQRS partly full of water. Let WL, wL be the upright water-lines of the vessel and tank, G the centre of gravity of the vessel and water combined, B the centre of buoyancy of the vessel, and b the centre of gravity of the water.

As the ship is filled successively through angles \( \theta_1, \theta_2, \ldots \) the centre of buoyancy B moves along the curve of buoyancy to \( B_1, B_2, \ldots \) the normals at which are tangential to the metacentric curve \( M_1, M_2, \ldots \). If the water in the tank could be kept from moving as the inclination proceeded, G would be fixed in the ship, and the righting levers would be \( GZ_1, GZ_2, \ldots \) those at small angles being equal to GM sin \( \theta \).

Actually, if the inclination be slowly performed, the water-level in the tank changes successively to \( w_1, w_2, \ldots \), maintaining a level surface at all times; its centre of gravity moves to \( b_1, b_2, \ldots \) thereby causing an apparent alteration in the combined centre of gravity G. Drawing \( b_1L \) perpendicular to the vertical through \( b_1 \) and calling \( W \) the weight of the water and of the water and ship combined, then at the angle \( \theta \) the line of action of the weight of the water \( wL \) has moved through a distance \( bL \) and the righting moment of the ship is diminished by an amount \( WbL \).

It is evident that the movement of the centre of gravity of the water in the tank is the same as would be the movement of the C.B. of a ship having the same form as the tank and water-lines corresponding to \( wL, w_1L, w_2L, \&c. \) The values of the levers \( b_1L, b_2L, \ldots \) can therefore be obtained by a process similar to that used for obtaining the righting levers of the ship; cross curves and thence ordinary stability curves being drawn for various heights of water and inclinations. If \( \theta \) be a small angle of inclination, the line of action of the weight \( bL \) will be such as to pass through the metacentre m corresponding to the water-line \( wL \) and determined by the formula \( bm = \frac{W}{P} \).

If the tank contains a fluid of specific gravity \( \rho \) the virtual rise of the centre of gravity is \( \frac{\rho}{\rho'} \). The loss of stability at small angles due to the mobility of the water is thus independent of the quantity in the tank, but is proportional to the moment of inertia of its free surface.

It is possible for a small quantity of water with an extensive free surface to render a ship unstable in the upright condition; the angle to which this large loss of stability extends depends, however, on the quantity of water in the tank, for the extent of the sideways movements of the centre of gravity G of the ship and water is minute if the tank be either nearly empty or nearly full, and the loss of stability at all angles above a small amount will then be inappreciable; the loss at moderate angles is usually a maximum when the tanks are about half full.

The assumption made above, viz. that the ship is inclined so gradually as to maintain a level water surface in the tank, is by no means in accordance with the actual circumstances during rolling; waves are then set up in the water, causing it to wash from side to side, so that the loss of stability may be either more or less than the amount calculated. To avoid danger of capsizing in still water, large tanks in a ship are filled or emptied in succession as far as possible, so that not more than one or two are partly full at the same time. Water-tight longitudinal partitions are also fitted in wide tanks in order to reduce the moment of inertia of the free surface. On the other hand tanks, partly filled with water, have been fitted and found effective in certain ships in order to reduce the rolling oscillations among waves.

Hitherto the stability of a ship has been considered only with reference to inclinations about any longitudinal or transverse axis. These are the cases which it is necessary to deal with in practice for the purpose of ascertaining the probable qualities as regards stability of a vessel by comparing the elements of its stability in the design stage with those of existing ships whose qualities have been tested by experience. For the exact theoretical consideration of the stability of a ship or any floating body, however, it is necessary to take account of the true line of the action of the buoyancy and not merely of its projection on the plane of inclination. The development of this part of the subject has largely been due to M. Dupin in his Mémoire de la stabilité des corps flottants and to M. Guyou in his Théorie du naufrage.

If a ship is inclined in all possible positions, keeping the displacement constant, the locus of the centre of buoyancy is a closed surface which is known as the surface of buoyancy; the curve of buoyancy for two-dimensional inclinations being the projection on the plane of rotation of the corresponding points on the surface of buoyancy. Similarly the envelope of all the water-planes is defined as the surface of flotation. The stability of a ship in all positions is known when (a) the form and dimensions of the surface of buoyancy, and (b) the position of the centre of gravity relative to it, have been obtained; the former depends entirely on the geometrical form of the ship and on the constant volume of displacement assumed, and the latter has to do only with the arrangement and magnitude of the component weights of the structure and lading. For an infinitesimal inclination the line joining the centres of buoyancy when upright and inclined is parallel to the water-plane, and the tangent plane to the surface of buoyancy is therefore parallel to the water-plane, i.e., it is horizontal, and the normal to the surface is vertical. If the initial position is one of equilibrium, the centre of gravity must lie on the normal. To determine the effect of a small disturbance from the position of equilibrium, it is necessary, as in the particular inclinations already considered, to find the line of action of the buoyancy for adjacent positions, i.e. to trace the normals to the surface of buoyancy to successive normals to this surface will not, in general, intersect; but, from the properties of curvature of surfaces, there are two particular directions of inclination for which adjacent normals to the surface will intersect the original normal, these directions being perpendicular to one another and parallel to the principal axes of the indicatrix of the surface of buoyancy.

If fig. 24 be a plan of the water-plane, \( Oxy \) the axis of inclination passing through two points of flotation \( Oy' \) and \( Ox' \) and perpendicular axes in and out right angles to the plane of flotation, then, from a consideration of the wedges of immersion and emersion for a small inclination \( \theta \), the travel of the centre of buoyancy B becomes:

\[
\frac{\partial}{\partial \theta} \left( \int_{y_x} x'y'd'x'd'y' \right) (or \text{BB} \text{ in fig. } 24) \text{ parallel to } Ox' \\
\frac{\partial}{\partial \theta} \left( \int_{y_x} x'y'd'x'd'y' \right) (or \text{BB} \text{ parallel to } Oy') \\
\frac{\partial}{\partial \theta} \left( \int_{y_x} x'y'd'y' \right) (or \text{BB} \text{ parallel to } Oy') \\
\frac{\partial}{\partial \theta} \left( \int_{y_x} x'y'd'y' \right) (or \text{BB} \text{ parallel to } Ox')
\]

These may be written:

\[
\int_{y_x} x'y'd'y' \left( \sin \theta - \cos \theta \right) \cos \theta \text{P} + \int_{y_x} x'y'd'y' \cos \theta \left( \sin \theta + \cos \theta \right) \text{P}
\]

where \( I_1' \) is the moment of inertia of the water-plane about \( Ox' \) and \( P \) the product of inertia about \( Ox' \) and \( Oy' \). For the principal axes of inertia of the water-plane \( Ox, Oy \) see Fig. 25, an angle \( \phi \) with \( Oy', Ox \) and if, from B as origin, axes \( Bx, By, Bz \) are drawn parallel to \( Ox, Oy, Oz \), then the co-ordinates of \( B' \) are as follows:

\[
x = -B_b \cos \phi - B_b \sin \phi \left( \cos \phi - I_x' \sin \phi \right)
\]

\[
y = B_b \cos \phi + B_b \sin \phi \left( \cos \phi + I_x' \sin \phi \right)
\]

\[
z = B_b \cos \theta - \frac{I_y}{I_x' - I_y'}
\]

Also:

\[
I_1' = I_x \cos^2 \theta + I_y \sin^2 \theta
\]

\[
P = \left( I_x - I_y \right) \sin \theta \cos \theta
\]
where $I_x$, $I_y$ are the principal moments of inertia of the water-plane. Hence

$$x = \frac{\theta}{V} I_x \sin \phi;$$
$$y = \frac{\theta}{V} I_y \cos \phi;$$
$$z = \frac{\theta}{2V} (I_x \cos^2 \phi + I_y \sin^2 \phi).$$

Eliminating $\theta$ and $\phi$, the locus of the centre of buoyancy for small inclinations of the ship becomes the elliptic paraboloid

$$\frac{x^2}{I_x/V} + \frac{y^2}{I_y/V} = \text{constant}.$$  

The equation to the indicatrix referred to axes parallel to $Bx$, By is therefore

$$\frac{x^2}{I_x/V} + \frac{y^2}{I_y/V} = \text{constant};$$

and the indicatrix is therefore similar and similarly situated to the momental ellipse of the water-plane, and the surface of buoyancy is everywhere symmetrical to all points within it. The quantities $I_x/V$ and $I_y/V$ are evidently equal to $BM_x$ and $BM_y$ (referring to inclinations about $Oy$ and $Ox$ respectively); and the indicatrix and momental ellipse become

$$BM_x + BM_y = \text{constant}.$$  

The angle $\psi$ that $BB'$ (the projection of $BB'$ on the plane of the indicatrix) makes with $SO$ is given by

$$\tan \psi = \frac{x}{y} \cot \phi;$$

hence the direction is conjugate to that of the axis of rotation with respect to the indicatrix.

This is illustrated in fig. 25, where the ellipse shown is the indicatrix; $OP$, the axis of inclination, $OQ$ the conjugate radius, and $ORM$ the perpendicular to the tangent. Draw $QN$ parallel to $OM$ to meet $OP$. The triangle $OMQ$ is similar to $BB'B''$; and they can be made equal by giving a suitable value to the constant in the indicatrix equation. In that case $ON$ is the projection on the plane of the normal to the surface at $B$, and the shortest distance between the normals at $B$ and $B'$ is equal to $ON = MQ = \frac{BB'}{\theta}$, since $ON$ or the axis of inclination is perpendicular to them both. Also, the length $BM'$ of the normal at $B'$ intercepted between $B'$ and the foot of the common perpendicular is equal to $ON$ since $\theta$ is the angle between the normals at $B$ and $B'$; if $\theta$ is divided into $I_x/V$ and $I_y/V$

$$\tan \phi = \frac{x}{y} \cot \phi;$$

hence the direction is conjugate to that of the axis of rotation with respect to the indicatrix.

This is illustrated in fig. 25, where the ellipse shown is the indicatrix; $OP$, the axis of inclination, $OQ$ the conjugate radius, and $ORM$ the perpendicular to the tangent. Draw $QN$ parallel to $OM$ to meet $OP$. The triangle $OMQ$ is similar to $BB'B''$; and they can be made equal by giving a suitable value to the constant in the indicatrix equation. In that case $ON$ is the projection on the plane of the normal to the surface at $B$, and the shortest distance between the normals at $B$ and $B'$ is equal to $ON = MQ = \frac{BB'}{\theta}$, since $ON$ or the axis of inclination is perpendicular to them both. Also, the length $BM'$ of the normal at $B'$ intercepted between $B'$ and the foot of the common perpendicular is equal to $ON$ since $\theta$ is the angle between the normals at $B$ and $B'$; it follows that

$$BM' = \frac{BB'}{\theta} = \frac{L'}{V},$$

an expression analogous to that obtained before for the case of small inclinations in the direction of the principal axes of the water-plane. It is worthy of note that the radius of curvature of the normal section of the surface of buoyancy through $Oy$ is, in general, less than $BM$; the latter being equal to $O{M^2}/2\theta$, and $\rho$ being equal to $O{R^2}/2\theta$; $\rho$ is also obtained by Euler’s expression—

$$\rho = BM' + BM.$$  

becoming equal to $BM$ for inclinations about the principal axes. Similarly the radius of curvature of the normal section through $Ox$ is, in general, greater than $BM$.

If the centre of gravity $G$ of the ship is coincident with $B$, the arm of the righting couple is $OM = \frac{x}{y} \theta$; and there is also a couple of lever $ON = \frac{1}{y} \theta$ in a perpendicular vertical plane. The resultant couple lies in a plane containing $OQ$, having a lever equal to

$$\frac{x^2}{I_x/V} + \frac{y^2}{I_y/V} = \text{constant}.$$  

In the general case when $G$ is situated at a distance $a$ above $B$, the righting lever becomes $

\frac{\theta}{2V} (I_x \cos^2 \phi + I_y \sin^2 \phi).$

The greatest angle of obliquity $(\alpha)$ occurs when $\phi$ is about $30^\circ$ and the plane of the couple is nearly coincident with the middle plane of the ship, and the value of $\alpha$ is greater than about $30^\circ$. It follows that if a weight is moved obliquely across the ship the axis of rotation is approximately longitudinal, except when the line of movement is nearly fore and aft; and in the latter case a small deviation from a fore and aft direction produces a large change in the position of the axis of rotation.

The direction of the axis of rotation is above expressed with reference to the position of the inclining couple in relation to the indicatrix of the surface of buoyancy; as, however, the couple is assumed small, the direction of the axis and the amount of inclination may equally be obtained by resolving the couple in planes perpendicular to the principal axes and superposing the separate inclinations produced by its components.

It has been shown above that the positions of equilibrium are found by drawing all possible normals to the surface of the buoyancy, and the condition for stability for an inclination in any direction is that the centre of gravity shall lie below the corresponding metacentre. The height of the metacentre varies with the moment of inertia of the water-plane about the axis of inclination, and the maximum and minimum heights are associated with the maximum and minimum moments of inertia, which again correspond to inclinations about the least and greatest axes of inertia respectively. If the centre of gravity lies below the lowest position of the metacentre (the transverse metacentre in the case of a ship when upright) the equilibrium is stable for all inclinations, and the condition is referred to as absolute stability. If the centre of gravity lies above the highest metacentre, the condition is one of absolute instability; if it lies between the highest and lowest metacentres, the condition is one of relative stability, the ship being stable for inclinations about a certain set of axes, and unstable otherwise.

The foregoing remarks apply to a vessel whose axis of inclination is fixed so that the component couple perpendicular to the plane of inclination is resisted. If, on the other hand, the vessel is free to move in all directions the resultant couple does not in general tend to restore the original position of equilibrium, although the component in the plane of inclination complies with the conditions above stated for absolute stability. If $m$ and $m_1$ be the greatest and least values of GM, the ratio of the component couples perpendicular to and in the plane of inclination, or tan $\alpha$ (fig. 25), is greatest when

$$\tan \phi = \frac{m_1}{m}$$

and then $\alpha = \frac{m_1 - m}{2\sqrt{m_1 m_2}}$.

If $m_1/m$, be small, this ratio is large, being equal to 4-93 in the numerical example above. In such cases the extent of the movement is such that, when a small initial disturbance cannot be readily determined by a statistical method, but the investigation of the work done in moving the vessel from one position to another appears to meet this difficulty.

This process is employed by M. Guyon in his "Théorie du navire", the stability of a ship in any condition being treated throughout from the dynamical standpoint. He proved that:

1. Owing to changes of position, without change of displacement, the potential energy of the system consists of a floating body and the water surrounding is a minimum when the weight of the body is equal to its displacement.

2. By changes of direction, without change of displacement, the potential energy of the system is equal to the weight of the body, multiplied by the vertical resolute of BG; when this distance is a minimum or a maximum the stability is respectively stable or unstable. A statistical proof of this has been given in the two-dimensional case.

The potential energy is thus equal to the dynamical stability.
SHIPBUILDING

increased by an arbitrary constant. If from any point B of the surface of buoyancy (fig. 26) a tangent plane be drawn, the declination of which to G, GN, is proportional to the potential energy, and the stability of the body is thus the same as that of the closed surface of buoyancy which is a solid capable of rolling on a horizontal plane. The locus of the foot of the perpendicular N is a circle (shown dotted in the figure); this surface resembles the surface of buoyancy in its general shape, but it is different, when GB is normal, i.e. at positions of equilibrium, B1, B2, B3, B4; it has the property that a radius GN drawn from G to a point on the circle through which the body is in its position at rest consists of two parts, and will then form a small flat ring; similar radii will form later at all other positions of absolute stability. Positions of absolute stability are those in which the energy is at a maximum, and which the body may reach if it is adrift in the position, i.e. that form the radius of a circle of which the body moves without external forces.

If the ship or body is supposed to move under no external forces, and the effect of any change in the displacement be neglected, the kinetic energy of the system can be expressed by $2m\dot{u}^2/2$, and the total energy by $(W+GN) + \frac{1}{2}m\dot{u}^2$; the latter is constant when there are no resistances, and steadily decreases if resistances are in operation. Neglecting resistance, when the body is momentarily at rest, $W+GN$ becomes $W_{L}$, where $\ell$ is a linear quantity; and throughout the motion GN is less than $l$ by $\frac{1}{2}\pi\mu^2m\dot{\theta}$. The effect of resistance is gradually to decrease $l$ or the maximum value of GN, and it may be exhibited graphically by the following conception. Imagine a sphere of water, with centre at G, to be originally entirely within the podaire and then to be capable of expanding until the whole surface is similar to that of the body. Then the body itself will remain within the podaire, and will then form a small flat ring; similar rings will form later at all other positions of absolute stability. Positions of absolute stability are those in which the energy is at a maximum, and which the body may reach if it is adrift in the position, i.e. that form the radius of a circle of which the body moves without external forces.

is less than $l$ and the position lies within the lake so bounded. The diminution of $l$ due to resistances has the effect of gradually drawing the body towards X'Y'. The body is originally placed near a position of absolute stability, the small lake on the one hand, and a boundary of the podaire on the other. The body is placed at rest near a position of absolute instability, the body in water will move freely from side to side and oscillate, until it reaches a position of absolute stability. Finally, if moving near a position of relative stability, the body will move freely from side to side until the body has been conducted to a position of absolute stability.

When regard is had to the surface of flotation it has been shown that in order that the displacement shall remain constant, consecutive waterlines must intersect on a line passing through the centre of gravity of the waterline or the centre of flotation. If the inclination take place from a given position in any possible directions, the lines of intersection with the original water-plane will all meet at the centre of flotation, which must, therefore, lie in the envelope of the water-planes, or the surface of flotation. The surface is therefore the locus of the centre of flotation for all possible inclinations. Since the curvature of the surface of flotation, which is the projection of the centre of flotation for inclinations about an axis perpendicular to the plane of projection, may change sign, the surface can also undergo similar changes in curvature and may be synclastic in certain parts and anti-clastic or saddle-shaped in others.

The relation between the surface of flotation and the stability of the ship is of great importance in the investigation of the ease with which the ship can be moved into horizontal positions by inclining the surface of flotation about an axis perpendicular to the plane of projection. The extension of the theorem of Leclerc to oblique inclinations contain no features of special interest or importance.

Rolling of Ships.

The action of the waves upon a ship at sea is such as to produce rolling or angular oscillations about a horizontal longitudinal axis, pitching or angular oscillations about a horizontal transverse axis, and heaving or translational oscillations in a vertical direction; also horizontal translations and rotations about a vertical axis which are not generally of an oscillatory character and will not materially affect the rolling. It is convenient when considering rolling to neglect the influence of the other accompanying oscillations, whose effect in most cases is slight in magnitude although complex in character.

The ship is in its first place conceived to be rolling in still water without any resistances in order to diminish the motion. The accommodation of motion for moderate angles of inclination within which the arm of the rolling couple is approximately proportional to the angle of heel (i.e. $2G\dot{\theta}/\eta$), is

$$\frac{\partial}{\partial \theta} = \frac{-\dot{\theta}^2}{\eta}$$

(1)

where $\dot{\theta}$ is the radius of gyration of the ship about the axis of rotation, $m$ the metacentric height, $\theta$ the angle of inclination and $g$ the acceleration produced by gravity. From this the time deduced for a single oscillation, from port to starboard, or vice versa, is

$$T = \sqrt{\frac{\eta}{\dot{\theta}^2}}$$

(2)

showing that the time of oscillation varies directly as the radius of gyration, and inversely as the square root of the metacentric height.

The value of $T$ is generally about 10 seconds in a large Atlantic liner, 7 to 9 seconds in a battleship, and 5 to 6 seconds in a small coastal liner. For a large modern warship is about one third of the breadth of the ship.

For unresisted rolling of ships among waves the theory generally accepted is that of Froude (see Proc. R. Inst. Arch., 1861 and 1862). Before his work, many eminent mathematicians had attempted to arrive at a solution of this most difficult problem, but for the most part their attempts met with scanty success; while Froude's results were imperfectly understood, and the forces impressed on a ship by waves could not be even approximated to. Froude's theory is based on the position that, when a ship is among waves, the impressed forces on her are to be placed normal to a water surface, which is assumed to be the surface passing through the ship's centre of buoyancy, and which is regarded as the effective wave surface, as far as the rolling is concerned. As in water at rest the ship is in equilibrium when her mast is normal to the surface of the water, so in waves she is in equilibrium when her masts are normal, instant by instant, to the effective surface of the wave that is passing her. While she at any instant deviates from this position, the effort by which she evades to return to the normal depends on the angle of deviation, in the same manner as the effort to assume an upright position, when forcibly inclined in still water, depends on the angle of inclination. Hence her stability (i.e. her effort to become vertical) in still water measures her effort to become normal to the wave at any instant on a wave. Froude made the assumptions that the profile of the wave was a curve of sines, and that the ship was rolling broadside on a regular series of similar waves of given dimensions and of given period of recurrence. He was aware that the profile of the wave would be better represented by a trochoid, but in his first paper he gave preference to prefer to the curve of sines. He also assumed that the ship's rolling in still water was isochronous, and that the period of the rolling was given by $T = \sqrt{\frac{\eta}{\dot{\theta}^2}}$ as obtained theoretically. On these assumptions the equation of motion is obtained by substituting, for the angle of inclination in still water, the instantaneous angle between the ship and the normal to the wave-slope, and thus becomes

$$\frac{\partial^2}{\partial \theta^2} - \frac{\partial}{\partial \theta} = \frac{\eta}{\dot{\theta}^2}$$

(3)

where $\dot{\theta}$ is the angle of ship's masts to the vertical, and $\Theta$ is the angle of normal to wave-slope to the vertical at the instant considered. $\dot{\theta}$ has to be expressed in terms of $t$, and is given by $\dot{\theta} = \Theta - \Theta_0$, where $\Theta_0$ is the maximum wave-slope, $T$ is the half period of the wave, and $\dot{\theta}$ is the angle of the wave at the distance equal to its length, and $t$ is the time dating from the mid-trough of the wave. Equation (3) can therefore be written

$$\frac{\partial^2}{\partial \theta^2} - \frac{\partial}{\partial \theta} = \frac{\eta}{\dot{\theta}^2} - \frac{\partial^2}{\partial \theta^2},$$

(4)

which is the general differential equation of the unresisted motion of a ship in regular waves of constant period. The solution of this is

$$\dot{\theta} = C_1 \sin \left( \frac{\Theta}{T} + C_2 \cos \frac{\Theta}{T} + \Theta_0 \right) \sin \left( \frac{\Theta}{T} + C_2 \cos \frac{\Theta}{T} + \Theta_0 \right),$$

(5)

where $C_1$ and $C_2$ are constants depending on the initial motion and attitude of the ship.

The last term of this expression,
represents the forced oscillations imposed on the ship by the passage of the series of waves during the time \( t \); and the first and second terms,

\[ C_1 \sin \frac{\pi}{T_1} + C_2 \cos \frac{\pi}{T_1} \]

are the same as the free oscillations of the ship in still water.

Equation (5) shows that the ship performs oscillations as in still water, but has superposed on these a series of oscillations, governed by the wave-slope and the relation existing between the period of the ship and that of the waves. The equation (5) becomes indeterminate. The correct solution to equation (4) is then:

\[ \theta = C_1 \sin \frac{\pi}{T_1} + C_2 \cos \frac{\pi}{T_1} + \frac{1}{2} \theta_0 \cos \frac{\pi}{T} \]

It is seen that at each successive wave crest and hollow the range of the oscillation is increased, so that the ship's hull would ineptly capsize, but for the effect of the resistances and the departure from synchronism at large angles of roll.

(b) When \( \frac{T}{T_1} = 0 \), in which case the ship is assumed to be quick in her movements, or the period of the wave is infinitely long as compared with that of the ship, the equation (5) becomes:

\[ \theta = \theta_0 \sin \frac{\pi}{T_1} \]

that is to say, the ship will behave very much as a thin flat board does on the surface of a wave, her masts being always perpendicular to the surface.

(c) If we choose the initial conditions in equation (5) so that the coefficients \( C_1 \) and \( C_2 \) are zero, the equation will become:

\[ \frac{\pi}{T_1} \]

Since \( \theta_0 \) the slope of the wave, is equal to \( \theta_0 \sin \frac{\pi}{T_1} \), the ratio of the ship's angle to the vertical to the angle that the normal to the wave-slope makes with the vertical, or \( \theta_0 / \theta \),

\[ \theta_0 / \theta = \text{constant} \]

That is to say, the ship forsakes her own period and takes up "forced" oscillations in the period of the wave. Under these conditions the ship's masts will lean towards the wave-crest if \( T \) is greater than \( T_1 \), and from the wave-crest if \( T \) is less than \( T_1 \).

Proude in his paper further showed how the successive angles of a ship's rolling may be exhibited graphically, and he touched on the influence of resistance in reducing rolling. The following is the summary he gave in 1862 of the conclusions he had reached:

(i) All ships having the same 'periodic time,' or period of natural roll, when artificially put in motion in still water, will go through the same sequence of movements when subjected to the same series of waves, whether this stability in still water (one of the conditions which govern the periodic time) be due to breadth of beam, or to deeply stowed ballast, or to any such peculiarity of form as is in practice destructive to the stability in still water.

(ii) This statement would be almost rigorously true if the oscillations were performed in a non-resisting medium, or if the surface-friction and keel-resistance, by which the medium operates to destroy motion, were of the same equivalent value for all the ships thus compared. It requires, however, to be modified in reference to the circumstance that of two ships having the same periodic time in still water, the comparative forms may be such that the one shall experience such resistance in a higher proportionate degree than the other, and the necessary modification may be expressed in terms of the relative behaviour when set in motion in still water. The vessel which is the more rapidly brought to rest by resistance in still water will in the greater degree resist the accumulations of angle imposed on her by consecutive wave-impulses, and will thus go through a maximum angle which onth would alike attain if oscillating in a non-resisting medium.

(iii) That ship will fare the best which, caeteris paribus, has the slowest periodic time.

(a) The waves which have a periodic time as slow as hers will have a greater length from crest to crest than those of quicker period; and, on the whole, long waves are relatively less steep than short ones. Now it is the steepness of the waves in a wave-series, not their height simply, which governs the rate at which angles of rolling will accumulate in a given ship when exposed to it.

(b) Of two ships one of which has periodic time rather slower than the waves in a given ratio, the quicker ship will accumulate the larger angles.

"(c) It will require a heavier or a more continued gale to rear waves which have the lengthened period.

"(d) When the gale has continued so long that the largest waves have outgrown the period of the ship, she will not thereby have been relieved, and the course of her own rolling is continued, since the larger waves carry on their surface smaller waves of every intermediate period (this, at least, I believe to be the case).

"(e) When the gale has ceased and the sea is going down, the slower ship of the two will go on rolling. As soon as she shall be released from waves of as slow a period.

"(iv) There are two, and only two, methods of giving a slow period to ship:

(a) By increasing her 'moment of inertia,' as by removing her weights as far as possible from her centre of gravity; an arrangement which for the most part can only be accomplished to a limited extent. The utmost that can be accomplished in the construction of a ship, and generally in her stowage, to any degree consistent with her performance of her regular duties, by simply raising her weights.

(b) As she goes on rolling up against the action of the wind on her sails, the steepest waves would pass under her without putting her in motion.

"(v) The conditions which govern pitching may be noticed here, though they have not been discussed in the paper.

"Were it possible, by concentrating her weights or by extending her plane of flotation, to give to the ship a period indefinitely quick for both longitudinal and transverse oscillations, as compared with the natural period of the waves, it can be demonstrated that she would acquire no cumulative oscillation, but would float always conformably to the mean surface of the wave which passes under her.

This condition, which is so unapproachable in practice in reference to transverse oscillations that the attempt to approach it will but develop the evils pointed out in (iii), is of necessity so closely approached in practice in reference to longitudinal oscillations, that these evils can only be escaped by approaching it as closely as is possible. The plunging of a ship whose weights are extended far fore and aft is but an incipient development of those phases of oscillation which have their proper development in transverse motion only. The best that can be desired in reference to longitudinal motion is that the ship's period, for longitudinal oscillation, shall be as quick as possible, and her position always as conformable to the possible cause of the wave-impulse, so that she would acquire no cumulative oscillation, but would float always conformably to the mean surface of the wave which passes under her.

I have insisted here, more prominently than in the body of the paper, on the circumstance that a total loss of stability, using that word in the ordinary sense of power of carrying sail, implies the power of also regarding rolling motion due to wave-impulse, because it has been pointed out to me that the attention of readers should be more strongly directed to it, not indeed as a representing fact, but rather as a representative fact, serving best the mind, by contact with an extreme conclusion immediately deducible from the theory, to appreciate its fundamental principles. And the proposition thus certainly furnishes a crucital test of whether the principles have been appreciated or not, and it supplies also a ready means of testing the theory by a crucial experiment. I must, in addition, express my own confident belief that any one who will try the experiment fairly will be equally convinced. I will feel it to be against the theory which leads to so paradoxical yet true a conclusion deserves at least a careful study. But the more practically useful aspect of the theory is that which presents to view the varying phases of the cumulative oscillation which a ship tends to undergo when exposed to various types of wave-series; the phases depending on the relation which her natural period of rolling, when set in motion in still water, has to each period of the wave-series. The breaking of each individual wave of the series—phases, in fact, which she would actually undergo but for the effect of surface-friction and keel-resistance; the nature and value of the coefficients, etc., for their determination, have been pretty fully dealt with in the body of the paper.

I will here only add a synoptical statement of the principal features which have been referred to in that part of the paper which referred to them, though they are pretty fully exhibited by the diagrams. By a 'complete phase' is meant that series of oscillations which the ship will undergo if the wave-series continues from the time when, for a moment, she is stationary and upright in a similar position, and is about to
recommence an identical repetition of the movements she has just completed. 

For the benefit of those who may glance at the appendix before they read the paper, I will mention that T is the number of seconds occupied by the ship in performing a single oscillation in still water, starboard to port, or vice versa; T1 is the number of seconds occupied by the wave in passing from hollow to crest, or crest to hollow. O is the number of degrees in slope of the steepest part of the wave; and p/q is the ratio T/T1, with the numerator and denominator converted into the lowest whole numbers that will express the ratio, where, however, it must be noticed that for T/T1 = 1, p/q must be taken as the limit of such a form as $\frac{p}{q}$. Then—

"(i.) The ship will complete the phase in the time $2\pi T$.  
(ii.) In completing the phase the ship will pass through the vertical position at the middle of the phase.  
(iii.) The ship will pass through the vertical position at the middle of the phase.  
(iv.) On either side of the middle of the phase there must occur, as equal maximum oscillation, the maximum, say $\theta$, which will approximately (but never in excess) = $\theta$.

"(v.) From these propositions it appears that if we compare two cases, in one of which the value of T/T1 is the reciprocal of its value in the other, the phase will in each case consist of the same number of oscillations similarly placed; but in that one in which the period of the wave is slower than the period of the ship, the angles of oscillation will be the larger in the ratio p/q or q/p, whichever is the greater. The following table expresses the results of the above propositions, as exhibited in the diagrams, based on the assumption that the period of the ship is in every case $T=5^{s}$, and that the maximum slope of the wave $O=9$ degrees:

<table>
<thead>
<tr>
<th>Ship Period, or T</th>
<th>Wave Period, or T1</th>
<th>T/T1</th>
<th>Time of Complete Phase, s</th>
<th>Maximum Slope of Wave, deg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>1</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>5.25</td>
<td>5</td>
<td>1.25</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>5.5</td>
<td>5</td>
<td>2</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>5.75</td>
<td>5.5</td>
<td>1.25</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>5.9</td>
<td>5.75</td>
<td>1.11</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>5.95</td>
<td>5.9</td>
<td>1.02</td>
<td>20</td>
<td>9</td>
</tr>
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<td>20</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>6.25</td>
<td>1.00</td>
<td>20</td>
<td>9</td>
</tr>
</tbody>
</table>

The assumption made in equation (1) that

$$G = m \cdot \theta$$

is true if the sections of the ship in the vicinity of the water-lins are circular and are approximately true for generally for small angles of inclination as long as m is not small. If m be small, the relation does not generally hold.

In a wall-sided ship,

$$GZ = \sin \theta \left( m + \frac{1}{2} a t^2 \right)$$

where the BM is denoted by a; whence the equation for rolling through small angles becomes

$$\frac{d\theta}{dt} = \frac{\theta}{a} + \frac{GZ}{a} \cdot \theta$$

where $\theta$ and higher powers of $\theta$ are neglected.

Sections of other forms lead to a similar equation, but with different coefficients of $\theta$; the above equation is therefore typical of all others. This condition has been worked out fully by Professor Scrivanti, who obtained a solution in the following form:

$$T = \frac{2\pi}{\theta} \sqrt{\left( 1 - \left( \frac{1}{3} \right)^2 \cdot \frac{p}{q} - \left( \frac{13}{3} \right)^2 \cdot \theta \right)}$$

where $\theta$ is the maximum angle of roll. J is defined as the moment of inertia of the water-plane expressed in foot tons, i.e. equal to W a, where W is the displacement in tons. 1 is the mass moment of inertia of the ship about its axis of oscillation, and $\frac{p}{q} = \frac{\theta}{\theta + \frac{2\pi}{2}}$. Some numerical results for $T = \frac{2\pi}{\theta}$, where $T_m$ is the period found by the usual "metacentric" formuula and $\theta$ is 12°, are:

<table>
<thead>
<tr>
<th>$T_m$</th>
<th>1.04</th>
<th>1.31</th>
<th>2.98</th>
</tr>
</thead>
<tbody>
<tr>
<td>m ft.</td>
<td>16.6</td>
<td>16.6</td>
<td>16.6</td>
</tr>
<tr>
<td>m ft.</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

When the metacentric height is zero, the formula becomes

$$T = \frac{1.67 \pi}{\theta} \sqrt{\frac{1}{2} - \frac{13}{3} \cdot \frac{\theta}{2\pi} \cdot \theta}$$

It has been assumed in the foregoing that the rolling in still water and among waves is unresisted; it remains to take into account the resistances which always operate during rolling. In still water these cause a degradation of the amplitude until the ship finally comes to a position of rest; and when a vessel is rolling among waves they cause a similar degradation of amplitude.

The earliest investigations of resisted rolling in still water were made by Froude in England, and by Bertin, Duhil de Bénaix, Risbec and Antoine in France. The method adopted was actually to roll the ship in still water and observe how the amplitude decreased roll by roll. Men were caused to run from side to side of the ship, their runs being so timed as to add to the angle of roll on each successive swing until the maximum angle obtainable was reached, when all movement on board was stopped, and the ship allowed to roll freely of itself until she came to rest. During this free movement a complete record of her angular motion was registered by means of a short-period pendulum and an electric timer, and from this a curve of "declining angles" was constructed, in which abscissae repre

The following equation for the angular motion of the ship:

$$\frac{d\theta}{dt} = K_0 \cdot \theta$$

where $K_0$ is a zero, a complete solution is

$$\theta = A \cdot e^{K_0 \cdot t}$$

where A and B are arbitrary, and the period T of resisted rolling is given by

$$T = \frac{2\pi}{\theta} \sqrt{\frac{1}{2} - \frac{13}{3} \cdot \frac{\theta}{2\pi} \cdot \theta}$$

It appears, therefore, that the period is slightly increased and the amplitude progressively diminished by the resistance. In actual cases $K_0$ is necessarily included in the differential equation, the complete solution cannot be conveniently expressed analytically, but it can be determined in effect either by any method of approxi

The diminution of amplitude can also be approximately obtained by

$$\frac{d\theta}{dt} = a \cdot \theta + b \cdot \theta$$

where $\theta$ is the extreme angle (in degrees) reached at any particular oscillation, n the number of oscillations, and a and b are coefficients equal to

$$K_0 = 2\pi W m^2 + \frac{4\pi}{3 \cdot 180} W m T^2$$

* Given by Sir W. H. White, F.R.S., in a paper read before the Institution of Naval Architects in 1895.
respectively. Froude gave his reasons for expecting the resistance to vary partly as the first and partly as the second power of the angular velocity. The latter part he considered would be due to surface-friction and the head resistance of keels and deadwood, and the

former to the resistance caused by the creation of a small wave at each roll, which, by travelling away from the ship, would cause dissipation of energy. Froude’s views have been confirmed by the accuracy with which the expression \( \frac{dW}{dn} = a.\theta + b.\theta^2 \) may be made to fit the curve of extinction of practically any ship by the judicious selection of the coefficients \( a \) and \( b \). M. Bertin has, however, preferred an expression equivalent to \( \frac{dW}{dn} = b.\theta^2 \), while other French investigators have preferred an expression equivalent to \( \frac{dW}{dn} = a.\theta \).

On substituting the value of \( a \) in equation (7) it becomes—

\[
\theta = aE_1 \sin \left( \pi t \sqrt{1 - \frac{c^2}{c^2 + \beta}} \right) \tag{9}
\]

a simplified form of the equation for resisted rolling when the coefficient \( b \) is neglected.

For the Revenge the following equations represent the curves of extinction given in fig. 29:

- For deep draught:
  - without bilge keels: \( -\theta = 0.0239 \theta + 0.0025 \theta^2 \)
  - with: \( -\theta = 0.065 \theta + 0.017 \theta^2 \)

- For light draught:
  - without bilge keels: \( -\theta = 0.015 \theta + 0.0028 \theta^2 \)
  - with: \( -\theta = 0.083 \theta + 0.019 \theta^2 \)

(\( \theta \) in all cases being measured in degrees and not in circular measure).

The large increase in the \( b \) coefficient after bilge keels had been fitted has given rise to considerable discussion. Mr R. E. Froude had experimented with a deeply submerged plane oscillating in water and he found that at a speed of 1 foot per second the resistance per square foot was 1.6 lb. Using this figure to calculate the work per swing from an extreme angle of \( \theta \), the head-resistance of the bilge keels is found to account for about one-fourth the energy lost in a single swing due to the increased value of the \( b \) coefficient in the above formula. The energy abstracted in this particular case is thus about four times greater than the theoretical head-resistance of the bilge keels. This discrepancy has been observed in many cases, and it appears that when bilge keels are added to a ship they become effective, not merely as flat surfaces moving with the ship and experiencing direct resistances, but also by indirectly influencing the stream-line motions which would exist about the oscillating ship, if there were no bilge keels. Another cause of the difference is that the bilge keels during the early portion of the swing set into motion a large mass of water, only a small proportion of whose energy is returned to the ship towards the end of the roll. This condition is accentuated when the vessel is in motion ahead, and owing also to the increase of other resistances at high speeds, a more rapid extinction is then obtained. It appears from experiments made on H.M.S. “Revenge” and on a torpedo boat destroyer that the extinction at a given angle of roll is given by a linear formula \( -\theta = a + b.\theta \), where \( a \) and \( b \) are coefficients independent of the speed of the ship.

Froude attacked the problem of resisted rolling in an inverse manner, endeavouring to ascertain what wave-series is required to keep the given ship at a given range of steady rolling with any assigned period, including the effect of resistance. He treated the problem in a direct manner by the process of “graphic integration,” an exact method of determining the motion of a ship, the elements of the ship’s rolling in still water and the wave-series acting upon her being given. Some interesting developments of the process were made by Sir William White in a paper read before the Inst. Nav. Arch. in 1881 on the “Rolling of Sailing Ships,” in which the action of the wind on the sails and the variation of the virtual weight of the ship on the wave are included. The effect of wind-pressure in heeling a ship is very much greater when she is at thecrest of a wave than when she is at the trough, because her virtual weight is less. This must be taken into account when dealing with sailing vessels; the reduction of virtual weight, and therefore of righting moment, at the crest of a wave being very considerable, although the heeling moments due to the wind suffer no such reduction.

The differential equation for rolling among waves including the effect of resistances varying as the first power of the angular velocity is

\[
\frac{dW}{dn} = a.\theta + b.\theta^2 + W_m \left( \theta - \Omega \right) \sin \left( \frac{\pi t}{T} \right) = 0,
\]

which becomes on substitution (\( K \) being expressed in terms of \( \theta \))

\[
\frac{d\theta}{dt} = a + b.\theta + W_m \left( \theta - \Omega \right) \sin \left( \frac{\pi t}{T} \right) \equal \frac{\pi t}{T} \cdot \frac{\pi}{\sin \left( \frac{\pi t}{T} \right)}\]

The general solution is

\[
\theta = aE_1 \sin \left( \pi t \sqrt{1 - \frac{c^2}{c^2 + \beta}} \right) + aE_1 \sin \left( \frac{\pi t}{T} - \beta \right) \tag{9}
\]

where

\[
\frac{1}{T} = \left( 1 - \frac{c^2}{c^2 + \beta} \right)^{\frac{1}{2}} + \frac{c^2 T^2}{c^2 + \beta} \quad \text{and} \quad \beta = \tan^{-1} \frac{c^2 T^2}{c^2 - 1}
\]

and \( A \) and \( \beta \) are arbitrary.

The first term represents a free oscillation of the ship, which in time dies out, leaving a forced oscillation in the period of the waves. From observations it is for that, owing to the departure from exact uniformity in the waves encountered, a ship seldom, if ever, completely forsakes her own natural period of rolls; for each slight alteration in the wave period \( T_1 \) introduces a term involving the free oscillation of the ship in the synchronizing conditions where \( T = T_1 \), the forced oscillation is represented by

\[
\theta = -\frac{\pi}{2a.\Omega} \cos \left( \frac{\pi t}{T} \right)
\]

the amplitude being limited entirely by the resistance; the phase is \( \frac{\pi}{2} \) before that of the wave slope. The vessel is then upright in mid-high, and inclined to its maximum angle on the crest and in the hollow of the wave. The maximum amplitude \( \theta \) is given by

\[
\frac{\theta}{\Omega} = a.\theta + b.\theta^2
\]

In 1894 and 1895 M. Bertin, at the Institution of Naval Architects, extended this relation to cases in which \( T_1 \) is not equal to \( T \), obtaining at the same time not simply the angles of steady rolling for these cases, but the maximum angles passed through on the way to the steady condition; to these maximum angles he gave the name of "spogged" rolls.

In 1888, the Institution of Naval Architects, Mr R. E. Froude, investigated the probable maximum amplitude of roll under the influence of a non-synchronous and non-harmonic swell. He imagined three identical ships, A, B and C, the first rolling in still water, and the two others placed in the same swell assumed recurrent in period \( 2T \), but not necessarily harmonic. Assuming resistance to vary as \( \theta^2 \), then denoting the vessels by suffixes, the effective wave slope by \( \theta_i \), and constants by \( K, K' \) and \( K'' \),

\[
\frac{d^2 \theta_A}{dt^2} + K\frac{d\theta_A}{dt} + K\theta_A = 0;
\]

\[
\frac{d^2 \theta_B}{dt^2} + K\frac{d\theta_B}{dt} + K\theta_B = K'\theta_A;
\]

\[
\frac{d^2 \theta_C}{dt^2} + K\frac{d\theta_C}{dt} + K\theta_C = K''\theta_A.
\]

1 See papers on this subject read before the Institution of Naval Architects in 1900 by Professor Bryan and in 1905 and 1909 by Mr A. W. Johns.

If at any instant
\[ \theta_1 = \theta_2 - \theta_3 \text{ and } \frac{d^2 \theta_1}{dt^2} = \frac{d^2 \theta_2}{dt^2} + \frac{d^2 \theta_3}{dt^2} ; \]
whence the above relations hold at the successive instants and consequently for all time. Hence the rolling of C differs from that of B in having the free oscillations of A in still water superposed upon it. If, therefore, it is possible to obtain any one motion in the swell, any other motion due to a different phase relation between ship and wave slope can be at once determined. A convenient motion in the swell to form a basis for obtaining other motions is the forced oscillation proper to the swell, i.e. the particular oscillation that is recurrent in the period of the swell. The amplitude of roll at an instant is therefore the sum of the amplitudes due to the forced oscillation and to an arbitrary free oscillation in still water. If the latter component be regarded as perfectly arbitrary there is no limit to the angle of roll obtained by postulating suitable initial conditions; to determine the practical limitation of rolling, however, it may reasonably be assumed that at or near the commencement of motion there will be a brief period of no roll roll obtained. the maximum angle of roll obtained will occur at no great time interval of this period after it. At the instant when there is no roll, the forced and free oscillations are equal in magnitude and opposite in phase, and the period of maximum (termed the "criterion") amplitude \( \theta_c \) will occur as soon as the two components are in phase; the time interval between the two conditions is \( T \), where \( n = \frac{\pi}{T} \).

It is assumed also that during the above interval—(1) the effect of the swell was sensibly the same as that of a simple harmonic wave, A being the amplitude of the forced oscillation (and of the initial free oscillation); (2) the extinction equation of the free oscillation \( \Delta \theta = \alpha \theta + \beta \theta^2 \) can be replaced by the simple form \( -\frac{d\theta}{dt} = E_0 \), where \( E = a + b \theta_0 \), approximately; this has been implied by the absence of terms containing \( \theta^2 \) in the differential equation above.

The amplitude of the free oscillation during the maximum roll is, from equation (8) \( \Delta \theta = \theta_c \); whence
\[ \theta_c = \lambda \left( 1 + \epsilon^2 \right) \]
Also, from equation (9), the forced oscillation is given by
\[ \theta = \lambda \left( 1 - \left( \frac{T}{T_1} \right)^2 \right) \left( \frac{2}{T^2} \right) \left( \frac{1}{E^2} \right) \]
From these equations \( \theta_c \) can be determined if \( T, T_1, a, b \) and \( \theta_c \) are given; conveniently if \( C \) is the bilge keel, \( \theta_c \) can be tentatively obtained.

The following table gives the criterion angle \( \theta_c \) and the angle of steady roll (A) for the "Revenge," both without and with bilge keels, obtained on the above-mentioned assumptions:

<table>
<thead>
<tr>
<th>Maximum Wave-Slope, deg.</th>
<th>Angle</th>
<th>Steady Roll, deg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Revenge&quot; (deep draught), with no bilge keels</td>
<td>825</td>
<td>4.35</td>
</tr>
<tr>
<td>&quot;Revenge&quot; (deep draught), with bilge keels</td>
<td>66</td>
<td>4.24</td>
</tr>
</tbody>
</table>

Among the conclusions reached by Mr. R. E. Froude in the case of a ship rolling in a uniform swell were:
However non-uniform initially, the rolling ultimately falls into the uniform forced oscillation; it does so the sooner, the greater the resistance, and with the fewer "cycles" or alterations of amplitude of rolling, the more nearly synchronous the swell with the ship. The amplitude of the ultimate uniform motion is that mean alternate maxima and minima of the preceding non-uniform rolling. If the rolling starts from zero, the maximum amplitude falls short of twice the ultimate uniform amplitude, the maximum being in phase with the maximum of the swell; and in a synchronous swell the maximum amplitude cannot exceed the ultimate uniform amplitude, unless it does so initially.
In two papers by Captain and Professor Kriloff of St. Petersburg, read before the I.N.A. in 1896 and 1898, the whole motion of the ship, including pitching and rolling, is dealt with; every variation which can reasonably be conceived is taken into account in these papers. Of the various appliances adopted to reduce rolling, the most important and successful are bilge keels. Some reference has already been made to the influence they exert on the rolling of ships as illustrated by H.M.S. "Revenge," in which there was one bilge keel on each side, 200 ft. in length and 3 ft. in depth, tapered at the extremities. The great value of bilge keels in diminishing rolling was pointed out by Froude and demonstrated by him in 1872 by experiment with the "Perseus" and the "Greyhound," which were alike in every essential respect, except that the former was not provided with bilge keels and the latter was. The general conclusion was that the rolling of the "Greyhound," was only about one-half that of the "Perseus." Bilge keels were used in warships until, in the design of the "Royal Sovereign" class, it was decided not to fit them, owing to the large dimensions of the vessels and the difficulties in certain circumstances of docking them if provided with bilge keels. Ultimately one of the class, the "Repulse," had them fitted for purposes of comparison, and the effect on her rolling was so marked that it was resolved to fit them to all the ships of the class. Before fitting them on the "Revenge," a careful programme was drawn up of experiments to be made before and after the bilge keels were fitted; and on carrying out this programme some valuable results were obtained. The experiments were made at Spithead in smooth water. The general effect of the bilge keels was to reduce the rolling to one-third of its former amount. When, instead of having no motion in the line ahead, the ship had a speed of 12 knots, an even greater reduction in the rolling was observed. Their effect on other qualities of ships is on the whole beneficial, and in many little, if any, reduction in speed has resulted from their use.

The experience of Great Britain with regard to bilge keels has been repeated in America. Bilge keels were omitted for the same reasons as they were in the "Royal Sovereign" class; they were afterwards fitted in the U.S.S. "Oregon," experimental investigation being made both without and with them, and the general conclusion arrived at was that the rolling was diminished by two-thirds by the adoption of the bilge keels.

A method for reducing rolling of ships in a sea-way by the use of water-chambers was devised by the writer in 1874 in connection with the design of the "Impulse" which was expected to be a bad roller. It consists in fitting one or more tanks across the ship of such shape that when filled to a suitable height with water the motion of the water from side to side of the vessel rolls is such as to retard the rolling. Let fig. 30 represent a series of transverse sections of a ship fitted with a water-chamber, in various positions in rolling from port to starboard; and suppose the water to move so as to be most effective in quelling rolling. Let G represent the centre of gravity of the ship including the water in the chamber, g the centre of gravity of the water in the chamber, and B the centre of buoyancy of the ship; and let the arrow in the sections indicate the direction in which the ship is rolling at the instant considered. In position No. 1 suppose the ship to have reached the extreme heel to port and to be on the point of commencing roll. Then the ship has reached the middle line on its way down towards the port side and the righting couple will be that due to the angle of heel, supposing the water to be a fixed weight amidships. In the position No. 2 the ship has turned towards the upright; the water will have moved farther down the incline, so that g will be some distance from the middle line on the port side and then B, and therefore G will also have moved out from the middle line on the port side; hence the righting couple will be less than what would correspond to the angle of heel if the water were a fixed weight amidships. In position No. 3 the ship has just reached the upright and will be moving with the maximum angular velocity; the water will have moved still farther down the incline, and g will be at a greater distance from the middle line on the port side, and therefore G will have moved farther out from the middle line on the port side; whereas the righting couple is still greater. It follows therefore that the weight of the ship and the upward pressure of the water will form a couple tending to retard the ship's rotation, although she is for the moment in the upright position. In the position No. 4 the ship is heeling over towards starboard and the centre of gravity is returning towards the middle line; but it and G are still on the port side, and the righting couple is therefore greater than that corresponding to the angle of heel of the ship and a fixed centre of gravity amidships. In the position No. 5 the ship has momentarily

![Fig. 30](https://via.placeholder.com/150)
come to rest at the end of the starboard roll, the centre of gravity of the water should have again reached the middle line, and the righting couple should be neither increased nor diminished by the water-chamber, except in so far as it affects the displacement and the vertical position of the centre of gravity. The same process is repeated on the ship's roll back from starboard to port. Thus the water-chamber reduces the angle of roll of the ship chiefly by modifying the righting couple acting upon her throughout the rolling; it increases the righting couple when it opposes the motion as the ship heels over, thereby reducing the amount of the heel, and on the return roll it lessens the righting couple and causes the ship to move more slowly than she otherwise would, so that she acquires less angular momentum on reaching the upright, and therefore tends to roll less deeply the other way.

Two water-chambers were originally contemplated in the old "Inflexible," but the space occupied by one of these was required for other purposes, and only one, the smaller of the two, which was 51 ft. long (across the ship), and 14 ft. wide (fore and aft), was finally fitted. This was shown to reduce the rolling by about 25%.

In addition to trials at sea to ascertain the diminution of roll by this means, still-water rolling experiments were carried out in the "Edinburgh" and compared with the results obtained with a model water-chamber on a linear scale of 1/200 loaded so that its period and stability corresponded to those of the ship. A close agreement was observed between the behaviour of the model and the ship; and this enabled the experiments to be carried out over a larger range of conditions than would have been practicable with the ship alone.

The model was supported on knife edges and connected to a paddle partially immersed in the water of a tank; this was adjusted to represent the natural extinction of roll in the ship without the water-chamber. The length of the chamber (in the ship) was 16 ft.; and widths of 43 ft., 51 ft. and 67 ft. were successively given to it. The displacement of the ship was about 7500 tons; the period to 10 seconds; and the metacentric height 7-52 ft. On experimenting with different depths of water, it was found that the maximum extiructive effect at all angles of roll was obtained with the depth at which the period of motion of the water from side to side of the tank is equal to the period of the ship. The best depths were found to be 2-3 ft. and 3-95 ft. with breadths of 43 ft. and 51 ft. respectively, thus agreeing closely with the theoretical formula, \( t = \sqrt{gh} \), for the speed of a solitary wave across the water-chamber. In these circumstances the water rushed across the tank in a breaking wave or bore, and consumed energy in its passage and through its violent impact with the sides of the tank. With other depths, the motion of the water, at moderate angles, took the form of a slope gently alternating from side to side at small angles of roll; and the effect was practically non-extiructive. With the critical depth the growth of the resistance to rolling commenced almost at zero angle; but, with other depths, the extinction was nearly nil, until a certain angle of roll was attained, whose amount increased with the departure from the critical depth.

At the larger angles of roll, the disadvantage of the departure from the critical depth was not marked. The resistance of the chamber increased considerably with the breadth; the value of the 51-ft. chamber was roughly twice that of the 47-ft. chamber at the critical depth of that, 43-ft. chamber.

In order to compare the effect of water-chambers with that of other methods of extinction, it is observed that the resistance due to the former increases slowly at large angles of roll. The effectiveness of bilge keels, on the other hand, increases rapidly as the angle of roll increases. It was found that, with 12° roll, the resistance of the water-chamber was equivalent to that of 2 ft. of additional bilge keel; but at 17° this was relatively about half as effective. With 3° of roll, however, the water-chamber was about 9 times as effective as the additional bilge keel. Fig. 31 shows the comparative rates of extinction under the various conditions.

Water-chambers have been successfully employed to limit the rolling motions at sea in ships of the old "Inflexible," "Edinburgh" and "Clyde" classes, and in other warships and merchant vessels.

Sir John Thornycroft devised an arrangement for overcoming the rolling motion of a ship amongst waves, consisting of a weight carried from side to side so as always to oppose the heeling caused by the wave slope. The weight was actuated automatically by apparatus controlled by two pendulums (or their equivalent), one of which—a long period pendulum—remained vertical, and the other—a short-period pendulum—placed itself perpendicular to the ship when the latter was rolling. This was fitted on a yacht of about 900 tons displacement, the moving weight being 8 tons; and the net effect in this case was to reduce the rolling by about one-half. (See Trans. Inst. Nav. Archs., 1892.)

An interesting application of the gyroscope to the diminution of rolling was devised by Dr O. Schlick, and fitted by him to the S.S. "See-bar." The principle of its action, the details of the gear, and a description of the trials are given in papers read before the Inst. Nav. Archs. in 1904 and 1907. Particulars of the "See-bar" were: length 116 ft., breadth 11-7 ft., draught 3-4 ft., displacement 56 tons, metacentric height 1-64 ft., and period of double roll (gyroscope at rest) 4-14 seconds. The by-wheel of the gyroscope was one metre in external diameter, weighed 1100 lb., and it ran at 1600 revolutions per minute; its axis was initially vertical, and the casing containing the pendulum was capable of revolving about a horizontal athwartship axis, the centre of gravity of the suspension lying slightly below this axis. A brake was fitted to control the longitudinal oscillations of the casing. When the wheel was revolving and the axis held by the brake, no effect was produced on the ship; but when it was free to oscillate over a horizontal plane the ship was allowed to oscillate freely in the middle-line plane the period of roll was lengthened to 6 seconds, but no other extiructive effect was obtained. By suitably damping the longitudinal oscillations of the gyroscope, however, an extiructive effect was obtained, and rolling was experienced; and during the trials made, the apparatus stopped practically all rolling motion.

The equations for the pitching motions of a vessel are identical in form with those for rolling, and the preceding remarks, in general, equally applicable to pitching. In a large number of ships the period for pitching is approximately one-half of that for rolling; but the actual difference is not always constant. Where control over the longitudinal positions of weights is possible, e.g., in small sailing vessels, weights are removed as far as possible from the ends in order to shorten the period, the safety of shorter period and boats therefore being increased; and the ship, nearly as parallel as possible to the wave slope (e. remarks by Froude ante).

The single period for heaving and dipping oscillations is equal to

\[ \sqrt{\frac{2}{T^2 - T^1}} \] when \( W \) is the displacement in tons, and \( T^1 \) the tons per inch immersion. When proceeding across waves of apparent semi-period \( T_2 \), forced heaving oscillations of semi-amplitude \( T_2^f/T_2 \) are obtained, where \( T \) is the single period of dip, and \( 2a \) is the maximum heave. Also, where \( T_2 \) is the amplitude of heave of the ship in and out of wave. These oscillations combine with the free heaving oscillations due to the circumstances of the initial motion, the resultant motion being of interest in connexion with the longitudinal rolling moments in the ship caused by the waves. (See section Strength.)

Pitching or rolling is frequently the cause of dipping oscillations, and the motion is then termed uneasy; this action may be of importance in ships whose sides near the water-line have a considerable slope to the vertical, since any rolling motion is then accompanied by vertical oscillations of the centre of gravity. It may also be shown that forced dipping oscillations of considerable amplitude are obtained when the period of roll (or pitch) in such cases approximates to twice the dipping period; the complex nature of the resistances attending the motion of the ship has, however, prevented a complete investigation of an interesting subject being thus far found so.

Interference also occurs between the rolling and pitching movements of a ship, when the centres of gravity of the wedges of immersion and emersion for moderate angles of heel are separated by a distance which is a large proportion of the water-line length, e.g., occasionally uneasy rolling of a peculiar character is caused thereby.

Resistence.

The resistance of a ship in steady motion, or the force exerted by the surrounding water on the hull, opposing its progress, is equal and opposite to the thrust of the propellers. The ship is supposed to move with a velocity equal to the speed of a wave front (8-76 ft. per sec. at about 8-5 knots) each of which is in some degree affected by the others. It is obvious, however, first to confine attention to the resistance of the hull, assuming the

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Since the action and the reaction of the water pressure on the hull of a ship are equal and opposite, forward momentum is generated in the water at such a rate that the increase of momentum per second is equal to the total resistance. The water participating in the forward movement is termed the "wake;" the portion of the wake in the vicinity of the propeller is termed the "frictional effect upon the propulsion of the ship. Experiments were made by Mr. Calvert (Trans. Inst. N.A. 1893) to determine the wake velocity with a model of length 28 ft. and displacement 2.9 tons. The extent of the wake was measured at various positions in the vicinity of the ship, and its maximum velocity was observed to be o-07 times the speed of the ship. Abrasent the screw the mean velocity ratio over an area of the same breadth (34 ft.) of ship and depth equal to the radius of the screw (1.55 ft.) was 0-09, of which about 0-04 was ascribable to the frictional resistance. In Rep. Brit. Assoc. 1874 is contained an investigation by Froude of the extent of the frictional wake and its effects. Froude's experiments based on the equality of the resistance to the momentum added per second. It may be here observed that for any ship propelled in the ordinary manner at uniform speed the momentum generated in the sternward race from the propeller is equal and opposite to that of the forward wake due to Eddy. The motion of the water as a whole thus consists of a circulating disturbance advancing with the ship, and having no linear momentum.

The whole of the resistance at low speeds, and a considerable proportion of it at higher speeds, is due to surface friction, i.e. to the eddying belt surrounding the hull which is caused by the tangential power of the frictional resistance or "frictional skin. It is nearly independent of the form of the vessel; and is conveniently estimated from the results of experiments made by towing in a tank planks coated with various surfaces. The most important of such planks were those made by Froude in the experimental tank at Chelster Cross, Torquay. The object was to obtain the laws of variation of resistance with the speed, the length, the breadth, the depth below water, and the breadth of the ship. A glass cylinder, having an equal length, breadth, and depth of glass, was experimentally, by which the planks were joined to register the resistance: the planks were given a fixed edge at each end to avoid eddy making, and were fully immersed in order that no waves should be formed. The results of Froude's experiments appear in the "Report of the British Association" 1872 and 1874. In the following table the resistance varies, A the mean resistance per square foot of surface over the length stated, and B the resistance per square foot of the after end of the vessel. A and B refer to a velocity of 10 ft. per second in fresh water.

<table>
<thead>
<tr>
<th>Type</th>
<th>n</th>
<th>2 ft</th>
<th>8 ft</th>
<th>20 ft</th>
<th>50 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinfoil</td>
<td></td>
<td>2.16</td>
<td>1.99</td>
<td>1.76</td>
<td>1.63</td>
</tr>
<tr>
<td>Paraffin</td>
<td></td>
<td>2.00</td>
<td>1.85</td>
<td>1.62</td>
<td>1.44</td>
</tr>
<tr>
<td>Farnish</td>
<td></td>
<td>2.00</td>
<td>1.85</td>
<td>1.62</td>
<td>1.44</td>
</tr>
<tr>
<td>Fine sand</td>
<td></td>
<td>2.00</td>
<td>1.85</td>
<td>1.62</td>
<td>1.44</td>
</tr>
<tr>
<td>Calico</td>
<td></td>
<td>1.93</td>
<td>1.79</td>
<td>1.60</td>
<td>1.44</td>
</tr>
<tr>
<td>Medium sand</td>
<td></td>
<td>2.00</td>
<td>1.85</td>
<td>1.62</td>
<td>1.44</td>
</tr>
<tr>
<td>Coarse sand</td>
<td></td>
<td>2.00</td>
<td>1.85</td>
<td>1.62</td>
<td>1.44</td>
</tr>
</tbody>
</table>

These results are in accordance with the formula:

\[ R = \text{f} n S^2 \frac{V^3}{L} \]

R being the frictional resistance, S the area of surface, V the speed, \( \text{f} \) the density of the water, \( \text{f} \) a coefficient depending on the nature and length of the surface, and \( \text{n} \) the index of the speed; the values of \( \text{f} \) and \( \text{n} \) can be readily obtained from the above table. It is seen that the resistance varies as the density of the water, but in the independent of its pressure; it diminishes as the length of the surface increases, on account of the frictional wake, which reduces the velocity of rubbing between the water and the surface towards the after end. The index is 1.83 for a varnished surface equivalent to the freshly painted hull. The results of Froude's experiments are closely corroborated by similar experiments undertaken by the late Dr Tideman.

When applying the data to ships of length greater than 50 ft., the coefficient \( \text{B} \), denoting the resistance 50 ft. from the bow, is assumed to remain unaltered at all greater distances astern. The velocity of rubbing is assumed equal to the speed of the ship, any slight variation due to stream-line action being neglected. The values calculated, can be estimated with sufficient accuracy by the formula:

\[ S = 1.7D + \frac{V^3}{L} \]

where V is the volume of displacement, L the length, and D the mean draught.

The resistance due to wave making, although inconsiderable at low speeds, is of importance at moderate and at high speeds; it constitutes the greater portion of the total resistance in fast ships.
By impressing, as above, a suitable velocity on the whole system of ship and water, the problem is reduced to one of steady motion in a stream flowing past a stationary ship. The stream tubes, originally of uniform width, become broader on approaching the bow of the ship, and attain their greatest breadth close to the stem. Proceeding aft, the tubes contract, and near amidships they become smaller than they were originally; an enlargement in the tubes again takes place near the stern. The changes in size and velocity in the stream tubes lead to corresponding alterations of pressure in accordance with the energy equation, which alterations appear as elevations and depressions of the surface forming what is termed the statical wave system. If this were a permanent system, no resistance to the motion of the ship would be caused thereby. The surface disturbance, however, is subject to the dynamical laws underlying the propagation of waves; in consequence the wave formation differs from the "statical wave" of the crest-lagging stern of the "statical" wave crest, and the ship being followed by a train of waves whose lengths are compatible to the speed attained. The energy within the water system is transferred backward relative to the ship at one-half its speed; the resistance experienced by the ship is due to the sternward drain of the wave energy which requires work to be done on the ship to replace that absorbed by the waves.

The form of the wave system is not susceptible of complete mathematical investigation; but the circumstances are approximately realized and the conditions considerably simplified when the actions of the bow and stern of the vessel are each replaced by the mathematical conception of a "pressure point." This consists of an infinitely large pressure applied over an infinitesimally small region of the water surface; it is assumed to move forward in place of the ship through still water, or, equally, to be stationary in a uniform stream. The resulting wave system has been investigated by Lord Kelvin and others. It is found to consist of a local disturbance surrounding the pressure point and depending on the pressure distribution combined with a series of waves which are confined within two straight lines drawn backwards through the pressure point and making angles of about $20^\circ \left(\frac{\tan^{-1} \frac{2}{\sqrt{3}}}{2}\right)$ with the line of motion. The waves within this region extend indefinitely astern with crests crossing the line of motion perpendicularly. The crest lines are slightly curved, convex to the pressure point, and at the bounding lines form cusps whose tangents are inclined to the line of flow at an angle of about $25^\circ \left(\frac{\tan^{-1} \frac{1}{\sqrt{3}}}{2}\right)$. The crest lines afterwards curve forward towards the pressure point. The distance apart of the transverse wave crests is equal to the length $l$ of wave appropriate to the speed $s$, as expressed in the formula $s = \frac{g/2s}{2}$. These results are of interest since they are in agreement in many respects with those of actual observation for ships and models. In fig. 32,

![Fig. 32.](image)

reproduced from a paper in the J.N.A. 1877, read by Froude, is shown the bow-wave system obtained from a model, which is also illustrative of that produced by ships of all types. It appears therefore that two types of waves accompany a ship: (1) diverging waves having sharply defined crests placed in echelon, the foremost wave alone extending to the ship; (2) transverse waves limited in breadth by the diverging crests and reaching the sides of the vessel throughout its length. These compare with the crest lines obtained in the above hydrodynamical investigation; the transverse and diverging waves correspond to the different portions of the crest lines which are respectively visible.

Since the bow diverging waves are not in contact with the ship except at the bow, the energy spent in their maintenance travels away from the ship and is lost. A diverging wave system of similar form is obtained when the ship is traveling at a speed greater than the wave speed, and the resistance due to the diverging systems of waves is therefore the sum of its components at the bow and stern, following a regular although unknown law, increasing with the speed, and depending considerably on the shape of the bow and stern.

On the other hand the interference between the transverse bow and stern wave systems produces a stern wave in combination with the ship; the resistance due to the resultant transverse wave action depends therefore on the phase relation between the waves of the component systems. The effect of interference on the wave resistance of two vessels was investigated by Froude (J.N.A., 1877) by the method of experiments on a series of models having the same entrance and run, but in which the length of parallel middle body was varied. At constant speed curves of resistivity resistance on a length base corresponding to the length of the models were obtained, the resistance increasing approximately equably to the wave length appropriate to the speed; the amplitude of the fluctuation diminished as the length increased. The resistance of a length $l$ at a speed $v$ with a very high speed of the power but it was also subject to a series of fluctuations whose magnitude and spacing increased with the speed. The results of these experiments were fully analysed in 1881 by Mr. R.E. Froude. The results are also in agreement with the observation by Lord Kelvin that the trough of the bow wave coincided with the crest of the component stern wave, the resultant wave system being of relatively small dimensions. Conversely, the resistance was abnormally increased when the crests of the bow and stern systems coincided. The fluctuation in the resistance thereby obtained was smaller when the length of middle body became greater, owing to the greater degradation of the bow wave system as the depth increased. For very considerable lengths of middle body, the height of the bow wave system at the stern was insufficient to produce interference or affect the resistance.

The power (V) of a wave is related to the length in feet ($l$) by the formula $V = \frac{1}{8l}$. If $l'$ be the distance apart of the component bow and stern waves (which is generally rather greater than the bow length of the ship), relatively small resistance would be anticipated when $V'$ is equal to the square root of a multiple of $36^2$; on the other hand when $V'$ was not greatly different from 1-8 $l'$, abnormal wave resistance would be developed. This result is of a greater extension of the experiments of ships of all classes; for economical propulsion at a speed $V$, the length $l$ of a ship should be generally equal to or slightly less than $V'$, corresponding to the "favourable" value of $V'$ of about 1-2 the ratio $\frac{V}{l}$; torpedo-boat destroyers and similar vessels of extremely high speed constitute an exception, the value of the ratio $\frac{V}{l}$ being there frequently as great as 4, which approximately coincides with the highest "favourable" value of $\frac{V}{l}$.

The foregoing description of the resistance experienced by ships through wave making makes evident that the conditions underlying wave resistance are too complex to enable its amount to be very satisfactorily estimated. Lord Kelvin, however, was able to establish the "similitude" enunciated by Newton, which is applicable with certain limitations to all dynamical systems. The extension of this principle forms the foundation of all methods employed practically for the purpose of keeping the resistance of ship. The principle states that in two geometrical and mechanically similar systems, whose linear dimensions vary as the squares of the velocities of the corresponding particles, and whose forces vary as their masses, the motions of the two systems will be similar. A proof of this theorem follows at once from the equations of motion for any particle. The law of comparison, which is the application (originally made by Froude) of the principle of similitude to the resistance of ships, is enunciated as follows:

If the linear dimensions of a ship be $n$ times those of its model, and the resistances of the latter be $R_1$, $R_2$, $R_3$, ..., at speeds $V_1$, $V_2$, $V_3$, ..., then the resistance of the ship at the corresponding speeds $V_1$, $V_2$, $V_3$, ..., will be $n^2R_1$, $n^2R_2$, $n^2R_3$, ..., and therefore the effective horse powers at corresponding speeds are increased in the ratio $n^4$.

It is necessary to establish that the conditions underlying the principle of similitude are satisfied by all the components of resistance, when the law of comparison is employed for the purpose of obtaining the ratio between the total resistances of two ships at corresponding speeds. When the component of resistance due to frictional resistance, the rounding of the form of the body and the air resistance, is attributable to normal pressures on various surfaces caused by changes of velocity in the water or air. It appears from Bernouilli's energy equation that the pressures per unit area and the square of the velocity are proportional to the square of the corresponding speeds, to the linear dimensions. The total pressures are therefore proportional to the cube of the linear dimensions, i.e. to the masses, thus complying with the primary condition regarding the condition of similitude.

Froude showed that a ship can be compared with a surface and as the 1-83 power of the speed, does not satisfy this condition. In the application of the law of comparison to ships and
models where the linear ratio is considerable, the residuary resistance already being independently calculated for ship and model from the results of Froude’s experiments. The law may, however, be extended without appreciable error to total resistance when the corresponding dimensions of the ships compared are not greatly different.

If it be assumed that the residuary resistance of a ship is capable of being represented as the sum of a number of terms of the form

\[ W = \frac{n}{2} \rho V^2 \frac{L}{g} \]

where is the displacement, it appears from the law of comparison that for each term of the expression and in the construction of approximate formulae of this type for residuary resistance allowance must be made for the length, breadth and depth of the ship, but the indices are found to vary irregularly with the speed and type of ship; at uneconomical speeds the form of the ship may be equal to or greater than 5, and at moderate speeds it may be less than 3. If is given an approximate mean value for at moderate speeds. A fact pointed out by Professor Biles in a paper read before the Institution of Naval Architects in 1881 is interesting in this connexion. When the resistance of a ship varies by an increase in the displacement by a proportionate enlargement of dimension will not cause an increase in the resistance for the same ship; if the resistance be increased by a higher speed than the 6th, the resistance would actually be reduced by increasing the displacement.

The accuracy of the law of comparison was verified by the “Greyhound” trials, carried out by Froude on behalf of the Admiralty (Trans. I.N.A., 1874). The “Greyhound” was a twin-screw slop 170 ft. long and of about 1160 tons displacement; the trials were made over a range of speeds extending from about 8 to 100 m.p.h. The ship was constructed about the line of equal draught and trim. She was towed from the end of a spar 48 ft. in length projecting over the side of the towing vessel, H.M.S. "Active"; this ensured that the towing force was applied perpendicular to the line of motion, increasing the “Greyhound” and influencing her resistance. A dynamometric apparatus was placed in the bow of the “Greyhound," and arranged so as to record the horizontal component of the tension in the tow rope; by means of this device the ship’s resistance was measured under various conditions, and her effective horse-power obtained. A “log ship” or small board, ballasted to sink a few feet and remain normal to the direction of motion, was towed to the end of a log line which was allowed to run freely out over the head of a spar during the trials. The slip of the “log ship” having been obtained during independent trials, the speed of the “Greyhound” was estimated from the change in resistance under the same circumstances. The frictional resistance on a base of speed were constructed for various conditions of draught and trim; the frictional resistance was estimated from the experiments on planks, and curves of residuary resistance were obtained. A model of the “Greyhound” on a scale of 1/14 full size, was also towed in the experimental tank under conditions corresponding to those of the ship; with the ship, the total resistance was measured, that due to friction was calculated, and the residuary resistance of the model was obtained. It was found, by assuming a particular value for the unknown frictional coefficient of the “Greyhound,” that a close agreement occurred between the residuary resistance of the ship and the model. The accuracy of the experiments in obtaining an experimental value for the coefficient of for a mixture of 1 calico and 1 varnish, which was probably equivalent to the condition of the ship’s bottom during the trials.

The experiments were carried out by Mr Yarrow (Trans. I.N.A., 1883). By these experiments, the residuary resistance of the boat was then about 3% in excess of that deduced by the law of comparison from experiments on a model.

As a result of the “Greyhound” trials, the accepted method of estimating the horse-power required for a new ship is by running a scale model under corresponding conditions in an experimental tank fitted and equipped for the purpose by the general subject.

Similar establishments have now been instituted by several foreign governments, the most important being that at Dumbarton and Messrs John Brown at Clydebank. The experimental tank now under construction at Toddington should prove an important and useful addition to the number of such establishments in this country. Its construction and equipment, it is hoped, will be available also for undertaking such private work as may be required by shipbuilding firms. Its inception is due to a committee of Inquiry set up by the Institution of Naval Architects, and the cost of installation is being defrayed by Mr A. F. Yarrow. The tank will form a part of the National Physical Laboratory, and its general control will be in the hands of officers of the latter.

The Admiralty experimental tank at Haslar is nearly 400 ft. long, 20 ft. wide and 9 ft. deep. The main experimental carriage spans the whole length of the tank, and carries a secondary railway on which the subsidiary carriage, which carries the experimental apparatus of different kinds, is adjusted in position. The main carriage runs on rails on the side walls, and can travel the whole length of the tank, from a stationary engine of ample power. Ordinary speeds range from 100 to 800 ft. per minute, while an extreme speed of 1200 ft. per minute can be obtained; the speeds are regulated by a highly satisfactory control system. The tank is divided into sections, some of which are made of hard paraffin wax, somewhat over 1 in. in thickness; they are cast in a mould, with an allowance of 1/2 in. for finishing. The carriage is fitted in the form of a bed of a machine in which a pair of revolving cutters, one on each side of the model, cuts out on its surface a series of level lines, whose contours are precisely similar to those on the drawing of the ship and may be used for the measurement of all the level lines have been cut in, the model presents the appearance of a series of steps, the bottom angles of which correctly represent the true form of the model should possess. The paraffin ridges between these level lines are trimmed off by the use of suitable tools and the outside surface made quite smooth with flexible steel scrapers. The model is ballasted to its required displacement and saddled with a frame. When the model has been in position in the towing tank, the towing-rod is then placed below the dynamometer. The towing-rod at the foreward end is then in a position to impart horizontal forces by a hard steel surface to a knife-edge on the dynamometer lever within the tank. Various corresponding arrangements to suit particular models are made, and the experiments recorded. Speeds and resistance corresponding to each experiment are deduced from these elements, a most necessary condition being that the speed shall be uniform throughout each experiment. By somewhat similar arrangements on a subsidiary carriage, the action of model screw propellers is tested either in an undisturbed water or behind a model, the speed, rate of rotation, retardance and thrust being measured.

An interesting account by Dr Glazebrook of some experimental tanks in various countries, together with particulars of some improvements made in their design, may be mentioned.

Of the very large number of experimental results that have been obtained from the trials of ships’ models in the tanks referred to above, comparatively few have been made public. In connection with the Torquay and Haslar tanks there are few of the reports by the elder Froude and Mr R. E. Froude that have been published by order or permission of the Board of Admiralty, chiefly through the Institution of Naval Architects. Among those which may be mentioned, the “Merkara” experiments recorded in 1874; the “Merkara” results in 1876; experiments on the effect produced on the wave-making resistance of the “Hotspur” by varying the draught in the experimental tank; results obtained from models of three merchant liners in 1881; papers in 1888 and 1892 on the “constant” system of notation of results of model experiments, used at the Admiralty Experimental Station; model experiments on the ship’s propeller by Mr R. E. Froude appeared in 1904. Some records of the experiments made at private and foreign experimental establishments have now been appearing.

Some of the most important of these experiments are described in these notes; it remains to show how they are applied in practice to obtain an estimate of the indicated horse-power required to drive a ship at any speed. If the resistance has been obtained from an experimental model, or inferred by the law of comparison from data obtained with a vessel of similar type, the effective horse-power is known; and by assuming a suitable value for the propulsive coefficient of the ship (vessel's frictional resistance is known) the results can be converted into horsepower on the sea. If model experiments or data for exactly similar ships are unavailable, the method of estimating the power which is most commonly used is one involving a relation between L.H.P., displacement, and speed, which is expressed by the following equation.

\[ \text{(Speed)}^3 \times \text{(Displacement)}^\frac{1}{3} = C \]

L.H.P. being called the Admiralty coefficient. The value of C varies considerably at different speeds even for the same ship. For it to be constant, the L.H.P. must vary as the cube of the speed; if resistance varied as the square of speed and speed, the condition of constancy would be fulfilled. Actually, owing to variations in the index of the speed to which the resistance is varied, the results given by the machinery and propellers, this method of estimating L.H.P. can only be used with great caution, care being taken that the values of C selected for comparison are taken from ships of fairly similar type, and of corresponding lengths and speeds.

Another means of obtaining approximate estimates of the power
required for ships of ordinary types is from curves of resistance drawn on a basis of simple functions of the speed, length and displacement, the curves being arrived at through the spots obtained from a large number of results of model experiments with different classes of ships. Curves of this character have been constructed by Mr. D. W. Taylor and Mr. A. W. Johns (Trans. I.N.A., 1907); the former series expresses the residuary resistance per ton of displacement in terms of \( V^2/W \); the latter gives the residuary horse-power divided by \( V^2/\) in terms of \( V^2/W \) and the prismatic coefficient.

### Volume of Displacement

**Area of Immersed Midship Section \( X \)**

The frictional resistance is calculated independently by Froude's or Tideman's tables.

To furnish data for estimating the I.H.P. of vessels covering a considerable range of type, a series of experiments on systematically varied forms of hull were made by Mr. R. E. Froude. The results were published by him in the *Trans. I.N.A.*, 1904, and are given in figs. 40 to 51. The forms of hull dealt with may be primarily divided into two groups, A and B, differing in Beam and Draught ratio; Draught being equal to 2:50 and 3:48 for A and B respectively. Each group is further divided into 6 types, differing in block coefficients, and the table following gives particulars of the coefficients for the models tried:

<table>
<thead>
<tr>
<th>Type</th>
<th>Stern snubbed, forward body as Type 1</th>
<th>Bow snubbed, after body as Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/5</td>
<td>1/6</td>
</tr>
<tr>
<td>2</td>
<td>5/5</td>
<td>1/6</td>
</tr>
<tr>
<td>3</td>
<td>5/5</td>
<td>1/6</td>
</tr>
<tr>
<td>4</td>
<td>5/5</td>
<td>1/6</td>
</tr>
<tr>
<td>5</td>
<td>5/5</td>
<td>1/6</td>
</tr>
<tr>
<td>6</td>
<td>5/5</td>
<td>1/6</td>
</tr>
</tbody>
</table>

### Resistance

The hull characteristics for A are shown in figs. 33 and 34, and the mode of presenting these indicates the way in which the several types were formed, each being obtained from the type 1 model by successively cutting back its stern and bow. This cutting back is termed snubbing. A curve of areas of transverse sections is given (fig. 35, Plate 1) as well as the sheer draught. The lines of group B can be derived from A, by altering beam and draught scales in the ratio of 66/17 and 57/204 respectively. Each of the 12 forms which embodied these lines was the generator of a series, differing only in length proportion.

The curve of areas is an important item in the hull characteristics. Experiment shows that the resistance of a hull of given curve of areas, beam and water-line entrance, is practically unaltered however the lines may be altered as long as they are kept ship-shape, and no unfair features are introduced. It follows, therefore, that although the data correspond to a given type of lines, yet (consistently with the preceding conditions) they are capable of application over a wider field than at first sight seems likely, covering variations of draught, form of profile and transverse sections.

Regarding the foregoing statement of permissible variations of lines, alteration in Beam/Draught ratio has some effect. Comparison of the two groups A and B gives the effect of the variation in the Beam/Draught ratio tried; and it is found that *caeteris paribus* increasing Draught by 34% (i.e. from 2:59 to 3:48) increases the Beam/Draught ratio by about 4%. A brief and approximate statement of the results of some experiments with models of varying Beam/Draught ratio, by Lieut.-Colonel G. Rota, R.N. (see *Trans. I.N.A.*, 1905), is that beyond a value of Beam/Draught = 2.5 an increase of 10% in Beam causes about 1% to 2.5% increase in resistance (the lower value being appropriate to the higher speeds, and vice versa). This result accords with that deduced from the A- and B-group experiments.

By the aid of the law of comparison (and a correction for skin friction), the information provided can be used to obtain the E.H.P. for any size of ship of form included in the experiments (or covered by the same experiment) by using an experimentally determined suitable propulsive coefficient. An example is given below as an illustration. In practical application it is important to notice that the coefficients used in such calculations must be the total length of immersed form (i.e. of the curvatures at all) and not the distance between perpendiculars arbitrarily placed.

The data are here given (figs. 40-51, Plates III.-VI.) in the form of curves of residuary horse-power for ships of different forms, plotted for a given speed on a base of immersed length. The range in abscissae shows the amount of variation in length proportion tried in the experiments; and as regards speed range the group B is for general purposes the group of interest. The curves may be termed standard E.H.P. curves.

The block coefficients of the forms dealt with are lower than those of the greater proportion of merchant ships, and hence the data are not directly applicable to these. At higher speeds, however, the E.H.P. might be approximately estimated from these curves, by assuming a further degree of slamming appropriate to the required block coefficient; but at speeds which correspond to those of ordinary merchant ships (which are the lower speeds given in the diagrams) the effect of slamming is variable, and depends really upon the actual speed-length ratio (i.e. \( V/\sqrt{L} \)) of the ship we are dealing with.

In this connexion it may be noted that the diagrams not only afford a means of determining the I.H.P. of a given ship, but they may also be used to determine the minimum design speed so as to ensure the best possible conditions of displacement and speed, &c. For example, suppose a ship of given displacement is required to obtain a given speed, with a given maximum E.H.P. (or I.H.P., assuming an appropriate propulsive coefficient); then the former gives the proper scale for 1000 tons displacement (\( V/\sqrt{L} \), the ratio of the linear dimensions, is equal to \( 1000/\) and hence E.H.P. becomes 1) and speed (\( 1000/\)) times the given values).

An E.H.P. curve for the given speed is easily interpolated on the diagrams, and we can at once obtain for the given E.H.P. (1) the length for each type, (2) the type which gives the most suitable length, (3) the economy resulting from any additional length, (4) the type for a given fixed length which gives the speed with least E.H.P., and (5) by inspection at lower speeds, how alternative forms compare at these speeds.

The following points may commend themselves, from consideration of an instructive comparison shown in fig. 4, where for the B group, E.H.P. curves for types 1, 3 and 6 are drawn together. In drawing conclusions, it is clearly remembered that E.H.P. speeds and lengths are for a standard displacement, viz. 1000 tons; and so in applications for different displacements, these quantities all undergo a numerical change, dependent upon the change in displacement, the first point being the economy shown which is most marked at high speeds; and even at low speeds, for the shorter lengths the E.H.P. begins to increase rapidly with decrease in length. These speeds, on the other hand, the length being increased beyond a certain point, so also increase the reverse. The reason for this is clear. At the low speed-length ratio we are considering, the wave-making resistance is practically nil, the resistance being almost entirely due to skin friction and eddy making, &c. It is obvious that by continually reducing the transverse dimensions of a ship of constant displacement, we increase the wetted skin (in the limit when the transverse scale is zero the surface is infinite) and hence the resistance due to skin friction increases, so therefore does the total resistance. This point would be more evident if the diagrams had been continued to a greater length and lower speed-length ratio beyond the alteration in block coefficient.

At speeds above 20 knots, snubbing in the form dealt with is beneficial as regards performance. At lower speeds the effect depends on the length. Since it is at these lower speeds the ordinary type of merchant ship works, we may say that the point is doubtful for these, and depends upon the speed-length ratio. A better result might be obtained in such cases if the method of increasing the block coefficient were by the insertion of parallel middle body and an extension the results obtained an extension of an existing curve. (For this point see Mr. R. E. Froude's *1905 I.N.A. paper.*). A third point is the effect of change in speed. For a given length, the rate of increase of E.H.P. with speed grows less, but increases least for the more snubbed type. As an instance, for a 1000-ton ship at 25 knots (see fig. 36, Plate I.) the E.H.P. increases about 15% per speed of 6 at a length of 300 ft. (see fig. 36, Plate I.) The following table gives the increase in E.I.H.P. for the corresponding changes in speed, and the increase at a speed of 50 knots for each length given.

- The figures in columns (4) and (5) are the means obtained from the individual pairs of speeds; at intermediate speeds these may have different and constantly changing values—
### SHIPBUILDING

In the results hitherto recorded the depth of water has been supposed sufficient to prevent the resistances arising from the motion of a vessel on the surface from extending to the bottom of the ship. In these circumstances the resistance is unaffected by a moderate change in the depth. Conditions, however, frequently arise in which vessels are at high speeds in comparatively shallow water; and a marked alteration is then observed in the resistance and power corresponding to a particular speed. An investigation of the effect of shallow water on resistance is therefore of importance and interest; and a brief account of this part of the subject is here appended.

The change from deep to shallow water modifies the shape of the streamlines, many of which in deep water are considerably in planes normal to the surface of the hull; those in shallow water tend to lie more nearly in horizontal planes, owing to the reduced space under the bottom of the ship. In consequence, the velocity in the stream tubes in the vicinity of the ship is increased, and the changes of pressure and the "statical" wave heights are exaggerated. This causes an increase in the frictional resistance as the depth of water becomes less; but the effect on the residuary resistance is more complicated.

Firstly, the length $l$ of the waves corresponding to a speed $v$ is increased from that expressed by

$$v = \frac{gl}{2}$$

to be in accordance with the formula

$$v = \frac{2g}{π} \ln \left( \frac{2h}{b} \right)$$

where $h$ is the depth of the water, and the wave becomes of the type investigated by Scott Russell in canals and termed a "solitary wave" or a "wave of translation." When the depth of water is less than $\frac{v}{2}$, no permanent wave system of speed $v$ can exist. These changes in the wave length considerably affect the wave pattern and alter the speeds at which interference between the bow and stern systems has a favourable or unfavourable effect on the efficiency of propulsion.

In the second place the amount by which the speed of travel of the energy of the wave falls short of the speed of the ship is expressed by

$$\frac{v}{2} \left(1 - \frac{2 \sqrt{h}}{b} \sin \frac{2πh}{b} \right)$$

In deep water this difference of speed is $\frac{v}{2}$; in shallow water it diminishes, becoming zero at the critical depth producing a wave of translation.

Thirdly, the local disturbance immediately surrounding the ship is increased in shallow water, theoretical investigation showing that, at the critical depth above referred to, it becomes indefinite or is only limited by its own size and existing conditions of the wave accompanying the ship; the particles of a wave in very shallow water are moving appreciably in the direction of travel, which might lead to a reduction in the frictional resistance.

From these considerations it appears impossible to obtain, a priori, the net effect of shallow water on the resistance, owing to the divergent character of the component effects producing the final result. This difficulty is confirmed by the inconsistency of the readings frequently obtained during experiments in shallow water, pointing to instability in the conditions then existing.

A number of experiments have been carried out in shallow water with both ships and models; the most important are those by Constructor Paulus (Schleswig-Holstein District Club, 1903), Captain Rasmussen, Mr Yarrow, Herr Popp, and Major Hock. Many of these are recorded in the *I.N.A. Transactions*. A summary of the conclusions drawn from them is appended:

- The minimum depth of water that has no appreciable influence on the resistance increases with the speed and, in some degree, with the dimensions of the ship.
- At constant speed the resistance is, in general, greatest at the critical depth of water $\frac{v}{2}$. It is concluded, therefore, that the increase of resistance due to the enhanced dimensions of the wave then accompanying the ship is more than sufficient to offset the gain resulting from the diminished drage of energy from the wave system astern.
- At high speeds, when a considerable portion of the resistance is due to wave-making, the total resistance diminishes at depths lower than the critical depth, and is frequently less in very shallow water than in deep water.
- The "humps" in the curves of resistance on a base of

#### Table 1: Change of Speed

<table>
<thead>
<tr>
<th>Change of Speed</th>
<th>Corresponding Change in E.H.P.</th>
<th>Corresponding Index of Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-16 knots</td>
<td>21 E.H.P.</td>
<td>130</td>
</tr>
<tr>
<td>23-25 knots</td>
<td>344 E.H.P.</td>
<td>16</td>
</tr>
<tr>
<td>25-26 knots</td>
<td>870 E.H.P.</td>
<td>18</td>
</tr>
<tr>
<td>33-35 knots</td>
<td>1050 E.H.P.</td>
<td>20</td>
</tr>
<tr>
<td>34-35 knots</td>
<td>1475 E.H.P.</td>
<td>22</td>
</tr>
<tr>
<td>43-45 knots</td>
<td>1794 E.H.P.</td>
<td>24</td>
</tr>
<tr>
<td>52-55 knots</td>
<td>2177 E.H.P.</td>
<td>26</td>
</tr>
<tr>
<td>64-66 knots</td>
<td>2347 E.H.P.</td>
<td>28</td>
</tr>
<tr>
<td>67-70 knots</td>
<td>2648 E.H.P.</td>
<td>30</td>
</tr>
</tbody>
</table>

The curve shown in fig. 39, Plate II, results from plotting col. (6) to a base given by col. (3). Since the propulsive coefficient varies with the speed, it is preferable to take the E.H.P. from the curve and convert to I.H.P. using an appropriate coefficient, than to use a common coefficient by plotting a curve of I.H.P.
Fig. 35.—If length for 1,000-ton Ship be assumed 240 feet, then maximum ordinate of above curves represents—

279.9 square feet for Type 1
274.7 .. .. .. 2
269.0 .. .. .. 3 and for other lengths, the number of square
265.5 .. .. .. 4 feet varies inversely as the length.
262.1 .. .. .. 5
255.4 .. .. .. 6

Fig. 36.—Group B. Comparison of Types:

Type 1.
.. 3.
.. 6.
**Plate II.**

**SHIPBUILDING**

![Curves of Surface Friction Correction](image1)

**Fig. 38.** Curves of Surface Friction Correction.

![Estimated Curve of E.H.P. for Vessel](image2)

**Fig. 39.** Estimated Curve of E.H.P. for Vessel $320' \times 35'1' \times 13' \times 2,135$ Tons.
**Fig. 40.**—Curves of E.H.P. for 1,000-ton Ship.
Group "A."
Type 1. Block Coefficient .495.

**Fig. 41.**—Curves of E.H.P. for 1,000-ton Ship.
Group "A."
Type 2. Block Coefficient .505.

**Fig. 42.**—Curves of E.H.P. for 1,000-ton Ship.
Group "A."
Type 3. Block Coefficient .516.

**Fig. 43.**—Curves of E.H.P. for 1,000-ton Ship.
Group "A."
Type 4. Block Coefficient .522.
Fig. 44.—Curves of E. H. P. for 1,000-ton Ship
Group "A." Type 5. Block Coefficient .529.

Immersed length in feet.

Fig. 45.—Curves of E. H. P. for 1,000-ton Ship
Group "A." Type 6. Block Coefficient .542.

Immersed length in feet.

Fig. 46.—Curves of E. H. P. for 1,000-ton Ship
Group "B." Type 1. Block Coefficient .495.

Immersed length in feet.

Fig. 47.—Curves of E. H. P. for 1,000-ton Ship
Group "B." Type 2. Block Coefficient .505.
Fig. 48—Curves of E.H.P. for 1,000-ton Ship.

Group "B," Type 4

Block Coefficient - 352.

Fig. 49—Curves of E.H.P. for 1,000-ton Ship.

Group "B," Type 3

Block Coefficient - 316.
Fig. 50.—Curves of E. H. P. for 1,000-ton Ship, Group "B". Type 5. Block Coefficient -529.

Immersed length in feet.

Fig. 51.—Curves of E. H. P. for 1,000-ton Ship, Group "B". Type 6. Block Coefficient -542.

Immersed length in feet.

Fig. 52.—Speed trials of H.M. Torpedo Boat Destroyer "Cossack." At Maplin and Skelmorlie. Displacement 836 tons.
The changes of resistance produced by shallowness are accompanied by corresponding changes in the speed of revolution of the engines and in the trim of the vessel. These are illustrated by the curves in fig. 52, Plate VI., which are taken from a paper read before the I.N.A. by the writer in 1909, giving the results of some trials on H.M. torpedo-boat destroyer "Cossack." The data obtained from the various shallow water experiments are capable of extension to ships of similar types by the application of the law of comparison at corresponding depths (proportional to the linear dimensions) and at corresponding speeds. The influence of shallow water on the speed of a large number of ships can be thus obtained; but the data at present available are insufficient to enable a general law, if any exists, to be determined.

A further modification in the conditions arises when a ship proceeds along a channel of limited breadth and depth. Some interesting experiments were made in this connexion by Scott Russell on the resistance of barges towed in a narrow canal. He obtained (by measuring the pull in the tow rope) the resistance of a barge of about 6 tons displacement, for a mean depth of the canal of about 4½ ft., as follows:

<table>
<thead>
<tr>
<th>Speed in miles per hour</th>
<th>Resistance in pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.19</td>
<td>250</td>
</tr>
<tr>
<td>7.57</td>
<td>500</td>
</tr>
<tr>
<td>8.52</td>
<td>400</td>
</tr>
<tr>
<td>9.04</td>
<td>280</td>
</tr>
</tbody>
</table>

At the critical speed (8.2 m. per hour) corresponding to the depth, the resistance was in this case reduced; and at a higher speed a further reduction of resistance was observed. It is stated that the bow was then situated on a wave of translation extending to the side of the vessel which was considered as a line of travel, and that the resistance of the bow was then almost entirely due to skin friction.

When the water is not uniform, the resistance is altered by an amount depending on the acceleration, the inertia of the ship, and the motion of the surrounding water. In the ideal conditions a vessel wholly submerged in a perfect fluid, the force producing acceleration is the "virtual mass," which is the mass of the vessel increased by a proportion of the displacement; e.g. for a sphere, one half the displacement added to the mass is equal to the virtual mass. The acceleration of the virtual mass then moves as though it were a solid object in the water, and the resistance divided by the acceleration of the ship, varies considerably with the circumstances of the previous motion. The mean value of the virtual mass of the "Greyhound," obtained by Froude from the resistance experiments, was about 20% in excess of the displacement. This value is probably approximately correct for all ships of ordinary form, and is of use in estimating the time and distance required to make a moderate alteration in speed; the conditions during the stopping, starting and reversing of ships are generally, however, such as to make this method inapplicable.

Propulsion.

The action of a marine propeller consists fundamentally of the sternward projection of a column of water termed the propeller race; the change of momentum per unit time of this water is equal to the thrust of the propeller, which during steady motion is balanced by the resistance of the ship.

Assuming in the first place that the passage of the ship is not affected and is uninfluenced by the working of the propeller, let V be the speed of the ship, v that of the propeller race relative to the ship, and w the mass of water added to the propeller race per second. The thrust T is then equal to mw (v-V), and the force producing acceleration is the "virtual mass," which is the mass of the vessel increased by a proportion of the displacement; e.g. for a sphere, one half the displacement added to the mass is equal to the virtual mass. The acceleration of the virtual mass then moves as though it were a solid object in the water, and the resistance divided by the acceleration of the ship, varies considerably with the circumstances of the previous motion. The mean value of the virtual mass of the "Greyhound," obtained by Froude from the resistance experiments, was about 20% in excess of the displacement. This value is probably approximately correct for all ships of ordinary form, and is of use in estimating the time and distance required to make a moderate alteration in speed; the conditions during the stopping, starting and reversing of ships are generally, however, such as to make this method inapplicable.

The propeller race is equal to \( \frac{1}{2}m(w - V)^2 \); whence the whole energy supplied to the propeller in unit time is expressed by \( \frac{1}{2}m(w - V)^2 \), and the efficiency by \( \frac{w - V}{v} \). The quantity \( w - V \) is commonly termed the slip, and \( \frac{w - V}{v} \) the slip ratio; the latter expression being denoted by s, the theoretical maximum efficiency obtained on this basis becomes \( \frac{1}{2} \). It appears, therefore, that the maximum efficiency should be obtained with minimum slip; actually, however, with screw propellers the losses here disregarded entirely modify this result, which is true only to the extent that very large ships is accompanied by a low efficiency. The foregoing considerations show that, with a given ship, the higher the efficiency, the lower the speed; or, more generally, the higher the efficiency the lower the efficiency of the propeller, thereby the slip, the higher the efficiency generally obtained.

The type of propeller most nearly conforming to the fundamental assumption is the jet propeller in which water is drawn into the ship through a nozzle, and escapes through the jet, effectively producing the "Waterwitch" and a few other vessels which have been propelled in this manner; since, however, the quantity of water dealt with is limited by the size of the jet, it is clear that a permanent reduction of the resistance is required to produce the thrust, and the slip being necessarily large, only a very low efficiency is obtained. A second type of propeller is the paddle, or stern-wheel which operates by means of floats mounted round the circumference of a circular or rectangular form, of the jet propeller. Certain practical difficulties inherent to this form of propulsion render it unsuitable or inefficient for general use, and the most usual form of propeller is of screw type, which require large manoeuvring powers, e.g. to turn a ship, and are used in vessels that have to run in very shallow water. The screw, which is the staple form of steamship propeller, has an action similar in effect to the jet, but requires a far greater expenditure of power than the screw propellers, it is desirable to define some of the terms employed. The product of the revolutions and pitch is often called the speed of the propeller; it represents what the speed would be in the absence of slip. Speed of advance, on the other hand, is applied to the forward movement of the propeller without reference to its rotation; and is equal to the speed of the ship or body carrying the propeller. The difference between the speed of the ship and the speed of advance is termed the slip; and if the two former speeds be denoted by \( v \) and \( V \) respectively, the slip is \( v - V \) and the slip ratio (or properly the apparent slip ratio) \( \frac{v}{V} \).

The theories formulated to explain the action of the screw propeller are divisible into two classes—(i) those in which the action of the propeller is considered as that of a blade advancing through water (similar to the blade of an oar), and (ii) those in which the propeller is considered as producing a jet of water similar to the jet propeller. The action of the screw propeller is more easily illustrated. The action of the propeller is similar to that of a sheet of paper with which a jet of water is blown from a jet of water, and the resistance divided by the diameter is termed the pitch ratio.

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Mr R. E. Froude in 1908, it is probable that the effect of friction would be in the direction of giving higher efficiencies for large screws than for small. The results obtained with ships’ propellers are in general accordance with those deduced from model propellers, although the difficulties inherent in carrying out experiments with full-sized screws have hitherto prevented as exact a comparison being made as was done with resistance in the trials of the “Greyhound” and her model. Results of model experiments have been given by Mr R. E. Froude, Mr. D. W. Taylor, Sir John Thornycroft and others; of these a very complete series was made by Mr R. E. Froude, an account of which appears in Trans. Inst. Nav. Archs., 1908. Propellers of three and four blades, of pitch ratios varying from 0-8 to 1-5, and with blades of various widths and forms were successively tried, the slip ratio varying from zero to about 0-45. In each case the screw advanced through undisturbed water; the diameter was uniformly 0-8 ft., the immersion to centre of shaft 0-64 ft., and the speed of advance 300 ft. per minute. Curves are given in the paper which express the results in a form convenient for application. Assuming as in Froude’s theory that the normal pressure on a blade element varies with the area, the angle of incidence, and the square of the speed, the thrust \( T \) would be given by a formula such as

\[ T = a \frac{R}{R^2 - dR} \]

where \( R \) is the number of revolutions per unit time.

On rationalising the dimensions, and substituting for \( R \) in terms of the slip ratio \( s \), the “conventional” pitch ratio \( p \), the diameter \( D \), and the speed of advance \( V \), this relation becomes:

\[ T = \frac{a}{p} \frac{DV^2}{(1 - \beta^2)} \]

or \( H = -0.03216 \frac{DV^2}{B} \times (1 - \beta^2) \)

where \( H \) is the thrust horse-power, \( R \) the revolutions in hundreds per minute, \( V \) is in knots, and \( D \) in feet. The “blade factor” \( B \) depends only on the type and number of blades; its value for various “disk area ratios,” i.e. ratio of total blade area (assuming the blade to extend to the centre of shaft) to the area of a circle of diameter \( D \) is given in the following table:

<table>
<thead>
<tr>
<th>Disk area ratio</th>
<th>.30</th>
<th>.40</th>
<th>.50</th>
<th>.60</th>
<th>.70</th>
<th>.80</th>
</tr>
</thead>
<tbody>
<tr>
<td>B for 3 blades elliptical</td>
<td>.0978</td>
<td>.1050</td>
<td>.1085</td>
<td>.1112</td>
<td>.1135</td>
<td>.1157</td>
</tr>
<tr>
<td>B for 3 blades, wide tip</td>
<td>.1045</td>
<td>.1126</td>
<td>.1166</td>
<td>.1195</td>
<td>.1218</td>
<td>.1242</td>
</tr>
<tr>
<td>B for 4 blades, elliptical</td>
<td>.1040</td>
<td>.1139</td>
<td>.1227</td>
<td>.1265</td>
<td>.1294</td>
<td>.1315</td>
</tr>
</tbody>
</table>

The ratio of the ordinates of the wide tip blades to those of the elliptical blades varies as \( 4 / 3 \), where \( r \) is the radius from centre of shaft.

Curves of propeller efficiency on a base of slip ratio are drawn in fig. 53; these are correct for a 3-bladed elliptical screw of disk area ratio 0-45; a uniform deduction from the efficiency obtained by the curves of -02 for a 3-bladed wide tip and -012 for a 4-bladed elliptical screw must be made. Efficiency corrections for different disk area ratios have also to be applied; for a disk ratio of 0-70 the deductions are -06, -05, and -01 with pitch ratios of 0-8, 1-0, 1-2 and 1-4 respectively; for other disk ratios, the deduction is roughly proportional to disk area ratio. A very complete series of experiments have shown that the conditions under which cavitation is produced depend upon the depth of immersion and other factors, the critical pressure causing cavitation varying to some extent with the type of ship and with the diameter of the propeller; the phenomenon, however, provides a lower limit to the area of the screw below which irregularity in thrust may be assumed. A very complete series of experiments with other screws (whether model or full-size) become inapplicable.

From the experiments the coefficient \( a \) was determined, and the final empirical formula below was obtained:

\[ T = \frac{a}{p} \frac{DV^2}{(1 - \beta^2)} \]

or \( H = -0.03216 \frac{DV^2}{B} \times (1 - \beta^2) \)

where \( H \) is the thrust horse-power, \( R \) the revolutions in hundreds per minute, \( V \) is in knots, and \( D \) in feet.

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1 Trans. I.N.A. 1897 (vol. xxxix.).
The above figures refer to full speed and are affected by alteration of speed.

1 Higher values have been obtained for the propulsive coefficients of the most recent turbine-driven ships.

Strength.

The forces tending to strain a ship's structure include (1) the static forces arising from the imposition of the weight and buoyancy when afloat, and the weight and supporting forces when in dock or ashore; (2) the dynamic forces arising from the inertia of the ship and its lading under the accelerations experienced in the various motions to which the ship is liable, such as rolling and pitching in a sea way; and (3) local forces and water pressures incidental to (a) propulsion and steering, and (b) the operation of the various mechanical contrivances which it carries.

The straining actions of the forces, due to the distribution of the weight and buoyancy of the ship at rest and to the inertia of the ship in motion, constitute the only part of the problem of the strength of the structure which can be considered theoretically with any generality; the character of the internal reactions arising in the structure is so complex, that simplifying assumptions always have to be made in order to enable them to be calculated.

The results of theoretical calculations as to the general structural strength of ships are therefore of value for comparative purposes and to some extent for the approximate estimation of stresses actually liable to occur in the structure. The comparison of the theoretical calculations with the results of experience forms an invaluable guide to the proper distribution of material. In making such a comparison the necessity of providing sufficient strength, on the one hand, and of keeping down the weight, on the other hand, has to be borne in mind; the latter point being especially important in a ship, since its economical performance is roughly dependent on the difference between the weight of the structure and the total available displacement.

The greatest straining actions, to which vessels of ordinary forms and proportions are subject, are due to inequalities in the longitudinal distribution of the weight and the buoyancy. Let WWW (fig. 54) represent the weight, and BBB... the buoyancy per foot run of a ship plotted along the length AC; over the lengths Aa, be, de, FC the weight is in excess of the buoyancy, while from a to b, c to d, e to f, it is deficient. Acqure LLL, whose ordinates are equal to the differences between those of WWW and BBB, is termed a curve of loads, and represents the net load of the ship regarded as a beam subject to longitudinal bending. Shearing forces are produced whose resultant at any transverse section is equal to the total net load on either side of the section; they are represented by the shearing force curve FFF, whose ordinate at any transverse section is proportional to the area of the "loads" curve BBB... up to that section. Similarly, on plotting the areas of the shearing force curve as ordinates, a "bending moment" curve occurs near amidships; its effect in figs. 55, 56 and 57 is to cause the ends to fall relatively to the middle, such a moment being termed "hogging"; the reverse or a "sagging" moment is illustrated in figs. 57 and 59. Curves of a similar character are obtained in the still-water condition, but the bending moments and shearing forces are then generally reduced in amount.

The maximum bending moment is frequently expressed as a ratio of the product of the ship's length and the displacement; average values for various types of ships are tabulated below:

<table>
<thead>
<tr>
<th>Class of Ship</th>
<th>W × L</th>
<th>Whether Hogging (on Wave Crest) or Sagging (in Wave Hollow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail steamer</td>
<td></td>
<td>MAXIMUM B.M.</td>
</tr>
<tr>
<td>Cargo vessel</td>
<td></td>
<td>From 25 to 30</td>
</tr>
<tr>
<td>Battleship (modern)</td>
<td></td>
<td>From 30 to 35</td>
</tr>
<tr>
<td>Battleship (older types)</td>
<td></td>
<td>About 30</td>
</tr>
<tr>
<td>First-class cruiser</td>
<td></td>
<td>About 40</td>
</tr>
<tr>
<td>Second-class cruiser</td>
<td></td>
<td>About 32</td>
</tr>
<tr>
<td>Scout</td>
<td></td>
<td>About 25</td>
</tr>
<tr>
<td>Torpedo-boat destroyer</td>
<td></td>
<td>About 22</td>
</tr>
<tr>
<td>Torpedo boat</td>
<td></td>
<td>From 17 to 25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>About 23</td>
</tr>
</tbody>
</table>

The conditions of equilibrium, viz. (a) that the total weight and buoyancy are equal, and (b) that the centre of gravity and the centre of buoyancy are in the same vertical transverse section, ensure that the end ordinates of the shearing force and bending moment curves are zero.

These curves are usually constructed for three standard conditions of a ship, viz. (i) in still water; (ii) on a trochoidal wave of length equal to that of the ship and height 2/3 of the length, with the crest amidships; and (iii) on a similar wave with the trough amidships. The curve of weight is obtained by distributing each item of weight over the length of the ship occupied by it and summing for the whole ship. Such a condition of the ship as regards stores, coal, cargo, &c., is selected, which will produce the greatest bending moment in each case. The ordinates of the curve of buoyancy are calculated from the areas of the immersed sections, the ship being balanced longitudinally on the wave in the second and third conditions. The shearing force and bending moment curves are then drawn by successive integration of the curve of loads. Typical curves are shown in figs. 55 to 59 for a first-class cruiser on wave crest, a torpedo-boat destroyer on wave crest (bunks empty) and in trough (bunks full), and a cargo vessel on wave crest (hold and bunks empty) and in trough (hold and bunks full). From these figures it is seen that the maximum bending moment occurs near amidships; its effect in figs. 55, 56 and 57 is to cause the ends to fall relatively to the middle, such a moment being termed "hogging"; the reverse or a "sagging" moment is illustrated in figs. 57 and 59. Curves of a similar character are obtained in the still-water condition, but the bending moments and shearing forces are then generally reduced in amount.

The maximum bending moment is frequently expressed as a ratio of the product of the ship's length and the displacement; average values for various types of ships are tabulated below:
The stresses at a transverse section due to bending are obtained from the usual formula \( M = \frac{2}{I} \), where \( M \) is the bending moment, \( I \) the moment of inertia of the section about the neutral axis, \( y \) the distance from the neutral axis of the point at which the stress is required, and \( p \) the intensity of stress. In calculating \( I \), a deduction from the area of plating in tension is made for rivet holes, and only the continuous longitudinal portions of the structure are assumed effective in resisting bending.

The stresses obtained by this method undergo considerable variation with class and size of ship. As regards the former, it is evident that the actual straining actions upon a ship necessarily vary with the type; and the stresses allowable, as calculated on a uniform basis of applied forces, must vary accordingly. The variation due to size is less obvious, but it is clear that the larger the ship, the less is the probability of encountering waves as long as herself; and, moreover, the proportion of height to length of the largest waves is generally less than that assumed. For these reasons greater calculated stresses are allowable in large ships than in small ships or in those of moderate size. The limiting stress frequently adopted for small ships is 6 tons per sq. in., which may be increased for portions in tension to 8 tons with high tensile steel; on the other hand, the calculated stresses in the largest vessels frequently exceed 8 tons compressive and 10 tons tensile.

The above method is now universally adopted for comparing the stresses in ships caused by longitudinal bending; although imperfect, it affords a reasonable basis of comparison between the longitudinal strengths of vessels, especially when, as is generally the case, the comparison is made between two ships of similar type. The relation between stress and strain has therefore to be investigated, which involves the experimental determination of the modulus of elasticity of the structure.

The assumptions on which the theory of bending is based are:

(a) At any transverse section the material lying on the neutral surface, which passes through the C.G. of the effective sectional material, is neither extended nor compressed.

(b) The material is homogeneous; and the layers comprised between adjacent surfaces parallel to the neutral surface act independently. (This is probably more nearly the case in a ship than in a beam of solid section.)

(c) The material situated at a distance \( y \) from the neutral surface is compressed (or extended) longitudinally by an amount \( \frac{E}{E_0} y \) of its original length; where \( E_0 \) is the curvature of the neutral surface if originally straight, or the alteration of curvature if originally curved.

(d) The stress is proportional to the strain and equal to \( \frac{E}{E_0} y \), \( E \) being Young's modulus for the material. It follows that the resultant longitudinal force across a section is zero, and the moment of the internal forces about the neutral axis (i.e. about the trace of the neutral surface in the section) is \( \frac{E}{E_0} y \), which is equal and opposite to the external bending moment \( M \).

(e) Taking axes \( O_x \) longitudinal, \( O_y \) vertical, since \( \rho \) is large, \( I \) may be replaced by \( \frac{d^2 y}{d x^2} \), and

\[
\frac{d^2 y}{dx^2} \frac{M}{I} = \frac{E}{E_0} y \]

\[
\text{or } E_0 \frac{M}{I} \text{ or } \varepsilon = \int \frac{M}{I} \text{ } dx \text{ } dx,
\]

giving the deflection \( z \) at any point.

The validity of the theory as applied to a ship was tested and confirmed in 1903 at Portsmouth Dockyard when experiments were made on H.M.S. "Wolf" by Professor J. H. Biles for the Committee on Torpedo-Boat Destroyers (see Trans. Inst. Nav. Archs., 1905). The principal dimensions of the "Wolf" are—length 210 ft., breadth 21.7 ft., draught 5.3 ft., and displacement 360 tons, with a coal capacity of 80 tons. Two sets of experiments were made—(i.) under a hogging moment when supported in dock on two cradles 10 ft. wide, spaced 26 ft. apart; centre to centre, and equidistant from the ship's centre of gravity, bunkers empty; (ii.) under a sagging moment when supported by similar blocks 120 ft. apart, bunkers full. The distribution of weight and buoyancy had previously been determined for each case so that the pressures on the blocks and the bending moments caused thereby could be accurately obtained. When thus supported the water-level in the dock was gradually lowered; and for successive water-levels spaced 6 in. apart the extension or compression of the plating was measured at various points of the structure by Stromeyer's strain indicators; the vertical deflections at various points of the length were also recorded. The observations were repeated several times, and the following are the general results:

(c) In the sagging condition the neutral axis was actually situated 7.55 ft. above the keel; the calculated distance was 7.6 ft. deducing rivet holes in parts in tension, and 7.7 ft. without such deduction. In the hogging condition the observed height was 7.2 ft., those calculated as before being 7.5 ft. and 7.6 ft. All shell and deck plating, gunwale and keelson angles, and the side girders and angles were included in the calculation for the moment of inertia. The calculated and observed positions of the neutral axis are thus in fairly close agreement.

(b) The actual vertical distribution of strain over a transverse section was approximately in accordance with the linear law assumed in the theory of bending.

(c) The modulus of elasticity \( E \) was obtained by equating the sum of the moments about the neutral axis of the stresses deduced from the observed strains to the bending moment.

(d) The value of \( E \) was also deduced from the deflections by means of the formula

\[
E_0 = \int \frac{M}{I} \text{ } dx \text{ } dx
\]

and its value under a sagging moment is in agreement with that found by (c). Under a hogging moment the mean value obtained from the deflection is less than that from the strain, showing that the curvature obtained from the deflections is greater than that to which the structure is actually bent.

The table at the top of the following page shows the values obtained for \( E \), the modulus of elasticity.

By observing the deflections of two vessels when loaded with ballast, the following values for \( E \) were obtained by T. C. Read and G. Stanbury (Trans. Inst. Nav. Archs., 1894), and are given for purposes of comparison:
STRENGTH

SHIPBUILDING

The maximum stresses above are approximate, and the values given below per square-inch units are

<table>
<thead>
<tr>
<th>Condition</th>
<th>Stress—Tons per Square Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keel.</td>
<td>Deck.</td>
</tr>
<tr>
<td>Maximum observed stresses when sagging</td>
<td>9 T.</td>
</tr>
<tr>
<td>Maximum observed stresses when sagging</td>
<td>5 T.</td>
</tr>
<tr>
<td>Calculated stress (sagging) when in wave bow of height</td>
<td>7 T.</td>
</tr>
</tbody>
</table>

C. = Compressive.  T. = Tensile.

It appears from these experiments that (at least in ships of similar character to H.M.S. "Wolf") the stresses corresponding to any particular external conditions closely agree with those calculated from the assumed moment of bending; on the other hand the waves encountered during the sea trials were such that the maximum stress then obtained was considerably less than that in the condition assumed for the standard calculations. Finally, the material of the ship was subjected in dock to a tensile stress of nearly 9 tons and a compressive stress of nearly 7 tons per sq. in. without distress.

While dealing with longitudinal bending, some of the refinements suggested for calculating stresses among waves may be cited, although the additional labour involved in their application has prevented their introduction in general practice.

Since the distribution of pressure in the water of a wave system differs from that in still water, the buoyancy of a vessel or the resultant vertical thrust of the water is then not equal to the weight of the water displaced, and the position of the ship when in equilibrium is the moment of the stresses upon it is greatly in consequence increased. By assuming the pressure at any point of the water to be in accordance with the trochoidal theory of wave motion, and undisturbed by the intrusion of the ship, the equilibrium position can be obtained and the modified stresses evaluated. This process was first applied to ships by Mr. W. E. Smith (Trans. I.N.A., 1883), who obtained the mathematical sum of the sagging and hogging moments on vessels placed in the trough by the forward end of a wave, thereby eliminating the effect of the distribution of weight; and compared it with the sum of the moments as ordinarily obtained. The correction for the ships considered involved a reduction of the bending moment to about 3/4 of the value calculated in the ordinary manner, and in a torpedo-boat destroyer a reduction of about 10% has been obtained. This reduction increases as the draught and fullness of the ships are increased, and the bending moment on a square-bilged ship deeply immersed is almost uninfluenced by wave motion, since the reduction in orbital motion at considerable depths below the surface ensures the bottom of a fairly deep ship being in comparatively undisturbed water.

In the foregoing the vessel is assumed to occupy at every instant a horizontal position on the wave with the correct displacement; a ship proceeding perpendicularly to the crests of a wave system will, however, undergo a heaving and pitching oscillations which lead to a further modification in the bending moment obtained (see paper by T. C. Read, Trans. I.N.A., 1890). Considering first the effect of pitching only, imagine the ship at her proper displacement (allowance being made for the angle of wave of the vessel as before), but momentarily out of her correct trim; the longitudinal restoring couple, due to the wedges of immersion and emersion, is balanced by the direct and indirect mass-accelerations about midship. The influence of the forward and after mass-accelerations about midship is then due to the directly and the indirectly reflexed acceleration to the corresponding parts of the ship.

These moments are therefore equal and opposite for each half of the ship and have no influence on the midship bending moment. It appears, therefore, that in the majority of ships whose departure from longitudinal symmetry is slight, pitching has little effect on the bending moment; nevertheless it considerably increases the bending moment at the ends.

The effect of heaving is investigated by obtaining the positions of equilibrium of the C.G. of the ship when on wave crest and in wave trough; intermediate positions of equilibrium are assumed to be given by y = a sin T = 

\[ W \text{ is the displacement,} \quad \rho \text{ the tons per foot immersion; the resistance to vertical motion being neglected. When} \quad T \text{ and} \quad T_1 \text{ are nearly equal, allowance has to be made for the resistance by using a process of graphic integration. On applying the correction to two} \quad T, \text{ and comparing the bending moments in their positions of the wave, given by the formula, with those in the equilibrium position, the effect on the maximum hogging moment was found small, but the sagging moment moderately fine vessel was increased by over 20% and that of a full vessel by about 10%}.

Allowance has also been made for the effect of the superposed heaving and rolling oscillations undertaken by a ship moving obliquely across the crests of a wave system (see papers by Captain Kriloff, Trans. I.N.A., 1896 and 1898).

The maximum calculated stress on vessels inclined to considerable angles of heel has been found in some instances to be slightly greater than that for the upright condition; and the stress on the material towards the ends is then usually more nearly equal to that amidships. In addition to the direct stresses on keel, bottom, and upper works arising from longitudinal bending, shearing stresses are experienced which in some cases are of appreciable magnitude. The intensity of shear stress in the side plating is equal to \[ \frac{FA^2}{2H} \text{ where} \quad F \text{ is the shearing force over the transverse section. At the moment about the neutral axis of the sectional area above or below a horizontal line through the point considered, and} \quad H \text{ the thickness of side plating. This stress is usually greatest at or near a quarter of the length from either end and at the height of the neutral axis, since here the relative moment of inertia of the two shearing stresses is the greatest in case the thickness of plating and arrangement of riveting have to be specially considered in relation to these shearing stresses. The shearing stresses due to transverse bending are not, in general, capable of definite determination; as, however, they are frequently severe when the ship is in dry dock, and may also attain considerable magnitude during heavy rolling, a means of comparing the transverse strength of vessels is of some interest. A transverse bulkhead forms a region of almost infinite transverse stiffness, and it is therefore difficult in ships internally subdivided by numerous bulkheads, to determine how far the stresses in intermediate sections are influenced by the neighbouring bulkheads. In many vessels carrying cargo, however, in which transverse bulkheads are widely spaced, a section midway along a hold may be so far removed from all bulkheads as to be uninfluenced by their local support; and the following method has been proposed for comparing the transverse strengths of such ships.}

Transverse bending.

A frame and a strip of plating one frame space in width are regarded as a stiff inextensible bar subjected to the known external forces and to the unknown tension, shearing force, and bending moment, at any fixed point. Let OP (fig. 60) be a portion of the framing under consideration, O being the keel, and Ox, Oy, horizontal and vertical axes. On consideration of the forces on the arc OQ, which are in
If the period of the force synchronizes or nearly synchronizes with the natural period of the structure, the amplitude is considerable, but otherwise it is of relatively small amount. If, therefore, the natural period of vibration has been found for a ship, the causes of vibration at various speeds can be readily traced, since marked vibration is usually attributable to a synchronizing source.

Vibration in a steamship is due to various causes, the principal of which are:

1. The reciprocating parts of the engines, if unbalanced, cause vibrating forces and couples in the ship's line and of two frequencies, one equal to, and the other twice, the speed of revolution, the latter being due to the secondary action introduced by the connecting rod. In twin-screw ships torsional oscillations in transverse planes may also require when the engines are working in opposite phase.

2. The rotating parts of the engines cause vertical and horizontal oscillations of frequency equal to the speed of revolution.

3. The vibration of the smoke, O, Q, R, due to causes, tends to cause torsional oscillation of the same frequency, particularly in single or two-cylinder engines.

4. Vibrations, principally at the stern, may result from an unbalanced and not recognized vibrations similar to those caused by the rotating parts of the machinery.

5. A screw propeller which experiences uneven resistance during its revolution is the cause of vibrations, whose frequency is the product of the revolution and the number of blades. Such resistances occur when (1) the blades pass too close to the hull; (2) when the screw breaks the surface of the water; and (3) when the supply of water to the propeller, that is, to the screw, is prevented from passing through the motion of the ship at the null surrounding the water. A thin uniform rod vibrating laterally has a minimum frequency (per minute) equal to \( \sqrt{\frac{4}{\pi^2}} \) (\( \sqrt{1020} \)) in this mode of vibration there are two nodes situated at a distance 224 L from either end. Vibrations of a higher order having three, four or more nodes are also possible, the frequencies increasing approximately in the ratio 1:2:3:5:4 &c. These variations are dealt with below; to obtain a corresponding result being obtained by direct mechanical investigation, recourse is therefore made either to direct experiments on ships, or to a "dynamic model. The instrument used for model testing is a smooth capsule with a weight suspended at one or more or more points, and held laterally in position, by springs, so as to have a long period of oscillation; pens or pencils attached to the weight record the vibrations upon revolving cylinders fixed to the vessel and fitted with time records. The formula (of the same form as that for a rod)

\[
N_n = \frac{E}{\pi^2 \rho W T^2}
\]

where \( N_\text{frequency per minute} \), was used by Dr Schlick for the vibration of ships; the value of e found by him for vertical vibrations was 1500 in vibration, while the value of 1400 was found when vibrations of the same type were measured in the model. The nodes were found to be at about a third of the length from the stern and about a quarter of the length from the after perpendicular. The frequency with three nodes was slightly less than the frequency of the unidirectional vibrations. The general and torsional vibrations were also observed; their minimum frequency is, however, generally considerably more than that of the vertical vibrations, and they are therefore generally of much smaller amplitude. (See papers in Trans. Inst. Nav. Archs. from 1884 to 1901, by Dr O. Schlick, and in 1895 by Mr A. Mallock.) The "dynamic model," suggested by Mr Mallock, forms a convenient means of approximately investigating the positions of the nodes and the frequencies of vibration of a ship. The formula given above suggests that by making a model of material whose modulus E and density \( \rho \) are known, and on a linear scale of \( \frac{1}{n} \), then if \( N_n \), \( \rho \) refer to ship and model,

\[
N_\text{model} = \frac{N_n \nu^2 \rho_w \rho_m \rho_w}{\frac{1}{n}^2 \cdot L \cdot \rho_m \cdot W_m}
\]

This relation is unaffected if the lateral distribution of material is changed in the model, provided that the weight of the model per foot run are unaltered at each point in the length; the model is therefore made solid and of rectangular or other convenient section, so that

\[
I_{\text{model}} = \frac{1}{12} \cdot \frac{1}{n}^2 \cdot L \text{ and } W_{\text{model}} = \frac{1}{12} \cdot \frac{1}{n}^2 \cdot \rho_m \cdot W_m
\]

the weight being also similarly distributed in a longitudinal direction over the ship. The vibrations of the vibrations obtained are by trial, giving the highest frequency for the model of vibration considered; these points are the nodes corresponding to the free vibrations when the model is unsupported, and the influence of the supports is thus eliminated. On comparison with the results obtained in a ship, the reliability of such model experiments has
"THUNDERER." Survey of track traversed by ship under the action of 31° of helm corresponding to the initial speed of 10.5 knots.

Fig. 61.

The curve given is that described by the pivoting point. The first time round is shown in a drawn line, the second time round in a dotted line.

A, Position of ship's centre of gravity when helm is half over 12 32 52
B, Position of ship's centre of gravity after she had turned through the first 180° 12 35 23.4
C, Position of ship's centre of gravity after she had turned through the second 180° 12 38 4
D, Position of ship's centre of gravity after she had turned through the third 180° 12 40 46
E, Position of ship's centre of gravity after she had turned through the fourth 180° 12 43 28

Speed on final circle, 7.14 knots.
Diameter of final circle, 1240 ft.
Tactical diameter, 1315 ft.
Time of turning through 180°, 2 min. 31 sec.
been verified in a few cases, the value adopted for \( \mathbf{E} \), being that for a riveted structure or about 10,000 tons per square inch. In some model experiments made in the laboratory, the frictional resistance of the rudder to the water was found to be reduced, and owing to the rapid damping of the free vibrations and to a virtual increase in the mass-inertia caused by the concomitant motion of the surrounding water, which also reduces the rudder's inertia. The results of these tests are given in the table, and the dynamic model. The extent to which such results require modification cannot be determined until further experiments have been made.

For an approximate investigation of the forces in operation during the turning of a ship, the motion may be divided into three stages: (a) when the ship is still; (b) when the rudder is put on, and the pressures on the hull are those necessary to produce angular acceleration; (c) when the accelerative forces are combined with those caused by the resistance of the ship to rotation; and (d) when finally turning uniformly in a circular path. The characters of the forces acting during the stages (a) and (c) cannot be ascertained, and the type of motion under the complex conditions (b) and (d) will consist of a gradual replacement of the motion at (a) by that at (c).

Initially, when turning the helm over, the change in the stream line motion at the stern produces a pressure upon the rudder normal to its surface, which forms a second point of force at the rudder, being brought into action in the manner described by relation (13). After the deadwood is reached, there is generally an additional pressure upon the after deadwood caused by the widening of the stream lines approaching the rudder. The resultant of these pressures, and the force due to the unsymmetrical distribution of the screws, is a force \( F \) at the stern which may be resolved longitudinally and transversely into \( R \) and \( Q \), where \( R \) tends to reduce the speed of the ship and \( Q \) to turn the ship outward (fig. 63). The proportion of the force \( F \) due to the deadwood is unknown, but it is small in recent warships in which the after deadwood is considerably cut away and the portion due to the rudder pressure can be calculated from the resistance of experiments on plates moving obliquely through water.

If \( A \) is the area of the rudder in square feet, \( \theta \) the angle of helm and \( V \) the relative velocity in knots in which the water impinges on the rudder (assumed equal to the speed of the ship increased by the slip of the screw), then \( P \) (in tons) = \( k \cdot A \cdot V \sin \theta \), approximately where the mean value of \( k \) for small inclinations is \( \frac{1}{4} \) for a square rudder and about \( \frac{1}{10} \) for a rectangular rudder of breadth twice its depth \( k \) also varies with the angle of incidence; when the latter is greater than about 35°, the above formula becomes no longer applicable.

The conversion of the stream lines at the stern due to the angle of run, and the oblique and variable motion of the water caused by the screw propellers, modify the value of \( k \), as applied to the determination of the rudder pressure; but it is evident that with ships of fairly similar types the force causing initial turning varies with the shape of the rudder and approximately as its area, the angle of helm and the square of the speed.

The initial angular motion of the ship is due to the action of the component of the pressure on the rudder and deadwood, which is equivalent to a force \( Q \) at the centre of gravity tending to produce a lateral translation of the ship as a whole and a couple \( QBG \) tending to rotate the ship about the centre of gravity. Both the lateral and angular movements of the ship are accompanied by the motion of a mass of water, which may be regarded as virtually increasing the mass of the ship. The initial motion of the ship results from these quantities, thus increased, by \( W \) and \( I \) respectively, the initial lateral acceleration of the ship is equal to \( \frac{Q}{W} \), and its lateral speed at the end of a short interval of time \( \Delta t \), during which \( Q \) and \( W \) may be supposed to remain constant, is \( \frac{Q}{W} \Delta t \). At the same instant and under similar hypotheses the angular velocity about the centre of gravity is \( \frac{QBG}{W} \Delta t \). Hence a point \( O \) forward in the middle line of the ship taken so that \( \frac{Q}{W} \) CG BG \( O \) and \( \Delta t \) is, at the instant considered, at rest except for the motion of the ship ahead, which is due to the original speed of the ship before putting the rudder over, and the instantaneous motion of the component \( R \) of the rudder pressure during the time \( \Delta t \). The instantaneous centre of the motion of the ship must therefore be somewhere in the perpendicular at \( O \) to the line of motion of the ship, the point \( O \) thus corresponding to the "pivoting point" as previously defined for the steady motion of the ship in a circle.

The actual position of \( O \) cannot be calculated, as it depends on the previous motion of the ship, and \( W \) is a difficult term, not expressible in terms of, the moment of inertia \( I \) and mass \( W \) of the ship itself, but from the method by which it is determined it is clearly forward of the centre of gravity and so far the investigation is confirmed by observation, which shows that the first effect of putting the rudder over is to cause the stern of the ship to swing towards the side to which the helm is moved to a much greater extent than the bow moves forwards the ship's head.

If the time \( \Delta t \) be supposed to become infinitesimal, and the effect

---

1 Similar experiments had been made by M. Ribes on the "Eloine" (Revue maritime et coloniale, 1876).
"Yashima" Survey of track traversed by ship under the action of 32° of helm, corresponding to the initial speed of 17.5 knots.

A, A, A, Curve described by pivoting point.
B, B, B, Curve described by centre of gravity.
C, C, C, Curve described by outer edge of stern.
D, Position of ship's centre of gravity when helm commenced to move over.
E, Position of ship's centre of gravity when helm had reached 32°.
F, Position of ship's centre of gravity when vessel had turned through 90°. Time from D, 49½ sec.
G, Position of ship's centre of gravity when vessel had turned through 180°. Time from D, 1 min. 20 sec.
of putting over the rudder being regarded as an impulse (measured by the finite product \( P \cdot d \)), delivered at the stern of the ship normal to the rudder, the resistance of the water to the rotation of the ship may be neglected, and the instantaneous centre of the turning motion (as distinguished from a location ahead) is the point \( O \) on a straight line \( GB \) perpendicular to the direction of the impulse, and such that \( GO \cdot GB = \frac{P \cdot d}{W} \); an expression for the position of \( O \) of the same form as obtained before.

In this case \( \frac{P}{W} = k \), where \( k \) is the radius of gyration of the ship about a vertical axis through the centre of gravity, and the point \( O \) is obtained by the geometrical construction shown in fig. 64, given by Professor W. M. Rankine, where \( GL = k \) and is perpendicular to \( GB \), and the angle \( \phi \) is the angle of heel.

The value of \( I \) is dependent on

1. the distribution of weight in the ship, being large when heavy weights are situated near bow and stern,
2. the length of the ship, and
3. the underwater form near the ends, being relatively large in fine ended vessels with large areas of deadwood. \( W \) is also dependent on the shape of the ship under water.

The handiness of a ship's rudder to respond to slight alteration of helm is generally denoted by the relationship \( Q \times OB = Q \times GB \times \cos \phi \), the moment of rudder pressure for a given angle, and \( I \) the virtual moment of inertia. If \( I \) is comparatively large, the vessel will turn slowly under helm until, gathering way, the rapidity of its motion is so large as to limit the value of \( I \) by the change of course to that desired. Unhandiness is usually experienced at low speeds (\( Q \) being then small) and also in shallow water, where the pressure is increased by the restriction in the flow of water from one side of the ship to the other. Improvement in the handiness in these circumstances has been obtained in certain ships with unbalanced rudders by filling in the after deadwood, the loss from the increased inertia being more than compensated by the greater turning moment due to the pressure on the after deadwood.

When the ship is turning steadily in a circle, if \( C \) (fig. 64) is the centre of rotation, and \( CO \) perpendicular to the middle line of ship, the motion is equivalent to a progression ahead with speed \( V \) (which is considerably less than the initial speed), combined with a rotation about the \( O \) pivoting point \( O \), which is generally situated slightly abaft the bow; the drift angle \( \phi \) is given by the relation

\[
OG = OC \tan \phi.
\]

The time of turning through 180° is \( \frac{\pi}{r} \) where \( r \) is the radius OC.

The forces acting upon the ship are now—the pressure \( P \) on rudder and deadwood (if any), the centrifugal force \( CV \cos \phi \), the thrust of the propellers, and the pressures on the hull. The last named consist of forces \( P \) forwards before \( O \), and \( P \) inwards about \( O \); of these \( P \) is usually negligible in amount; \( P \) cannot be directly estimated, but since work is done against it by the transverse forces of the after part of the ship, a reduction of speed results whose amount is largely dependent on the obliquity of motion at the centre of gravity, that is on the drift angle \( \phi \). Under full rate of speed, the speed when turning to the initial speed is often about 60 or 70\%; but in some quickly turning ships it is less than 50\%.

Of the remaining forces, the transverse component \( W \cos \phi \) of the centrifugal force is known since the final diameter of turning \( 2r \) is approximately the same as the tactical diameter. To obtain \( I \), it is to be observed that the water impinges on the rudder in a direction \( BF \) intermediate between \( BE \) (perpendicular to \( BC \)) due to the ship’s motion and \( BD \) due to the turning motion of the after part of the ship, a reduction of speed is produced that increases the effective rudder angle is approximately \( \theta \). The pressure on the rudder is therefore less than when helm is first put over and is further reduced on account of the diminution in the speed of the ship.

From experiments made with the object of measuring \( P \), when turning steadily, it is found that the pressure recorded was about one-tenth of the value calculated on the assumption of the ship retaining her original speed and effective rudder angle; when helm had just been put hard over, from one-half to one-third of the theoretical pressure was obtained. (See Bulletin of the Association Technique Marine, 1893; American Institute of Naval Arts, and Mar. Eng., 1893.) The transverse forces calculated on this basis for a battleship of 15,000 tons displacement when turning steadily under full helm are approximately—centrifugal force 200 tons, direct pressure 30 tons, total 230 tons, passing through a point on the middle line about 40 ft. abaft the centre of gravity.

The following equations applicable to the state of steady rotation can be obtained from the above considerations, neglecting \( P \), and the small couple due to \( R \):

\[
Q = Q + W \cos \phi.
\]

Fig. 64.

From (i) it is seen that a small vertical diameter will be obtained when \( Q \) is large compared with \( Q \); from (ii) it follows that the point \( M \) (fig. 65) should then be near \( G \). These conditions are realised in a ship whose resistance to leeway is considerable but concentrated about the middle of the length, such, for example, as a yacht having a deep water keel, or a boat with centre board and drop keel. In these instances the vessel may be regarded as virtually anchored by its keel, and the pointing point brought to a position in close proximity to the centre of gravity. Similarly tactical diameters of vessels of ordinary type are reduced by diminishing the resistance to lateral motion at the after end and by increasing it amidships or forward.

During the turning trials made with H.M.S. "Thunderer," observations were made of the heel caused by the transverse forces brought into play when turning. On first putting the helm over a small inward heel caused by the pressure of the rudder was observed; as the rotational speed of the ship increased this inclination was succeeded by a steady outward heel, amounting to about \( 1^\circ \) at knots speed. The latter is caused by the couple formed by the centrifugal force and the lateral resistance diminished by the (usually) small couple due to the rudder pressure. During some more recent trials carried out on the Yashima "the angle of heel was \( 8^\circ \) at full speed. Similar large inclinations are generally found with modern warships having small turning circles and high speeds and whose centres of gravity are also situated high up; at moderate speeds, however, the heel is of the order of a few degrees. During the heels quickly amidships when turning, the opposing couple due to the rudder pressure is removed or reversed and the angle of heel momentarily increased; instances of this have been recorded of ships of exceptional stability and comparatively large "rudder couples" collapsing through this cause.

The rudders used in ships are of two types:—(1) Unbalanced, shown in figs. 65, 67, 68; and (2) balanced, shown in figs. 66, 67 (at bow) and 69 to 74. An unbalanced rudder is in stable equilibrium when amidships and force is to have been applied to the rudder in order to place it at any angle to the middle line. It is supported at its forward edge by means of pintles working in gudgeons on the sternpost and owing to the simplicity of construction and to its property of returning quickly to the middle line when the tiller is released through any cause, this type is preferred when the force required to put the rudder hard over is sufficiently moderate to enable steering to be performed by hand or by an engine and gear of moderate size when steam steering is admissible.

With high speeds and large manoeuvring powers, the unbalanced type is generally unsuitable; and balanced rudders are adopted in order to reduce the force required and the work done to obtain large angles of helm. A balanced rudder is unstable amidships, and, if left free, comes to rest at a moderate angle on either side of the middle line. Slightly less than one-third of the area is usually placed below the axis; in stability tests in which the former has been put forward, difficulty has been experienced in bringing back the rudder to amidships. As shown in the figures, the method of support has varied in different ships; in many cases the upper pintle is placed some 6 or 8 ft. abaft the water-line, and is comparatively narrow longitudinally. Some what greater efficiency when using small or moderate angles of helm is obtained with rudders of this shape; as, for a given pressure...
on rudder, the turning moment on the rudder head, and the power required for working the rudder are also less. A type of balanced rudder devised by Professor Biles and adopted in some large Atlantic liners is shown in fig. 66. Broader and shallower rudders are adopted in warships owing to the necessity of keeping the whole of the steering gear below the water-line for protection.

<table>
<thead>
<tr>
<th>Ship or Class</th>
<th>Displacement in Tons</th>
<th>Length in Feet</th>
<th>Area of Immersed Longitudinal Plane divided by Area of Rudder</th>
<th>Speed in Knots at Commencement of Turn</th>
<th>Advance in Yards</th>
<th>Tactical Diameter in Yards</th>
<th>Tactical Diameter divided by Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dreadnought</td>
<td>17,900</td>
<td>490</td>
<td>37.5</td>
<td>19</td>
<td>490</td>
<td>440</td>
<td>2.7</td>
</tr>
<tr>
<td>Lord Nelson</td>
<td>16,500</td>
<td>410</td>
<td>40.5</td>
<td>17</td>
<td>400</td>
<td>370</td>
<td>2.7</td>
</tr>
<tr>
<td>King Edward VII</td>
<td>16,350</td>
<td>425</td>
<td>44.5</td>
<td>16</td>
<td>430</td>
<td>440</td>
<td>3.1</td>
</tr>
<tr>
<td>Formidable</td>
<td>15,000</td>
<td>400</td>
<td>45.2</td>
<td>14</td>
<td>440</td>
<td>450</td>
<td>3.7</td>
</tr>
<tr>
<td>Majestic</td>
<td>14,900</td>
<td>390</td>
<td>47.8</td>
<td>16</td>
<td>450</td>
<td>500</td>
<td>3.0</td>
</tr>
<tr>
<td>Minotaur</td>
<td>14,600</td>
<td>400</td>
<td>48.4</td>
<td>19</td>
<td>480</td>
<td>600</td>
<td>3.7</td>
</tr>
<tr>
<td>Monmouth</td>
<td>9,800</td>
<td>440</td>
<td>44.5</td>
<td>23</td>
<td>500</td>
<td>700</td>
<td>5.4</td>
</tr>
<tr>
<td>Drake</td>
<td>14,100</td>
<td>435</td>
<td>44.5</td>
<td>23</td>
<td>500</td>
<td>700</td>
<td>4.9</td>
</tr>
<tr>
<td>Diadem</td>
<td>11,000</td>
<td>390</td>
<td>46.8</td>
<td>26</td>
<td>565</td>
<td>920</td>
<td>6.7</td>
</tr>
<tr>
<td>Powerful</td>
<td>14,200</td>
<td>500</td>
<td>50.3</td>
<td>22</td>
<td>800</td>
<td>1120</td>
<td>6.7</td>
</tr>
<tr>
<td>Minerva</td>
<td>5,600</td>
<td>350</td>
<td>48.5</td>
<td>18</td>
<td>540</td>
<td>770</td>
<td>6.6</td>
</tr>
<tr>
<td>Arrogant</td>
<td>7,570</td>
<td>320</td>
<td>33.5</td>
<td>17</td>
<td>330</td>
<td>360</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Helm angle about 35° in all cases.

The unbalanced type was mainly used in British battleships up to H.M.S. "Formidable" (1901) and "Duncan" (1903) (fig. 67). In the "King Edward VII." class (1905) (fig. 68) the rudder was balanced, about one-fourth of its area being placed before the axis; balanced rudders supported at about mid-depth were fitted in the "Yashima" (1897) and the "Lord Nelson" class (1902) (fig. 69). In H.M.S. "Dreadnought" (1905) and recent "battleships" twin-balanced rudders are fitted immediately behind the inner propellers (fig. 70), to obtain additional steering effect from the propeller race, and to enable the ship to be steered from rest in getting under way. Owing to the higher speeds of first-class cruisers, balanced rudders were used; those fitted in "Diadem" (fig. 74), which had, in addition to the usual rudder at the stern, a double-balanced rudder in the bow, which could be drawn up into recesses in the hull; the two rudders were about 3 ft. apart and when in use worked together.

The results of the turning trials of some of the Experimental principal classes of warships are given in the following results:

<table>
<thead>
<tr>
<th>Ship</th>
<th>Battlehip</th>
<th>First-Class Cruiser</th>
<th>Second-Class Cruiser</th>
<th>Torpedo-Boat Destroyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>10° helm</td>
<td>750</td>
<td>1400</td>
<td>1000</td>
<td>700</td>
</tr>
<tr>
<td>20° helm</td>
<td>550</td>
<td>1000</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>35° helm</td>
<td>450</td>
<td>750</td>
<td>600</td>
<td>300</td>
</tr>
</tbody>
</table>

In ships having unbalanced rudders and fitted with hand-steering gear considerable time is required to put the helm hard over at full speed; and consequently the tactical diameter and the advance are greater at high speeds than at low speeds. When steam-steering gear is provided the helm can usually be put hard over in from 10 to 20 seconds at any speed; and in modern warships the speed is found to have little influence on the path described when turning. In the case of torpedo-boat destroyers marked increases in the tactical diameter and in the advance occur at high speeds, the cause of which is not fully known. In such vessels of length 270 ft. and displacement 500 tons, the tactical diameter is about 350 yds. at 30 knots and 300 yds. at 15 knots.

A moderate variation in the mean draught has little effect on the course, but additional trim by the stern results in a greater space being required for turning.

By working one propeller ahead and the other astern the space required for turning may be shortened, but the time of turning is frequently increased. The character of the path described depends on the relation between the revolutions of the screws.

In a single-screw ship, with the propeller well immersed, the upper blades experience greater resistance to rotation than the lower blades, since the forward velocity at the fractional wake is greatest at the surface; hence a right-handed screw tends to turn the ship's head to starboard, and requires starboard helm. The reverse is occasionally experienced when the upper portion of the screw is incompletely immersed.

When a ship is going astern manœuvring is performed with some uncertainty, as the rudder is near the pivoting point.
**Process of Design**

When a shipbuilder is approached for the production of a new ship, he must be informed of the requirements of the case; the kind of trade or service in which the vessel will be engaged; her speed; if she is to be a steam vessel, the distance she must run on ordinary voyages without recoaling; the weight of cargo to be taken or the number of passengers to be carried, and the kind of accommodation required for them. Very frequently these requirements will include certain limits of size, draught, cost, or tonnage, which must not be exceeded. In addition it must be stated in what society, if any, she is to be classed, as this will determine the details of the scantlings to be employed. The shipbuilder will usually have, to guide him, the details of some successful ship or ships previously built to fulfil the same or similar conditions as in the vessel required, and he will probably know what measure of success or popularity the respective features of the vessel or vessels have earned on service. The dimensions can in this case be at once fixed to provide the necessary speed, strength, stability and seaworthiness, and the cost of the vessel determined. If the departures from some similar ship of known and approved qualities are small, the details of the new ship can be inferred directly from those of the similar ship, and modified drawings, specifications, &c., can be rapidly prepared and the building proceeded with. On the other hand, the departures from previous vessels or the usual practice may be very great, in which case much will depend on the shipbuilder's skill and judgment. Outline drawings must first be prepared to the dimensions which may be considered suitable, and the calculations are made on this assumed design. These will include estimate of the weights of the hull, of the machinery, equipment, &c.; and if it is not intended to class the vessel in some registration or classification society, questions of strength will have to be considered. If, however, the vessel is to be so classed, the determination of the structural strength may be omitted, as the scantlings required by the rules of such society are arranged to provide sufficient strength. If the calculations show that the dimensions assumed do not enable the required conditions to be fulfilled, the dimensions must be modified in the direction indicated by the calculations, and the calculations made over again. This process must be continued until a satisfactory result is obtained. As soon as the dimensions obtained for the vessel are found to be appropriate, more complete drawings are put in hand, and the final calculations pertaining to the displacement sheet, weights of hull and equipment, centre of gravity and trim, metacentric diagram and curves of stability and speed, are made. In the design of yachts the views of the owner, especially if he is a yachtsman of experience, must necessarily play an important part.

While President of the Royal Yacht “Alexandra” he was commanded on several occasions to wait on the late King Edward VII. to take his instructions. King Edward took a special interest in the design throughout and sketched in his own hand the shapes of the knee of head and stern. All leading details were shown to him in model and settled by him personally. At an important stage the King consulted the prince of Wales (George V.), whose views as to the principal dimensions were afterwards adopted.

In the case of the construction of large passenger ships the design often originates with the owner’s or steamship company's staff, and in some instances naval architects are employed, completed drawings and specifications being handed over to the shipbuilder with the order for the vessel. In other cases shipbuilders work in close connexion with the steamship companies, and the business relations are of a very simple character, the company being content to send an order, with a note of the principal dimensions and type of ship required, leaving the determination of all details of the design in the hands of the builders. The general practice lies between these two extremes. In any case, complete design drawings and detailed specifications are necessary for the shipyard operations, and if not prepared must be supplied by the shipyard staff. Sometimes outline drawings of the vessel on a small scale—including an elevation or side view, one or two plans of the main deck and other parts, and a short description of the vessel—are first prepared, and are called an outline or sketch design; but usually the information which constitutes a design comprises a sheer, profile and plans of each deck on a 1-in. scale, a midship section on a 1-in. scale, and a complete specification.

The sheer drawing gives the outside form of the ship. It consists of an elevation showing her longitudinal contour; the position of the water-line or line at which she will float, and certain other lines parallel to this and equally spaced below it, which are also called water-lines; a series of vertical lines equally spaced from stem to stern, called “square stations”; and certain other details: of a body plan showing the sectional form of the ship at the square stations, supposing her to be cut by transverse planes at these stations: and of a half-breadth plan showing the form of the ship at the several water-lines, supposing her to be cut by horizontal planes at the levels of these lines. The sheer plans give all the internal arrangements of the vessel, the holds or spaces set apart for cargo, the passenger accommodation, the positions of the engines and boilers, the accommodation provided for the crew, and other principal fittings.

In a warship there are no cargo holds or passenger accommodation, but the distribution of the armament and magazines, the armour, and other arrangements for the protection of the vessel against injury in action are carefully shown, and the appropriation of every portion of the internal capacity of the vessel is clearly indicated. The midship section shows the structural arrangements of the vessel, and usually the scantlings of the most important parts. The specifications is a statement of all the particulars of the vessel, including what is shown on the drawings as well as what cannot be shown on them; the quality of the materials to be used is described, and the scantlings of the same carefully recorded; and it is clearly stated how parts not manufactured by the shipbuilders are to be obtained.

When first formed the objects of register societies were simply the maintenance of a register in which was recorded for insurance purposes the main particulars of each vessel’s hull, machinery, equipment, &c., together with the names of owner, master and builder, as well as a designation or class represented by a symbol, which was intended to give to underwriters an indication of the strength, durability and general seaworthiness of the ship. As a natural sequence it became necessary for the register societies to formulate a series of regulations which would be acceptable to owners and builders of all the structural conditions that would entitle vessels to the highest class and the minimum rates of insurance. The register societies now provide the shipbuilder not only with a record of all the important structural characteristics of the ship, but also with such additional information as he requires for the design of his vessel, but they also fix the quality and strength of the material to be used, the shape of the vessel, the lines of the hull, the riveting of the attachments, the equipment of pumps, anchors, cables, &c., the dimensions and details of the principal parts of the machinery, and all the details of the boilers. Classification societies are thus technical bureaux of the highest value to the shipping community, whose rules are a reflex of the most advanced knowledge and whose methods encourage developments in structural design.

The principal registration and classification societies in 1910, and the number of vessels (fishing and steam) classed, were as follows:

- Lloyd's Register of British and Foreign Shipping, having its headquarters in London: 10,302 vessels.
- British Corporation for the Survey and Registry of Shipping, London, 710.
- Bureau Veritas International Register of Shipping, at Paris: 4,626.
- Germanischer Lloyd, at Berlin: 2,676.
- Norvik Veritas, Christiansand: 1,560.
- Registro Nazionale Italiano, at Genoa: 1,263.
- Record of American and Foreign Shipping, at New York: 1,139.
- Veritas Austro-Ungarico, at Trieste: 1,041.
- Great Lakes Register: 609.

Of these societies, Lloyd's Register, as at present constituted, has existed since 1824, at that date it superseded two rival institutions which had been founded by Kellner of Lloyd's Coffee-house, once situated in Lombard Street, in which underwriters met for business purposes, and from which in 1666 they issued their first publication. The first printed register was issued about 1726, a copy dated 1764 being still extant. The office of surveyors is referred...
to a register book of the date 1751, but there are evidences that in 1768 surveys were superintended by officers of the society. In 1799 surveys were stationed at twenty-four ports on the British coast. In 1827 the first staff of 155 surveyors was distributed over the principal home and foreign ports.

The Norske Veritas was established in 1864 by the various marine insurance clubs of Norway. Each club had its own separate staff of surveyors, on whose report to their club depended the class of the vessel and the premium to be paid. As ships rose in value and reinsurance became the rule, something had to be done for making classification, uniform. The British Bureau Veritas one uniform system of classing and valuing was substituted for the older methods. In the matter of rules this society kept pace with the American Bureau of Shipping, and rules for some small vessels were issued. Steel was accepted in 1867, experimentally, steel being then made by the Bessemer process. Steel by the Siemens-Martin process was accepted for some small vessels in 1877. Engineer surveys were first appointed in 1874. The society is voluntarily maintained by the shipping community.

Its branches are managed by a committee of sixty-one members—composed of shipowners who represent the important shipping centres of the country, and there are branch committees at Liverpool and Glasgow. In technical matters affecting the register the rules for the construction of ships and machinery the committee has the advantage of the co-operation of a body of representatives of prominent shipbuilders, engineers, steelmakers and foremasters, who are specially elected by the leading technical institutions of Great Britain. The society’s rules for steel ships were entirely revised so recently as 1909. The society has a total staff, at home and abroad, of 310 surveyors, of whom 232 are its executive servants.

In the case of a new vessel intended for classification, the plans for its construction are in the first place submitted to and approved by the committee; the building proceeds under the supervision of the society’s representatives of whom the whole is considered the vessel by the committee upon that surveyor’s report. The society issues annually to its subscribers a register book containing particulars of classification of vessels to which classes have been assigned. A register is published for each other class, containing vessels in the world of 100 tons and upwards, excluding those trading on the Caspian Sea, and wooden vessels on the Great Lakes of North America, are included in the work. This register contains particulars of vessels for sale, tonnage, dimensions, ownership, register, and of vessels of 30,000 tons or over. The society also publishes yearly a register of yachts, containing full particulars of the yachts of the world and other interesting data, a register of river vessels, which gives similar particulars of all American and Canadian yachts.

In the United Kingdom for the testing of anchors and chain cables are licensed by the Board of Trade to carry out these tests under the control of the committee of Lloyd’s Register. The assignment of freeboards of vessels, the survey of refrigerating machinery, electric light installation, &c., all come within the scope of the society’s activities.

The Bureau Veritas was founded in Antwerp in 1828, one of its principal aims being to make known to underwriters the qualities and defects of ships frequenting Dutch and Belgian ports. In 1851 the bureau was extended in influence spread to all countries where shipping or shipbuilding existed. It is now represented in over 250 districts comprising about 1,500 ports. In 1851 rules were drawn up for the construction of iron ships, and rules for steel came later. These rules were revised from time to time and recently have been remodelled and extended, so as to apply to vessels up to about 900 ft. in length. Special rules have been issued for vessels intended for navigation in inland waters, for yachts and for motor boats. Each staff of surveyors formed part of the organization from the beginning; and in the later days the professional experience of the surveyors was the only guide as to what was necessary and sufficient. With the lapse of time, and with increased variety of construction and complications of interests, something more than individual judgment and experience became necessary, and with the Bureau Veritas, its temporary quarters, its permanent premises, were introduced, and by their means a greater uniformity of practice was attempted and secured.

The British Corporation was founded in 1850, and obtained its charter in 1854. The British Bureau of Shipping and the assignment of freeboards; its first rules were issued in 1893. Its inception was due to the enterprise and influence of a number of leadin shipowners, shipbuilders and engineers throughout the British Empire, particularly in Glasgow and the West of Scotland, the first aim of the founders being to provide an independent society, thoroughly capable of dealing with the complicated questions which were likely to arise from the use of iron and steel. Among the pioneers who adhered to the British Corporation was the Liverpool Registry, which had then been independent, but had been absorbed into Lloyd’s Register some years before, and it was thought that the enormous shipbuilding interests of the country deserved encouragement. At present, the British Corporation is in the hands of a council, but a great society of Lloyd’s Register would have a beneficial influence on the shipbuilding of the country. Owing to the comparative absence of small vessels the relatively small number of vessels on the register represents 2,331,000 tons. The society is controlled by a committee of forty members—shipowners, shipbuilders and underwriters—and, in addition, there is a branch committee in Italy.
that the machinery also conforms with the requirements of the rules and has obtained a separate certificate.

Certain steam vessels obtain a certificate which includes the following tests for angle bars and other materials:

<table>
<thead>
<tr>
<th>Ultimate Tensile Strength</th>
<th>Elongation in Length of 8 in.</th>
<th>Temperature Test.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lloyd's Register</td>
<td>28 and 32 tons per sq. in.</td>
<td>Not less than 20% for plates $\frac{1}{4}$ in. thick and upwards.</td>
</tr>
<tr>
<td>British Corporation</td>
<td>27 and 32 tons per sq. in.</td>
<td>Sample heated to a low cherry red cooled in water at $80^\circ$ F. and held for a period of $\frac{1}{4}$ h, shall not crack.</td>
</tr>
<tr>
<td>Registro Nazionale Italiano</td>
<td>58,000 and 68,000 lb per sq. in.</td>
<td></td>
</tr>
<tr>
<td>Norske Veritas</td>
<td>26 and 31 tons per sq. in.</td>
<td>20% for plates to 10 mm. in thickness and upwards.</td>
</tr>
<tr>
<td>Bureau Veritas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record of American Shipping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germanischer Lloyd</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For plates less than $\frac{1}{4}$ in. in thickness the first four societies in the above table allow an elongation of 16%, the Bureau Veritas allows an elongation varying between 20% and 10% for plates between $\frac{1}{2}$ and 3 in. in thickness. The Record of American Shipping allows an elongation of 18% for plates weighing $\frac{1}{2}$ lb per square foot: the Germanischer Lloyd allows an elongation of 16% for plates between 10 mm and 5 mm in thickness and 14% for plates between 5 mm and 3 mm in thickness. For steel to be flanged cold Lloyd's Register and the British Corporation require a minimum tensile strength of 26 tons, and for sectional material such as angles, bulb angles and channels the tensile strength may be as high as 30 tons. For iron sheets the tensile strength must be 25 and 30 tons per square inch, with a minimum elongation of 25% on a gauge length of eight times the diameter of the bar. Hot and cold finishing tests for angle bars and other materials are also specified.

The regulation of certain matters connected with the design of merchant ships falls upon the Marine Department of the Board of Trade. The authority of the Board is the Merchant Shipping Act of 1894, which contains the necessary enactments. These matters include the measurement of tonnage, and provision for the safety and comfort of the crew. The former is discussed in a separate article (see Tonnage), but it may be mentioned here that the following countries have at various dates accepted the British rules for tonnage: United States, Denmark, Austria-Hungary, Germany, France, Italy, Spain, Sweden, Netherlands, Norway, Greece, Russia, Finland, Hayti, Belgium and Japan. The amount of deduction for propelling power varies in Spain, Sweden, Netherlands, Greece, Russia and Belgium, but it is granted to owners of ships to have the engine-room remeasured under the rules of allowance for engine-room relating to British ships. Special certificates are at present also issued, on application, to vessels trading to Italian ports, as the British government do not recognize certain sections of the Act of 1894 in regard to deductions from tonnage and exemptions from measurement. Special tonnage certificates are also issued for the Suez Canal, where the measurements of ships and deductions from tonnage are to be regulated by British government rules at least by the Board of Trade in their Instructions to Surveyors. With regard to safety and comfort the surveyors have to see, among other matters, that the crews are properly accommodated and the passengers not too crowded; that the boats and life-saving appliances are sufficient; that the lights and signals are in order; that the freeboard is sufficient and ship otherwise seaworthy; that grain cargoes are properly stowed; and that coal cargoes are adequately ventilated. Any question of doubt as to the strength of passenger vessels has to be referred to the Board of Trade, and in future midship sections, with all particulars marked thereon, are to be submitted in the case of all new, second-hand, or repaired ships. A survey for which passenger certificates are required. A passenger certificate is required whenever a steamer carries more than twelve passengers. In granting it the Board of Trade recognizes five different services of passage, viz., bulk-passengers, first-class passengers, second-class passengers, third-class passengers, and boats from the United States to Canada. The Board of Trade rules for scantlings are not published officially.

A Bill, known as the Load Line Act of 1869, dealing with the load line question, contained a clause requiring the draught of water to be recorded at which a vessel is floating when leaving port. This Bill did not pass; but in the following year the Merchant Shipping Code Bill was brought in, and the same provision, and, in addition, requiring a scale showing the draught of water to be marked on stem and stern post of British ships, became law in 1871. The same Act empowered the Board of Trade to record the draught of all sea-going ships on leaving port by surveyors duly authorized. In March 1873 a Royal Commission on "Unseaworthy Ships" was appointed by the British government, and one of the questions considered was that of the load line. In the final report in 1874 the conclusion was arrived at that a settlement of a load line should, if possible, be guided by the experience of other countries as a first consideration with the British Board. The commissioners were, however, of opinion that an act of parliament, framed to enforce any scale of freeboard, would be mischievous. They recommended, therefore, that the Board of Trade, as would be any universal rule for the safe loading of merchant ships.

In 1874, in a paper read before the Institution of Naval Architects by Mr. B. Martell, who was then the chief surveyor to Lloyd's Register, Tables of freeboard were suggested from data collected at all the principal ports in the United Kingdom. These tables were based on the principle of reserve buoyancy, and were intended to apply to the load line and the freeboard of British vessels. As an indication of the form of the vessel, it was suggested that a tonnage certificate should be used, in order that the tables might be adapted to all sea-going ships, whether at that time at sea or in port. In 1875 a short Act was passed, to remain in force only until October of the following year, which embodied as its chief feature the requirement of what was afterwards universally recognized as the "British Board freeboard." In 1876, after "M.P. the prime mover in securing legislation for the prevention of overloading in British ships," All British ships were to have the position of the "Freeboard line" shown on the side of the ship, and every foreign-going British ship was to have a circular disk marked below the load line, indicating the maximum draught to which it was intended to load. The Act in no way fixed the amount of freeboard; this was left to the owners. The provision was confirmed by a more comprehensive Act in 1876, which extended the compulsory marking of the deck line and disk to all British ships, except those under 80 tons engaged in fishing and the coasting trades, also excepting yachts or war vessels. Before this Act was passed the Board of Trade took action, by appointing a committee to consider the possibility of framing rules for the regulation of freeboard. The committee was to be composed of representatives of the Board of Trade, Lloyd's Register, and the Liverpool Underwriters' Registry. This attempt to establish an authorized scale of freeboard failed. Meanwhile the subject was not lost sight of; the commission of data was continued, investigations were carried out, and six-years later (in 1882) the committee of Lloyd's Register issued freeboard tables, and undertook to assign freeboards, on the basis of the tables issued, on owners making application for the same. In the course of three years 944 certificates were granted to them, and in the case of 775 of this number the owners voluntarily accepted the freeboards assigned. In December 1883 the Load Line Act was passed, which, while retaining the principles of the Act of 1876, required all British ships to be marked with respect to the load line in the United States on the Atlantic, the sailing from or to which in the winter was subject to the ship to a few inches additional freeboard. In 1898 they were further modified (a) to exempt ships over 330 ft. in length from the additional freeboard, and (b) to give some concession to turret-deck steamers; and (c) in some other minor matters. In 1906 the Shipping Laws were amended so that all foreign vessels loading at British ports required to be provided either with a freeboard assigned under the British tables, or under tables of a foreign country, as selected by the British Board. By the British Board of Trade as being equally effective with the British freeboard tables.

In the same year the British tables were revised throughout in the light of the experiences of previous years of practical administration, by a committee whose members were drawn from the Board of Trade and the three assigning bodies—Lloyd's, British Corporation, and the Bureau Veritas. Important modifications were
made in the freeboards for vessels with complete superstructures or a considerable extent of strong deck erections, and in those for large vessels, with the result that a considerable increase was given to the carrying capacity of British shipping. This was followed by a considerable development of the nominal dimensions of the British government—being practically the former committee—and eight German delegates. The conference resulted in an adjustment of the German freeboard tables previously in force, and Germany has carried through the freeboard changes which are recommended by the British government in an Order in Council dated 21st November 1908. France and Holland have adopted the British tables, and the loan an outcome of the work and the changes made in Germany, which will become international. Under the provisions of the Merchant Shipping Act 1906 the British load line regulations now apply to all foreign ships while they are within any port of the United Kingdom.

Ships laden with grain have to comply with rules of the Board of Trade, which provide that for single-decked ships there shall either be provision for feeding the hold, or there shall not be any grain in bulk, the remaining one-fourth being occupied by grain or other suitable cargo in bags, bales or barrels, supported on platforms laid on the grain in bulk. For ships with two decks, grain- or store-cases, and the ports and floors in the scantlings for certain grains are allowed, provided there are separate feeders for hold and 'tween-decks, or else sufficiently large feeders to the 'tween-decks, and fitments made for feeding to the feeders for the holds. In ships with two decks longitudinal grain-tight shifting-boards must be fitted where grain is carried either in bags or bulk; these shifting-boards must extend from beam to deck and from deck to beam, in the grain way, and be fitted between the beams and carried up to the very top of the space. The regulations also impose a fine not exceeding five pounds for every hundred cubic feet of wood carried as deck cargo which arrives in Britain, British or foreign, in any port of the United Kingdom between the 31st October and 16th April, provided no unforeseen circumstances, as defined by the Act, intervene. By deck cargo in this section is meant any deals, batters or other wood goods of any description to a height exceeding 3 ft. above the deck.

In 1890 a committee was appointed by the Board of Trade to deal with the spacing and strength of transverse water-tight bulkheads, the framing and arrangements for the necessary openings in them. A matter connected with this committee related to subdivision which should enable a ship to float in moderate weather with any two compartments in free connexion with the sea. The committee, while recommending the above as a standard for sea-going ships of not less than 425 ft. in length, and for cross-channel steamers irrespective of length, suggested less stringent conditions for sea-going ships of shorter length. There was no suggestion of enforcing such subdivision by law; but as a reward for complying some concession was to be allowed, under the Life Saving Appliances Act of 1888, as to the boats or life rafts to be carried. On the presentation of the report the matter was, however, allowed to drop, and the rules of Lloyd's Register and the other classification societies are therefore the only rules with practical influence. The subdivision required by Lloyd's Register for all steamers carrying more than 64 tons and at each end of the machinery spaces, and a bulkhead at a reasonable distance on either side of the centre line, making four in all. In addition for larger steamers other bulkheads have to be fitted, making the total as follows, namely:

<table>
<thead>
<tr>
<th>Length of Steamer</th>
<th>Bulkheads</th>
</tr>
</thead>
<tbody>
<tr>
<td>255 ft. to 335 ft.</td>
<td>5</td>
</tr>
<tr>
<td>335 ft. to 405 ft.</td>
<td>6</td>
</tr>
<tr>
<td>405 ft. to 470 ft.</td>
<td>7</td>
</tr>
<tr>
<td>470 ft. to 540 ft.</td>
<td>8</td>
</tr>
<tr>
<td>540 ft. to 610 ft.</td>
<td>10</td>
</tr>
<tr>
<td>610 ft. to 680 ft.</td>
<td>12</td>
</tr>
<tr>
<td>680 ft. to 750 ft.</td>
<td>14</td>
</tr>
</tbody>
</table>

The positions of these additional bulkheads, and the height to which they are to be carried, are clearly stated, and the rules are given for their scantlings. These scantlings are suitable for purposes of safety in the event of accident; but it is understood that they have to be considerably increased when the bulkhead is also used to withstand frequently the pressure of oil or water ballast; a deflection of the plating which would do no harm in an emergency once encountered would certainly become a hindrance in the ordinary service of the ship. The foremost bulkhead of the ship receives the name of collision bulkhead, or sometimes fore-deck bulkhead, and is often made of heavy plating. In sailing ships the collision bulkhead alone requires to be fitted.

Practical

Practical shipbuilding requires a knowledge of the properties of the materials used in the construction of ships, and of the processes by which they are produced or prepared for use, so they may be suitably selected for the services for which they are intended; also a knowledge of the methods, means and machinery by which, after delivery of the shipyard, the materials are brought to the desired shape, erected in their proper relative positions, connected together, and completed so as to form a structure which shall fulfil the intentions of the design, whether large or small, merchant ship or warship. The varieties of ships are very great, and are constantly changing, and thus new problems continually present themselves to the shipbuilder. There is also an ever-increasing demand for rapid production, which necessitates a rigorous and constant search for simplification of methods of work, for labour-saving and time-saving machinery, for improved means of handling material in the shipyard, and for adapting workshops and factories which will more completely prepare and finish their various products before dispatch to the shipyard.

Whatever the size of the ship or the type to which she belongs, the general principles of construction remain very much the same in all cases. The following account applies to steel and iron shipbuilding. The external parts—the bottom, sides and decks—supply the strength required for the structure as a whole. The bottom and sides are spoken of as the shell or outside plating, and are, with the decks, kept to the required depth by means of frames, bulkheads, girders, the rafters in a roof or the ribs in the body. These are divided transverse frames or ribs, and beams where they run under the decks. The parts of the frames at the bottom of the ship, where they are made deep and strong to support her when she is docked or grounded, are known as floors, while the spaces between these floors are spoken of as the bilges. The transverse frames and floors are held upright in their proper relative positions by other frames which run lengthwise in the ship; one at the middle line being called the centre keelson, and others fitted at the sides, keelsons, bilge keelsons and side stringers. All the fore-and-aft lines are thus connected, and so bound together. Where tanks for carrying water ballast are built into the bottom of the ship, the centre keelson is called the centre girder, and the keelsons or bilge keelsons the side girders. In large merchant vessels, and in all war vessels, except the smallest classes, an inner bottom is provided for increasing the security against injury by grounding, and against ramming and torpedo attack in war vessels, in addition to forming tanks for carrying water, either as ballast or for use in the ship. In such cases the centre keelson is called the vertical keel, and the keelsons and girders are called keel timbers.

When the framing plates are placed longitudinally along the floors only extend between the keelsons, girders or longitudinals, and are attached to them by angle bars, the floors are called intercostal floors, and the keelsons, girders and longitudinals are said to be continuous; on the other hand, when the keelsons, girders or longitudinals extend only between the frames and floors they are called intercostal keelsons, girders and longitudinals, and the frames and floors are said to be continuous. In war vessels, except the smallest classes, much of the longitudinal framing is continuous; and the transverse framing, for the most part, is built up of angle bars upon the outer bottom and under the inner bottom, with short plates, called bracket plates, between them, attached to the longitudinals by short angle bars. Frames built up in this way are called bracket frames. In mercantile vessels the transverse frames both within and without the double bottom are usually continuous. Besides the transverse and longitudinal framing, there are partitions used for dividing up the internal spaces of the ship, which are called bulkheads; they are partial, complete, water-tight or non-water-tight, as the circumstances of the case require. In warships the transverse bulkheads are so numerous, in order to restrict as much as possible the entrance of water from damage in action, that they go a long way towards providing the necessary transverse strength, and the transverse frames are consequently made of thinner materials and fitted at greater distances apart than they otherwise would be. Transverse frames are from 36 to 48 in. apart in large warships, and from 24 to 33 and sometimes 36 in. in large merchant ships. At the extreme ends of the ship the shell plating on the two sides is attached to forgings.
or castings, which are known as the stem at the fore end, and the stern-frame or sternpost at the after end. The stem of a warship is generally made very massive, and projects under the water so as to form the ram.

The longitudinal framing is carried right forward and aft when possible, and the ends of the several frames are connected together across the ship by strong plates and angles, which are called knees or breasthooks, forward, and knees or crutches, aft. Additional supports, introduced to enable the vessel to withstand the heavy blows of the sea in bad weather, are called piping, stringers, piping knees, and piping beams, panning being the term applied to the movements which occur in the side plating if sufficient strength is not provided. Where the ends of the ship are very full, or bluff, the frames are sometimes inclined, or canted out of the transverse plane, so as to be more nearly at right angles to the plating; such are known as cant frames. At the stern a transverse frame, called a transom, is attached to the upper part of the sternpost to form a base for cant frames, or the overhanging part of the stern which is known as the counter. To assist the beams and bulkheads in holding the decks in their proper positions, vertical pillars are introduced in large numbers; but to avoid the loss of space and inconvenience in handling cargo, ordinary pillars are often dispensed with, and special pillars and deep deck girders are fitted instead.

The steel generally used in shipbuilding is known as mild steel. It is very tough and ductile, and differs from the hard steel, out of materials, which tools are made, in that it will not take a temper, i.e. if heated and plunged into oil or water, the sudden cooling has very little effect upon it, whereas with tool steels a great change takes place, the steel becoming very hard, and usually brittle. This quality of tempering depends chiefly on the amount of carbon in the steel, mild steel containing less than 0.25% of carbon of greater strength than mild steel is used occasionally in certain parts of warships. The extra strength is obtained generally by the addition of carbon, nickel or chromium, coupled with special treatment. The quality of the plates and bars used is tested by cutting off a small piece, say 2 in. wide, and bending them double by hammering, or in a press, until the bend is a semicircle whose diameter is three times the thickness of the strip. The strips are sometimes heated and piled up in a furnace to soften them sufficiently, and then may be cut from either side or the end of the plate. Strips are taken occasionally and hammered into various other shapes while hot and while cold, so as to ascertain the general quality of the material. To ensure its tensility, strips are taken and machined to give a parallel part about 2 in. in width, of at least 8 in. in length. Two centre-punch marks are made 8 in. apart, and the strip is secured in a testing-machine constructed so that the ends can be gripped by strong jaws which do not injure the parallel part. The jaws are then gradually pulled apart, the amount of the pull required to break the strip being registered, and also the extent to which the strip stretches in the length of 8 in. before breaking. The tensile strength varies between 26 and 32 tons per square inch, calculated on the original sectional area of the parallel part before breaking, and the elongation in the 8 in. is about 20%. The standard strength and elongation required by the principal registration societies have already been given. The steel used for making rivets is similarly tested; and samples of the finished rivets are also taken, and hammered into various shapes, hot and cold, to ensure that the material is of the best quality. To test the quality of the steel in the casting, small pieces, which are cast on for the purpose, are removed and tested in the same manner as described for the strips cut off from the plates; they are required to give about the same tensile strength, but a little less ductility, say 10% in length of 20% elongation in 8 in.

The sections of the iron and steel bars in common use are shown in fig. 75, and are named as follows:

B. T (Tee) bar.  F. Plain bulb bar.  K. Moulding.

The vertical, or central, portion in the I, T and bulb sections is spoken of as the web, and varies from about 3 in. to 9 in. in depth; the horizontal parts are called flanges; in an angle bar, both parts of the section are called flanges. The flanges vary in width from about 2 in. to 7 in. in the angle bar, and from 3 in. to 6 in. in the others. The thickness varies from about ¼ in. to ¾ in. These dimensions taken together are called the scantlings of such material. The thicknesses of the plates in common use generally lie between ⅛ in. and 1 in. Thicker or thinner plates are obtainable, but are not often used for merchant ships. These plates of varying sizes as required, the tendency being to use very large plates where possible, and widths of 5 ft. to 7 ft. are used in lengths of from 40 to 20 ft. Angle bars are used in lengths of from 20 to 80 ft. as required, or as may be limited by the means of transport between the steel works and the shipyard.

The various plates and bars are connected together by means of rivets of various forms. Specimens of the common kinds are shown in fig. 76. The heads and points have distinctive names, as follows:

(a) Countersunk head, chipped flush.  (d) Ordinary countersunk head.
(b) Snap head.  (e) Snap head with conical or swelled neck.
(c) Pan head with conical or swelled neck.  (f) Pan head.
(g) Countersunk point.  (g) Countersunk point.
(h) Rough hammered point.  (i) Snap point, hand work.
(j) Snap point, machine work.

The pan head rivet (k) with conical or swelled neck is the most commonly used, as it is convenient to handle and gives good sound work. The rough hammered point (h) is also very commonly used, is very effective and is readily worked. The pan head (d) and snap head (c), without cones under the heads, are only used for small rivets; the heads (A), (B), (C), (D), are used where considered desirable for appearance' sake, but (C) and (D) are also adopted when the riveting is done by hydraulic machinery, in which case the snap point (i) is also used. The countersunk point (g) is also used. The countersunk point (g) is used on the outside of the shell, and in other places where flush work is required. The snap point (l), for internal hand riveting, is used where desired for appearance, instead of the rough hammered point. The rivets have a diameter from about ¼ in. to 1 in., and the lengths are as required to go through the holes and give enough material properly to form the points. The diameter of the rivet is settled according to the thickness of the plates to be connected, being generally about ⅛ in. more than the thickness of the separate plates. The distance from centre to centre of the rivets is spoken of as the pitch, and is generally expressed in diameters. For connecting plates and bars in the framing, the pitch of the rivets runs generally to 7 diameters; for securing edges which must be water-tight, the pitch is from 4½ to 5, and, if they are to be oil-tight, 3 to 3½ diameters. In butts and edges of shell-plating the pitch varies from 3¾ to 4½ diameters.

Fig. 75.

Fig. 76.
In some positions rivets like the above cannot be driven into place and properly hammered up; resort is then made to rivets which have screwed points, called *tap rivets*, shaped as shown in fig. 77. That shown at (a) is used where it is necessary to make the surface flush; at (b) it is not necessary to remove the rivet for the purpose of obtaining the angle of plating; and when drove right up, the square heads fit into the holes cut in the plate and the surface hardened smokeless rivets of positions patterns (a) or (c) are used as may be required. The bodies of the rivets may be replaced by V-shaped cutters for this purpose. When the plates and bars leave the shearing and punching machine their edges are rough and slightly disordered, to remove which it is necessary in many cases to grind or smooth them. This is usually done by shearing edges provided for the purpose. In the most modern types the cutters are duplicated and the machine arranged to cut both ways. When it is required to cut a square edge free from flanges a small angle of cutting may be used. The machine is frequently used, but it is more usually done in a planing machine.

In shipbuilding a great deal of drilling must be done by hand, but, where it is possible, drilling machines are employed, and in a modern shipyard may drill a number of holes at the same time. For countersunk work it is necessary to make the hole funnel-shaped, as will be seen from fig. 77. The shape is a rapidly given to the holes already punched or drilled by means of a special drilling tool, which can be very easily and rapidly manipulated. The use of portable drills, to avoid hand labour, is rapidly increasing, and several types are manufactured by electric motors. An electric eye, which can be made to operate on the bar. The inclination of the roller is varied as the bar passes along, a dial and pointer giving the angle of bevel at all times, and a lever to hold it in the appropriate setting. The electric eye on the dial, manipulates the machine so as to give it the required bevel. It is afterwards completed on the slabs, the form being taken from the scrive-board in the usual way.

Another modern appliance is the shearing machine, which is used chiefly in connexion with the lapped butt of shell and other plating. Before its introduction it was usual to bring the ends of the plates together tightly and then, by a device called cover plates, to insert the latter and allow it to be driven into both plates with a proper arrangement of rivets (see fig. 78). It is now more usual in merchant ships to work overlap butts, some half of the weight of the butt-strap and riveting and other work being saved by this arrangement. As it is nearly impossible, as may be quite sightly, the difficulty with this system is that the passing plates on each side have their edges lapped over the ends of the lap, and in order that they may be brought close some machining is required; this is usually done by machining away the corners of the projecting butt so as to produce smooth surfaces for the side laps (see section at A, B, fig. 78). The machine used for this operation is a large shearing machine of the type shown in fig. 79, which can be placed in the shipyard, with the plates mounted on it, and one at a time they can be removed from behind and then passed through the machine. As already described, the usual method of working the shell-plating is by alternate inside and outside strakes of plating, the outside strakes overlapping the inside plates, and the same between them and the frames being filled in by ships or liners. These lines throughout the ship amount to a considerable weight, and the object of the jogging is to do away with the necessity for them. This is done by machine; heavy-pegging machines. It is described in section 5, fig. 79; the inside plate lies in the recessed portion of the plate formed by the jogging process, and the outside strakes are of the shell-plate type and are usually simulated by the other strakes, in which the inside of these strakes is the same as that used on the plates. The advantage of this system is very great, and it is very popular with shipbuilders. It is also employed in the manufacture of many other parts of merchant ships.
PRACTICAL]

SHIPBUILDING

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purpose they are intended, so that they can be readily identified
and removed without loss of time. When required, they are taken
from the racks, and the edges, butts and rivet holes carefully
hoisted, except for plates under the bottom and counter, where a
wire rope is used.

At Newport News, in Virginia, the structures are differently
arranged, being on the cantilever travelling-crane principle. There
are five such structures in the yard; three of them are wood, the
last two of steel. The largest is 700 ft. long. One trestle structure, or
gantry, serves two building berths, and runs longitudinally between

marked upon them before they are taken to the machines where
the shearing, punching, drilling, shaping, &c., are carried out, after
which they are taken to their proper position in the
ship.

In many shipyards great attention has been given
to the questions of the economical handling of the
material, and very costly and novel appliances
are to be found in these yards for the
purpose. As an example mention may be made of
the overhead cranes fitted at the Union Ironworks of San
Francisco. A framework of wood is built up over the
entire building berth, the structure being well braced in
all directions for carrying two travelling girders.

There are four building berths fitted in this manner,
and the latest has a length of 408 ft., a clear breadth
of 80 ft., and clear height of 72 ft. A swing crane of
50 ft. spread at each end of the erection increases its
effective length to 500 ft. Each of the travelling girders
carries a trolley, with motion transverse to the ship;
five tons can be so lifted, and parts of the ship's structure
not exceeding this weight can be taken from the
ground anywhere in the neighbourhood of the structure
and conveyed to any desired spot in the ship. The
driving power is electric. The longitudinal travel of
the girders is 660 ft. per minute; the transverse travel of the trolley
and speed of lift, each 90 ft. per minute. A manila rope is used for

FIG. 78.—Details of Shell-plating.

Section shewing Ordinary Type of Plating

Section shewing Joggled Plating.

Section shewing Joggled Frames.

FIG. 79.—Methods of working Shell-plating.
the two. On the gantry is mounted a double cantilever crane, having an effective reach of 95 ft. on each side of the centre; this outreach is sufficient for a ship 70 ft. broad on each side of the travel. These cantilevers and other American ships. The load that can be raised is 15 tons, and if necessary a bulkhead up to that weight can be lifted bodily into place. The speed of lift for this weight is 100 ft. per minute, and the hoist, which rides along side the gantry and can be swung to either of the two ends of it, can be raised or lowered at the rate of 500 ft. per minute, and of the whole crane longitudinally is 400 to 700 ft. per minute. All movements are made by electric power. Similar gantries are also to be found on Messrs. Swan, &c.-Tyne, but not so extensively used.

The view shown in fig. 80 (Plate VIII.) represents one of these structures as fitted in Messrs. Cramp's shipyard in Philadelphia. At the yard of Messrs. C. S. Swan & Hunter, on the Tyne, similar structures have been used since 1894; besides carrying cranes, these have standards and stiffening girders, from which ships under construction are shored for fairing. Roofs and sides are fitted to protect the ship, and the arrangement for distributing the weight of the cranes to the ground is ingenious. It has three in number, and serve for two berths; they are formed of steel lattice-work, with standards mostly 20 ft. apart. The clear height of roof is 83 ft., and clear breadth of berths 68 ft. and 73 ft., a roadway on the ground level is left free on each side of the berths inside the standards. Two revolving 3-ton electric cranes travel along paths suspended from each roof; their jibs have sufficient radius to lift material from the roadways and deposit it at the centre of the ship's building. The longitudinal speed of these cranes is 300 ft. per minute; speed of lift, 100 ft. per minute.

A third berth is served by a travelling cantilever crane on top of the adjoining hold, whose crane travels from 700 ft. and above the yard to the building, was introduced in 1897 (see fig. 81, Plate VIII.). In this case the structure takes the form of a travelling gantry or bridge over the building berth, the legs running on rails at a great height above the ground, and the gantry, which is traversed by the crane, has three traversing cranes and four 4-ton swing cranes. It was designed to facilitate the lifting of plates and portions of the structure into position, and also to support the derelict riveting and other appliances for the carrying out of the work. The success of the appliances, first used in the "Oceanic," has led to a further extension for other ships in hand.

**Course of Construction**

The first steps taken on the receipt at the shipyard of the design drawings and specifications, which have been generally described on page 957, have for their object the provision of detailed drawings of the structural arrangements, which will enable materials for the various parts to be ordered from the manufacturers, and of information for the guidance of the workmen in erecting the structure.

A wooden model of half the exterior surface of the ship, called the "half-block" model, is immediately prepared from the sheet drawing, generally to a scale of ½ in. to the foot for a large ship and a somewhat larger scale for a small one, and on its surface are carefully drawn the main frames, the edges and buttoes of the upper bottom or shell-plating, together with the positions of decks, longitudinals and other features which influence the detailed arrangement of the framing and shell-plating, the particulars of which are fixed by the draughtsmen of the ship and the midship and other sections. The work on this model is carried out concurrently with the laying off of the ship, which will be described presently, so as to be complete by the time the latter is sufficiently far advanced to enable full-sized measurements of the breadth of the plates to be obtained. The lengths of the plates are then measured from the model and the breadths from the mould loft floor, a small surplus on the net measurements being allowed to provide for inaccuracies; and the whole of the outer bottom platting ordered from the manufacturers.

The whole of the framing is also ordered, the lengths of the various parts being measured from the model, and should the case be necessary, the parts are sent to the builders and the parts to be made of the protective deck if it should have much curvature or sloping sides. All details of plating, framing, beams, carlings, hatchways, &c., will be shown on these models, and the dimensions of all the parts will be carefully measured off and the material ordered of the manufacturers; the breadths of the plating being obtained as in the case of the outside bottom plates.

For flat or nearly flat surfaces such as flat keel plates, vertical keel, bulkheads, decks, engine and boiler bearers, &c., the detailed arrangements of plating and frames are made on drawings, from which the dimensions are taken for ordering the material from the manufacturers; while the drawings themselves constitute working drawings which are issued for general guidance in building the ship.

Drawings of details of important structural castings or forgings, such as the stem, sternpost and shaft brackets, are also among the earliest to be taken up. The draughtsman is almost as busy when, they are large and complicated castings as in a warship, cannot generally be completed without information obtained from the mould loft floor.

Laying off is the name given to the process of drawing the lines of a ship to full size in plan and elevation in order to determine the exact dimensions of the most important and fundamental parts of the structure. The necessity for drawing the lines arises essentially from two causes: first, the measuring of a whole section of any horizontal plane parallel to the keel, and of such a size as to take in the full depth of the ship in its width. The building or room in which the floor is situated is called the "mould loft," and is an important adjunct to the shipyard drawing office.

The rationale of the methods of projection of points and lines and rabatment of planes used in laying off is subjected to a detailed examination in the various cases (figs. 82 to 92, illustrating the method of laying off), but it may be summed up in the statement that it is confined to a description of some of the detailed problems which occur in actual practice, the solutions being often approximations which do not find wide application.

In different localities and in the construction of different types of vessel, the extent to which the process of laying off to full size is employed varies considerably. In some yards laying off on a large scale is carried out on all large vessels, and even little vessels are laid out full size; in others it is only applicable to the larger vessels. The present work is limited to the Great Lakes vessels employed on the Great Lakes lakes, and has been selected for the sake of the simplicity of the methods used, for the detailed examination of the processes employed.

The formal title of various drawings, and the general form of the various types of drawings used in the construction of ships, have been described on p. 972. The essential points to be observed in each drawing are indicated when they first appear in the text.
SHIPBUILDING

PLATE VIII.

Fig. 81. Gantry at Mee's Hardand & Wolff's Shipbuilding Yard, Belfast.

Fig. 80a. Gantry at Mee's Cramp's Shipbuilding Yard, Philadelphia.

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other information required for laying the vessel off and making the necessary moulds being usually given on other drawings. The sheer drawing is next drawn, showing the whole vessel, the framing and plating being given concerning the form of the ship and other features of the design required for laying the vessel off, ordering the material for her construction and afterwards preparing the frames and timber, which is the object of the fairing process to correct, being proportional to the increase in scale in first copying. The process is simply described as "fairing" which is described below.

A straight line is drawn to represent the keel, this being a fixed straight batten nailed to the floor a short distance from the wall of the building to represent the load-water-line in the sheer and body plans. In the later stage of the drawing when the vessel is to be drawn with regard to it within the limits, on the floor and clear of the batten, the inner edge of which becomes the base-line of the sheer, half-breadth and body plans. The fore and after perpendiculars, the position of the forward and after perpendiculars, the distance between which defines the nominal length of the ship. The water-lines are 3 to 4 ft. apart. Intermediate square stations are then drawn from these and perpendiculars are dropped from the forward and after perpendiculars, the distance between which defines the station marks, the distance of the surface of the ship is rapidly altering; as at the ends and below the bilge. It is usual, and obviously sufficient in the sheer drawing as well as in the process of laying off, to show only one-half of the ship on one side of the longitudinal vertical plane of symmetry. Thus, in the half-breadth plan only the port side of the ship is drawn; and in the body plan, for greater clearness, the half ship is further divided, the part forward of the midship section, or square station at the middle of the length of the ship, being shown on the right of the middle line of that plan, and the part aft of the midship section on the left of the middle line.

Other Drawings.—The profile and plans and the midship section have also been described in this article. The profile and plans of H.M. yacht "Alexandra" are given on plates. Fig. 84, Plate XII., gives sections at two points showing the arrangement of decks, bulkheads, machinery, living spaces, storage spaces, etc.; figs. 86, 93, 94, 95 and 96, Plate X., give the plans of the promenade deck, upper deck, main deck, lower deck and hold respectively with important fittings shown upon them; figs. 88, 89, 90, and 91, and plate X., give sections of the ship showing the inboard works at stations E, D, C, B and A on the profile respectively; and on fig. 97, Plate XII., are shown all the vertical sections and scantlings of the framing and plating. Fig. 98, Plate XII., also gives the midship section of H.M. battleship "Lord Nelson."

Any two of the three plans of the sheer drawing may be taken to represent the form of the ship. The longitudinal view, or the "longitudinal Geometry, and are theoretically sufficient to define the shape of the vessel completely, but the three plans are practically necessary for the sake of clearness and accuracy. If a sheer drawing the lines may represent the intersections of planes with the surface of the framing of the ship, or with an imaginary surface having a mean position between the irregularities of the surface of the ship caused by the system of plating adopted. The former system is the more usual in the drawings of steel-built merchant ships, necessitating an allowance on all measured dimensions used in calculating displacement, &c.; the latter system is the more usually used in shipbuilding, where it is important to include the measurements of structural scantlings and material for the laying of a ship plated with raised and sunken plates strakes as described on p. 962, would be an imaginary surface midway between the outsides of the raised and sunken plates. The height of the bow and stern, which is the nominal height, are also shown to indicate to show displacement lines in contrast to the former system which shows " moulded " or frame lines. In the case of vessels with a plank sheathing over the bottom the names of the frames are given in the drawings as " Frame X."

As the primary object of the laying off of the ship is to ascertain the shape of the frames, the surface of the outside of the frames is always that which is laid off on the mould loft floor. If displacement lines are given in the sheer drawing a preliminary process of deriving from them the moulded lines is necessary before laying off on the floor. The process, to be strictly accurate, involves setting in the requisite distance along the normal to the surface shown in the sheer drawing. This is easily done at the midship section, where the normal to the surface lies in the plane of the section and coincides with the normal to the curve of the square station in the body plan, or at the practically vertical faces of the frames in the sheer drawing. The normal to the line in the water-line in the half-breadth plan. In other positions, however, it would be necessary to rabat a plane containing the normal on one of the planes of symmetry, and drawing the sectional view of the vessel, to find the projections of the point in the frame surface so obtained and of other similar points, and thus obtain the projections of curves on the frame surface, which by their intersections with ordinates to the middle vertical plane, give rise to the lines of maximum depth and water-lines corresponding to the moulded surface of the ship. Such a process, though simple, is more laborious than is necessary in the drawings of vessels where the position of sections is fixed by the length of the vessel, the water-line being constant for equal sections of the vessel, and the framing and plating being customarily to set in normal to each square station a distance slightly greater than the thickness of the plank and plating, the increased distance required being roughly estimated from a consideration of the obliquity of the water-lines, without producing any sensible error.

The frame lines having been obtained, it is customary at some shipyards to " fair " the body on paper on a larger scale than that of the sheer drawing, before laying off on the floor. This saves a certain amount of labour in fairing the full-sized body on the floor. It is well known to every experienced copyist how much it is the object of the fairing process to correct, being proportional to the increase in scale in first copying. The process is simply described as " fairing " which is described below.

The whole of this process of measurement and tabulation is frequently done in the drawing office, and the " lotsman " or person who makes the layout of the layout is supplied with the sheer drawing, but only with these tables of " offsets, " the tables for the lines in the sheer and half-breadth. The process, however, is the same in each case.
series of points on the several water, diagonal and buttock or bow lines corresponding to each square station, being held in position by nails, specially adapted for the purpose, lightly driven into the floor, the batten in each case being adjusted so as to lie in a fair curve. Usually the batten will not under these conditions pass through all the points found for the curve on account of irregularities introduced or magnified in the process of enlarging to full size, and it must be allowed to take up a mean position passing outside some of the points and inside others. All of the sections in the body plan are drawn in with chalk in this way. The section where the greatest breadth of the ship occurs, usually at or near the middle of the length, must have the line parallel to and half the moulded breadth of the ship from the middle line for a tangent, and no section must project beyond this line.

The intersections of each section thus drawn, with the water and other lines, are the vertical projections on the body plan of points, the horizontal projections of which lie in the horizontal trace of the transverse plane at the corresponding square station or ordinate in the sheer and half-breadth plans, and are at the same perpendicular intersection of the bow plane 1B with square station 2, and is the projection in the sheer of the intersection of water-line 2WL with the same bow plane. The water-lines and diagonals in the half-breadth and the diagonals and bow and buttock lines in the sheer may thus be drawn as fair lines by the help of battens, and if the lines do not pass through all the points obtained by projection from the body plan, the sections in the latter are rubbed out and new ones obtained from the lines in the half-breadth. This process should be repeated until the curves in both plans are fair and the intersections correspond accurately with one another as the projections of points in space.

No frame of the ship, however, is made to the curves of these water and diagonal lines, so that their true shapes are not required for any practical purpose except fairing the body. For the whole length of the ship, except about three to four twentieths at each end, space and labour are therefore saved and greater accuracy is ensured by using the contracted method of fairing. In this method the ordinates of the half-breadth are set only from 1th to 10th of their true distance apart, while the transverse

**Fig. 99.**

distances from the middle line of the half-breadth as the corresponding vertical projections are from the middle line of the body. For example, in fig. 99 P, and Q are the projections in the half-breadth of the same points of which p and q are projections in the body plan, and are found by making the ordinates of P, and Q, measured from the middle line of the half-breadth plane at square station 2 equal to the perpendicular distance of p and q respectively from the middle line of the body plan. Thus points in the projections in the half-breadth of the water and diagonal lines can be found from the body plan already drawn, and in order that the surface of the ship may be fair, the series of points corresponding to any water or diagonal line must lie on a fair curve. In the case of a diagonal the distance from the middle line of the body to the intersections of the diagonal with the square stations may be measured along the diagonal, and set off on the corresponding square stations in the half-breadth. This gives the true or rabatted form of the intersection of the diagonal plane with the ship's surface, and this, equally with the projected diagonal, must be a fair curve if the surface is fair. The diagonals are also projected into the sheer plan by measuring the height above the base-line at which each diagonal in the body plan cuts each square station, and setting up this height from the base-line of the sheer plan at the corresponding square station. The projections of the bow and buttock lines in the sheer plan are obtained in a similar manner. Thus in fig. 99 V is projection in the sheer plan of the measurements are made to full size as before, thus making the curvature of the water and diagonal lines sharper throughout the region over which it would otherwise be somewhat flat and indefinite. As the curvature of the contracted level and diagonal lines depends upon the differences between the lengths of the ordinates of the curves and not upon their actual length, a further saving of space is effected by measuring the distances to be set up as ordinates in the half-breadth not from the middle line of the body but from a point selected arbitrarily in each water or diagonal line, generally a few inches outside the midship section. By suitably varying the distances outside the midship section of these arbitrarily chosen points in the different water and diagonal lines, it can be arranged that the curves in the half-breadth do not interfere with one another, an advantage from the point of view of clearness. With the above modifications the process of fairing by the contracted method is precisely similar to that when the ordinates are their full distance apart.

In fig. 88 the diagonals 1D and 2D are shown laid off by the contracted method, the spacing of the ordinates in the contracted half-breadth being 1/10 of that representing the spacing in the diagram of the uncontracted sheer and half-breadth. In the contracted half-breadth the ordinates 4^1, 5^1, &c., are equal to the distances O, O, &c., measured to sections 4, 5, &c., in the body, O being a point arbitrarily selected in the diagonal 1D.

The principle of contracted fairing is sometimes extended by the
Length between perpendiculas - 410 feet. Displacement in tons - 16,500
Breadth - 79 feet 6 inches. Speed in knots - 18.5
Depth - 43 feet 8 inches. Built - 1908.
M.S. "LORD NELSON."

SHIP BUILDING

PARTICULARS OF STEAMSHIP "LONDONDERRY."

Length between perpendiculars - 330 feet. Displacement in tons - 2,200

Breadth, Moulded - 42 feet. Speed in knots - 21.7

Depth - 25 feet 6 inches. Built - 1904
provision of a large drawing-board 4 or 5 ft. broad and long enough to take the whole length of the ship on a scale of 1/10th full size. The ordinates of the half-breadth and sheer being set off on the board to this scale, any line in which the difference between the greatest and least ordinates does not exceed the breadth of the board can be fairied thereon by this contracted method. This allows considerable lengths of the midship parts of diagonals and water-lines, and such lines as decks at middle and side, and any other lines of very flat curvature, to be fairied on the board, resulting in a great saving of time and labour, owing to the convenient height at which the board may be placed, and to greater accuracy, as the fairness of the lines can be better seen and judged.

At the forward and after ends of the ship the correct shapes of the water-lines are required in order to determine the shapes of the stem and stern-post, besides which the curvature of these lines is too great to permit of contraction of the abscissa scale.


![Diagram of ship's sections and lines](image)

**Fig. 100.**

by separate processes there shall be a considerable overlap throughout which the water and other lines in the two parts are identical in order to ensure the continuity of the surface.

The detailed drawings of the stem and stern castings already referred to must ensure that these castings shall form a fair continuation of the outside surface of the plating or sheathing. They are perhaps most complicated in the case of sheathed armoured warships where the surfaces of "rabbits" or recesses for housing the bottom and armour plating and the wood sheathing must also conform to the lines of the ship laid out on the floor. A sketch of the stem casting for an armoured, sheathed ship with a ram bow is given in fig. 100, the sections being shown in a wider scale than the elevations for the sake of clearness, except the section at the water-line AA, which is drawn to illustrate the method of ending the water-lines, similar sections being used for the displacement of the ship. The form of the stem is drawn in full size in the sheer plan on the floor in its correct position relatively to the fore perpendicular and water-lines by measurements taken from the sheer drawing, and the projections of the line of the inner angle of the rabbit for the shell plating, called the "middle of rabbit," marked in the figure, are drawn in the sheer and body plans as fair lines. It should be observed that in the figure the free ends of the middle of rabbit of plating are shown in side elevation as coincident lines on account of the smallness of the scale; they will not be generally coincident in a full-size drawing. The middle of the rabbit line is best fairied in an expansion drawing. In this method a batten is bent to the curve of the projection of the line in the sheer plan, and the position of the water-lines where sections of the stem have been drawn on it. The free ends of the middle of the rabbit line is then allowed to spring straight along a straight line drawn in any convenient position on the floor, and the positions of the water-lines are transferred from the floor to the floor. The distances such as "xh" in the section at AA are measured from each section in the drawing and set up in full size perpendicular to the straight line on the floor at the positions corresponding to the sections. A fairied line is then along the end perpendicular to the face of the deck at any position in the length of the stem and enable the projections of the middle of rabbit-line to be drawn accurately in the body and half-breadth plans.

To end any water-line such as AA in the half-breadth plan a perpendicular to the middle line of the half-breadth is drawn from the intersection of the line AA, with the projection of the middle line of the in the shear plan, and the distance "xh" taken from the body plan, or direct from the expansion of the middle of rabbit-line, is set out from the middle line of the half-breadth; the point "h" is the end of the water-line AA required. The water-lines having been drawn and ended in this manner, ordinates coinciding with the transverse frames are drawn in the half-breadth plan and their projections obtained and fairied in the body plan in order to define more closely the somewhat twisted surface of the ship in the neighborhood of the stem. These frame sections may involve correction and adjustment of the endings of the water-lines, which corrections are made subject to the condition that the projections and expansions of the middle of rabbit-line must remain fair curves. With the middle of rabbit thus fixed in proper relation to the fairied surface of the fore end of the ship, the sections of the stem by the water-planes can be reconstructed in the half-breadth plan by the help of the drawing of the stem and of any additional information contained in the specification as to the nature of the fastenings of the plank and planking in the casting and the length of the foreframes. Where the general direction of the stem is considerably out of the vertical, sections of the frame surface by planes normal to the fore edge of the stem are obtained by the help of the closely spaced frame sections, and rabated on the sheer plane; and sections of the stem casting constructed on them as in the case of the water-lines. In this way as many points as are required are obtained in the various lines in the surface of the stem, viz. the after edge of the casting, and the various angles of the rabbit, and these lines are fairied so far as they are continuous in the three plans. The shell and protective plating and plank sheathing are also put on outside the various sections of the frame surface for a short distance in the neighborhood of the stem, and the surface of the stem forward of the fore edge of the rabbit is fairied in with the outside surface of the ship.

When a batten mould is made to the outline of the stem plan, and the projections of the lines of the rabbits and of gulleling, position and shape of webs for connecting to decks and stringers and to the keel, lines of rabbits for connecting to led plates at the lower end and to the plate at the upper end (if the casting is not continued right up to the forecastle deck), the position of the fore perpendicular and load water-line are marked upon it. Sections of the casting taken from the floor are painted on the mould, the centre lines of the sections indicating the position where they are taken, showing more particularly the changes in shape of the casting at such positions as the upper and lower edges of the protective plating and the upper edge of the plank sheathing. The stem mould thus gives complete information for the preparation of the pattern for the casting. The positions of the fore perpendicular and load water-line marked on the stem mould are transferred to the pattern in the casting, and enable the stem to be erected in its correct position at the ship.

The after end of the ship is faired and the mould for the stern post and other castings prepared in a similar manner. The process of preparing the moulds for the stem and stern post is also generally similar to the above in the case of an unsheathed ship, but the castings are less complicated owing to the absence of the plank sheathing.

The whole of the 21 square stations which constitute the original body plan having been fairied as described above, it is usual to prepare the 21 square castings and to calculate the displacement and buoyancy of the ship from the lines laid off on the floor to ensure that in the process of fairing no departure of any consequence has been made from the original design. For this purpose the steps shall be taken, whether there be or not, must be put on by a process the inverse of that described as taking off the plank. If any serious departure from the original design should be discovered as the result of this calculation, the lines must be corrected and again fairied.
The transverse frame lines are the intersections with the frame surface of transverse vertical planes passing through the lines of intersection of the two exterior surfaces of the flanges of the frame angle bar, or of the web and flange of any other type of rolled section which may be used for the frame.

The distance between two adjacent frame lines, called the "frame space," is given in the specification, and the positions of the frames relatively to the ordinates are shown in the sheer plan of the ship. The frame space in a warship is commonly 4 ft. within the limits of the double bottom and 3 ft. forward and aft. In a merchant ship the spacing is usually less. The positions of the planes of the frames are set off along the middle line of the half-breadth plan, the proper scale being used in the contracted half-breadth, and ordinates are drawn to represent their traces in the half-breadth and sheer plans. The projections of the frame lines in the body are obtained from the intersections of the ordinates with the water and diagonal lines in the half-breadth and the bow and beam lines in the sheer plan in a manner already described in the case of the more widely spaced stations used in fairing the body. These frame lines in the body should require no further fairing if the work has been accurately done when using the original square stations, and they can be at once raised in on the floor.

As already stated, it is usual to dispose the transverse framing of a ship entirely in planes perpendicular to the trace of the load water-plane with the longitudinal plane of symmetry of the ship. This practice leads to a large and varying bevel being given to the frame bars at the ends of a vessel with a very bluff bow or stern, and it becomes a practical question whether it would not be better at such parts to dispose the frames in planes which are more nearly normal to the general surface of the ship and which need not be perpendicular to either of the three planes of reference. The disposal of frames in this way, more usually in planes perpendicular to the half-breadth planes only, when they are called "cants," is in common use in wood shipbuilding, it being of great economical importance that the timber frames shall be of square or nearly square section, but it is also adopted in iron and steel ships of unusual form or having special features, such as instance as a lifting screw propeller.

To lay off a cant frame or "cants" let the traces of the cant be $a'b'$, $ab$ in fig. 101. Let LL be the projections of a level line in the three planes intersecting $ab$ at $b$ in the half-breadth. Then $b_1$ in the sheer is the vertical projection of $b$, and a curve through all such points as $b_1$ is the projection in the sheer of the shape of the frame or, as it is called, of the moulding edge of the frame. $b_2$ in the body, where $ab_2$ is equal to the perpendicular distance of $b$ from the middle line of the half-breadth, is a point in the projection in the body plane; and $b_1$ where $ab_1$ is equal to $ab$ is the position of the point, when the cant plane is hinged about $a'b'$ until it is parallel with the body plane. Hence a curve drawn through all such points as $b_1$ is the true form of the moulding edge of the cant. To obtain the angle which the surface of the ship makes with the plane of the moulding edge, a plane parallel to that of the moulding edge and distant from it the width of the bevelling board must be laid off in a suitable position in the body plan. Let $g'e'$, $ge$ be the traces of such a plane where $af$, the normal distance between it and the plane whose traces are $a'b'$, $ab$, is the breadth of the bevelling board. The vertical projections of $c$, viz. $c_1$ and $c_2$, in the sheer and body are found in the same way as those of $b_1$; but in order to obtain the rabatted curve of the bevelling edge in such a position relatively to the moulding edge that the perpendicular distance between the two curves measures the bevelling in the same way that the perpendicular distance between two frame lines of the square body measures their bevelling, it is necessary to first project the bevelling edge on the plane of the moulding edge before rabatting the latter. The whole operation is effected by making $a_1 c_1$ in the body equal to $fe$ in the half-breadth, where $af$ is perpendicular to $ab$ and $gc$. A curve through all such points as $c_1$ is the bevelling edge laid off in the position relative to the moulding edge required, the bevellings being taken in a similar manner to those of the ordinary transverse frames.

Spots on the cant can also be obtained from diagonals as follows:—In fig. 102 let DD be the projections of a diagonal line in the three plans cutting the horizontal traces of the moulding and bevelling edges at $d$ and $e$ in the half-breadth. The projections $a_1$, $e_1$ in the sheer and $a_2$, $e_2$ in the body of the intersections of the diagonal line with the planes of the moulding and bevelling edges are obtained in the same way as in the case of the level line, and the method of obtaining the rabatted positions, when the plane of the moulding edge, with the bevelling edge projected upon it, is turned about $a_1 b_1$ until it is parallel to the body plane, is also analogous; but in this case the corresponding points of the moulding and bevelling edges are in different level planes $a_1 d_1$, $e_1 f_1$. Points in the rabatted curves of the moulding and bevelling edges of the cant may also be obtained from the intersections with bow and buttock lines, as shown in fig. 103, where $BB$ are the projections of the bow or buttock line in the three plans. The method is analogous to that described above when using level lines and as shown by the figure, $h_1$ and $k_1$ being rabatted positions of points in the moulding.
SHIPBUILDING

PARTICULARS

Length between Perp... 275 Feet
Breadth................. 40
Draught (even keel)..... 12'6"
Displacement............... 2050 Tons

Fig. 84.

Profile

H.M.YACHT "ALE"

Fig. 85

Fig. 86.

PROMETHEUS

Fig. 87.

BODY PLAN.

Fig. 88. - SECTION AT E.

Fig. 89. - SECTION AT D.

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SHIPBUILDING

PARTICULARS
Speed.............. 18.25 Knots
Shaft Horse Power ... 4,500
Ship completed...... April 1908

BREADTH PLAN

FIG. 90.—SECTION AT C.

FIG. 91.—SECTION AT B.

FIG. 92.—SECTION AT A.

Scale of Feet
and bevelling edges respectively; where $h_1 h_2$ is equal to $ah$ and $kbh_2$ to $fh$.

In fig. 104 let $AB, A'B'$ be the traces of the plane of the moulding edge of the frame in the sheer and half-breadth plans respectively. When, as in the figure, neither trace is perpendicular to the base line, the frame is said to be a double canted frame, or a double cant. Let $1L, 2L, 3L$ be the projections of level lines in the three plans, $P, Q, R$ in the sheer plan being their point of intersection with $AB$. The

Double canted frame.

horizontal projections of these points are found as indicated in the figure where $Q'$ on the middle line of the half breadth is the horizontal projection of $Q$. The line $Q'Q''$ parallel to $A'B'$ is the horizontal projection of the line of intersection of the double canted plane with the level plane $2L$, and $Q''$, obtained by the construction shown, is the vertical projection of the point where this line of intersection cuts the surface of the ship, $q''$ being the horizontal projection of the same point. The projections of other points in the intersection of the double canted plane with the surface of the ship are found in a similar manner by the help of other level lines; and the projections $s'$ and $s$ of the ending where the line of half side of the flat keel cuts the double canted plane are found by the construction indicated. The projections of the moulding edge of the double canted frame $s'q''s''q'$ in the sheer plan and $s'q''s''q'$ in the half-breadth are thus determined.

The true form of the moulding edge is laid off in the body plan by a double process of rabatment of the double canto plane, first about the trace $AB$ to bring it perpendicular to the sheer plan, and then about a normal to the sheer plan through $A$ to bring it parallel to the body plan, in the following manner. Set off $P_1, Q_1, R_1$ on the middle line of the body so that their distances from $A$ are equal to $AP, AQ, AR$ measured along the trace $AB$ in the sheer plan. Draw $AC$ in the sheer plan perpendicular to $AB$ and measure the heights parallel to $AB$ of the points $p_1, q_1$ and $r_1$ above $AC$. Draw level lines $1L', 2L', 3L'$ in the body plan at distances above the base line equal to these heights, and from the centres $P_1, Q_1, R_1$ describe circles cutting $1L', 2L', 3L'$ in $p_2, q_2, r_2$, &c., so that the radius $Q_2Q_2'$ is equal to $Q''q''$, &c. The curve $p_2q_2r_2$ is the true form of the moulding edge of the double cant laid off in the body plan.

The plane of the bevelling edge is parallel to that of the moulding edge and at a perpendicular distance from it suitable for use as the base of a bevelling triangle similar to that which is described for the ordinary frames. The width of the bevelling board is made equal to this perpendicular distance, corresponding to the frame space in the case of the ordinary frames, and the bevelling edge must be laid off so that the normal distance between it and the moulding edge can be used for marking the bevelling in the same way as the normal distance between consecutive frames of the square body is used.

To obtain the traces of the plane of the bevelling edge, in fig. 104 let $AB, A'B'$ be the traces of the moulding edge plane; $nm$ drawn perpendicular to $AB$ and $n'm'$ perpendicular to the axis are the traces of a plane perpendicular to the plane of the moulding edge and to the vertical or sheer plane. If $mM$ be drawn perpendicular to $nn'$ and equal to $n'm'$, $nM$ is the intersection of the planes $BAB'$ and $n'm'm$ rabatted on to the sheer plane, and $MN$ perpendicular to $n'M$ is the rabatted position of a line perpendicular to the plane of the moulding edge. Make $HH$ equal to the chosen distance of the bevelling edge plane from the moulding edge plane; draw $Kk$ parallel to $MM$ cutting $nm$ in $k$; through $k$ draw $DE$ parallel to $AB$ and through $D$, where $DE$ meets the base line, draw $DE'$ parallel to $A'B'$; then $DE, DE'$ are the traces of the plane of the bevelling edge arranged at the required perpendicular distance from the plane of the moulding edge.

In laying off the bevelling edge it is first projected on to the plane of the moulding edge, and the latter then rabatted into the body plane. To effect this operation the horizontal trace $Am_1$, of a plane perpendicular to the double cant plane and intersecting it in the vertical trace $AB$ must be drawn, which is done by the construction shown in fig. 104a, where $nm$ is, as before, perpendicular to $AB$ through any point $s$ in it other than $A$, and $n'm'$, drawn through $n'$, the horizontal projection of $s$, is perpendicular to $A'B'$. The projections of the traces with the several level planes of the plane of the moulding edge, such as $U''w''$ and the projections of the bevelling edge drawn in the sheer plane and $Pw''w''$ in the half-breadth are obtained in exactly the same way as in the case of the moulding edge. The projections such as $Qw''$, of the traces with the several level planes of the plane whose traces are $AB$ and $Am_1$, in fig. 104a are also drawn parallel to $Am_1$, through the horizontal projections of $P$, $Q$, $R$, &c. The vertical projection $w_1$ of the point $w''$, in which $Qw''$ meets $U''w''$ produced, is found and $Am_1'$ set up on the middle line of the body equal to the perpendicular distance of $w_1$ from $AC$. A level line $2L''$ in the body plan is drawn at a distance from the base line equal to the perpendicular distance of $w$ from $AC$ and a point $w_2'$ is found in it such that the radius $U_2w_2'$ is equal to $w_2w''$ in the half-breadth. $w_2'$ is then the rabatted position of the projection on the plane of the moulding edge of the point in the bevelling edge whose projections are $w$ and $w''$. Points $l_1, m_1, n_1$ corresponding to the projections $l$ and $l'$, $t$ and $t'$, $v$ and $v'$ are found in a similar manner and a curve drawn through $l_1m_1n_1$ is the bevelling edge laid off in the body plan in the correct relation to the laid off position of the moulding edge for the bevellings to be then.

Additional points in the rabatted shape of the double canted frame may be obtained by the use of diagonals when desired. In fig. 105 $AB, A'B'$ are the traces of the double canted plane; $cd, c'd'$ are the projections of a diagonal line in the body and
sheer and $c_n$ its reduction in the half-breadth plan. Draw $c e, c f$, the traces of a bow plane and through $d$ where it cuts the diagonal of the boat the draw the trace of a level plane $W L$. Find the intersection points $l, p, y$ of this plane with the diagonal plane at the bow and the bow plane. Then $e g, f g$ the intersection of $c e, c f$ with the bow plane is a point common to these two planes and to the bow plane. Since this point is common to the level plane $W L$ and to the bow plane $e f$, it belongs in the plan of the diagonal and double cant planes. In a similar manner $c m$ is a point in the same two planes. Therefore $e g$ is the projection of the intersection of these planes, and $m$ where $e g$ cuts $c m$ is a point where the double cant plane meets the diagonal plane of the double cant about $A B$, moves in the line $m B M$ perpendicular to $A B$. If now $m$ is projected on to $c o$, then $M$ taken in $m B M$ so that $m M = e c$, will be a point in the model circles of the framework to show $m$ to the framework. Similar points can be obtained for each diagonal. The plane of the bevelled edge is determined as previously described, and the bevelled edge laid off similarly to the moulding edge, except that provision must be made that it shall come in its right relation to the moulding edge for bevelings to be taken as in the previous case when laying off by level lines.

A method of determining and fairing the swell for the propeller shaft in a twin or multiple screw ship is shown in fig. 106. The projections of the centre line of shaft, which are given in the figure, are drawn in the planes of the sheer and half-breadth planes of the sheer drawing, and are drawn in the plans on the floor, the bow and stern wing planes, the plan of the centre line of shaft with the plane of each square station is found from the series of points on the straight line $a b$ in the figure. The radius from the centre of shaft required for the shaft tube and fittings at the boss frame, or frame where the shaft passes outside the ship, is found from the machinery specifications. This is increased by the thickness of the plank in the case of a wood-sheathed ship and of the plating for the wood sheathing to allow for clearance and for the obliquity of the shaft line, and a frame is selected for the boss frame such that a circle drawn with this radius, viz., $H$ in figure, is tangent to the trace of the centre line of shaft with the frame plane in question would just touch the frame line on the outer edge of the frame. The length and amount of projection beyond the ordinary frame lines of the shaft swell can be considerably reduced if the frames shaft the boss frame, viz., frame No. 14 in the figure are dished inwards as shown in the figure, thus allowing the required radius between the centre of shaft and the frame line to be obtained further forward from the frames were not dished. A similar method is used for finding the frame where the radius required round the centre of shaft will not cause any bossing in the frame line. Special attention must be given to the required radius at the back of the stuffing box bulkhead, where considerable space is required for the stuffing box and fittings, and at the after end of the shaft, where the line of the frame—may not be sufficiently clear of the inner bottom line to permit a sufficient depth of double bottom to be maintained without bossing out the frame line as shown by the small diagram in the figure. The frame, No. 2 in the figure, where the swell is to end, has been selected, a normal $m l$ to the frame line is drawn from $n$, the trace of the centre of shaft line with the plane of the frame line. A line is drawn through the centres of the line of shaft with the other frame planes, representing projections of the intersections with the frame planes of a plane through the centre of shaft. This plane is projected on to a diagonal plane having its traces with the body parallel to the trace of the plane, and the diagonal plane carrying the projection with it is rabbeted by the following process. A convenient line $X Y$ is selected perpendicular to the parallel traces in the plane of the frame line, at $X$ any point, the projection $X Y$ is drawn. The ordinates to $X Y$ are equal to the ordinates to the frame line $X Y$ is drawn at any convenient position on the floor, and the line $X Y$ is the frame spacing. The distances from $X Y$ in the body are measured along all such lines as are parallel to the line of shaft and to the unbossed frame lines, and these distances are set up from $X Y$ in the plan at the corresponding frame ordinates giving the straight centre line of shaft, and $G G$ the plan of the line of intersection of the plan through the centre of shaft with the frame line. Each mould is marked on it, or indicated by a straight-edged batten forming part of the mould, a convenient water-line and vertical line drawn on the floor. When the moulds are held in vertical planes separated by the length of the shaft the corresponding straight lines on the two moulds are made to lie in the same plane, or are "looked out of winding," giving the relation between the various ordinates, corresponding to that marked $k$ at No. 8, are used as radii for describing the outer part of the section of the shaft swell at the corresponding square stations in the body plan, the trace of the shaft line being the centre at each frame from which the circular arc is described. The outer part of the section of the swell thus formed, $e g, c c$ at the boss frame in figure, is joined up to the general run of the frame line to which it belongs by arcs of circles $d$ struck with the same radius as the outer part. The radii for the hollowed-out frame lines abaft the boss frame are obtained in a similar manner. One or more diagonals cutting the swell plane are drawn and rabbeted in the half-breadth plan to test the fairness of the altered lines, but no further alteration should be required if the swell has been drawn in the manner described above.

The sectional shape of the boss frame casting is shown in the plan in fig. 106, and the outline of the palm which is secured to the floor plate of the boss frame is shown by the line $k k$, $k k$, in the body plan. This part of the casting is fashioned solely for mould for boss frame casting.

The fore and after part of the shaft struts, or "A" brackets, as they are sometimes called, is shown on the design drawings, and the scantlings of the hollow cylindrical boss which carries the shaft, bearing and of the arms which connect the boss to the ship's structure are given in the specification. The detailed drawing appears in these pages showing these particulars together with the shape of the palms worked on the inner end of the bracket arms to connect them to the ship's structure, and it is only necessary to obtain from the lines of the ship laid off on the floor the exact relation of the positions of the surfaces of the palms to one another and to the centre of the shaft. For the purpose of the line of centre of shaft with transverse planes at the forward and after ends of the boss are marked in the body plan, and a batten mould is made in each of these planes showing the centre of shaft, the direction of the two arms and the position where they are crossed by the frame line at the edge of the ship, or, if the lower arm connects to a web or palm on the stern post, as is frequently the case, in a ship with a rising keel line aft, the position of the edge of this palm and the direction of its surface. Each mould is marked on it, or indicated by a straight-edged batten forming part of the mould, a convenient water-line and vertical line drawn on the floor. When the moulds are held in vertical planes separated by the length of the shaft the corresponding straight lines on the two moulds are made to lie in the same plane, or are "looked out of winding," giving the relation between the
the position of the palms and the direction of centre of shaft. Guided
by these moulds and the detailed drawing, the pattern for casting the A brackets is made.

The inner bottom consists of the plate and longitudinal sight edges are drawn in the body plan on the floor by measuring their distances from the middle line along each frame line in the half-

block model, on which they have been already arranged, and joining them by straight line, those points are marked off round the corresponding square stations in the body.
The points so found should lie on fair curves, if the sight edges have been carefully placed. In case of any errors in the work so far, in the course where discontinuities in the curves may occur, as where a plate sight edge crosses a longitudinal sight edge to avoid an acute intersection. The edges of the sunken strakes of plating are drawn parallel to the frame in the middle line, and the angles between them and as already stated, the breadths of the bottom plates are measured between the lines of plate edges so found and used in ordering the materials for the formers.

The surface of the inner bottom is defined relatively to the outer bottom by the depth of the vertical keel and longitudinal frames given in the specification. The outline of the vertical keel is also shown in the sheer drawing, and the general shape of the inner bottom by the midship section, which is often supplemented by a section through the engine-room where the double bottom is locally made deeper. The surface of the longitudinal is arranged so that its trace with the plane of each square station is approximately normal to the curve of the square station; taken in conjunction with the method of drawing the sight edges so that the whole effect may be regarded as much as possible like a plane. This is approximately the same thing as generating the surface of the longitudinal by the normal to the ship’s surface as it moves along the sight edges, as was described in the depth. There is no effect on the plane of any section normal, and when the longitudinal are fitted on a raised strake of outer bottom plating, are greater by the thickness of that strake than the distance to be found from the frame line to the inside of the frame on the inner bottom. The latter is usually worked with the stokes of plating disposed “clinker” fashion, or is sometimes flush with edge strips fitted on the underside. Points in the sections of the inner bottom frame surface by the lines of the square stations are obtained by setting in the depth of the longitudinals, and the surface of the inner bottom is fitted by diagonal and water lines in the same manner as the outer frame surface. On the exception of the space where the depth of the double bottom is increased, and where there are usually plane surfaces to take the structure under the engine bed, and a cylindrical recess to provide clearance for the engine cranks, these special features must be arranged separately, so also is any bosoming of the inner bottom at the after end to allow clearance for the shaft tube and fittings.
The plate edges already arranged on the model of the inner bottom must be transferred to the floor and faired in the same way as those of the outer bottom; and the breadths of the plates measured from the floor must be used in ordering the material from the manufacturer.

Before and abaft the double bottom the transverse frames may consist of zed bars, split at their lower ends for the insertion of a floor to lengthen or reduce in depth, and are intercostal between the frames until they meet with flats or fore and aft bulkheads, or they are continued as deep zed bars slotted over the narrower trans-
verse frames behind, in which the thickness does not require any process of general fairing; but the upper parts of the floor plates are drawn on the floor, and are faired locally throughout the lengths of the ship where they maintain a uniform character.

The freeboard forward and aft and amidships is generally given in the specification and can be measured from the sheer drawing. The breadths of the sections and by the through sections shown in the sheer drawing, the heights of the intersections of the beam at middle with the square stations are marked on the corresponding square stations of the contracted sheet plan and faired in with the profile of the water lines, projected to the middle line of the body plan. The round up or camber of the midship beam of each deck is shown on the midship section and is expressed as a sine of half the arc and the breadth of the beam at the level of the beam the chord. A mould is readily constructed to these data, and is applied so that the chord is perpendicular to and its plane parallel with that of the body plan. When the centre of the arc coincides with a point projected from the beam at middle line the arc cuts the corresponding square station at a point in the projection of the beam-end line. The points in the beam-end line so found are connected by a line which is tested by projection into the contracted sheet plan, and the line is then raised in the body plan.

The shaft and propeller deck in a battleship is shown in the sheer drawing. Throughout that part of the length of the ship covered by the main armour belt, which rests on this deck, the deck edge usually lies in a water plane. The middle part of the deck also lies in a water plane, except where it is raised up over the engines, and the slopes sides form cylindrical surfaces. The straight lines of the sides and middle part of the deck section are joined by arcs of circles of uniform radius, and this part of the deck is necessarily fair in profile. The nature of the deck and of constructing the sections of its surface. At the ends of the ship the beam-at-middle and beam-at-side lines are copied from the sheer drawing and faired on the floor and the beam surface between these points may be faired by one or more boltless butt and lock joints.

The surface of the framing behind the main armour belt in a war-
ship, arranged as shown by the midship section depicted, is parallel to the surface of the model and distant from it by the thickness of armour and wood backing plus the thickness of plating behind armour, generally a double thickness of plating flush jointed. This distance, less the thickness of the armour, is the outer edge of the plating and the thickness of the plates, is set in normal to the surface shown by the lines on the floor in wake of the armoured side by approximate methods similar to those applied in tank construction. The relationships of the frames and the sections of the beam lines behind the armour in the body plan are thus obtained and drawn in. The frames are usually single zed bars extending vertically from deck to deck and are completely defined by these lines without the necessity of drawing any inside surface.

Projections of the intersection of the surface of the frames behind armour with the beam surface of the deck at the top of the frames and with the plate surface of the deck at their heels are drawn in the half-breadth plan, and expansion drawings of the frame surface are prepared in a manner somewhat similar to that which will be seen in the plan of the expansion of the expansion of the separate armour plate, except that in the present case the whole length of the surface is expanded in two or three 4-in. scale drawings. The point of the frame to which the position of the frame lines, and of any longitudinal girders which may be fitted to the main truss, and in the frame drawing, also the approximate positions of the armour plate butts and edges and of the armour bolts. The butts and edges of the plating behind armour are ranged on this drawing and the dimen-
sions of the plates measured therefrom in ordering them from the manufacturers.

This protective plating beyond the ends of the main armour belt usually projects from the ship’s side and is secured without wood backing direct to the shell plating, which is worked in two thicknesses flush jointed in place of the protective plating. In this case the frame lines behind the armour are not shown either on the half-breadth plan, or with the separate armour plate, and the disposition of the butts and edges of the plating behind armour and of the armour itself is arranged on the half-breadth model; but only the plating behind the armour is ordered to dimen-
sions taken from the model.

It is important that the detailed information given the shapes and dimensions of the armour plates should be in the hands of the manufacturers as early as possible on account of the time required for the manufacture of this material. As, more, laying off the moulds for the armour of a warship.

In general, however, the armoured side is very little twisted and can be dealt with for practical purposes as a developable surface, which case the necessary information can be obtained by a process of laying off as described below, which, though obviously only approximate, is found by experience to be sufficiently accurate for practical purposes.

In fig. 107 the portion of the body plan shows sections of the armour surface by planes of the frames, which are generally 2 ft. apart behind the armour, and the half breadth shows projections of the upper and lower edges of the sections of the frames and the point of the middle of the main beam at the level of the middle of the deck; but is generally allowed to be about 1 in. below it, so as to make sure of getting in the armour, in spite of possible small inaccuracies in building the rest of the structure, which might result in the exact position of the middle of the two deck. The lower edge of the armour follows the deck edge, which is usually a level line throughout the length of the belt; but is kept an inch or two above it to avoid making the armour plates with a sharp edge to fit the acute angle formed by the beam edge and the deck, and which would be a serious point of weakness. The armour, in fact, usually rests on the deck as shown by the midship section depicted. The butts of the armour are arranged “brick fashion,” that is, the butts of one strake at the middle of a plate in the adjacent
strake, and each butt should be as close as possible to one of the vertical frames behind armour in order to allow the armour bolts to be sufficiently near the butt of the plate. At the same time it is convenient both for manufacturing purposes and for erecting the plates at the ship, to have the butt surfaces as nearly as possible normal to the surface of the plates. The butts are therefore arranged in vertical planes whose traces in the half-breadth plan lie in direction between the normals to the projections of the upper and lower edges of the plate. The lengths of the plates are made as great as possible, taking into consideration the capacity of the manufacturer's rolls and of the appliances for handling them during erection at the ship.

To lay off any plate such as that of which the projections of the intersections of the planes of the butts with the surface of the armour are ab, cd in the body plan and ab, cd in the half-breadth, a straight line YY is drawn in the body plan so that its direction lies between the directions of the normals to ab and cd at the points where they cut YY, and a straight line XX is drawn in the half-breadth plan similarly lying between the normals to o, c, and b, d and approximately at the centre of the plate.

Battens are bent to the curves of Yb, cd, aXc, bXd and the points named are marked on the battens so as to give the lengths of Y, Y, X, X, &c., measured round the curves. A pair of rectangular axes OX, OY are then drawn in any convenient position on the floor and the points o, b, c, d found such that the co-ordinates of o, ab, cX, dX, of o, yb, Xb, Yb, and Xc, of o, db, Yd, Xd. The figure abcd obtained by joining the points so found is straight lines is regarded as the expanded shape of the surface of the plate. A flexible batten mould is made to this figure and is used by the manufacturer to mark the four corners of the plate and thus to get its superficial size. A pair of moulds such as N are made, one to the top and the other to the bottom of the plate in the half-breadth plan, showing the curvature of the edge and the direction of the butts; and another pair such as M, one at each butt, showing the curvature of the edge of the butt plane and the sectional shape of the top and bottom of the plate. The butt moulds are made to the section of the surface of the plate by the plane of the frame, which is indistinguishable from the section by the very slightly inclined plane of the butt. Each of the butt moulds serves for the two plates which join at the butt, but each edge mould refers only to one plate. Each batten mould, of which all are straight lines which lie in one plane or, as it is technically expressed, are "out of winding" when the moulds are in their proper position, are also made to fit on the butt and edge moulds as P, Q in the figure. By means of these moulds the manufacturer makes each separate plate to its correct curvature and twist, while the top and bottom "out-of-winding" moulds for two or more consecutive plates have a common straight line drawn on them as l in the figure, to fix the relative position of the plates when they are erected at the manufacturer's works to prove the correctness of their shape.

A drawing is also made showing superposed expansions of the back and front surfaces of the armour without any necessity for extreme accuracy, as these surfaces are fully defined by the moulds. The butts and edges of the plates with numbers identifying each plate with its moulds are shown on this drawing.

The specification gives particulars of the dimensions of the bolts to be used and lays down the general principle of their distribution, e.g. one bolt to so many square feet of armour. The bolts are approximately arranged in accordance with the expansion of the plating behind armour. For the purposes of the present drawing their positions must be definitely fixed sufficiently clear of the frames behind armour to allow space for putting on the nuts. With vertically arranged frames projection of the bolts from this point only is of importance from this point of view. The projections of the normals to the plate surface representing the centre lines of the bolts are drawn in the half-breadth plan, and shifted if necessary to give the required clearance of the normals to the positions of the centres on the back of the plates are then measured along the curved sections of this surface in the body and half-breadth plans from the nearest edge of butt, and these distances are indicated in figures on the drawing.

The positions of any holes for the fastenings of top and bottom edge covering plates, or of any fittings to go on the outside surface of the armour are also shown in figures on the drawings of the plates and butts of the plates on this drawing. All holes must be drilled and tapped in the plates by the manufacturer before the final hardening process which renders the material unworkable.

The drawing also shows the plate in each strake selected as the "shutter in" or last plate to be fitted in place. This plate is not finally completed by the manufacturer until all the rest are in place on the ship and moulds have been made to the space which remains to be filled up.

The moulds for screen bulkhead armour are prepared in a similar manner to the process of specification when not actually plane, is cylindrical with a vertical generating line and therefore accurately developable.

For barbette armour nothing more than a drawing is usually necessary, the barbette being circular for its plan, the surface cylindrical and the top in a horizontal plane. The information issued from the Mould Loft for the guidance of the workmen in the shipyard has been generally passed over in the foregoing description, which has been devoted principally to the information prepared for the guidance of manufacturers of material, but it is not intended to imply that all the material is ordered before erection is begun. Much of the information for the erection of the frames and other parts of the structure, including the keel and transverse and longitudinal frames amidships, may be given before the ends of the ship are faired on the floor. Keel battens are provided giving the spacing of the transverse frames throughout the length of the ship, the lines defining their positions on the battens being marked with the distinguishing numbers by which the frames are identified on all the drawings, moulds and information accompanying the specification, and serves as information for its erection.

Section moulds are made in accordance with the frame lines in the body plan for guidance in shaping the flat keel plates transferred and on these the edges of the adjacent plates are also marked.

The practice, at one time quite common, of making batten moulds to each frame line on the Mould Loft, has been abandoned by the workmen employed bending the angle or zed bars, and the method of shaping and assembling the parts of the frame, is now almost entirely superseded by the use of the "scriveboard." Each batten mould, when issued, showed the outline of the frame, or of the part of the frame between two longitudinals, the shape of the floor plate or bracket plates, the position of the plate edges and other points necessary for completing the frame ready to go into its place at the ship.

The scrive-board is an auxiliary mould loft floor constructed conveniently near the frame line being slabs of hard wood, copied on it, with certain modifications or additions adapting it to the practical needs of the shipyard work, the whole of the body plan as laid off on the Mould Loft floor. For convenience in copying the lines so made it can be divided into portable parts and taken to the Mould Loft to have the lines copied on it, and then transported to its proper position and put together again. Otherwise it is a fixture in its proper
FIG. 97.—MIDSHIP SECTION OF

H. M. YACHT "ALEXANDRA".

Scale of Feet
Fig. 98.—Midship Section of H.M.S. "Lord Nelson."
position; but the process of copying the frame lines on it is one of measuring on battens the ordinates of their intersections with water and covering these with the same in either case. All of the frame lines are shown on the scrive-board, and the complete section of the frame surface for both sides of the ship is shown at each station. To avoid confusion of lines either a separate board is used for the fore and after bodies, or they are drawn on the same board with their centre lines parallel and a few feet apart, and one of the two bodies inverted. All the lines already referred to as having been laid off in the shipyard are placed in the loft floor, including the lines of outer edges of all transverse frames, the inner edges of all in the double bottom, and the upper edges of all floor plates outside the double bottom, the projections of plate edges of inner and outer bottoms, and on longitudinal bulkheads, projections of beam at side lines for all decks, and of the intersection of the beam surface of the protective deck by the plane of each frame, and also all the planed and eased in on its side. The scrive-board thus gives complete information of the shape and dimensions of every part of each transverse frame. To completely define the frame the "beveling" is required in addition, that is, the angle between the two flanges of the angle bar on the edge of the frame connecting it to the outer or inner bottom plating. The bevelling is usually given at the plate edge; but any other convenient bevelling spots may be chosen and their positions marked on the frame lines. To obtain the bevelling at any spot a normal is drawn to the frame line in the body plan at the spot; the distance from the frame line is measured along this normal to its intersection with the line towards the midship section, and this distance is set up as one of the sides containing the right angle in a right-angled triangle of which the frame space is the base. The angle of the hypotenuse is taken as the bevelling at that station. The straight lines marked on the side of the board and the straight edge of the board representing both the bevelling and its supplement. In the frame bars there is no doubt as to which of these two angles the workmen are to regard as the true bevelling, since the flanges of the frames are all turned towards the midship section, so as to make the true bevelling always greater than a right angle, or "standing" angle is the preferred, in distinction to "under" bevelling, which is less than a right angle.

Special bevelling frames are used in marking the bevelling boards, by which the construction of the triangles is reduced to setting off the normal measurement between the frame lines and drawing the hypotenuse directly on the bevelling board. The flanges of the angle bars on the inside edge of the frame, or the reverse frame bars, unmarked positions (that is towards the midship section) on the flanges of the frame bars, throughout the double bottom, in order to facilitate the construction of the bracket frame. Where the longitudinal surface is considered as the true bevelling, these angles on the inner bottom is the supplement of that of the frame angles. But throughout the double bottom neither bevelling differs much from a right angle. When the longitudinal tapers in breadth and the edges must be taken for the inner angles, a method similar to that already described for the frame angles. Outside the double bottom the reverse angle, or inner part of the split zed bar, is either unconnected to anything but the floor plate, or else connected to a horizontal flat, and does not require bevelling.

The bevellings of the short angle bars which connect the bracket or floor plates of the transverse frames to the longitudinal surface are avoided by measuring in the body plan at the middle of the intersection of the transverse frame with the plane of a frame station the normal distance to its intersection with the plane of the new station (that towards the midship section) on the frame station, and setting it up as one side of a right-angled triangle of which the frame space is the base.

To check the spread of the transverse frames during their erection, half-breadth staffs and height of breadth staffs are inserted at the keel, loft or off the scrive-board. These give the co-ordinates of the intersections of the longitudinal sight edges with the frame lines in the middle horizontal part. On the horizontal arm of the mould vertical lines are drawn at a given distance from the middle line at each frame station.

It is essential that the shape of the longitudinal frames should be obtained with considerable accuracy, especially when half-breadths and heights measured to their sight edges are largely relied upon for keeping the transverse frames to their designed spread during erection.

As already stated, the longitudinal surface does not much differ from a surface generated by the normal to the ship's surface as it travels along the curve of the longitudinal sight edge of the surface generated by the normal is developable and the sight edge is a line of curvature, which is approximately ensured by the method of drawing it, and it is found by experience that no error of practical importance is involved in drawing the surface of the longitudinal by the following approximate method.

Fig. 180 shows part of the body plan in which the frames lines are numbered 1 to 7, the projection of the longitudinal sight edge is shown by a b c d e f g, and the projections of the traces of the longitudinal surface with the planes of the frames are shown by the straight lines o1 o2 o3 o4 o5 o6 o7, all of the same height, and both off the scrive-board. These lines show the coordinates of the intersections of the longitudinal sight edges with the frame lines in the middle horizontal part. The curves o1 b1 c1 d1 e1 f1 g1, and o2 b2 c2 d2 e2 f2 g2 both cut all the traces at right angles, so that they are involutes of their envelope. Their positions are chosen at convenient distances beyond the inside and outside of the group of frame lines, which defines the shape and length of longitudinal which is to be developed in one operation.
Parallel straight lines $A_1G_1$, $A_2G_2$, the distance between which is equal to the normal distance between the two involutes in the body plan, are drawn in any convenient position on the floor, and perpendicular ordinates, 1, 2, 3, 4, 5, 6, 7, drawn between them distant the frame space apart. The longitudinal is developed in this plan on the assumption that when its surfaces are expanded, the involutes $a_1 b_1 g_1$ and $a_2 b_2 g_2$ will coincide with the straight lines $A_1 G_1$ and $A_2 G_2$ respectively. Taking $g_2 b_2$ in the body, represented by $G_2 G_3$ in the plan, as the fixed end of the longitudinal isometric, the shape of the surface to be unrolled, the lengths $g_2 b_2$, $g_3$, &c., are measured along the curve of the involute and set off along the lines $5, 6, 7, &c.$, in the plan giving the points $F_3, E_2, D_3$, &c., which represent with sufficient approximation the true position of the points of intersection of the line $a_1 b_1 g_1$ with the corresponding marks on the batten. The points $F_3 E_2 D_3 G_2 A_2$ are obtained by the other involution in a similar manner, and the lines $F_3 E_2, E_2 D_3, D_3 G_2, G_2 A_2$, obtained by joining corresponding points are regarded as the expanded positions of the traces of the longitudinal surface with the planes of the frames. The distances $G_2 G_3, F_3 F_2, E_3 E_2$, &c., then become $a_2 b_2$, $a_3 b_3$, &c., in the body, and the curve $G F E D C B A$ through the points so found is the expanded sight edge of the longitudinal. The distances $G_0 G_3, F_2 F_3, E_0 E_2$, &c., are then made equal to $g_1 b_1, g_2 b_2$, &c., in the body, and the curve $G F E D C B A$ through the points so found is the expanded sight edge of the longitudinal. This method, in which the involutes $a_1 b_1 g_1$ and $a_2 b_2 g_2$ are replaced by straight lines perpendicular to the trace, from which the longitudinal is to be unrolled, may be used; but, without assuming any substantial simplification of the process, the accuracy is so much less than that of the method described above, that it is not safe to lay off more than two or three plates of the longitudinal in one length by it.

When the longitudinal is much twisted, as, for example, when the longitudinal surface at its ends is to be made continuous with a deck flat, which is not normal to the surface of the ship, it is generally desirable to use the more laborious but reliable method of "mocking up." In fig. 109 the curves numbered 1 to 6 are projections of frame lines in the body plan. $a b c d e f$ is the projection of the sight edge of the longitudinal breaking into the longitudinal with the planes of the frames throughout the length which is to be mocked up. Trapezoidal frames made of four straight battens nailed together at the corners, such as $X Y Z E$ in the figure, are made to show the relative position of the traces of the longitudinal surface and of the level plane with the plane of each frame. The outer and inner ends of the trace of the longitudinal surface are marked on the upper batten of each frame as at $a$, $e$, and a point $O$, fixing the lateral position of each batten frame relatively to a convenient straight line perpendicular to the planes of the ship's frames, is marked on the lower batten. A diagonal plane such as $D D$ can be used instead of the level plane, for convenience in allowing smaller and better-shaped batten frames to be used; and the process is precisely the same.

The ship, when erected on its bases $X Y$ in planes perpendicular to the floor, parallel to one another and distant the frame space apart, with the points $O$ in all the frames lying in one straight line perpendicular to the batten frames. The upper edges of the upper battens then define the true shape of the longitudinal surface in three dimensions, and a fair curve through the points $e$, &c., marked on the battens represents the outer edge, and through points $a$, &c., the inner edge.

Whether the shape of the longitudinal has been obtained by development on the floor or by the mocking-up process, batten moulds are made to the outline of each plate, the buttoes being arranged so as to give the longitudinal the true horizontal, giving the shift of butts of bottom plating and longitudinals. Cross battens are fitted to mark the position of each transverse line of longitudinals, and for marking the inside space to stiffen the mould, and to carry marks or figures indicating the shape and dimensions of the lightening hole, which occurs between each pair of frames in non-watertight longitudinals. These moulds are used by the workmen in the construction of the frames, when the longitudinal is erected at the ship.

The normal sectional shape of the bilge keel in a sheathed ship consists of a single steel plate in the middle of the section covered over by wood trimmed to shape. The plate lies in a diagonal plane and is readily laid off by rabattting the diagonal plane. This gives the true form of the intersection of the bilge keel plate with the surface of the frames, and the outer edge of the plate is obtained by setting out from the inner edge of the bilge keel plate plus an allowance for the thickness of the shell-plating.

In an unshathed bilge keel is of triangular section, as shown in the body plan in fig. 109, and it is formed by two steel plates, a central plate, which is fitted to the frame by angle bars at their inner edges, the space being between the plates being filled with wood. In this case the middle plane of the bilge keel is shown, as shown by $2 D$ in the figure. The depth of the bilge keel at each frame plus the allowance for shell-plating is set out from the frame line along the diagonal, giving the vertex of the section of the keel at each frame station. A triangular mould is produced to the section of the bilge keel shown in the section drawing and is applied with its vertex coinciding with the points on the floor found as described above and with its centre line coinciding with the diagonal, and the traces of the sides of the keel are drawn at each frame station $a b, c d, &c.$ as shown in the figure. The surface of each side of the keel is then developed in the same way as the surface of a longitudinal except that in this case, since the lines are projected from the ship's bow to the stern, the longitudinal become straight lines, and the development is strictly accurate. A mould to each plate of the bilge keel, similar to the mould for a longitudinal plate, is prepared from the expansion of the bilge keel on the floor and issued for the guidance of the workmen. A triangular batten mould, made to show the angle between the diagonal plane, in which the centre of the bilge keel lies, and the horizontal, and having marked on it a point to be set at a given distance from the middle line plane of the bilge keel, is to be used as the basis of all the moulds, and the position of the bilge keel, is also issued to enable the position of the centre line of the bilge keel to be sighted-in on the bottom plating of the ship. The obtaining information for laying-out the plan of the ship is mostly in the form of drawings, which are largely descriptive rather than dimensioned, inasmuch as the frames and beams of a ship being once erected all other principal parts have to conform to them and any difference which may occur between their shape as erected and as laid off on the mould loft floor.

All the drawings of the structure and of the fittings must be pushed on and issued to the shipyard in good time. Very much of the success achieved in actual building will depend upon the efficiency of the drawing office, and the rapidity with which the various detailed working plans can be supplied for guidance. These plans must be accurate and complete, and must be ready as soon as required. The drawing-office staff has the oversight of weights actually worked into the ship, a careful record of which should be kept. Each firm has its own system of work in these departments, but experience shows that the more thorough and systematic the work in the drawing office and its subdivision the better may the result be. Another important record is the cost of the materials and labour. In all shipyards careful account is kept of workmen's time, whether employed on piece or by the day. Many different systems are in vogue; but whatever the system, the aim is to record the cost of the labour in each trade, and the detailed cost of various parts of the ship.

The work connected with laying-off and obtaining materials, &c., is going on in the office, where the handy labourers, prepare the ground for the keel blocks, lay the blocks at the proper height and inclination, and secure them against being floated away by the tide or being accidentally tripped while the ship is building. The blocks consist
of several pieces of tough redwood, 3 to 6 ft. in length, and are held in the height required. The top block is called the cap-piece, and is of oak or other hard wood. The blocks are spaced about 4 ft. apart for ships of medium size, and somewhat less for larger vessels. The framing is usually of a flat keel, consisting of a single timber, called the inside keelson. Sometimes it is continuous, especially in large ships and in warships. The frames are then cut by it, and the floor-plates are attached to it by short angle bars. After the centre keelson, the side keelsons are laid and erected. The rabbets are cut for the shores supporting the deck beams, being riveted at their heads to the beams and at their heels to the keelson, inner bottom or sternpost. These shovelform boards or rabbets, with the weepholes at their heel, are laid over the rabbets and are held in place by short angle bars or struts attached to the inside keelson and inner bottom. In a ship fitted with an inner bottom the procedure is somewhat more complicated, as the transverse frames cannot be lifted into place as a whole. There are many varieties in the arrangements in such cases; one frequently adopted is shown in fig. 101, in which the inner bottom extends out to the turn of the bilge. This figure shows the general construction of the vessel, including the framing at a bulkhead and elsewhere, the bulkhead itself with all transverse partitions, the double bottom with its inside keelson and inner bottom. At the centre line, immediately over the flat keel plates, there is a vertical girder, the full depth of the double bottom, and this girder is secured to the inner bottom by continuous double-angle bars. This centre girder may or may not be water-tight, according to the desired tank arrangements. The transverse frames are in four parts; the two lower parts are built up of an inner and an outer keelson, the two upper parts of the double bottom, which is a continuous girder of special construction; and the two upper, from the margin plates to the top-sides. The lower parts consist of a floor-plate with angle bars, and at its edges for attaching it to the inner and outer bottoms, the centre girder and the margin plate. The bulkheads of these floor-plates are solid, and the angle bars are united and made water-tight; elsewhere they are lightened by holes, and the angle bars at their upper and lower edges and ends are separate pieces. The upper parts of the transverse framing consists of a frame and a girder, and each has a plating-plate riveted on, and to one another along their deep flanges, with their shallow flanges standing the reverse way to one another. The shell-plating is attached to the shallow flange of the frame bar. Between the centre girder and the margin plate on each side of the ship there are three intercostal girders, the plates of which are connected by short angle bars to the floors and to the shell and inner bottom plating; and between the margin plates and the lower deck on each side there are three stringers, consisting of intercostal plates attached by short bars to the outer plating, and three continuous angle bars riveted to part of the intercostal plates which extend beyond the respective stringers.

In the course of erection, after the flat keel plate is laid upon the blocks, and the centre girder placed upon it, the two lower parts of the frames, which have been constructed alongside, are put into position by means of their outer keelsons being riveted to the sides of the foundry. The intercostal girders and margin plates are then fitted. The lower edge of the margin plate is brought close to the outer edge of the lower deck, and is secured to the latter by special rivets — shell-plating, while its upper edge is flanged for the purpose of being attached to the inner bottom plating. The ship at this stage gives the impression that a flat pontoon is being constructed.

When the margin plates are up and fairied and as desirable, riveted, the upper parts of the frames on each side are erected and the fairing proceeded with as before. The beams are now got into their position in the frames, and the outer keelsons are riveted to the sides of the blocks. The plates are fitted and riveted, usually cut completely through the transverse frames, and special brackets are provided to maintain the transverse strength. The chief advantages derived from cutting the frames by the margin plates is the saving of framework, and moreover the rapidity with which this part of the work can be proceeded with.

As soon as the keelsons and stringers are riveted, and the ship by its means sufficiently stiffened, the outside or shell plating is commenced. The plating squad is supplied with a drawing showing the disposition of the butts in each line of plates; and the line bars are worked up to the exact shape of the edges and butts, and the positions of all the rivet holes in the frames. From these moulds the edges and butts and the holes are marked off, the holes are punched, and the bars are filed and set to shape, furnacing being resorted to only when the curvature is too extreme to be obtained with cold. The line bars are then worked up to the finished shape, the strakes alternately (see a, fig. 79). The inside strakes, which are worked first, are templated off the ship, and lie directly on the flanges of the frame bars. The outside or overlapping
plates are then worked, and are templated from the place they are intended to occupy on the ship, and are kept at the proper distance from the frames by liners or slips of the same thickness as the adjacent inside plates. Towards the ends of the ship the number of strakes of plating must be reduced, as the girth along the frames is much less than over the midship portions. Stealers are introduced for this purpose; they are single plates, which at one end receive the butts of two plates, and at the other the butts of only one. By them two strakes are merged into one.

The number of plates requiring to be furnished is small in comparison with the whole number, but there are always some at the after end of the ship, especially in the neighbour-hood of the bow (for the stern tube) and the counter, and a few at the forward end of most ships. As each plate is got ready, it is taken to the ship, hoisted into position, and temporarily secured by the platers by means of bolts and nuts. As the work of plating proceeds, and the weight of the ship increases, extra shores are put into place, and bolts are erected by the shipwrights, to keep the structure to its shape and prevent local and general "unfairness." The shell-plating in way of the intended bilge blocks is completed at as early a period as possible, and painted, so that when once the bilge blocks are in place they need not be disturbed until immediately before launching. While the platers are at work on the shell-plating, other squads of riveters are engaged on the deck-plating and internal work, such as the bunkers, engine and boiler bearers, the shaft tunnel, casings and, in the later stages, the hatches, houses on deck, etc., and as much as possible of the internal work is done before the shell shuts out the day-light. As the work is completed by the platers, it is ready for the riveters and caulkers; and these trades follow on without delay, except in some parts of the casings and decks in way of the machinery, which are left portable, and taken down after the launch, to allow the machinery to be put in place.

The platers usually work in squads, composed generally of three platers, a marker-boy and a number of helpers or labourers, the number of whom depends on the size and weight of the plates, and the nature of the work to be done on them, and also on the facilities of the yard for handling such material. On the work of a large vessel many of these squads would be employed. The riveters also work in squads, a squad consisting of two riveters, one holder-up and one heater-boy, with sometimes a catcher, i.e., a boy to pass on the heated rivets when the distance from the rivet-hearth is great. Pneumatic riveting has not made great progress in Great Britain. Hydraulic riveting has a limited extent is adopted, especially in the case of work that can be taken to the machine, such as frames, beams and other parts; but in shipbuilding the large proportion of the riveting is done by hand. In the Royal dockyards platers' work is done by shipwrights, and riveting is not considered a trade, though regarded as skilled labour. Shipwrights also lay the blocks, erect the ribs, shroud and fair the ship, but labourers construct the stages. Driller's work consists in drilling by hand or by portable electric or pneumatic drills holes which it is not convenient or possible to punch or drill before erection; they also rime out and countersink punched and drilled holes when this is necessary. Portable electric or pneumatic drills are used when possible in some shipyards, and three-cylinder hydraulic engine drills are employed for some purposes, such as in cutting armour bolt holes in thick plating behind armour. The caulkers follow closely upon the riveters, and generally work singly.

A very important part of a caullker's duty is water-testing. In the large oil-tank steamers, possibly 8000 tons of water are used for testing one ship alone, and about the same amount for a large war vessel. This water is pumped from the sea or river into the compartment to be tested. In the case of an oil vessel, each compartment is filled right up, and a pressure put on by means of a stand pipe, carried for a considerable height above the highest part of the tank; any leakage found must be made good by the caullker, and the tank rested until it is perfectly water-tight. The double bottoms of merchant ships, and the smaller compartments and double bottoms of war vessels, are filled up and tested by a head of water rising a few feet above the load water-line. It is not usual to fill all the larger compartments, such as boiler and engine rooms in war vessels, or the machinery compartments and cargo holds in merchant ships; but water at a high velocity is played on the bulkheads by hose, to test the water-tightness and the strength. An occasional test, however, is made by filling a typical large compartment with water to a height of some feet above the load water-line. Angle-smiths form beam knees where these are welded, and generally all angle-bar work where heating in a smith's fire is required. It is usual to defer the painting of certain parts of the steel structure of a ship as long as possible, so

FIG. 110.—Great Lake Cargo Steamer; midship portion, in perspective.

FIG. 111.—British Cargo Steamer; midship portion, in perspective.
in certain circumstances it forms a galvanic couple with the steel plate. For warships the British Admiralty requires the removal of this scale from these parts by immersing the plates in a weak solution of hydrochloric acid. Red and white lead, oxide of iron and oxide of zinc form the bases of most of the paints used on steel ships.

**Structural Arrangements.**

The following are particulars of ships recently built at New London (Conn., U.S.A.) on the longitudinal system: The great centre girder, which in all vessels prior to these has been in the form of an I girder, is formed of a double II or box; that is, these vessels

composed of angle bars riveted together. At certain parts of the structure, where the heave of the sea will tend to strain the ship, the frames are double and made very strong. The outer surface of these frames is a shell composed of plates of 1 in. thickness. These enormous plates are arranged to give a maximum of strength, and the riveting of them to the frames and to each other is receiving the utmost care.

These ships have continuous longitudinal bulkhead on the centre, extending from the inner bottom to the main deck. The side plating of the shell, with this longitudinal bulkhead, form three vertical members of the ship, with the frame. The lower part of the girder are formed by the upper and main decks, which are laid with heavy steel plates. This great girder is designed to support a full cargo when suspended by long sea waves at either end. The side girders are kept in place by three intermediate decks between the tank and the main deck, making in all five complete decks, each covered with heavy steel plate. The plates supporting all these decks are of channel steel, and fitted to every frame by large bracket plates. One of the many notable features in the construction of these vessels is the distribution of the water ballast. Various conditions of trim and sinkage are obtained. The double bottom is divided longitudinally into three water-tight divisions and transversely into about twelve, making in all thirty-six separate tanks. In addition to these there are the fore, after peak tanks and side tanks between the main and 'tween decks, about one quarter of the vessel's length from either end. The latter tanks are really fitted for the purpose of controlling the ship's stability and seaworthiness.

The vessels are divided transversely into thirteen water-tight compartments, while the longitudinal bulkhead is water-tight in the machinery space, which makes the upper deck. In all fifteen water-tight compartments. The engine-rooms are completely independent of each other; so are the boiler-rooms; but access is had from one to the other by water-tight doors. The coal can gravitate direct to the stokehold floor. The method of pillaring is somewhat novel. . . . Strong girders run under the transverse beams and are supported at wide intervals by built stanchions. By this means the least possible trouble is experienced in stowing the cargo.

Fig. 110 shows the construction of a typical American Lake steamer, a diagram of which is given in the article *American Red-crest Lake steamer*.

For half the length or more of the ship is of the same transverse section, the frames being made identical in form. The outer plating is about 1 in. thick generally, but it is thicker at the garboards, flat keel and sheer strake, and becomes thinner generally towards the ends of the vessel. The frames are made of four separate pieces—two across the bottom and one up each side. These across the bottom consist of a 15-in. channel bar, with deep flanged brackets of 17½ lb plating connecting their inner ends to the centre keelson and their outer ends to the bilge and tank top. Extending up each side the frames consist of 6-in. channel bars of 17 lb per foot, worked 24 in. apart in the ordinary frames, and 15-in. channel bars of 3½ lb per foot, worked 8 ft. apart, and called belt or special frames. The frames are all connected to the tank top and to the upper deck-plating by flanged bracket plates 17½ lb per square foot; and the belt frames are stiffened by hold beams of 1 section, 12 in. deep and 35 lb per foot, attached to each by deep flanged brackets of 17½ lb plating, as indicated, and supported in the middle by stanchions or pillars of similar section. The stanchions are attached to the tank top by double clips of 6-in. angle bar, and to the upper deck beams by direct riveting and by flanged brackets of 15 lb plating. Each belt frame is thus complete in itself, and very readily erected after the tank top is completed. The tank top is of 20 lb plating amidships and under the loading hatches and 17½ lb elsewhere. The margin plate is a continuation of the tank top, is made of 17½ lb plating, and flanged against the shell. The centre keelson is of about 22½ lb plating and about 3½ ft. deep; the side keelsons of 17½ lb and slightly less, so that the margin plate extends from the inner bottom to the centre keelson, with the rise of floor on the outside, say 3 in. in the half-breadth of the ship, there is a small fall of the tank top towards the bilges, say 6 in. in the half-breadth, so as to drain the hold to the water-courses over the margin plate. The centre keelsons are connected to the tank top and the outer bottom, being attached to the tank top and the flat keel by heavy double angle bars, and well stiffened by the flanged floor brackets, which are connected to the keelson by heavy double angle bars to the tank top, and the floors by fore-and-aft angle bars 3 in. by 3 in. of 7½ lb per foot, and stiffened by vertical 6-in. angle bars at every frame. At the lower edge the keelson plates are connected to fore-and-aft intercostal channel bars.

![Fig. 112.—Cunard Liner "Campania"; midship portion, in perspective.](image-url)
15 in. deep of 33 lb per foot, riveted to the sheel-plating, which, with the channel floors, give very great local support to the bottom. This system of framing extends practically throughout the length of the vessel; thus the bottom is very strong, and very large ballast tanks are formed, having a capacity of nearly 3000 tons. The upper deck is plated, and the stringers are made specially heavy, to compensate for the strength lost by cutting wide hatchways.

Fig. 113 represents a modern British cargo steamer of ordinary construction, of about the same breadth and depth as the American Lake steamer just described, and it will be interesting to note the differences between the two vessels. These differences, so far as the outside form is concerned, are chiefly that the British cargo steamer has deck erections, topsides and a main deck, whereas the Lake steamer has scarcely any deck erections and no topsides, while her hold extends from the top of the inner bottom to the upper deck; they are due to the fact that the latter ship is only required to traverse inland waters, where heavy weather is not met with, whereas the former is an ocean-going vessel, and must be prepared to meet all conditions of wind and sea. As to the differences in the details of construction, they are chiefly that in the American Lake steamer the bottom framing, which is of great depth, consists of deep channel-frame bars, above which the longitudinals are continuous, instead of the usual transverse framing in the British ship, extending between the outer bottom and tank top; and that the margin plate continues the surface of the tank top out to the side, instead of being nearly vertical, as in the British ship. The system adopted in the American steamer conduces to security in case of grounding in the shallow waters through which she has to pass.

The general construction of a large passenger vessel is shown by fig. 112, which gives a perspective sectional view of the framing, &c. of the Cunard liner "Campania." The transverse frames and the girders or longitudinals extend in depth from the outer bottom plating to the inner bottom plating. The centre keelson, the second longitudinal from the middle line, and the margin plate on each side, are continuous, the transverse frames being fitted between them and attached to them by angle bars. The first and third longitudinals from the middle line are intercostal, being fitted in short pieces between the frames and attached to the

Fig. 113.—Details of Framing and Bulkheads.

Fig. 114.—Breast-hook and Panting Stringers.

floor-plates by short angle bars. The floor-plates have large holes cut in them to lighten them, and to give access to the different spaces for inspection, painting, &c., and smaller holes for watercourses. From the margin plate the transverse frames consist of stout channel
bars extending to the upper deck; each tier of beams is securely riveted to them, and their lower ends are connected to the margin plate by strong brackets. At intervals the channel-bar frames are replaced by deep built-up frames, the frequency of which depends on local requirements. Heavy side stringers of the same depth as the deep frames run fore and aft, to stiffen the side between the bilges and the first plated deck. Where the deep frames are cut by these stringers, the strength of the frames is continued by gusset plates, as shown.

Some further structural arrangements usually adopted in British ships are shown in figs. 113 to 115. Fig. 113, to which reference has already been made, shows in detail the construction of a bulkhead, with the framing in wake of it, and the same details at an ordinary frame; also the stringers, beams, pillars, &c. The bulkhead itself stops at the tank top, being secured to it by double angle bars, and the floor immediately beneath it is made watertight. It would involve very costly work to make the bulkhead water-tight if the side and bilge stringers were made continuous; these have therefore been cut, and the continuity of the longitudinal strength is maintained, as far as possible, by the large brackets shown in the plan. Besides bulb stiffeners, the bulkhead is provided with built-up vertical stiffeners at AB and a built-up horizontal stiffener at CD. Fig. 114 shows the arrangement for special strengthening at the extreme fore end of a vessel, between the collision bulkhead and the stem, and below the main deck, these consisting chiefly of panting stringers, panting beams and breast hook. Fig. 115 shows the general arrangement of stern framing of a single-screw ship, including the shaft tunnel. A water-tight door, which can be closed when necessary from above the level of the outside water, shuts off communication between the engine-room and tunnel; the form of the stern post and aperture frame casting is shown, with its attachment to the centre keelson and other details.

Figs. 116 and 117 show the arrangements of the stern and bow framing of the "Campania," which may be taken as those usually adopted in large passenger steamers of this class.\(^1\) In both transverse framing becomes deeper and stronger as the extremities are approached, while the decks and side stringers are all continued to the extremities, finishing in strong breast-hooks, and additional stringers, breast-hooks and panting beams are introduced. It is worthy of note that the rudder and steering gear are in this vessel entirely under water, so that the may be used for war purposes without running the risk of disablement by the rudder or steering gear being struck by projectiles. Above the water the stern is finished off so as to have the appearance of being fitted with an ordinary rudder. This important departure from the usual practice was first introduced by Professor Biles in the "City of Paris," and the "Campania" and her sister the "Lucania" were in 1902 the only British ships so fitted.

Fig. 112 gives in perspective the general structural arrangements of the Japanese cruiser "Izumo," and figs. 118-121 (Plate XIV) are from photographs of the vessel in course of construction. It will be seen that the departures from the structural arrangements of a merchant ship are very considerable. As already pointed out, lighter scantlings are used in warships than in ordinary merchant ships. This is effected by more carefully devised and more costly arrangements of framing and plating, and by making the structural features necessary in a warship for protection, &c., serve also for local and general strength.

\(^1\) We are indebted to the late Dr Elgar, F.R.S., for these and other plans of the "Campania."
local support to the bottom as well as general strength to the vessel. There are in a warship so many structural features, such as water-tight bulkheads and flats, that the latter are needed for the necessary subdivision, armour decks, plating and framing behind armour, &c., which are made to contribute to the strength of the structure as a whole, that the strength of the shell-plating and the transverse framing can be proportionately reduced.

In a merchant ship there are many considerations which require the structure to be stronger and heavier than would be necessary to withstand the wind and waves which she may encounter. The continual change of cargo and of disposition of cargo necessitates special local strength throughout. The custom, often pursued, of grounding vessels to discharge cargo, and their liability to touch the ground in the ports they frequent, make the provision of great strength in the floors and the shell-plating essential. Other considerations affect the decks, and call for local strength in them with corresponding increase of weight.

Most warships, except gunboat, torpedo and other small craft, have double bottoms, chiefly for protection against damage in action, but also against accidental grounding. The space between the bottoms is divided into a large number of compartments by making some of the frames and longitudinals water-tight.

The lower bottom extends on each side to the turn of the bilge, and from that point is carried up vertically as a wing bulkhead, as shown in fig. 122. The wing spaces thus formed being occasionally utilized for coal-bunkers. The framing, consisting of frame bars, reverse frame bars and frame plates or brackets, is usually carried up in a fair curve to the armour shell, suppose the vessel to be an armour-clad, as in fig. 122. From the edge of the armour, which is generally about 5 ft. below the load water-line, a change in structure is made, and the framing behind the armour is set back from the outside of the ship sufficiently to admit of an internal skin of steel plating (often worked in two thicknesses), seal backing, upon which the armour is embedded, and the armour itself, to be carried with the surface of the armour flush with the shell-plating. The vertical frames behind armour are spaced 2 ft. apart, and the longitudinals are made intercostal, the whole having exceptional strength, to support the armour. Above the armour another change is made, the frames being brought again to the outside of the ship, and the topside plating directly attached to them becoming flush with the outside of the armour. There is generally a strong deck, called the protective deck, extending from stem to stern in the form of a turtle back, the lower edges being at the armour shelf on each side of the ship, and the top of the arch forming the first deck above water, as indicated in fig. 120. With a view to maintaining its defensive power where it has to be perforated for tunnels and air shafts, armour gratings, or armour bars as they are called, are fitted in the openings. As much water-tight subdivision as possible is introduced throughout the ship, but for communication between the various compartments openings are provided in the bulkheads, having water-tight doors which can be closed either from a position close to the door or from a deck above water, or from both. Below the protective deck are the engine and boiler spaces, magazines, shell-rooms, submerged torpedo rooms, and steering-gear. A passage is provided on each side of the ship just below the protective deck, for the supply of ammunition to the secondary armament.

Fig. 118 shows the "Idzumo" partially in frame, looking forward from the after extremity: the frames below the armour deck over a considerable length of the ship are complete, and a number of the beams which carry the armour deck are in place. Fig. 119 shows the ram stern, which has just been placed in position. The collision bulkhead and the framing below the armour deck are for the most part in place. Fig. 120 gives the top of the armour deck, which is nearly completed, as seen from the fore end, with the forward citadel bulkhead in course of construction. Fig. 121 shows the after part of the vessel, which is not so far advanced as the forward portion shown in fig. 120. In fig. 121 the framing has been carried to a bulkhead near the after extremity, the rudder post is in place, and the bearing for the rudder head can be seen in the foreground. The construction of the armour deck is proceeding, and the after citadel bulkhead is also well advanced, though no backing is yet upon it, as in the case of the forward bulkhead, but the base of the redoubt which carries the after turret is erected.

The fittings in a ship cannot be fully described in the present article, but we shall conclude with some account of the auxiliary machinery. Two ordinary arrangements of steering-gear fitted in merchant steamers are shown in fig. 123. In the first example a three-quarter circular grooved rim, keyed to the rudder head, carries the steering-chains, which are led forward one on each side of the hatches to the steam engine, placed in this case in the engine-room casing, and controlled by shifting from the bridge. The usual steering-wheel is fitted on the bridge, and actuates the controlling valve of the steam engine by means of the shafting. The second example is very similar to the first: a quadrant is keyed on the rudder head, and worked by chains led over pulleys one on each side of the ship to the steam gear, which in this case is placed on the bridge, close to the wheel. In all such cases gear is also provided by which in an emergency the ship can be steered by hand, by steering-wheels placed close to the rudder head, as indicated in the figures.
In a warship the arrangement is different, as it is necessary to keep the steering gear below the water-line for protection. The breadth available at the rudder head is as a rule not sufficient for a tiller or quadrant to be fitted. Fig. 124 shows a frequently adopted. A crosshead of sufficient size is keyed on to the rudder head, and is worked by connecting rods from a similar crosshead placed a little farther forward, where the breadth of the ship is sufficient to allow a tiller to be worked. The tiller is worked by a block or carriage, which is drawn across the ship on a guide, at the same time sliding upon the tiller, which is machined for the purpose. The block-and-guide arrangement is known as Rapson's slide. The block is hauled to and fro across the ship by a chain, which passes round a sprocket wheel upon a shaft, which is driven in either direction, as required, by the steering-engine. In fig. 125 the arrangement is shown which has been for a considerable period adopted in large merchant ships and has in recent years been adopted in ships of the British navy. It is known as screw steering gear. On the same central shaft there are right- and left-handed propellers indicated on the plan, by which blocks A and B are made to travel always in the opposite direction when the shaft is rotated. These actuate the crosshead on the rudder E by means of the rods C and D, one of which will communicate a thrust and the other a pull, and vice versa according to which way the shaft is made to rotate. The shaft may be actuated either by hand-gear or by steam by means of the clutch F. In many cases the steam steering-engine is placed in the engine-room, to avoid heating the after-compartments by the steam pipes, and for the sake of easier control by the engineers.

Amongst the auxiliary machinery usually fitted in passenger and other well-found vessels may be mentioned the windlass for working the cables and weighing the anchors; a warping capstan forward in connexion with the windlass, and another aft with its own engine; steam winches for handling the cargo and baggage, and for hoisting coal on board; and occasionally steam cranes, fitted either in addition to or in place of the winches. Then there are the electric light, pumping, ventilating and refrigerating installations. Hydraulic power is employed in many cases, especially for cranes, but here the source of the power is necessarily a steam engine, which is usually placed in the main engine-room. Electric power sometimes replaces steam for operating some of the machines enumerated above; for instance, ventilating fans are now generally driven by electric motors in passenger and war ships. A large number of comparatively small fans are used, each supplying air to a particular part of the ship.

In warships the amount of auxiliary machinery has been very greatly increased in recent years. On each side of the deck amidships there is generally a steam winch for raising and lowering the boats, one of the principal functions of the mast in the modern warship being to carry the derrick used for this purpose. Electric motors are fitted for working the after-capstans, ash hoists, sometimes the winches, and the workshop machinery; also to traverse, elevate and work the guns, and bring the powder and projectiles up from the magazines to the guns. But for the heavier guns, the steering-gear, and certain other purposes, hydraulic power or steam is still preferred.

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(P. W.A.)

SHIPKA PASS, in Bulgaria, a pass in the Balkans, celebrated as the scene of fierce fighting in the Russo-Turkish War of 1877-78. The main road from Rumelia to Bulgaria, leading from Sistova by Tarnova and Eski Zagn to Adrianople, crosses the Balkans near the village of Shipka, and this passage was of necessity an important point in the Russian plan of operations. The road does not pass between high peaks, but crosses the main ridge at the highest point; it is therefore not a pass in the ordinary sense of the word. Near the summit, running parallel, and close to the road is a series of three ridges, some 300 ft. high, and about 2 m. from north to south, which formed the position for a force holding the pass. It was originally held by a Turkish force of about 4000 men with 12 guns, prepared to resist the Russian advance. On the 17th of July they repelled a feeble attack from the north, and the following day faced round and drove back an attack by Gurko from the south. These attacks were to have been simultaneous, but Gurko, having met with unexpected resistance, was a day late. Though so far successful, the Turks evacuated their strong position, and it was occupied by the Russians on the 19th of July.

They were first attacked by Suleiman Pasha towards the end of August. Having concentrated with Reouf Pasha and driven Gurko across the Balkans at the end of July, he moved to the Shipka on the morning of the 21st of August, and attacked. The Russian force there, including five battalions of Bulgarians, then numbered 5000, but that day a regiment from Selvi brought their numbers to 7500, and this force held the position against 30,000 Turks for three days, when heavy reinforcements arrived. The fighting continued till the morning of the 26th, when Suleiman, his troops being exhausted, and having lost 10,000 men, entrenched himself in the position he then occupied in a semi-circle round the southern end of the Russian position. Having called up more battalions from Yeni Zagra, after a four days' artillery bombardment, he attacked on the 17th of September, and was repelled with a loss of 3000 men.

There was no more fighting on the Shipka till the general advance of the Russians after the fall of Plevna. Radetzky's command of about 60,000 men advanced from Gabrova on the 5th of January, in three columns. Radetzky, with the central column, moved by the main road and attacked the Turks, who still faced the position on the summit, while Skobelev and Mirski, crossing by trails some 3 m. to the west and east of the Turkish position, attacked their reserves on the far side, about Shipka and Shenova, where Vessil Pasha (who had succeeded Suleiman in command) had formed an entrenched camp. These flank columns made their way over the mountains, deep in snow, and Mirski attacked alone on the 8th of January, as Skobelev's advance had been delayed. But the following day both columns attacked, and after fierce fighting the Turks surrendered. The force on the summit had that day repulsed, with heavy loss, a frontal attack by Radetzky, but they were included in the surrender. Their numbers were 36,000, including 6000 sick and wounded, and 93 guns. The Russian losses were 5800.

Not only were the Turkish attacks on the Shipka unsuccessful, but they were made without object. At the end of July, when Suleiman forced Gurko back over the Balkans, the moral equilibrium and the plan of operations of the Russians had been upset by the second battle of Plevna, and the Shipka ceased to have any strategic importance for the time being. Had Suleiman at that time followed Gurko and joined Mehmet Ali, or moving round acted with Osman against the Russian flanks, the evacuation of the Shipka would have been compulsory. Suleiman, knowing nothing of strategy, preferred to act independently, and his action was supported by the still more ignorant ministers at Constantinople. The Shipka was merely a geographical point until the Russians committed themselves to advance, but, fortunately for them, the Turks chose to waste an army in fighting it throughout the critical period of the operations. As with Osman at Plevna, it was Constantinople that forbade Vessil
Pasha to withdraw his forces at the beginning of January, compelling him to wait to be swelled up. The Turkish tactics were equally unsound. Suleiman divided his forces and used up his troops in costly frontal attacks on Mt. St Nicholas, the southern and strongest point of the position, whereas a well-supported flank attack would probably have met with success. The manner in which he sacrificed his men earned for him the name of the 'Shipka butcher.'

J. H. V. C.)

SHIPLEY, JONATHAN (1714–1788), bishop of St Asaph, was educated at Reading and Oxford. He was ordained about 1738, and acted as tutor in the household of the 3rd earl of Peterborough. In 1743 he became rector of Silchester and Sherborne St John, Hampshire, and prebendary of Winchester. He was appointed to a canonry of Christ Church, Oxford, in 1748, and in 1760 to the deanery of Winchester and the living of Chilbolton, Hampshire, which he held in addition to his earlier preferments. In 1769 he was consecrated successively bishop of Llandaff and of St Asaph. He was much concerned with politics, and joined the Whig party in strong opposition to the policy of George III. towards the American colonies. In 1779 he was the only bishop to advocate the abolition of all laws against Protestant dissenters. He died on the 6th of December 1788. His brother, William Shipley (1714–1803), originated the Society of Arts; and his son, William Davies Shipley (1745–1826), became dean of St Asaph.

SHIPLEY, an urban district in the Shipley parliamentary division of the West Riding of Yorkshire, England, on the south bank of the Aire, 3 m. N. by W. of Bradford, on branches of the Great Northern, Midland, and North Eastern railways. Pop. (1901) 25,573. The manufacture of worsted is the principal industry, and there are large stone quarries in the neighbourhood. The parish includes Saltaire, so named after Sir Titus Salt, who established large alpaca manufactories, opened in 1853.

SHIP-MONEY, a tax, the levy of which by Charles I. of England without the consent of parliament was one of the causes of the Great Rebellion. The Plantagenet kings of England had exercised the right of requiring the maritime towns and counties to furnish ships in time of war; and the liability was sometimes commuted for a money payment. Notwithstanding that several statutes of Edward I. and Edward III. had made it illegal for the crown to exact any taxes without the consent of parliament, the prerogative of levying ship-money in time of war had never fallen wholly into abeyance, and in 1619 James I. aroused no popular opposition by levying £40,000 of ship-money on London and £8,550 on other seaport towns. The fleet of Charles I. during the first three years of his reign was, says S. R. Gardiner, 'largely composed of vessels demanded from the port towns and maritime counties. The idea of universal ship-money to be levied in every county in England seemed to him to be requisite for further extension of the crown's power.' Accordingly, on the 11th of February 1668, Charles issued writs requiring £173,000 to be returned to the exchequer by the 1st of March for the provision of a fleet to secure the country against French invasion and for the protection of commerce, and every county in England was assessed for payment. This was the first occasion when the demand for ship-money aroused serious opposition. Lord Northampton, lord-lieutenant of Warwickshire, and the earl of Banbury in Berkshire, refused to assist in collecting the money; and Charles withdrew the writs. It will be seen, then, that the statement of Hallam—that in 1634 William Noy, the attorney-general, unearthed in the 'Tower of London musty records of ship-money as a tax disused and forgotten for centuries.—has no real foundation. It was, it is true, the suggestion of Noy that a further resort should be had to this expedient for raising money when, in 1634, Charles made a secret treaty with Philip IV. of Spain to assist him against the Dutch; and Noy set himself to investigate such ancient legal learning as was in existence in support of the demand. The king had obtained the advice in support of the legality of the writ from Lord Keeper Coventry and the earl of Manchester, but the writ was issued in October 1634 and directed to the justices of London and other sea ports, requiring them to provide a certain number of ships of war of a prescribed tonnage and equipment, or their equivalent in money, and empowering them to assess the inhabitants for payment of the tax according to their substance. The distinctive feature of the writ of 1634 was that it was issued, contrary to all precedent, in time of peace. Charles desired to conceal the true aim of his policy, which he knew would be detected by the country, and he accordingly alleged as a pretext for the impost the danger to commerce from pirates, and the general condition of unrest in Europe. The citizens of London immediately claimed exemption under their charter, while other towns petitioned the king for a remission of the amount of their assessment; but no resistance on constitutional grounds appears to have been offered to the validity of the writ, and a sum of £104,000 was collected. On the 4th of August 1635 a second writ of ship-money was issued, directed on this occasion, as in the revoked writ of 1628, to the sheriffs and justices of inland as well as of maritime counties and towns, demanding the sum of £268,000, which was to be obtained by assessment on personal as well as on real property, payment to be enforced by distress. This demand excited growing popular discontent, which now began to see in it a determination on the part of the king to dispense altogether with parliamentary government. Charles, therefore, obtained a written opinion, signed by ten out of twelve judges consulted, to the effect that in time of national danger, of which the crown was the sole judge, ship-money might legally be levied on all parts of the country by writ under the great seal. The issue of a third writ of ship-money on the 9th of October 1636 made it evident that the ancient restrictions, which limited the levying of the impost to the maritime parts of the kingdom and to times of war or imminent national danger, had been finally swept away, and that the king intended to convert it into a permanent and general form of taxation without parliamentary sanction. The judges again, at Charles's request, gave an opinion favourable to the prerogative, which was read by Coventry in the Star Chamber and by the judges on assize. Payment was, however, refused by Lord Saye and by John Hampden (q.v.), a wealthy Buckinghamshire landowner. The case against the latter (Rex v. Hampden, 3 State Trials, 823) was heard before all the judges in the Exchequer Chamber, Hampden being defended by Oliver St John (q.v.) and Robert Holborne, and lasted for six months. Seven of the twelve judges, headed by Finch, chief justice of the common pleas, gave judgment for the crown, and five for Hampden; though two of the latter—namely, Bramston, chief justice of the king's bench, and Davenport, chief baron of the exchequer—based their judgment on technical grounds which did not touch the constitutional question at issue. The judgment of the court practically abrogated the right of parliament to control supply; and the necessity for curbing the royal prerogative in regard to taxation, thus rendered arbitrary by legal decisions, became more obvious in the decision on the legality of the writ of 1634 directed to Charles I., which after the Hampden trial grew increasingly formidable. In 1639 Charles ventured again to issue a writ of ship-money, but for the comparatively small sum of £70,000. In 1641, by an Act of the Long Parliament (17 Car. I. c. 2), introduced by Selden, the illegality of ship-money was expressly declared, and the Hampden judgment annulled.


SHIPPARD, SIR SIDNEY GODOLPHIN ALEXANDER (1838–1902), British colonial administrator, was the eldest son of Captain William Shipppard, 29th Regiment. He was educated at King's College school and Oxford. Taking his degree in 1863, he was called to the bar as a member of the Inner Temple in 1867. He then entered upon a long career in South Africa. He was attorney-general of Griqualand West, and 1877, when he was made acting recorder of the High Court of Griqualand. From 1880 to 1885 he sat as a judge of the Supreme Court of Cape Colony; and he was British commissioner on the Anglo-
German commission in 1834–1835 for settling the claims of British subjects at Angra do Pequeno and other parts of the south-west coast. Shippard, while at Oxford in 1872, had discussed with Cecil Rhodes the plan of the projected British advance in south central Africa to the Cape. The annexation of Damaland and Namaqualand the first step in a design to secure for Germany territory stretching from ocean to ocean—a design which if executed would have been fatal to the British position in South Africa. Consequently when after the Warren expedition of 1885 he was chosen to organize the newly acquired British possessions in Bechuanaland he saw in his appointment an opportunity for forestalling the Germans, and also the Boer adventurers who likewise sought to be beforehand with Britain in the countries north of Bechuanaland. From his home in London he kept up a friendly correspondence with the Matabele king Lobengula with the object of attaching him to the British cause. At the end of 1887 he went to Graham’s Town with the hope of inducing the high commissioner (Sir Hercules Robinson—afterwards Lord Rosmead) to sanction the conclusion of a treaty with Lobengula binding that ruler not to cede any part of his territory to any other power than England. "I used all my power of persuasion," Sir Sidney writes, "but failed to induce Lord Rosmead either to act on his own responsibility in the matter or to approach Her Majesty’s government on the subject. As a last resource I telegraphed to Mr Rhodes, who was then busily engaged at Kimberley, to come down at once to Graham’s Town and try the effect of his eloquence. He came, and by taking upon himself all pecuniary responsibility succeeded in obtaining the requisite sanction" (see article “Bechuanaland," by Sir S. Shippard, in British Africa, London,1890). The treaty was signed and British interests secured. Shippard was thenceforth freer to devote himself to the special interests of Bechuanaland, which he governed with conspicuous success. He held the chief official position there from 1885 to 1895, being administrator, chief magistrate and president of the Land Commission for British Bechuanaland, and resident commissioner for the Bechuanaland Protectorate and the Kalahari. He was created K.C.M.G. in 1887. In 1896 he played an unofficial part in the negotiations between Sir Hercules Robinson and the Johannesburg reformers after the Jameson Raid. He then returned to England, where he died on the 29th of March 1902.

**SHIPPING.** To the floating log and paddle of the primeval fisherman must be attributed the growth of the great industry of merchant shipping. The hollowing of a log and the addition of a skin sail would before long serve to convert the embryo craft into a vessel navigable in the smooth and narrow waters which lapped the shores of the Mediterranean and the far distant East. The coastal villages had need of worked stone knives, of beads and of skins for winter coverings, to be obtained by barter for their fish and salt. Passing from settlement to settlement dotted on the shore, the traders found in the local skiffs a convenient alternative to the rough and tedious tracks along the winding or indented coast. In course of time they established themselves at the coastal settlements and built or purchased craft for their own use. As populations and their needs increased, the traders, gaining confidence by experience, built larger vessels and extended the area of their barter, sailing in companies, for mutual safety and defence. Of the early days of this traffic, as developed in the East, we have but little information, but in the Eastern seas, apparently, the Chinese usually came no farther than the coast of Malabar. The Malays seem in all ages to have traded with India and probably with the coast of Africa. In the Indian Ocean the Arabs were the principal carriers. Greatest of all the ancient navigators nearer to the West were the Phoenicians, the hardy sons of Tyre and Sidon. To the remarkable maritime ascendancy of Tyre Ezekiel xxvii. bears eloquent testimony. King Solomon’s undertaking for the building of the temple was largely founded on the support of Phoenician Hiram. Much later, but still some 2000 years ago, ships had become a common means of transport and were of no small size, since the centurion charged with the conveyance of St Paul to Rome (Acts xxvii.) found at Myra an Alexandrian ship about to sail with wheat for Italy, which was able to take on board, besides the cargo, the whole of the company, making a total of 276 souls in all. Then, as now, ships were but links in a mighty chain of commerce on the land, a commerce for which the ports were centres of collection and distribution. The products of India and Europe were conveyed from east and west in stages by inland or coastal routes with which in their entirety India and Europe alike were unacquainted (Vincent). And, generally, in the ancient days ocean commerce ceased with the summer season, and sea-borne goods from the distant east to the remote west found their way from entrepôt to entrepôt. These entrepôts were great trading centres, the advantageous situation of London. Foreshadowing, having before the days of the Roman conquest marked it out as a convenient emporium for the northern traders.

The Phoenicians, especially, for centuries pushed their commerce farther and farther afield, establishing factories and trading ports which in time grew into independent settlements. Cadiz, the ancient Gadir, was one of such, and from Gadir or more northern settlements the Phoenicians visited Britain, bartering merchandise for tin at Cornwall or the Scilly Isles. Amongst the various nations of the south, between whom the great shipping heritage of the Phoenicians was in course of time divided, the Ráidians rose to great importance. By these notable traders was drawn up a code of maritime laws, many of which were embodied in the Roman law, and eventually, at or about the time of Richard I., became a foundation for the Law of Oleron, which is in some part adopted at this day. Emerging from the constant struggles in the Mediterranean and Adriatic, the Venetians, Genoese and Pisans attained to great prosperity and renown, the reputation of the Genoese ship-builders creating from time to time a demand for their ships on the part of the nations struggling for maritime supremacy in the channel and the North Sea. The once familiar English word "argosy" dates from the appreciation of the vessels built at Arguze or Ragusa, a Dalmatian city on the Adriatic. The proximity of Italy to the Holy Land tended greatly to the prosperity of the Italian shipping.

In very early days the commerce of northern Europe was principally carried on by inland routes. With the increase and civilization of the populations, the cities on the navigable rivers and on the sea found the advantage of ocean commerce, and strove for supremacy in trade. In Britain many an ancient seaboard town, from Bristol to far north Inverness, largely owing its prosperity to the great trade which with the eastern countries became important as a trading centre. The English merchants were not without ships, but the foreign traders were enterprising and wealthy, and in their emulation for the renowned English wool and for English hides were prepared to venture much. In those days and for several centuries later the history of shipping was a history of arbitrary restraints, of claims for exclusive rights of trading and navigation, and of pretext of various kinds, resulting in captures and burnings, in embargoes and confiscations in port and in fierce reprisals. The merchantman was a more or less armed vessel prepared alike for aggression or defence, a condition of affairs to which has probably to be attributed the occasional construction of vessels of a tonnage then remarkable. The ships of Spain and Portugal, of England and the Netherlands—of French shipping for a considerable period there was comparatively little—homeward bound from Indian ports and factories and from the New World’s trading settlements from time to time were preyed on by one another. The Algerian and Barbary corsairs, with nothing to lose and everything to gain in merchandise and captives, were the dread of all. The Dey of Algiers had his harem in the British isle of Gibraltar, and from still farther north—and within the straits. The insurance of the voyagers against capture and the payment of head-money for their ransom was a well-established system of the times.

In England, the Cinque ports, in consideration of valuable privileges, were specially engaged to hold vessels at the service of the state, but on need arising the ports at large were called upon for ships and men. These demands at times became oppressive. Thus we read that in 1371 it was complained in parliament
that owing to the demands of the king the merchants were being ruined and their mariners driven into other trades. The size or measurement of ships was assessed on the weight of their cargo, and the first step in the present system of tonnage measurement. Ships sailed in fleets, one or more of their masters being appointed admirals, to be obeyed by all the company. In times of special maritime disturbance an armed fleet convoyed the merchantmen, much, no doubt, to the added cost of transport. The great source of England’s wealth was her wool, of which the abundance and fineness gave rise to a wide demand. Staples or licensed entrepôts or marts were set up for this and other produce at certain towns in England, and overseas, English merchants associating themselves at such foreign staples. In like manner foreign trading societies located themselves under certain privileges and obligations at English marts, to the great increase of shipping, more especially of foreign bottoms. About the middle of the 15th century a considerable use sprung up for shipping in the carriage of African slaves to Portugal, their captors being the Moors. In later years this melancholy trade found large employment for the ships of Liverpool, Bristol and London, trading with the distant west. Pilgrimages, too, were bringing profit to the ships of London and other of the Channel, being engaged on the one hand to the shrine of St James of Compostela and on the other to that of St Thomas of Canterbury.

From times remote the fishing industry produced a hardy race of shipmen, the maritime nations being all more or less engaged in an enterprise rendered doubly lucrative by the want of flesh meat and the regulations of Holy Church. Thus in very early days the northern seas were thronged with rival fishing fleets, which, from about the middle of the 15th century, began to find their way to the banks of Newfoundland. At the close of the 16th century the whale was being pursued by rival fishermen on the Greenland coasts. Queen Elizabeth, for the maintenance of shipping and the increase of fishermen and mariners, forbade the eating of flesh on Wednesdays and Saturdays, an order from time to time subsequently revived. Sir Walter Raleigh, in his statement to King James, lamenting English commercial supineness as compared with the enterprise of the Dutch, declared that 20,000 vessels of all nations were engaged in fishing off the British coasts, of which vessels the Dutch owned 3000; and no doubt they formed a valuable mercantile and naval school.

The great discoveries of the renowned Spanish and Portuguese navigators in the reign of Henry VII. awoke in the maritime states a new spirit of commercial enterprise and emulation, in which Henry and his successors took an active part. A royal grant of navigation and discovery was given to the Cabots, then settled at Bristol, and “ divers tall ships ” of London, Southampton and Bristol traded direct with the Mediterranean ports, though the English merchants generally employed foreign vessels for this trade. A “ tall ” ship was apparently a vessel carrying topmast with yards and square sails, an important development of the simpler pole-mast rig of earlier times. Henry VIII. and Ferdinand of Spain entered into a league, primarily aimed at France, under which it was agreed to police the seas in protection of their shipping, the English fleet to watch the sea to Gibraltar, and Spain to guard the Mediterranean. The Corporation of the Trinity House was now established, in great part for the deepening of the Thames and to supply shipping with the ballast gained in the process, though the vessels actually London-owned were apparently few in number. Most English ships of burthen were then obtained by purchase at the South Baltic ports, where the great Hanse town, Lübeck, was the centre of an enormous trade. The Hanse towns, indeed, practically carried on the trade of England. In the time of Elizabeth, England began to achieve commercial independence. Great building of ships took place, for which bounties were granted by the queen, and Elizabeth set herself against the Hanseatic league. At the close of her reign the Steelyard was shut up, and the Dutch were competing successfully with the Hanse towns, of which “ ...their teeth were out and the rest but loose.” In the early days of commerce the risks were considerable to be borne by individuals, who accordingly associated themselves as companies of merchant adventurers for the purposes of their particular trade, exclusive rights and privileges being granted to them by their own sovereign, and corresponding liabilities on the part of the foreign states or cities traded with. In England certain of these societies, notably the company of Russian merchants, the Turkey merchants and, for long, the East India Company, occupied positions of influence and importance, the last-named company especially becoming possessed of much shipping, including large vessels, well armed, for prize-making or defence. The needs of trade and shipping were for long but little understood or often arbitrarily obstructed, but as a broad general principle it was recognized by them that their trading interests required for their protection special privileges and concessions. Thus the patent granted by Elizabeth to the African adventurers in 1588 was expressed to be on the ground that “the adventuring of a new trade cannot be a matter of small charge and hazard to the adventurers in the beginning.”

At the middle of the 16th century Antwerp was at the zenith of its great prosperity. It was described as the general storehouse of the world, and it was stated that so many as 2500 vessels might be seen lying in the Scheldt at one time. These, however, were, as we have seen, for foreign, Antwerp being a mart or emporium to which other nations traded. Towards the close of the century this great city’s peaceful population was, in the name of Holy Church, crushed under the iron heel of Christian Spain. Its traders fled from cruelty and torture largely to Amsterdam, about this time the northern entrepôt for Portugal’s East India trade. The Hollanders, profiting by the decline of the Hanse towns, were now greatly devoting themselves to shipbuilding and to foreign trade. They, like the English, hampered in their navigation by hostile and unfriendly occupation of the ports of refuge and supply at the two great southern capes, were bent on discovering a north-east or north-west passage to the East. This enterprise and the desire for gems and precious metals, as to the existence and abundance of which there were many false beliefs, added greatly to the knowledge of the distant seas and shores, on which many settlements were being established. To such settlements the attention of the French was now directed, with much encouragement to their shipping by the powerful Richelieu. The East Indian settlements and shipping of the Portuguese were being persistently harassed by the advancing Dutch, while the rich treasure ships of Spain were laid wait for and captured by English shipping, greatly to the Spanish loss. But the Dutch especially were prospering. Amsterdam, a vast trade centre supplied by Dutch shipping, had between 1571 and 1650 trebled itself in size. So far back as 1603 Sir Walter Raleigh, in his statement to King James, had complained that the vessels of the Dutch, by reason of their greater capacity and smaller crews and consequently lower freights, were cutting out the English ships or driving them into the Newcastle coal trade. By such enterprise the Hollanders gradually became the carriers for the English merchants. English bottoms were neglected and English seamen took service with the Dutch. Affairs for English shipping had about 1650 reached a crisis. There existed, moreover, great animosity between the English and the Hollanders.

In the defence of the national shipping the great Navigation Act was in 1661 placed upon the British statute-book. Under this far-reaching act the trade between England and her colonies and the British coasting trade was strictly confined to English bottoms, English owned and manned substantially by English seamen. The act contained further provisions in support of British shipping, the effect of which was greatly to prejudice foreign shipping in its competition for the British carrying trade. It is not impossible that some of the regulations of the act may have proceeded from the animosity already mentioned (Adam Smith). From the point of view of the Dutch, indeed, it was a “ vile act and order,” to be resisted at all costs. From the prolonged hostilities which ensued England finally emerged supreme at sea. For some time the French, under the powerful encouragement of Richelieu and
SHIPPING

subsequently of Colbert, had been devoting themselves to colonial enterprises both across the Atlantic and in distant India, to the eventual important increase of French shipping, whilst on the other hand Spanish shipping was declining. As the result of the Navigation Acts and its successful implementation, the increase had taken place in English tonnage, which in 1688 was said to be nearly double that of 1666. In the war with France this increase was greatly in favour of her privateers, which in two years are stated to have captured 3000 British ships as against but 67 which were taken from France, a result in part attributable to her employment of Dutch vessels. About this time Inverness, long devoted to shipbuilding, had obtained a high reputation for its ships.

In 1701 England’s private shipping numbered 3281 vessels, of a total burden of 261,222 tons and carrying 5560 guns. London leading with 560 ships of 84,882 tons, Bristol coming next with 165 of 17,338 tons, Liverpool being seventh on the list with 102 ships. Thirty years later London’s ships had increased to 1417, ranging from 15 tons to a great ship of 750 tons owned by the South Sea Company, but the majority measured less than 200 tons. In 1765 we read that the Dutch, Danish and Swedish ships were generally larger than the English vessels and that they had succeeded in outshining England as the carrier of Lisbon’s Mediterranean trade. In 1714 an act was passed, and at subsequent dates revived, offering public rewards for improved methods of ascertaining longitude at sea, and John Harrison (“that heaven taught artist”) received in all £20,000 for the invention of a chronometer which was successful to a degree of accuracy beyond that for which the act provided. Towards the second half of the 18th century the foundations were laid of the present great shipping industry on the Great Lakes. Oak timber of large size was now becoming scarce in England, and in the interests of the navy restrictions were placed upon the East India Company as regards its use. British merchant shipping, too, had apparently outgrown the supply of seamen, for towards the close of the century it was permitted to British vessels to carry foreign seamen to the extent of three-fourths of the crew. The traffic in African negroes gave much employment to British shipping. The war with America led to the harring of British commerce by American privateers cruising off the English coasts. War premiums were very high and the insurance obtainable was insufficient. Partly on this account and partly owing to the demand for shipping, vessels of new and various capacities were provided for transport and other public services, whilst many more were sailed as privateers, the Thames was now full of foreign vessels loading British cargoes. During the absence from the West Indies of the British fleet under Admiral Byron, engaged in conveying homewards the West Indian merchantmen, two valuable British islands were captured by the French. The hostilities of the rival states were being fought out at sea, with peaceful commerce as their objective. The seas swarmed with privateers, armed and equipped as sordid speculative enterprises, occasional rich prizes stimulating the greed of many citizens, not a few of them, no doubt, the owners of ships and merchandise which had in like manner fallen to the enemy. The French privateer “Bordelais,” captured by the English in 1790, is reported to have taken in four years 149 prizes, of the net value of £1,000,000 sterling (Mahan). Between May 1756 and July 1757 a total of 772 French vessels was captured by the British, whilst 637 British ships were taken by the French. It was declared in the House of Lords in February 1778 that the value of the British captures of American vessels had amounted to £1,800,000, against which that of British shipping captured by America had been £1,800,000. Towards the close of the prolonged hostilities which concluded in 1815 Liverpool and Glasgow were holding public meetings and urging upon the admiralty and the throne that they were being ruined by the want of protection to their shipping. In 1786 an act was passed (26 Geo. III. c. 86) for the encouragement of shipping, in which the personal liability of shipowners, till then unlimited, was in certain cases of their loss of cargo now limited to the value of the vessel and her freight, the first of progressive acts of the like nature. Smuggling was for long the cause of serious loss to the national revenue, and an act was passed declaring forfeited any British sloops or cutters found within four leagues of the coast if provided with a bowsprit exceeding two-thirds of the beam.
owing to the superior advantages of iron hulls, not yet constructed in
America, the United States now further lost place as ocean
carriers. In 1868 the chief employment of her ocean shipping
was on the Atlantic coast and in the Gulf of Mexico. Steam-powered vessels resulted in the estab-
lishment of many coaling stations in distant ports, with
much employment of shipping to supply them. Towards the
middle of the 19th century British shipowners were greatly
alarmed at proposals to repeal the navigation acts, and in spite
of their petitions and remonstrances, and of demands that the
bill, eventually introduced, should at least require reciprocity,
in 1849 the proposed measure became an act, the coastal trade
being in 1854 similarly thrown open, this latter measure being
initiated by the need for British shipbuilding. A number of the
vessels of the Crimean War (Lindsay). Probably in no small degree owing to the discovery of gold in California and Australia about
this time, and to the further employment provided for shipping
by the Crimean War and by the necessities of the Indian Mutiny,
the direful forebodings of British owners as to the consequences of
the repeal of the Navigation Act were far removed. In 1856
the Treaty of Paris and its appended Declaration pronounced,
amongst other notable clauses affecting maritime warfare, the
abolition of privateering. To this great treaty much of the
maritime status of the maritime states was due. AD The British,
United States and Spain, however, not yet being signatories.
The altered conditions as between warships and merchant vessels,
and the disabilities imposed by neutrality laws have, however,
in themselves done very much to render privateering as formerly
conducted no longer possible. But the Declaration, notwithstanding,
the employment of duly commissioned merchant vessels may still be resorted to by the state for the destruction
of commerce and for other belligerent purposes.
In 1858, after great difficulty and outlay, Brunel's huge ship the
"Great Eastern" was floated on the Thames. The vessel,
having a length of 679 ft. and a burden of 15,337 tons gross and
13,344 tons net (Lloyd's Register) and being provided with six
sail-carrying masts, was furnished both with a screw propeller
and with paddles. Highly successful as an engineering enterprise,
commercially she was from the first a ruinous failure. Under
the remarkable development of the Atlantic passenger traffic,
however, the size of steamships steadily and continually increased.
In 1873, as the outcome of a prolonged public agitation con-
ducted by Mr Samuel Plimsoll, an amendment to the Merchant
Shipping Act was passed (39 & 40 Vic. c. 80), making it a penal offence to knowingly
send a ship to sea unseaworthy, and requiring a loadline to be
fixed on British vessels, the line to be indicated on ocean going
vessels by what is now universally known as the Plimsoll mark.
The opening in 1869 of the Suez Canal created a revolution in
the eastern shipping trade. Year by year steamships increased
greatly in number and in burden. With improved conditions of
steam navigation the supplementary use of sails was generally abandoned, masts being retained only for signalling purposes and as
attachments for cargo hoists. New conditions in ship con-
struction, the commercial demand for expedition and the manufac-
ture of new articles of commerce together resulted in an
increased risk of fire on ships both at sea and in port, with great
loss primarily to underwriters, more especially by the flooding
of holds full of valuable cargo. To overcome this danger steam-
ships are being increasingly equipped with apparatus which
on the outbreak of fire enables the holds to be filled with a fire-
extinguishing gas. The invention and adoption of refrigerating
machinery and insulated holds resulted in the development of
a vast trade in frozen meat and perishable produce.
The triumph of Germany in the Franco-Prussian War in
the Fatherland a spirit of industrial enterprise which greatly
increased the population of her manufacturing areas. The
supplies required by the prosperous industrial populations and the
national demand for raw materials for the manufactur-

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Sailing Vessels Net</th>
<th>Steamers Gross</th>
<th>No. Sailing Vessels Net</th>
<th>Steamers Gross</th>
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<tr>
<td>1890</td>
<td>1,650,311</td>
<td>1066</td>
<td>1,140,177</td>
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<tr>
<td>1891</td>
<td>1,950,033</td>
<td>1066</td>
<td>1,140,177</td>
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<tr>
<td>1892</td>
<td>4,322,145</td>
<td>1066</td>
<td>1,140,177</td>
<td></td>
</tr>
<tr>
<td>1893</td>
<td>3,539,378</td>
<td>1066</td>
<td>1,140,177</td>
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In consequence of an act passed by the French government to
grant bounties on sailing vessels constructed and owned in France,
the owners of such vessels found it to their profit, the bounty
being assessed on distances sailed, to engage in long voyages,
with the earning of freight as a secondary consideration. This
procedure being found to operate prejudicially on the freight
earnings of sailing vessels generally, and more especially in the
Pacific trade, an international meeting of the owners of sailing
vessels was held at Paris in 1893, with the result of the formation of
the Sailing Ship Owners' International Union to maintain
rates of freight. French owners identifying themselves with the
measures decided on by the union in the common interest, Influenced, no doubt, by German example, certain French
steamship companies about this time decided to grant preferential
combined tariffs on goods sent from inland centres of production
in France for shipment by their vessels, to the great dissa-
atisfaction of the owners of foreign steamers loading for similar
destinations at French ports.
Early in 1902 a shipping pool or "combine" was effected in
the case of certain important British steam lines engaged in
the North Atlantic trade. The combine, involving vast capital
values, was engineered by a well-known New York business house largely interested in American railways. In England it was variably attributed to a resolve on the part of American traders to share in the transport of the national trade; to a purpose evidenced by a number of steamers which were named to effect economies by a consolidation of management, and to a scheme intended to benefit certain great American railways. The transaction gave rise to much comment in Great Britain, being by not a few regarded as contemplating the eventual transfer of the lines to American ownership. And indeed, though the steamers continued to be under the British flag, the extent to which they remain substantially under British ownership cannot be affirmed. It was stated in 1898 that on completion of its building programme the combined fleet of the American line possessed only 1,159,704 tons, as compared with 3,798,000 tons of vessels operating under the British flag.

The general adoption of steampships in place of sailing vessels was gradually followed by their separation into two classes, one devoted to a fixed service on regular lines of employment, the other to promiscuous trade. The former class are now known somewhat vaguely as "liners," ranging, however, from the first-class mail and passenger steamer on the one hand, to the regular cargo steamer on the other. To the second class belong the "seekers or tramps" which come and go wherever profitable employment occurs, and which more especially lay themselves out to be chartered to carry full cargoes of coal, timber, wheat, nitrate, jute and such like. These vessels, some of which are of great capacity, are frequently in competition with the liners. This competition sometimes results in "cut rates" of freight, to the serious loss of the great shipping firms and companies. With the establishment of regular lines, moreover, there grew up competition between rival lines, with similar results. A solution was found by the creation of working agreements between rival lines at agreed rates of freight, but the lines thus associated were still exposed to the attacks of "tramps" upon what the liner owners regarded as their privileged trade. Fierce conflicts from time to time ensued, with great disturbance of the freight market and with consequent loss or inconvenience to the merchants themselves. As the result, shipping "rings" or "conferences" were created in many trades, the owners of the liners undertaking to provide the traders with a regular service accompanied by advantageous conditions, whilst the traders undertook to ship only by the conference steamers. In order to ensure this support, the shipowners instituted the system of deferred rebates, under which each merchant, at the end of a year or other fixed period, should be entitled to a discount or rebate on the amount of freight paid by him during such period, provided that he should have shipped no goods at all by steamer outside the conference, the discount only to be paid after a further fixed period of six or nine months, during which time also he should rigidly support the conference lines. In the event of failure to comply with the conditions, a merchant is exposed to forfeiture of the rebate, and in addition to measures in the nature of a boycott on the part of the conference lines. Notwithstanding, attempts are from time to time made by steamers outside the ring to gain admittance, with the consequence of occasional freight wars, and with the incidental result that goods are sometimes carried, for example, from America to a British colony at lower rates of freight than similar goods manufactured in England. Mainly on account of complaints made against the working of the South African ring, a British royal commission was in 1906 appointed to take evidence and report upon the subject generally.

With the growth of populations and the development of means of transport, both by land and sea, a great increase arose both in production and consumption, and competition became very keen for markets, both home and foreign. In this competition the cost of carriage is always an element of great importance, even though the freight payment may bear but an insignificant relation to the value of the goods carried. For in modern trade rivalries every penny saved in charges counts with the importer, and if goods of a similar kind can, by reason of lower transport charges, be obtained a fraction cheaper from one industrial centre than from another, the tendency is to give the preference to the centre or country which can deliver most cheaply to the consumer. Trade follows cheapness, and, with the world's industrial development, the striving for cheapness took at the outset the form of economies in production. The day of small trade with large profits was passed, and producers of all kinds now aimed at a large output at diminished cost, and contended themselves with a smaller ratio of profits on a larger business. The utmost economy was studied with a view to successful competition, especially in overseas markets; and in this struggle for the cheapening of supplies the cost of transport became an important element. The fact was recognized that the ship is but a link in the chain of connexion between producer and consumer, and the system of "through" bills of lading was introduced, under which a particular consignment of goods was removed from the port of shipment to the port of discharge by vessels of the carriers, with the consent of the owners, without any intermediate stage of change of ownership or of the medium of transport.

With this increase in the volume of traffic went a growth in the number and size of the vessels employed in the carriage of goods in conjunction with other lines, with the object and effect of cheapening the transport as a whole. Individual shipowners, in order to obtain cargoes for their ships, were in turn driven to devise economies in transport, with the result that rates of freight were continually reduced. In modern ocean carriage size means cheapness, the transport of a given weight of cargo being cheaper in a single vessel than in two vessels each of half the size. For not only does this concentration of carrying power effect economy of officers and crew, with their wages, provisions and accommodation space, but in shipbuilding also size makes for cheapness. Thus, if, for example, two steamers each carrying 2000 tons will cost together say £40,000, a single vessel of equal carrying capacity can be supplied for £35,000. Or, put another way, if for £40,000 two steamers can be built to carry between them 4000 tons, for the same sum a single vessel can, it is stated, be provided to carry 4700 tons. Consequently, the size of vessels is continually on the increase, and no sooner is a navigable channel at such cost made deep enough than new vessels of greater dimensions are constructed. Vessels larger are constructed, and shipowners complain anew that the harbour depth provided is insufficient. The constant demand for greater depths resulted in the production of mammoth dredgers of which, also, the size and power are continually increasing. At the present time it is the navigable depth of ports and canals, and the need of adequate dry docks, rather than the obtaining of cargoes, which are the controlling factors in the size of great ocean vessels. But the heavy interest on the capital cost of these vessels and their working expenses call for the utmost dispatch in their loading and discharge, and with the simultaneous arrival of several vessels of large tonnage, the question of prompt discharge is one of great and increasing difficulty. For many modern steamers will carry 10,000 tons of cargo, and some a great deal more; so that, with old-type railway trucks carrying ordinarily only about 8 tons, it not infrequently happens that the discharge of the ship, equipped though she be with remarkable facilities for landing her cargo and assisted by discharge into barges, is impeded owing to deficiency of shore clearance. If 8 tons be taken as the capacity of an ordinary railway truck and 30 trucks be allowed to be attached to a train, it will be obvious that a single modern cargo ship will require a vast procession of rolling stock to clear her cargo. A single cargo of 10,000 tons, for example, will require some 1250 railway trucks for its removal; or, allowing 6 yards' length to the truck, 7500 yards of rolling stock, without engines and vans. And, in fact, congestion of shipping owing to delays is frequently the cause of bitter complaint in the case of certain ports. Trucks of much increased capacity are now being introduced, but for various reasons their adoption is very slow. In ports that argues the argument is sometimes heard that the backwardness of this or that port will result in the trade being driven elsewhere: the ships, it is said, will remove it. But the ship is but the blind instrument of trade, to come and go where and as trade calls it. The ship will, however, sooner or later require a higher rate of freight for ports of slow despatch, and this increased expense in transport will undoubtedly operate in favour of rival ports. For the ports themselves are but stepping-stones to or from a market or industrial centre, and the market will always select the cheapest route for its trade.
With the increase of populations in the Old World and the development of new countries, the transport of emigrants and of travellers for business and for pleasure became a highly important and lucrative source of employment for steamship

 Công việc tăng của dân số trong thế giới cũ và phát triển của các quốc gia mới, vận chuyển người di cư và du lịch trở thành một nguồn việc làm quan trọng và sinh lợi cho các công ty tàu lái.

 It is now indeed becoming a common practice on the part of ocean steamship companies to employ a surplus or superseded vessel of their fleet solely in carrying holiday tourists to a succession of foreign ports. In regular traffic the demand for increased speed and greater security and comfort on the part of ocean travellers resulted in the competitive evolution of passenger steamers of dimensions and draught which create an increasing strain on port and dock authorities.

 Công việc cao hơn đã trở nên phổ biến đối với các công ty tàu lái biển, bởi việc thuê thêm hoặc đóng lại tàu, để chỉ vận chuyển du khách nghỉ lễ đến các quốc đảo. Trong giao thông định kỳ, sự yêu cầu từ du khách di chuyển biển đã dẫn đến sự cạnh tranh trong việc phát triển tàu của kích thước và độ nổi, tạo ra một áp lực ngày càng tăng lên cho cảng và bến đỗ.

 These remarks must not be concluded without mention of the important part played in the evolution of modern shipping by the system of marine insurance and by the rules of classification. For the cost of insurance is a heavy tax on the profits of the shipowners, and only by providing vessels of the best construction and maintaining their reputation can owners gain the advantage of low insurance rates. And not only so, but by the merchants also, to whom insurance premiums are a no less serious consider-

 Những nhận xét này không thể kết thúc mà không men- tion của vai trò quan trọng của hệ thống bảo hiểm hải quan và các quy tắc phân loại trong việc phát triển giao thông hiện đại. Doanh nghiệp tàu biển phải chịu một thuế nặng lên lợi nhuận, và chỉ có việc cung cấp tàu có chất lượng tốt và duy trì uy tín của mình, chủ tàu mới có thể giành được lợi ích từ việc giảm cước bảo hiểm. Và không chỉ vậy, mà còn nhờ các thương nhân khác, người trả phí bảo hiểm là một vấn đề quan trọng. 

...tion; vessels of the highest class and reputation are insisted on with a view to cheap cargo insurance, inferior ships being consequently placed at a serious disadvantage. On the other hand, the rules of construction and classification of the Society of Lloyd's Register (a body altogether distinct from the Corporation of Lloyd's) are most exacting, and any failure to comply with the rules of the Register or "Book," which, moreover, are in a constant state of scientific evolution, may involve withdrawal of the vessel's class, a result which would be fatal to her cheap insurance as well as to her employment in successful competition for freights. With its skilled surveyors at foreign, colonial and home ports, the great society offers every facility for the classing of the whole world's shipping and foreign as well as British owners are fully alive to the importance of a strict com

...tion; tàu của cấp cao và uy tín cao được yêu cầu dùng để hoàn thiện bảo hiểm hàng hóa, tàu hạng thấp sẽ bị đặt vào trạng thái không cạnh tranh. Mặt khác, các quy tắc xây dựng và phân loại của Society of Lloyd's Register (Nhà cung cấp tư cách hoàn toàn không liên quan đến Nhà cung cấp tư cách Lloyd's) rất nghiêm ngặt, và bất kỳ vi phạm nào các quy tắc của Register hay "Sách," các quy tắc này đang trong trạng thái không ngừng thay đổi, có thể dẫn đến việc rút khỏi class của tàu, một kết quả sẽ gây hại lớn cho bảo hiểm Lage thấp của tàu cũng như việc thuê tàu vào cuộc đua việc thuê tàu. Với các kỹ sư chuyên nghiệp ở nước ngoài, thuộc địa và trong nước, tổ chức này cung cấp mọi tiện ích để phân loại toàn bộ thế giới tàu hàng và cả tàu nước ngoài và người sở hữu tàu Anh cũng nhận được sự nhận thức đầy đủ về sự quan trọng của việc tuân thủ các quy tắc này.

... But the various factors or forces which make for the evolution of shipping may all be summed up under the word "competition," which is the mainspring of the machinery both of insurance and classification. These factors operate, however, in different ways. Thus, while insurance and classification make most for ships increased safety, the desire for profitablefreights tends continu-

 Nhưng các yếu tố hoặc lực lượng ảnh hưởng đến việc phát triển giao thông đều có thể được tổng hợp lại dưới từ "cạnh tranh," đó là động lực chính của hệ thống bảo hiểm và phân loại. Những yếu tố này tác động, tuy nhiên, theo cách khác nhau. Do đó, khi bảo hiểm và phân loại là yếu tố quan trọng nhất cho việc đảm bảo an toàn cho tàu, sự yêu cầu về việc có tàu có lợi nhuận cao dẫn đến việc phát triển tiếp tục.

... But the various factors or forces which make for the evolution of shipping may all be summed up under the word "competition," which is the mainspring of the machinery both of insurance and classification. These factors operate, however, in different ways. Thus, while insurance and classification make most for ships increased safety, the desire for profitablefreights tends continu-

 ...
Her most sensational prophecies had to do with Cardinal Wolsey, the duke of Suffolk, Lord Percy and other men prominent at the court of Henry VIII. There is a tradition that on one occasion the abbot of Beverley, anxious to investigate the case for himself, visited Mother Shipton’s cottage disguised, and that no sooner had he knocked than the old woman called out “Come in, Mr Abbot, for you are not so much disguised but the fox may be seen through the sheep’s skin.” She is said to have died at Clifton, Yorkshire, in 1561, and was buried there or at Shipton. Her whole history rests on the flimsiest authority, but her alleged prophecies have had from the 17th century until quite recently an extraordinary hold on the popular imagination. In Stuart times all ranks of society flocked in to hear her; and referring to her supposed foretelling of the Great Fire, Pepys relates that when Prince Rupert heard, while sailing up the Thames on the 20th of October 1666, of the outbreak of the fire “ he said was, ‘now Shipton’s prophecy was out.’” One of her prophecies was supposed to have menaced Yeovil, Somerset, with an earthquake and flood in 1859, and so convinced were the parishioners of the truth of her prognostications that hundreds moved from their cottages on the eve of the expected catastrophe, and a perfectly fine town in front of the county to see the town’s destruction. The suggestion that Mother Shipton had foretold the end of the world in 1881 was absurdity the cause of the most poignant alarm throughout rural England in that year, the people deserting their houses, and spending the night in prayer in the fields, churches and chapels. This latter alleged prophecy was one of a series of forgeries to which Charles Hindley, who reprinted in 1862 a garbled version of Richard Head’s Life, confessed in 1873.

SHIRAZ—SHIRÉ

SHIRAZ, the capital of the province of Fars in Persia, situated in a fertile plain, in 29° 36′ N., 52° 32′ E., at an elevation of 3100 ft., 156 m. by road N.E. by E. from Bushire (112 m. direct). According to Eastern authorities Shiraz was founded in A.D. 693 by Mahommed b. Yusuf Thakefi, a brother of the famous Hajjaj. It is approached on the south from the Persian Gulf through lofty and difficult mountain passes (highest 7400 ft.) and on the north through chains of hills which separate the plain of Shiraz from that of Mervadsch, where the ruins of Persepolis are. It is surrounded by a low mud wall flanked by towers, and a dry ditch, and measures about 4 m. in circumference. There are six gates. The town is divided into eleven quarters (mahalleh), one of which is exclusively inhabited by Jews and called Mahalleh Yahudi. The population of Shiraz is estimated at 60,000, but in 1854 it was 53,007, of which 1070 were Jews. The houses of Shiraz are, in general, small, and the streets narrow. A great bazaar, built by Kerim Khan Zend, forms an exception to this; it is about 500 yds. in length and has a vaulted roof 22 ft. high, and contains many spacious shops well supplied with goods and merchandise. There are many mosques, the most notable being the old Jama, a foundation of the Saffarid ruler Amr b. Leith in 904, now in a state of ruin; the new Jama, generally called Masjed-i Nau; the New Mosque, built by Atabeg S’ad b. Zengi, c. 1200; and the Jama i Vakil, built by Kerim Khan Zend in 1766. Shiraz still possesses the title “Dar ul im,” the “Seat of Knowledge,” and has many colleges (madressah), the oldest being the Mansurieh built in 1278 by Seyed Sadr ed din Mahommed Dastktei; the Hashimiyeh and Nizamieh date from the middle of the 17th century, the college called M. i Agha Baba was begun by Kerim Khan Zend, c. 1750, but finished in 1823 by Agha Baba Khan Mazanderani. Of the twenty caravanserais, or more, which Shiraz has, the oldest is that called Car Chiragh Ali, built in 1678. There are several shrines of Imam-zadehs, the most venerated and rich being that of Seyed Ahmed, commonly known as Shah Chiragh, a son of Músá Kázm, the seventh imam of the Shíites. It was built c. 1240 by Atabeg Abu Bekr. Two of Shah Chiragh’s brothers and a nephew also have their graves at Shiraz. Within the town and in close proximity to it are many pleasant gardens (bagh), among them the B. Jaljel Nema (Kerim Khan 1766), where C. J. Rich, the British resident at Bagdad and explorer of Babylon and Kurrashan, died on the 5th of October 1821, and the adjoining B. i Nau (1810); B. i Takhti i Kajar (built 1687 by Atabeg Karajeh under the Seljuk Malik Shah; restored 1754 by order of Agha Mahommed Khan, the first Kajar ruler); B. i Dilgusha (restored 1785), &c. Close to the last-mentioned garden is the Sadiyeh, an enclosure with the tomb of the celebrated poet S’ad, and in a cemetery near the northern side of the town stands the Hafizieh, with the tomb of the likewise celebrated poet Hafiz, a sarcophagus supposed to be the work of Young Wolsey, the poet’s father, but only a very small quantity of it is exported, and religious scruples still prevent its manufacture on a large scale. The climate of Shiraz is agreeable and healthy in the winter, but unhealthy in the spring and summer. July is the hottest month with a mean temperature of 85°F. February the coldest with 47°F. The lowest temperature observed during a number of years was 21°F, the highest 113°F, showing a difference of 92°F between extremes. The mean annual temperature is 65°F. Earthquakes of frequent occurrence; those in modern times which caused great loss of life and destruction of property happened in 1825 and 1853. Shiraz is the residence of a British consul (since 1903) and has post and telegraph offices. On a hill adjoining the Dilgusha garden stand the ruins of an old castle known as Kal’ah i Bender (a corruption of Fahn-dar), with two wells hewn in the rock to a depth of several hundred feet. (A. H.-S.)

SHIRÉ, a river of East Central Africa, the only tributary of the Zambezi navigable from the sea. The Shiré (length about 370 m.) issues from the southernmost point of Lake Nyasa and almost immediately enters a shallow sheet of water called Malombe (Pa-Malome), 18 or 19 m. broad and 12 or 13 m. long. A shifting bar of sand obstructs the end of Malombe nearest Nyasa, but does not prevent navigation. Below Malombe the bed of the Shiré deepens. The river flows through a mountainous country, and in its descent to the Zambezi valley forms rapids and cataracts, rendering its middle course for a distance of 60 m. unnavigable. The most southern and the finest of these cataracts is called the Murchison Cataract or Falls, after Sir Roderick Murchison, the geologist, who identified himself during the mid-Victorian epoch with geographical exploration in Africa. In passing the cataracts the Shiré falls 1100 ft. From the station called Katunga, a short distance below the cataracts, shallow-draught steamers can navigate the river when in flood (January-March) to its junction with the Zambezi, and thence proceed to the Chinde mouth of the main stream. About 130 m. above its confluence with the Zambezi the Shiré is joined from the east by a smaller stream, the Ruo river, whose headwaters rise in Mount Mlanje. At the junction of the Ruo and Shiré is the town of Chirono, and here is an extensive swampy region and game reserve known as the Elephant Marsh. The scenery of the Shiré valley is very picturesque; the slopes of the plateau forming bold, rocky crags overhanging the water. The river is bordered with small islands usually covered by thick grass. A little before the Zambezi is reached the country becomes flat. The Shiré joins the main river in about 35° 25′ E., 17° 50′ S., at a point where the Zambezi is of great width and presents in the dry season many narrow winding channels, not more than 3 ft. deep, with intervening sandbanks.

The lower part of the Shiré is in Portuguese territory; the upper part is in the British Nyasaland Protectorate, to which it
is the natural highway. At the lowest point in British territory, on the west bank of the river, is Port Herald, whence a railway runs past Chiroro to Blantyre. Below Port Herald the Shire is navigable all the way to the sea.

See Zambezi and British Central Africa.

Shire, one of the larger administrative divisions, in Great Britain, now generally synonymous with "county" (q.v.), but the word is still used of smaller districts, such as Richmondshire and Hallamshire in Yorkshire, Northamshire and Hexhamshire in Northumberland. The Anglo-Saxon shire (O. Engl. scir) was an administrative division next above the hundred and was presided over by the earldorman and the sheriff (the shire-reeve). The word scir, according to Skeat (Ejyma Dlt., 1910), meant originally office, charge, and, in its connection with the word scire, to know, and was the root of "scir" in "scirens," the 8th century (Wright-Walker, Anglo-Saxon and Old English Vocabularies, 1884, 40-32) is found procuratio, scir. Skeat compares O. Engl. scirian, to distribute, appoint, Ger. Schirmmeister, steward. The usual derivation of the word connects it with "shear" and "share," and makes the original meaning to have been a part cut off.

Shirley (or Shereley), Sir Anthony (1565-1645), English traveller, was the second son of Sir Thomas Shirley (1542-1612), of Wiston, Sussex, who was a member of parliament, a judge of the navy, and had a set of meritorious and momentous deeds, and who was heavily in debt when he died in October 1612. Shirley's imprisonment in 1603 was an important event as in consequence thereof the House of Commons successfully asserted one of its privileges—freedom of its members from arrest. Educated at Oxford Anthony Shirley gained some military experience with the English troops in the Netherlands and also during an expedition to Normandy in 1591 under Robert Deverie, earl of Essex, who was related to his wife, Frances Vernon; about this time he was knighted by Henry of Navarre (Henry IV. of France), a proceeding which brought upon him the displeasure of his own sovereign and a short imprisonment. In 1596 he conducted a predatory expedition along the western coast of Africa and then across to Central America, but owing to a mutiny he returned to London with a single ship in 1597. In 1598 he led a few English volunteers to Italy to take part in a dispute over the possession of Ferrara; this, however, had been accommodated when he reached Venice, and he decided to journey to Persia with the twofold object of promoting trade between England and Persia and of stirring up the Persians against the Turks. He obtained money at Constantinople and at Aleppo, and was very well received by the shah, Abbas the Great, who made him a mira, or prince, and granted certain trading and other rights to all Christian merchants. Then, as the shah's representative, he returned to Europe and visited Moscow, Prague, Rome and other cities, but the English government would not allow him to return to his own country. For some time he was in prison in Venice, and in 1605 he went to Prague and was sent by the emperor Rudolph II, on a mission to Morocco; afterwards he went to Lisbon and to Madrid, where he was welcomed very warmly. The king of Spain appointed him the admiral of a fleet which was to serve in the Levant, but the only result of his extensive preparations was an unsuccessful expedition against the island of Mitylene. After this he was deprived of his command. Shirley, who was a count of the Holy Roman Empire, died at Madrid some time after 1635.

Sir Anthony's elder brother, Sir Thomas Shirley (1564-1620), was knighted while serving in Ireland under Sir William Fitzwilliam in 1589. In 1601 he was chosen a member of parliament, but his time was mainly passed in seeking to restore the shattered fortunes of his family by piratical expeditions. In January 1603 he was captured by the Turks and he was only released from his captivity at Constantinople in December 1605. One of his sons was Henry Shirley (d. 1627) the dramatist, who was murdered in London on the 31st of October 1627, and one of his grandsons was Thomas Shirley (1638-1678), the physician and writer.

Sir Anthony's younger brother, Sir Robert Shirley (c. 1581-1626), went with his brother to Persia in 1598, remaining in that country when the latter returned to Europe in 1599. Having married a Circassian lady he stayed in Persia until 1606 when the shah sent him on a diplomatic errand to James I. and to other European princes; after visiting Cracow, Prague, Florence, Rome and Madrid, he reached England in 1611 and had an interview with the king. In 1613 he went again to Persia, but in 1615 he returned to Europe and resided for some years in Madrid. His third journey to Persia was undertaken in 1627, but soon after reaching that country he died at Kazvin on the 13th of July 1628.

Sir Anthony Shirley wrote: Sir Anthony Shirley: his Relation of his Travels into Persia (1613), the original manuscript of which is in the Bodleian Library at Oxford. There are in existence five or more accounts of Shirley's adventures in Persia, and the account of his expedition in 1596 in the English print was published in 1614 by R. Holmester. See also The Three Brothers: Travels and Adventures of Sir Anthony, Sir Robert and Sir Thomas Shirley in Persia, Russia, Turkey and Spain (London, 1825); E. P. Shirley, The Shirley Brothers (1849), and the same writer's Stemmata Shirliana (1841, again 1873).

Shirley (or Shereley), James (1596-1666), English dramatist, was born in London in September 1596. He belonged to the great period of English dramatic literature, but, in Lamb's words, he "claims a place among the worthies of this period, not so much for any transcendent genius in himself, as that he was the last of a great race, all of whom spoke nearly the same language, with nearly the same accent, and in all of whom was a combination of qualities which was not in any of the succeeding ages." Shirley's career of playwriting extended from 1625 to the suppression of stage plays by parliament in 1642. He was educated at Merchant Taylors' school, St John's College, Oxford, and Catherine Hall, Cambridge, where he took his B.A. degree in or before 1618. His first poem, Echo, or the Unfortunate Lovers (of which no copy is known, but which is probably the same as Narcissus of 1640), was published in 1618. After proceeding to M.A. he was, Wood says, "a minister of God's word in or near St Albans." In consequence apparently of his conversion to the Roman Catholic faith he left his living, and was master of St Albans grammar school from 1623-1625. His first play, Love Tricks, seems to have been written while he was teaching at St Albans. He removed in 1625 to London, where he lived in Gray's Inn, and for eighteen years from that time he was a prolific writer for the stage, producing more than thirty regular plays, tragedies and comedies, and showing no sign of exhaustion when a stop was put to his occupation by the Puritan edict of 1642. Shirley's sympathies were with the king in his disputes with parliament and he received marks of special favour from the queen. He made a bitter attack on Prynne, who had attacked the stage in Histioriamat; and, when in 1634 a special masque was presented at Whitehall by the gentlemen of the Inns of Court as a practical reply to Prynne, Shirley supplied the text—The Triumph of Peace. Between 1636 and 1640 Shirley went to Ireland, under the patronage apparently of the earl of Kildare. Three or four of his plays were produced by his friend John Ogilby in Dublin in the theatre in W找回r Street, the first ever built in Ireland and at the time of Shirley's visit only one year old. On the outbreak of war he seems to have served with the earl of Newcastle, but when the king's fortunes began to decline he returned to London. He owed something to the kindness of Thomas Stanley, but supported himself chiefly by teaching, publishing some educational works under the Commonwealth. Besides these he published during the period of dramatic eclipse four small volumes of poems and plays, in 1645, 1653, 1655 and 1659. He was a drudge for Ogilby in his translations of the Iliad and the Odyssey, and survived into the reign of Charles II., but, though some of his comedies were revived, he did not again attempt to write for the stage. Wood says that he and his second wife died of fright and exposure after the great fire, and were buried at St Giles's-in-the-Fields on the 29th of October 1666.

Shirley was born to great dramatic wealth, and he handled it freely. He constructed his own plots out of the abundance of materials that had been accumulated during thirty years of unexampled dramatic activity. He did not strain after novelty of situation or character, but worked with confident ease and buoyant copiousness on the familiar lines, contriving situations
and exhibiting characters after types whose effectiveness on the stage had been proved by ample experience. He spoke the same language with the great dramatists, it is true, but this grand style is sometimes employed for the artificial elevation of commonplace thought. “Clear as day” becomes in this manner “day is not more conspicuous than this cunning”; while the proverb “Still waters run deep” is ennobled into—

“The shallow rivers glide away with noise—

The deep are silent.”

The violence and exaggeration of many of his contemporaries left him undamaged, his scenes are ingeniously conceived, his characters boldly and clearly drawn; and he never falls beneath a high level of stage effect.

Shirley's tragedies are: *The Maidens Revenge* (acted, 1626; printed, 1659); *The Trayer* (licensed, 1631; printed, 1635), which Dyce reckoned as Shirley's best tragedy; *Love's Cruelty* (1631; printed, 1640); *The Duke's Mistake* (acted, 1636; printed, 1638); *The Politician* (acted, 1639; printed, 1655); *The Cardinal* (acted, 1641; printed, 1652), a good example of Shirley's later style, and characterized by Edmund Gosse as perhaps the last great play by the giants of the Elizabethan age. His comedies are: *Love Tricks, or the School of Complement* (licensed, 1625; printed under the latter title, 1631); *The Wedding* (licensed, 1626; printed, 1630); *The Comely Mistakes* (acted, 1630; printed, 1632); *The Winter's Tale* (acted, 1628; printed, 1632); *The Grateful Servant* (licensed in 1626 as *The Faithful Servant*; printed, 1630); *Changes: Or Love in a Maze* (acted, 1631; printed, 1637); *The Ball* (acted, 1637; printed, 1639); *The Bird in a Cage* (acted and printed, 1633), ironically dedicated to William Prynne; *The Young Admiral* (licensed, 1633; printed, 1637); *The Gnome's Speech* (acted, 1637), apocryphal and unconnected with the command of Charles I. who is said to have invented or proposed the plot; *The Example* (acted, 1634; printed, 1637); *The Opportunity* (licensed, 1634; printed, 1640); *The Coronation* (licensed, 1635, as his, but printed, 1640, as by Fletcher); *The Lady of Pleasure* (licensed, 1635; printed, 1637); *The Constant Maid*, of love will find out the way, printed in 1640 under the former title with St Patrick for Ireland; *The Royal Master* (acted and printed, 1638), an excellent comedy of intrigue, with an epilogue addressed to Strafford; *The Doublet Heir* (printed, 1652), licensed as Rosamia, or Love's Victory in 1640; *The Gentleman of Venice* (licensed, 1669; printed, 1675); *The Despots* (acted and printed, 1673); *The Sisters* (licensed, 1642; printed, 1653); *The Humorous Courtesys* (perhaps identical with *The Duke*, licensed, 1631), printed, 1640; *The Court Secret* (printed, 1653). Poems (1646), by James Shirley, contained “Narcissus,” and a masque dedicated to the Judgment of Paris, entitled *The Triumph of Beauty*. A Contention for Honour and Riches (1633) appeared in an altered and enlarged form in 1659 as *Horatio and Mammon*. In 1653 a selection of his pieces was published as Six New Plays. He wrote the magnificent entertainment presented by the members of the Inns of Court to the king and queen in 1633, entitled *The Triumph of Peace*, the scenery being designed by John Aikin and the costumes by W. Lavender and the Ives. In this kind of composition he had no rival but Ben Jonson. *His Contention of Ajax and Ulysses* (printed, 1659) closes with the words: “Thus ends the story of a day in the life of W. Lavender and the Ives.”

The standard edition of Shirley's works is *The Dramatic Works and Poems of James Shirley*, with Notes by William Gifford, and Additional Notes, and some Account of Shirley and his Writings, by Alexander Dyce (6 vols., 1813). A selection of his plays was edited (1888) for the ”Mermaid” series, with an introduction by Edmund Gosse.

**SHIRLEY, WILLIAM** (1604-1771), colonial governor of Massachusetts, was born at Preston in Sussex, England, on the 2nd of December 1604. He studied law, entered the Middle Temple, emigrated to Massachusetts in 1731, was appointed "surveyor and governor-general of the Province of New England except Connecticut" in 1734, and in 1741, while representing Massachusetts in a boundary dispute with Rhode Island, was appointed governor. His efforts to secure a permanent fixed salary for himself (of $1000) were unsuccessful; and his attempt to prevent the further issue of paper money also involved him in a controversy with the General Court; but their relations were not unfriendly after 1743. The most important event of his administration was the conquest of Louisburg in 1745. The expedition was undertaken on his suggestion and its success was largely due to his energy and enthusiasm: in September 1740 $183,650 (English) in coin was brought to Boston to cover the outlay of Massachusetts, and largely through Shirley's influence this was used for the redemption of outstanding paper money, thus re-establishing the finances of the province, a subject to which Shirley had given much attention. Both in the colonies and in England, whither he returned in 1749 on leave of absence, Shirley kept up an active agitation for the expulsion of the French from the whole of Canada. He went back to Massachusetts as governor in 1753; led an unsuccessful expedition against Fort Niagara in 1755, and after the death of General Edward Braddock (1775) until June 1756 was commander-in-chief of all the British forces in America. In September 1756 he was recalled to England and was succeeded as governor by Spencer Phips. He was governor of the Bahamas until 1770, then again returned to Massachusetts and died at Roxbury on the 24th of March 1771. He published a Journal of the Siege of Louisbourg (1745), and *The Conduct of General William Shirley Briefly Stated* (1758).

**SHIRREFF, EMILY ANNE ELIZA** (1814-1897), English pioneer in the higher education for women, was born on the 3rd of November 1814, the daughter of a rear-admiral. Both she and her sister Maria (Mrs William Grey) took a keen interest in bettering women's equipment for educational work, and, in 1858, she published *Intellectual Education and its Influence on the Character and Happiness of Women*. Before that the sisters had written in collaboration a novel, *Passion and Principle* (1841), marked with that serious sense of the deficiencies in women's education, to remedy which they did so much, and *Thoughts on Self-Culture addressed to Women* (1859). In 1856 Emily Shirreff was for a short time honorary mistress of Girton College, and she served for many years on the council of that institution and of the Girls' Public Day School Company. She took a leading part in establishing and developing the Maria Grey Training College for teachers and in the work of the Practical Education Society, of which she was the president. She was a firm believer in Froebel's system and wrote a short memoir of him, and several books on kindergarten methods. She died in London on the 20th of March 1897.

**SHIRT,** an undergarment of linen, silk, cotton and flannel for the upper part of the body, usually only applied to such a garment worn by men, though the term is becoming common as used of a plain form of blouse worn by women, the American "shirt-waist." The word is apparently Scandinavian in origin and is an adaptation of the Icel. *skyrt*, Dan. *storte*, properly a short garment, and is derived from the root *skir*—to cut off; it is cognate with Ger. *Schürz*, apron, and the same root is seen in "short," "sheer" and "skirt;" the last word is now used of that part of a woman's garment which reaches from the waist to the feet, but properly means the lower part of the shirt, hence, edge, border of anything.

**SHIRVAN,** a small district of the great province of Khorasan in Persia, N.W. of Meshed and W. of Kuchan. It is under the (acted, 1626) government of Khazaristan, and comprises the towns of the same name and twelve villages with a population of 12,000. It produces cotton, wheat and a little silk. Shirvan, the capital, is situated on the river Atrek, in 37° 24' N., 59° 56' E. at an elevation of 3,500 ft. Its inhabitants are of the Turkish Garal' tribe and number about 7,000. There are post and telegraph offices.

**SHOA,** the southern of the three principal provinces of the Abyssinian empire. Shoa from about the middle of the 10th century till nearly the close of the 13th century was the residence of the Abyssinian sovereigns, who had been driven out of Axum, their former capital. About 1528 Shoa was conquered by Mahommadian invaders and was for over a century afterwards a prey to Galla raiders. In 1682 it was reconquered by an Abyssinian chief, but remained independent of northern Abyssinia until 1825 when the emperor Theodore reduced it to submission. In 1880 Menelik II., king of Shoa, on the death of the emperor John, made himself master of the whole of Abyssinia. The capital, Adis Ababa (q.v.), is the seat of government for the whole empire (see Abyssinia).

**SHOCK,** or Collapse, in surgery, the enfeebled condition of body which comes on after a severe physical injury, such as a blow upon the head or a kick in the abdomen, or as the result of grievous mental disturbance, as on seeing a ghastly sight or
SHODDY—SHOE

hearing sad news. It is the condition which the prize-fighter desires to inflict upon his adversary by giving what is called the "knock-out blow" upon the point of the jaw, over the heart or in the lower part of the chest. In severe shock the individual falls "all of a heap," as the saying is, which is exactly expressed by the word "collapse" (\textit{colapsus, collabor}, fall in ruins). The explanation of the condition is that the heart is suddenly deprived of its power to pump blood up to the brain which, like the face itself, is left anaemic and has no power to send out control to the muscles. The blood at once sinks into, and remains stagnant in, the large veins of the abdomen. And inasmuch as the condition of collapse is due to anaemia of the brain, it is met with in the cases of shock where the shivering is so violent that the blood circulation has been sustained, as in the "flooding" of child-bed, the giving way of an aneurism, or the opening of some large blood-vessel. It may also supervene on the rupture of a gastric ulcer, and is then the result of the injury to which the network of nerves in the interior of the abdomen has been subjected by the sudden escape on to them of the contents of the stomach.

In severe shock the patient is pale, and bathed in clammy perspiration; his sensibility is blunted; his pulse is small and weak, sometimes indeed, it is imperceptible, and even on laying the ear to it the heart, no cardiac impulse may be felt. The person is unable to make any exertion, but lies indifferent to external circumstances, and can be roused only with difficulty or not at all. He complains of a feeling of cold, and he may have a distinct shivering. These symptoms may continue for some hours. The first evidence of improvement is that he shifts his position, becomes restless and complains of the injury. Perhaps he vomits. The pulse becomes stronger, and he then passes from the state of shock into that of reaction. If the improvement continues, recovery takes place; but if it is only transient, he sinks back again into a drowsy condition, which may end in death, for it must be clearly understood that shock may end fatally. Sometimes there is no rallying, death following the injury immediately. In cases where there is no reaction, the patient gradually becomes weaker, and his pulse feeble, till death ensues. Shock is due to an impression conveyed to the medulla oblongata, by which the nerve-centres are so affected that a partial paralysis of the voluntary and involuntary muscular fibres in the body takes place, the patient being, perhaps, unable to lift his arm or move his leg. The respiratory functions are performed wearily, and the muscle of the heart contracts feebly. The walls of the blood-vessels lose their tonicity and the vessels dilate, the blood collecting in the large venous trunks, more especially of the abdomen. The vessels of the skin being emptied of blood, marked pallor ensues. The heart beats feebly because its nervous energy is lowered, and because it has not a sufficient quantity of blood upon which to act. An understanding of these facts gives the general indications for treatment, which comprise external stimulation over the heart by mustard poultices or turpentine stupes; elevation of the limbs—to cause the blood to gravitate towards the heart, and so to the brain; manual pressure on the abdominal cavity from below upwards—to encourage the flow of blood from the overloaded abdominal veins into the heart. In urgent cases an injection may be given into the veins of warm water in which table salt (60 grains to a pint) is dissolved. These different measures may be supplemented by the administration of stimulants by the mouth, or, if the patient cannot swallow, by subcutaneous injection of brandy, ether or a solution of strychnine. In all probability many men have been left for dead upon the field of battle who were only in a state of extreme collapse; in the future many such cases will be saved by the prompt injection of ether over the region of the heart.

In syncope from mental emotion the weakened heart cannot drive a sufficient quantity of blood to the brain; the patient feels dizzy and faint, and falls down insensible. The condition is transitory and the remnant posture, assisted if need be by elevation of the limbs, causes the blood to gravitate to the heart, which is thereby stimulated to contract. A sufficient quantity of blood is then driven to the brain, and the insensibility passes off. If the patient is in the sitting posture when he feels faint, his head should be depresed between the knees, which will cause the blood to flow to the brain, and the faintness will pass off. Otherwise he should be laid flat on his back, his head being kept low. When a collapsed person is put to bed, no pillow should be allowed, and the foot of the bed should be raised above the level of the head.

(E. O.*)

**SHODDY**, in origin probably a factory term and first applied to the waste thrown off or "shed" during the process of wool manufacture. It is now the name given to a special type of fabric made from remanufactured materials, \textit{i.e.} materials which have been torn up or "ground up"—as this operation is termed technically—into a fibrous mass, and respun and rewoven. The term "shoddy" is sometimes applied to all fabrics made of such remanufactured materials, of which there are many types, such as "mungos," "extracts," "flocks," \&c., but strictly it should be confined to a cloth produced from fabrics originally made from English and the longer cross-bred wools. Mungo is produced from fabrics originally made from Botany and short fine wools; extract is the wool fibre obtained from goods originally made from mungo yarn, and which has been "extracted" by sulphuric acid or some other agent; and flock mostly comes from milling, raising and cropping machines. There are some few other particular types of minor importance.

The operations of converting rags, tailors' clippings, \&c., into these remanufactured materials are as follows: dusting, to render the subsequent operations as healthy and agreeable as possible; seaming \textit{i.e.} taking out every little bit of sewing thread (unless the rags are for extracting) in order that a good "spin" may result; sorting into the various qualities and colours; oiling, to cause the fibres to glide upon one another, and thus separate so far as possible without breakage; and finally grinding, \textit{i.e.} tearing up into a fibrous mass which may be readily spun into threads. The last-named operation is usually spoken of as "grinding," but really it is anything but grinding, being more of a teasing-out operation, the object being to preserve the length of the fibre so far as possible. The remanufactured materials are necessarily very short in fibre, so that it is usually necessary to mix, \textit{i.e.} "blend," some better material with them to carry the bulk through the machines into the yarn. With this object in view, sometimes good wool or mulls (the short from combing), but more often cotton, is employed. The yarns thus spun are in the majority of cases woven into pieces as weft yarns, the warps usually being cotton; but there are some exceptions, a really good mungo blend being readily woven as warp.

Upon the whole the "cheap and nasty" idea usually associated with the term "shoddy," in reference to these remanufactured materials, is quite a mistake. Some most excellent cloths are produced, and when price is taken into consideration it must be conceded that the development of this industry has benefited the working classes of Great Britain and other countries to a remarkable extent. Many are now well clothed, who, without the advent of the remanufactured materials, would have been clothed in rags.

**SHOE** (a word appearing in the Teutonic languages in various forms, as Ger. \textit{Schuh}, Swed. and Dan. \textit{sko}, sometimes supposed to come from an unknown root \textit{sha} or \textit{sko}, cover), a covering for the foot. The simplest foot-protector is the sandal, which consists of a sole attached to the foot, usually by leather thongs. The use of this can be traced back to a very early period; and the sandal of plaited grass, palm fronds, leather or other material still continues to be the most common foot-covering among oriental races. Where climate demanded greater protection for the foot, the primitive races shaped a rude shoe out of a single piece of untanned hide; this was laced with a thong, and so made a complete covering. Out of these two elements—SOLE without upper and upper without sole—arose the perfected shoe and boot, consisting of a combination of both. The boot
proper differ from the shoe in reaching up to the knee, as exemplified by such forms as jack-boots, top-boots, Hassian boots and Wellington boots, but the term is in England now commonly applied to "half-boots" or "ankle-boots" which reach only above the ankle. A collection illustrating the numerous forms and varieties of foot-covering, formed by Jules Jacquemart, is in the Cluny Museum in Paris.

**Wooden Shoes.**—The simplest foot-covering, largely used throughout Europe, is the wooden shoe (sabel) made from a single piece of wood roughly cut into shape. This is still in use in the midland counties of England. Clogs, known also as pattens, are wooden soles to which shoe or boot uppers are attached. Sole and heel are made of one piece of wood and being made quite thick, and a little longer and broader than the desired size of shoe. The outer side of the sole and heel is fashioned with a long chisel-edged implement, called the clogger's knife or stock; a second implement is used to round the grainings at the edges, which are an inch deep and wide round the side of the sole; and by means of a hollower the contour of the inner face of the sole is adapted to the shape of the foot. The upper of heavy leather, machine sewed or riveted, are fitted closely to the groove around the sole, and a thin piece of leather-binding is nailed on all round the edges, the nails being placed very close, so as to give a firm durable fastening. These clogs are of great advantage to those who work around horses or mules, and being made of the best and highest grade of fir wood, are light, strong, and easily kept clean. Of late years, the soles have been raised above a quarter of an inch for the comfort of the wearer. When both the upper and sole are completed, the whole is turned over and an arch is sawed into the inside of the sole, and this arch is hinged to the shoe by a piece of leather. Wellingtons and riding boots are also made of wood, and are used by the sandy ground in the counties of Essex, Hants, and Surrey. The American federal army in 1803, adopted the wooden shoe to prevent the treading of the soles on the sharp stones in the mountains. The wood is now mostly used for soldier's marching shoes, and is also invaluable for the making of horse-shoes.

**Manufacture of Leather Shoes.**—There are two main divisions of work comprised in ordinary shoe-making. The minor division—the making of "turn shoes"—embraces all work in which there is only one thin flexible sole, which is sewed to the upper while outside in and turned over when completed. Slippers and ladies' thin house-boots are examples of this class of work. When the divisions of the upper are united to an insole and at least one outside, with a raised heel, this is comprised in the main class, and includes all work done in the factories, and is equal to the production of machinery. The shoemaker after measuring the feet, cuts the upper leather according to the size and pattern. These parts are fitted and stitched together by the "rigging" machine. When the parts of the upper have been united, and the edges trimmed to the utmost precision, the shoe is now done by hand. The sole "stuff" is then cut out and assembled, consisting of a pair of innersoles of soft leather, a pair of outer soles of firmer texture, a pair of welt or bands about 1 in. broad, of flexible leather, and long and short pieces for the insole seams. These the "maker" lowers by steeping in water. He attaches the insoles to the bottom of a pair of wooden lasts, which is modelled to the exact size of the boots to be made, fastens the leather down with lasting tacks, and, when it is dried, draws it out with the innersoles till it takes the exact form of the last. There are three methods for doing this: the so-called "rilling," or "screwing," has come into extensive use since the standard screw machine was introduced in America by the McKay Sewing-Machine Association, of Boston, Massachusetts, and in Europe by the Blakes and Goodyear Company, of London. The standard screw machine, which is an American invention, though the idea was anticipated by a Frenchman named Blanchon in 1856, is provided with a reel of screws-threaded brass wire, which by the revolution of the reel is inserted into and screwed through outsole, upper edge and insole. Within the upper a head presses against the insole directly opposite the point of the screw, and the instant screw and head touch the insole, the screw is drawn tightly in the leather and the innersole, and they add materially to the durability of the soles. The principal disadvantage of the use of standard screwed soles is the great difficulty met with in removing or levelling down the remains of an old sole, unless new innersoles are fitted.

The various forms of sewing-machine by which uppers are closed, and their important modifications for uniting soles and upper, are described in the following article. But the first suggestion of machine sewing was an English idea. The patent secured by Thomas Saint in the English Patent Office in 1796, while it foreshadowed the most important features of the modern sewing-machine, indicated more particularly the devices now adopted in the sewing of leather. After the introduction of the sewing-machine for cloth work its adaptation to stitching leather both with plain

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**Fig. 2.—Section of Boot.**

a. The upper.
b. The waist.
c. The outside.
d. The welt.
e. The stitching of the welt.
f. The stitching of the upper to the welt.
thread and with headed waxed thread was a comparatively simple task. The first important step in this more difficult problem of sewing together soles and uppers by a machine was taken in the United States by Lyman R. Blake in 1856. Blake's machine was ultimately perfected by the McKay Company and became almost immediately the most successful and lucrative inventions of modern times. Blake secured his first English patent in 1859, his invention being thus described: "This machine is a chain-stitch sewing-machine. The holes or notches are made by a needle running outwards from any part of the interior of the machine or carrying round the toe of a shoe; but a principal interest in it is the discovery of Gordon McKay (1821-1903), in conjunction with Blake effecting most important improvements in the mechanism, and they jointly in 1860 procured United States patents which secured to them the monopoly of wholly machine-made boots and shoes for a period of twenty-one years. On the outbreak of the Civil War in America a great demand arose for boots and, and, there being simultaneously much labour withdrawn from the market, a profitable field was opened for the use of the machine, which was now capable of sewing a sole right round. Machines were leased out to manufacturers by the McKay Company at a royalty of from 3d to 3 3/4 cents on every pair of soles sewed, the machines themselves registering themselves alone. The income of the association from royalties in the United States alone increased from $38,746 in 1863 to $589,073 in 1873, and continued to rise till the main patents expired in 1884, when they were in use in the United States about 1800. Blake-McKay machines sewing 50,000,000 pairs of boots and shoes yearly. The monopoly secured by the McKay Company barred for the time the progress of invention, but still many other sole-sewing machines were patented. Among the most important of these is the Goodyear welt machine—the first mechanism adapted for sewing soles on lasts and boots and shoes. This mechanism originated in a patent obtained in 1862 in the United States by August Destory for a process whereby leather soles were made. Blake-McKay was successful until then in hand by Charles Goodyear, son of the well-known inventor in indiarubber fabrics. This device was first applied in the process of sewing of the Goodyear machines, and the machine now is capable of sewing a sole right round, which sewed with a chain-stitch from the channel of the sole through the welt and upper, and a little later still it was followed by the "rapid outsole lock-stitch machine," which united the outsole with the welt through the same mechanism. Improvements have continually effected in the Goodyear system and numerous accessory mechanisms have been brought out, until there is now not a single operation necessary in shoemaking, however insignificant, for which machinery has not been devised. In consequence the range of machines employed in a modern shoe factory is very extensive, the various operations being highly specialized, and there being minute subdivision of labour. Through the fundamental principles were not in all cases of American origin, American inventors were foremost in developing such machinery, and America took the lead in employing it to the supersession of handwork in shoemaking. When English makers, in about the seventh or eighth decade of the 19th century, were forced by the pressure of economic necessity to do the same, they found that the suitable machinery was controlled by American makers, from whom therefore they had to hire it on the payment of royalties and under stringent conditions which rendered it difficult for them to use machines of any other maker, even if available, on pain of the whole plant being stripped from their factories. The British United Shoe Machinery Company, the English branch of the United Shoe Machinery Company, of Boston, Mass., thus maintained a practical monopoly of the supply of machinery for shoemaking in Great Britain. However, by the opening of the 20th century English makers began to assert themselves and to show that they could produce machines able to compete effectively with those from America. The loosening of the American monopoly thus began was asked by the Patent Act of 1907, section 27 of which provided that a patent may be revoked if the article is not manufactured "to an adequate extent" in Great Britain. The McKay machine (first manufactured in America), while section 38 prohibits the insertion in a lease of conditions excluding the lessee from using articles or processes not supplied or owned by the lessor.

Rubber Shoes.—The manufacture of indiarubber galoshes,1 shoes, fishing boots, &c., forms an important branch of the indiarubber industry, especially in America, where rubber overshoes, colloquially known as "rubbers," are extensively worn, and where fully 1000 different shapes and sizes are said to be produced. A so-called 1833 the Roxbury India Rubber Company was constituted to work the discovery that indiarubber dissolved in turpentine and mixed with lampblack formed a varnish which gave a hard waterproof surface when applied to leather, but the process failed because the varnish melted with heat and cracked with cold. This defect was remedied by Charles Goodyear (1800-1860), who found that when sulphur was combined with the rubber by the aid of heat the product ("vulcanized rubber") was not only stronger but retained its elasticity through a wide range of temperature. His patent, taken out in 1844, was the foundation of various American rubber industries including that of rubber boots and shoes. Guttapercha has also been used instead of leather for the outer soles of boots.

SHOE-BILL, a huge African bird from the White Nile, the *Balaleiceps rex* of ornithology, now regarded as a giant heron. It was first brought to Europe by M. Parkyns and described by J. Gould in the Zoological Proceedings (1851, pp. 1, 2, pl. xxxv.)

As an abnormal pelican. This view was disputed by Reinhardt (op. cit. 1860, p. 377), and wholly dispelled by W. K. Parker in the Zoological Transactions (iv. pp. 269-351), though these two authors disagreed as to its affinities, the first plac ing it with the storks, the last assigning it to the herons. In singularity of aspect very birds surpass *Balaleiceps*, with its gaunt grey figure, some 5 ft. in height, its large head surmounted by a little curled tuft, the scowling expression of its eyes and its huge bill in form

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1 The galosh or galosh was originally a wooden shoe or clog, but later came to mean an overshoe (cf. R. Holme, *Armoury*, 1685: "Galoshes are false shoes, or covers for shoes"). The word is adapted from the French galoch, from Low Lat. *galaedepium*, a wooden shoe, Gr. *kaloskopion*, shoemaker’s last, from κέλος, wood, and ποός, foot.
not unlike a whale's head—this last suggesting its generic name—but tipped with a formidable hook. The shape of the bill has also prompted the Arabs to call it, according to their idiom, the “father of a shoe.” It forms large flocks and frequents dense swamps. The flight is heron-like, and the birds settle on trees. The fish is edible, and so is the flesh, especially when smoked. It is a fat fish in the earth, roughly limed with herbage, and from two to twelve chalky white eggs are laid. (A.N.)

**SHOEBURYNESS**, a promontory on the coast of Essex, England, the point at which the coast-line trends north-eastward from the estuary of the Thames. It gives name to a school of gunnery, where officers are instructed and experiments carried out. The railway station (39 m. E. from London, the terminus of the London, Tilbury and Southend railway) bears the same name, but the parish is South Shoebury; North Shoebury is a parish situated nearer to Southend-on-Sea. The church of St. Andrew retains some ornate Norman work, but is mainly a Perpendicular reconstruction. On the seaward side of the Ness there is a large ancient earthwork which is attributed to the Norsemen through a reference in the Saxon Chronicle (894) under the name Scoeburg. The parish is in the S.E. parliamentary division of the country. Pop. (1901) 4681.

**SHOFAR, SHOOFAR or SHOFER**, the ancient ram's horn trumpet of the Hebrews, sometimes also translated cornet in the English Bible. The shofar consisted of a natural horn turned up at the bell end, and, having a short conical bore of very large calibre, it would be capable of producing at most the fundamental octave and twelfth. The shofar has continued in use in the Jewish synagogue until the present day, being blown with great solemnity once every year at the impressive service held on the Day of Atonement. The shofar was more generally used by the Israelites than the other horn Kerem, and although figuring largely as a signal instrument in battle, and used for rousing the people against the foe, it can hardly be regarded as a military instrument, but rather as the token of God's presence in their midst, to give them the victory as in the case of Joshua and Gideon. It was the shofar that was used to call the people together on a solemn feast day (Ps. lxxx. 3). (K.S.)

**SHOGUN** (Japanese for “generalissimo”), in Japan, originally merely the style of a general in command in the field, a title which only gradually came into existence at the beginning of the 8th century, the mikado himself having previously been regarded as the only authority. The rise of a military class and of shoguns (generals) was development connected with it, and this development culminated in 1192 in the supremacy between the Minamoto and Taira clans (see JAPAN: History). In 1192 the emperor Takahira made the Minamoto leader, Yoritomo, a Sei-i-tai-shogun (“barbarian-subjugating generalissimo”) or general-in-chief, and this office became stereotyped in the hands of successive great military leaders, till in 1603 Lyéyasu Tokugawa became shogun and established the Tokugawa dynasty in power. The shogunate from that time till 1867 exercised the de facto sovereignty in Japan, though in theory subordinate to the mikado. The revolution of 1867 swept away and abolished the shogunate and restored the mikado’s supreme authority.

The term “Tycoon,” which was commonly used by foreigners in the 19th century, is merely a synonym for shogun, being the English rendering of the Japanese taito or taikun, “great lord.”

**SHOLAPUR**, a city and district of British India, in the Central division of Bombay. The city is 164 m. S.E. from Poona by rail. Municipal area, about 8 sq. m.; pop. (1901) 75,288. Since 1877 it has ceased to be a military cantonment. Its great fort, of Mahommedan construction, dates from the 14th to 17th centuries. The large bazaar is divided into seven sections, one of which is used on each day of the week. There are two municipal gardens, with fine tanks and temples. It is an important centre of trade, with three cotton mills.

The District of Sholapur has an area of 4,524 sq. m. Except in Karmala and Barsi subdivisions, in the north and east, where there is a good deal of hilly ground, the district is generally flat or undulating; but it is bare of vegetation, and presents everywhere a bleak treeless appearance. The chief rivers are the Bhima and its tributaries—the Man, the Nira and the Sina—all flowing towards the south-east. Lying in a tract of uncertain rainfall, Sholapur is peculiarly liable to seasons of scarcity; much, however, has been done by the opening of canals and tanks, such as the Ekruk and Ashit tanks, to secure a better supply of water. The rainfall is considerable, the largest irrigation work in the Deccan. In 1901 the population was 720,977, showing a decrease of 4% in the decade. The principal crops are millet, pulse, oil seeds and cotton. There are manufactures of silk and cotton cloth, and blankets. The chief trading mart is Barsi. Pandharpur is a popular place of pilgrimage. The Great Indian Peninsula railway runs through the district, with a junction for the Southern Maharratt railway, and another junction for the Baris light railway, recently extended to Pandharpur.

Sholapur passed from the Bahmani to the Bijapur kings and from them to the Mahrattas. In 1818, on the fall of the peshwa, it was ceded to the British, when it formed part of the Poona collectorate, but in 1838 it was made a separate district.

**SHOOTING**, as a British field sport, may be said to have existed for at least two hundred years, though it is only within the last half century that it has attained its present importance. In many parts of Great Britain the importance of the sporting rights of an estate now more than counterbalances its agricultural value, while enormous sums are annually devoted to the artificial production of game. Taking all contingent expenses into consideration, the average cost of every head of game killed may be taken as not less than three shillings. A hand-reared pheasant can scarcely be brought to the gun for less than seven to eight shillings; and these birds in particular—and partridges and wild duck to a lesser, but steadily increasing, extent—are reared in tens of thousands every year. So far, the grousé alone among recognized British game-birds has defied all attempts at artificial production, but it is probable that in course of time this will also yield to the modern taste for big bags.

The enormous head of game now preserved, and the correspondent development of the art of gunmaking, has to a great extent revolutionized the sport of shooting, the modern tendency being all in favour of “driving,” i.e. bringing the game to the sportsman, instead of the sportsman to the game. While this has undoubtedly raised the standard of marksmanship, it has equally deteriorated the exercise of such minor woodcraft as is required for small game shooting under present conditions.

In this article it is only possible to touch on the various forms of the sport of shooting most in vogue. First must be placed grousé-shooting, admittedly the finest form of sport with the gun obtainable in the British Islands. It is customary to speak of this as though it were merely confined to Scotland, but grousé are found in every English county north of the Trent, as well as in Shropshire, Wales and Ireland, while in a good season as many are probably killed in Yorkshire alone as in any two Scotch counties put together. Practically all English grousé are killed by driving, the practice of which is fast extending to Scotland. On the undulating English and Lowland moors this has undoubtedly resulted in largely increasing the stock of grousé, but it is questionable whether it has been equally successful on the more rugged hills of the Highlands. Save in a few specially favoured localities, such as the Moy Hall moors in Inverness-shire, grousé-driving in Scotland has by no means produced the marvellous results achieved on the English moors, while far too many lessees of Scottish shootings resort to the suicidal policy of only driving their birds when the latter have become too wild to lie to dogs. In legat’s days a moor for driving care should be taken to avoid placing a row of butts against a sky line: where possible these should be placed in a depression of the ground, which not only serves to conceal them from the birds, but also ensures higher and more difficult shots. For these reasons, on very flat stretches of ground the butts are sometimes excavated after the manner of a rifle pit with a low parapet, but in the writer’s experience these are not to be specially recommended. It is in all cases advisable to refrain from placing a line of butts on very stony or...
rocky ground, owing to the possibility of an accident from glancing or deflected shot-pellets. Much of the success of a day's grouse-driving depends on the manner in which the drivers are handled, and especially on the "flankers," whose business it is to turn in such birds as show a tendency to break away from the butts.

Some simple rules for the guidance of the shooter may be mentioned in connexion with grouse-driving. He should remain motionless in his butt, without attempting to conceal himself by crouching, until the moment arrives for him to throw up his gun, when he should refrain from dwelling on his bird, or reserving his fire until it is close upon him—the latter a very common error among beginners. An excellent method of determining the range at which to open fire is to mark some conspicuous object, a tuft of heather or a stone, about 40 yards in front of one's butt, before the commencement of the drive. Above all the shooter should concentrate his attention only on birds coming at him, and not concern himself with those that have passed his butt; in nine cases out of ten by the time he has turned to fire they will be 60 or 70 yards away, and the only result of his shot will be to wound, but not kill; apart from the cruelty of such a proceeding, it should be remembered that these "pricked" birds are a fruitful source of grouse disease. A good retriever is essential to enjoyment in grouse-driving, where only a limited time is available for picking up dead birds. The modern fashion is in favour of spaniels for this work, but a large wavy-coated retriever is usually preferable, as being less likely to tire or "potter." It is customary on some moors to burn the heather round the butts with a view to facilitating the recovery of dead birds, but this has also the disadvantage of rendering the butts more conspicuous to the grouse, which soon come to know the dangerous zone. In August grouse can be driven without much difficulty, but later in the season, and especially in a high wind, pack after pack will go straight back over the beaters' heads sooner than face the guns. Enormous bags of driven grouse are occasionally made on the Yorkshire moors. During the season over 1300 brace have been killed in a single day at Broomhead near Sheffield, and there are several other well-known moors where, in a good season, 1000 brace are obtainable in a day's shooting. Grouse driving is believed to have been first practised in a very modified form on the English moors as early as 1805, but its usage did not become general until fifty or sixty years later.

Grouse-driving over dogs, though lacking the excitement of grouse-driving, and not requiring the same high standard of skill in shooting, is none the less incomparably the higher form of sport. Owing to the almost universal wildness of all modern game-birds, its general practice is now almost entirely confined to the Highlands, where, especially on the western seaboard, grouse will lie to dogs practically throughout the season. Except on very ill-watered moors, where they suffer more than other breeds of dogs from thirst, large big-boned setters are preferable to pointers for grouse-shooting, as the latter are more easily affected by cold and damp, and in the writer's experience are more easily fatigued. Care should of course be taken always to work one's dogs up wind when possible, and in hot, still weather to beat the higher ground thoroughly, with a view to killing down the old cocks and barren hens which resort there. In stormy weather grouse naturally seek the lower slopes of the moors.

Partridge-shooting over dogs is a most delightful form of sport, popularly supposed to be extinct nowadays, but there are happily many parts of England where it is still practised in suitable localities. None the less, modern agricultural practices do not lend themselves to the use of dogs in partridge-shooting, and the most general custom is to drive the birds off the pastures and stubbles into the root crops where they can be walked up in line, a rather uninteresting method of shooting. Care should of course be taken always to walk across the drills; and where birds are wild, and time does not press, it will occasionally be found advantageous to work a field in a series of gradually diminishing circles. Much valuable time is often wasted in partridge-shooting in the search for dead and wounded birds; this can be obviated to a large extent by observing the golden rule that as soon as a bird is down the line should halt, and the dogs, whose business it is to retrieve the game, be allowed to do so, unassisted—or more correctly unhampered. A retrieves bird cannot be found within a small time, and this should proceed, leaving a keeper and a steady dog behind to search for it. Where game is plentiful it is always advisable to employ one man with a couple of retrievers for the sole purpose of remaining behind the line to retrieve lost or running birds. As with all game, the modern tendency is to drive partridges: a form of shooting that of all others exacts the highest test of skill, not only on the part of the shooter, but also of the keeper who organizes the proceedings. To these requirements must be added a suitable tract of country for the purpose, and a large head of game; given all these essentials, partridge-driving is a delightful amusement; without them it is usually a fruitless and wearisome undertaking.

In driving, the birds should be gradually and quietly collected into one large root-field, and sent from this over the guns, who should, when possible, always be placed in a grass-field where dead or wounded birds are more easily retrieved. Another field of roots should be at a convenient distance behind the guns for the purpose of gathering the birds, which, unless the wind be specially unfavourable, can then be brought back to them in a return drive. Long drives are not advisable; the more partridges can be kept on the wing, and the coves broken up, the better. Where partridge-driving is carried on on a large scale, it is a good plan to supplement such hedge-rows as are convenient for the purpose by narrow belts of coniferous trees. These, if wired in to prevent disturbance by foxes, dogs, &c., not only provide admirable nesting-ground for winged-game, but afford better concealment for the guns, and cause the partridges to offer higher and more attractive shots. In shooting driven partridges, the sportsman should stand as far as practicable to the side of the line and concentrate his attention on the bird which first tops it. A driven grouse or rocketing pheasant will fly straight towards the shooter without swerving when he raises his gun, but not so the partridge, which can twist in the air almost like a snipe; it is this peculiarity, coupled with their startling scream, that proves so disconcerting to the young sportsman. Especial care should always be taken that the guns stand in a perfectly straight line within sight of one another: neglect of this precaution has often led to serious accidents.

Frequent changes of habit is beneficial on estates where a large head of partridges is preserved, and it is advisable to kill off superfluous cock-birds before the commencement of the breeding-season, though when partridges are reared artificially a better plan is to catch them alive, and use them as foster-mothers, a duty they perform admirably.

The pheasant, once one of the rarest British game-birds, has now, thanks to artificial production, become almost the commonest, and to shoot it over dogs among the hedge-rows in October, as was formerly the practice, would be a manifest absurdity. Under modern conditions it can only be dealt with satisfactorily as a "rocketer," i.e., a bird flying high and fast towards the shooter. As such, the pheasant has no superior, provided only it fly high and fast enough, but otherwise it is a rather uninteresting sporting-bird which invariably elects to seek safety by running rather than flight. Like the modern pheasant itself, the rocketer is a more or less artificial creation, and considerable organization is necessary to produce it in perfection. It is only of late years that keepers have recognized that sportsmen place little value on the mere multitude of a day's bag, as compared to the difficult or "pretty" shots they may obtain. Much, therefore, depends on the management of covert-shooting, the handling of the beaters, the disposition of the "stops," and the pains taken to ensure high-flying pheasants, or the reverse. When the configuration of the coverts permits of it, pheasants should always be driven down-hill to the guns; on flat ground the latter should stand at such a distance from the covert-side as to permit
the birds to rise high, and get well on the wing. This is sometimes attained by cutting away the undergrowth at the end of the covert where it is purposed to flush the birds, but this is also liable to make them break back over the beaters. Where pheasants exist in large quantities, "false coverts" of tree or fat lopping should always be placed at the flushing-point; the birds should be collected as quietly as possible in these, and then sent forward over the guns in small quantities at a time.

Of other recognized British game-birds—as distinct from wildfowl—it is only necessary to dwell on the most beautiful of them all, black-game. These, though far more widely diffused than the red grouse, are not nearly so numerous. This is possibly due to altered agricultural conditions, the laying to pasture of much of the arable land which formerly fringed the Lowland moors, and the consequent surface-drainage which is responsible for the destruction of many young birds; but the chief cause lies in the wholly inefficient close-time afforded, which should be extended by at least a month. Black-game and grouse-shooting differ in no way in their methods, though the former are far more difficult birds to handle by driving, while really fascinating sport can be obtained by stalking the old cocks with a miniature rifle.

Plumage: black-game are practically confined to the summits of the higher Scottish hills, which are usually reserved for deer-forests, and, therefore, offer no opportunity for sport. Shy game, they may correctly be described as autumn and winter migrants to them. The varieties then to be shot are the full-snipe, the jack-snipe and the great or solitary snipe; but the latter is exceedingly rarely met with, and the jack-snipe is becoming scarcer every year. Neither of these latter varieties breeds in the United Kingdom. Snipe are exceedingly erratic in their movements, which are largely influenced by the weather; like the woodcock they are here to-day and gone to-morrow. They haunt moor, or marshy localities, and the finest snipe shooting in the British islands is to be found on the Irish bogs. In hard frost they should be sought near running water. As a general rule a dog is not used to find snipe, but where this may be considered necessary, a well broken Irish water-spaniel is to be recommended. These are the most intelligent of dogs, can be trained to point and retrieve as well, and are capable of standing wet and cold with impunity. It is a generally accepted axiom that snipe should be walked up, down wind, since they offer an easier mark when rising against it, but in the writer's experience this is more than counterbalanced by the fact that snipe, which are particularly susceptible to noise, lie far better when approached up wind. To kill snipe well is the most difficult knack in shooting, and one to which few men, however good shots they may be at other forms of game, rarely attain.

Woodcock are rarer birds than snipe, and even more erratic in their movements. Large quantities of them usually arrive in England with the first November combination of an easterly gale and a full moon, but they cannot be depended on to stay more than a few hours in the locality where they alight. In Ireland, however, they are far more constant in their habits, and it is here that the largest bags of woodcock are made in the United Kingdom. Though woodcock are properly forest, or covert-haunting birds, in many parts of Ireland and the Western Highlands of Scotland they frequent the open bogs and moors, where they are shot over pointers or setters. Otherwise no particular rules can be laid down for their pursuit, beyond the fact that they are very conservative in their choice of a haunt, and that year after year cocks may be found in the same spot. Woodcock are usually esteemed difficult birds to shoot, but more are missed from over-sagerness on the part of the shooter than from the difficulty of the shot they present. Still in thick covert they undoubtedly require a quick hand and eye acting in unison, to kill them neatly and promptly.

Of quadrupeds or ground-game, only three varieties, the roe-deer, the hare and the rabbit, are preserved for sport with the shot-gun in the United Kingdom. The roe-deer, in England and Ireland, is chiefly associated with Scotland so far as shooting is concerned. It is essentially a forest-loving animal, and is usually killed by driving it up to a line of guns, when, if close enough, it will drop to an ordinary charge of No. 5 shot, but a hundred of Bul. or No. 1 is a far-preferable, and more efficient, gauge to use. Roe-deer are not easy animals to move in a direction in which they suspect danger, and the more quietly a drive is conducted, the greater the chance of success. A few men walking carelessly through a wood, i.e. as if beating were not their object, will drive roe, and especially the cunning old bucks, with far greater certainty than an array of shouting, stick-rapping beaters.

Far finer sport, however, in every sense of the expression, can be obtained by stalking roe-bucks during the summer season with a small-beat rifle, carrying a hollow-nosed, and not a solid bullet. The most suitable opportunity for this is at sunrise or sunset, when the roe will be found feeding in the more open spaces in the woods. The same animals will nearly always be found in the same locality, but they are exceedingly wary creatures, and the old bucks are quite as difficult to stalk as a red-deer stag.

The hare no longer exists in the same quantities as formerly; indeed in many parts of Great Britain it is practically extinct, the result of the Game Act of 1831. No special methods are employed for shooting hares, nor is any great skill requisite for doing so, but sportsmen should always bear in mind that unless hit in the head or heart hares are not easily killed dead, and should, therefore, refrain from firing long shots at them, especially when they do not offer a broadside shot.

It is to be presumed that the Ground Game Act was specially directed—and with reason—against rabbits more than hares, but the former show little or no evidence of being affected by it. Yet from every point of view, except perhaps that of shooting, they are far less valuable, and more noxious, animals, which ravage alike the young plantations of the landlord and the crops of the tenant farmer. Where they are preserved in large numbers, the most usual method of shooting them is to ferret them out of the burrows as short a time as possible before the day fixed for shooting, and then fill in the mouths of the holes with well beaten soil, which should also be drenched with paraffin or tar to deter the rabbits from digging their way in again. If this be carefully done, and plenty of covert—coarse grass, bracken or gorse—be available, in fine dry weather the rabbits will lie out for two or three nights, but in the event of heavy rain or especially snow, nothing will prevent them going to ground again. Where natural covert is scarce, it can be supplemented by strewing bushwood and fir-loppings under which rabbits will readily shelter. In beating for rabbits, the beaters should not merely tap with their sticks, but should thrust them into the clumps of grass and underwood; otherwise many rabbits will be passed over. When rabbits are driven up
to a line of guns in covert, the latter—if no winged game is expected—should stand just inside the edge of the wood, with their backs to the beaters, and take the rabbits after they have passed. This not only induces the rabbits to face the open, but precludes the possibility of an accident to the beaters. Capital sport can be enjoyed in the summer evenings by stalking rabbits with a pea-rifle in a suitable locality, i.e. where no danger to human beings or live-stock can be caused by a stray or deflected bullet. A disused quarry or sand pit is an ideal place for such sport.

One branch of shooting remains to be touched on, namely, wild-fowling, which again must be classed under two totally distinct headings, shore or flight shooting, and shooting afloat with a swivel punt gun. In flight shooting, the sportsman stations himself at a point over which the birds will probably pass at sundown or daybreak in their passage from or to the sea, when going to or leaving their inland feeding places. Success in flight-shooting must, therefore, depend very largely on chance or luck, but given a fair proportion of the latter, it is a fine, wild sport. One essential requirement is a well-trained and thoroughly intelligent dog, and here again no better can be than an experienced man. His methods of working, and the rules of guidance can be laid down for shore-shooting; the districts are unhappily few and far between where even a moderate bag of edible wild-fowl can be made nowadays, and experience alone can give that knowledge of their habits which is essential to success. Wild stormy weather which drives the birds off the sea is best for shore-shooting.

Punt-gunning or wild-fowling afloat is a sport confined to an exceedingly small number of people, professional or amateur, and is as distinct from ordinary inland shooting as deer-stalking from pigeon-shooting. It may be briefly described as the art of shooting wild-fowl on the sea, or in estuaries of rivers, from a flat-bottomed punt carrying a heavy, fixed gun, weighing anything from 70–170 lb, the muzzle of which rests in a revolving crutch in the bow of the boat, and firing a charge of 1–2 lb of shot. A punt may be either single- or double-handed, i.e. to contain one or two people, and it is perhaps unnecessary to add the fowl are shot sitting, or just as they rise from the water. It is a sport that contains a considerable element of danger, and requires great powers of endurance and a strong constitution no less than good nerves, and it has been rightly termed a science in itself. What can be learnt by a patient apprenticeship under an experienced teacher.

The art of shooting cannot be learnt theoretically, and can only be acquired by experience and practice. The beginner should, however, from the first seek to avoid an ugly or cramped style, which, once developed, is very difficult to get rid of, and should bear in mind that, in firing at a moving object, his purpose should be not to place his charge of shot where such object is at the moment he pulls the trigger, but whether it will be by the time the shot reaches it; in other words the game should run or fly into the circle of pellets. Nor should he seek to effect this by dwelling on his game with his gun at his shoulder—a practice not only clumsy but exceedingly dangerous—but by firing at an imaginary point in front of it. Practice alone can teach the knack of doing this properly; to some men it seems a natural gift, while others do not acquire it in a life-time. A sound digestion is the surest aid to successful shooting, for unless the nervous system be in perfect tune, brain, eye and hand cannot act in that spontaneous sympathy necessary to quick and pretty marksmanship.

Probability of shooting under game, a very common fault among sportsmen. Excessive chokes is to be deprecated; a patcern of 140 for light barrels, and 160 for the left barrel will be found amply sufficient, and a load of 40–42 grains of nitro-powder with 1 or 1½ oz. No. 5½ unchilled shot will meet all ordinary requirements of the shooting field. A thoroughly good hammerless ejector gun can be obtained from a first-class London gunmaker for 35–45 guineas, and a pair for £75 to £100, but these prices are capable of considerable modification or the reverse. Single-trigger guns are the latest fashion, but no special advantage can be claimed for them.

The bibliography of shooting is very extensive, but the following works can be cited as standard ones on the subject: The "Badminton Library" "Shooting—Hints to Young Shooters," by Sir Ralph Payne-Gallwey; the "Fur and Feather" series of publications; The Gun and its Development, by Greener; and for wild-fowling, Colonel Hawker's evergreen Instructions to Young Sportsmen; The Art of Wildfowling, by Abel Chapman; The Foiler in Ireland, by Sir Ralph Payne-Gallwey; and The Wildfowler, by Folkard.

Big Game.

The pursuit of large game, whether for food or sport, has ever exercised the greatest fascination for mankind, and with the rapid opening up of vast continents hitherto unexplored, and the introduction of breech-loading rifles, it has assumed an importance within the last few decades that bids fair to render it a thing of the past before the end of the current century. The present generation has seen the bison, which formerly roamed the American prairies in countless millions, wiped off the face of creation; the veldt of Southern Africa, which teemed in equal proportions with big game of every description, has become a pastoral country, where a few of the commoner varieties still persist, but are suffering from the same conditions as the semi-wild deer of the Scottish Highlands; and even the jungles of Hindustan, save where jealously preserved by native potentates, show signs of exhaustion as regards the larger fauna. True, wherever the white man holds sway, the danger of extinction has been recognized; close-times have been instituted; reserves set apart wherein the animals may breed unmolested, and the number of each species that may be killed, restricted; but it is doubtful whether these laws, wholesome and well-intentioned as they are, can do more than retard the ultimate destruction of big game outside such reserves as the Yellowstone Park in North America. Within the pale of this no rifle is ever fired, and the game has prospered correspondingly, but once let a single head of it wander outside the restricted area, and its doom is sealed. Moreover, there are still vast tracts in Africa, and to a limited extent in other parts of the globe, where big game forms the staple meat supply of the aboriginal inhabitants, who, in addition, are no longer dependent on their primitive weapons of the chase, but are equipped with more or less efficient firearms. Great regions are however still to be found, of which sportsmen have as yet barely touched the fringe. The dense forests of Western Africa are practically unexplored, much less shot out, and Central and Eastern Asia, the Dutch East Indies, and Borneo and Sumatra, offer an almost virgin field for sport with big game. Save for the Barren Grounds of the Arctic regions and some parts of the extreme north-west—though Alaska now enjoys particularly stringent game laws—the North American continent is fast becoming denuded of big game; but in Europe, within a week's journey of London, the mountains of the Caucasus and the forests at their feet are only known to a handful of intrepid explorers. It will thus be seen that although good trophies, whether of hide or horn, are yearly becoming scarcer, fair sport is yet obtainable in those parts of the world where big game is indigenous, though the days are long past when a sportsman could shoot at his own discretion over the whole of Africa or North America, or when the globe-trotter visiting India could count on big game shooting as forming part of his programme.

Indeed, in view of the increased, and increasing, facilities for world travel, and the prevalent fashion for sport, it is probable that in course of time big game shooting will be universally...
conducted on modern European lines; i.e., wild animals will be carefully preserved by the state and private owners, and where the latter do not care to exercise the sporting rights they will be let to the highest bidder, and big game shooting will, as with Scottish deer stalking, become exclusively a pastime of the wealthy or luxury classes. Already large tracts in the wilder parts of the Eastern States of America have been acquired by rich men, over which they jealously preserve the sporting; and with the opening up of railway communication in the south of Africa to the Zambesi, and in the north to Khartoum, the dawn of another century may not improbably see shooting-boxes advertised “to let for the winter months,” dotting the very countries where Osowel, or Baker, found a virgin field for their rifles within the last few decades. Distasteful as such a state of things may seem to the present generation of sportsmen, some thing more or less approaching it will inevitably come to pass; and where climatic conditions or inaccessibility forbid its adoption, big game will become extinct at the hands of native races or white “professional” hunters. Carpe diem must undoubtedly be the motto of the big game shofter of the present day, who requires genuine wild sport under the highest possible conditions. Even at present it is essential that he should obtain the fullest information as to the existing game laws in the part of the world he intends to travel in, the whole of North America and practically three-fourths of Africa being governed by stringent regulations respecting the preservation of big game. Every state in the North American Union, and in some cases every county in a state, has its own close-times and game laws, and the same is true of Canada. Moreover, heavy fees for licences to kill big game are now exacted in all parts of the world where game laws exist. In the United States the cost of this varies very much, the present highest charge being $50 for a “non-resident” sportsman, while in addition in some states he is not permitted to hunt unless accompanied with a qualified guide. Full information on these points can be obtained gratis on application to the Board of Agriculture at Washington, where every assistance is given with the greatest courtesy, and which further issues admirably compiled pamphlets dealing with the whole question of game-preservation. Infringement of the United States Game Laws entails exceedingly heavy penalties, amounting in the most extreme case to two years’ imprisonment plus a fine of $5000.

In Canada the highest charge is $100 in Manitoba, while in Africa it varies from £50 in the Sudan and British and German East Africa to £100 in Bechuanaland. Moreover, it must be borne in mind that these fees only permit the killing of a limited number of specified animals. Still, excellent as these laws undoubtedly are, their value must remain enormously discounted as long as the sale of game and skins by aboriginal or professional hunters is permitted; it is they, and not the heavily taxed foreign sportsman, who are responsible for the threatened extinction of big game.

So far as Asiatic sport is concerned, British India, save to those furnished with credentials to native potentiats or high government officials, offers scant opportunity as regards big game to the itinerant sportsman, who must now wander farther afield into Central or North-Eastern Asia, Borneo, Java and the wilder parts of Assam or Burma; but the greater portion of the first-named locality is only open to persons duly authorized by the Russian government.

Although South America and Australia offer little attraction for sport with the rifle, big game of varying species is thus indigeneous in every part of the world.1 It is obviously impossible within our limits to deal at any length with either its habits or the various methods of hunting it. Brief allusion will be made, however, to the chief varieties of it found in the various continents and the necessary equipment for their pursuit.

Europe contains big game in greater variety and quantity than is generally supposed. The last survivors of the aurochs or European bison still roam the forests of Lithuania and the

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1 Except in New Zealand, where red-deer have, however, been introduced and afford magnificent sport.

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Caucasus: elk are found in Scandinavia, Russia and Eastern Prussia, and red-deer are common to the whole of the continent. Of the more Alpine kinds of big game, reindeer exist in the chamois in the mountainous districts of Central and Southern Europe; wild sheep in Corsica and Sardinia; while a few of the European ibex still linger in the royal preserves of the Italian Alps. A variety of ibex is fairly plentiful in Spain, and wild goats are found in South-Eastern Europe. Of the carnivora, bears, wolves and lynxes, though not often met with, still exist in fair numbers in most of the mountainous countries of Europe, though the first-named animal is practically the only one afford ing opportunity for sport with the rifle. Gluttons or wolverines are found in Scandinavia, and the lynx of this species still exhibit the carefully preserved forests of Central Europe. The reason for this continued supply of big game is that the whole of the European continent has been for centuries under private, communal or state preservation. The’ Caucasus, which though geographically in Europe, can hardly with fairness be held to be so as regards sport, further contain such purely Asiatic varieties of big game as tigers, leopards and tahr, and but for the savage character of the country and its inhabitants, and the obstacles thrown in the way of the sportsman by the necessarily less probable nature of the visit of English sportsmen than is at present the case. In civilized Europe, Scandinavia, Spain and the Mediterranean islands probably offer the best field for the big game hunter of moderate means, though the last named localities still enjoy an enviable reputation for brigandage.

Among useful works of reference dealing with big game shooting in Europe the following may be cited: Wild Spain, by Chapman, and Wild Norway by the same author; Flood, Fell and Forest, by Sir Henry Pottinger; Savage Scenata and Sports in the Crimea and Caucasus, by Phillips Woolley; Tyrol and the Tyrolese, by Baillie-Grohmann; the volumes of the “Badminton Library” dealing with the subject, and especially Short Stalks, by E. N. Buxton.

The physical geography of so vast a continent as Asia, no less than its varying climatic conditions, naturally produce many different species of big game, ranging from the Alpine to the purely tropical. When it is remembered that the continent includes the frozen tundras of the Arctic Circle, the steaming plains of Hindustan, the treeless wastes of the Pamirs and the dense jungles of Burma, together with the highest mountains in the world, it will be readily seen how varied must be its fauna. Among the carnivora, the tiger and the leopard or panther are found practically throughout Asia, save in the extreme north and north-west; while lions, though exceedingly rare, still exist in Guzeght and parts of Persia and Mesopotamia. The usual methods of tiger-shooting in British Asia are, when the game has been located, either to drive it to the sportsmen by means of natives acting as beaters, or else to force it into the open with a long line of elephants, which also serve to carry the shooters; the choice of methods must, of course, depend on local conditions. The second practice is not a form of sport within the reach of men of moderate means, who, indeed, except as the guests of some native potentate, are not likely to have the opportunity of indulging in tiger-shooting at all. In localities where neither of these methods is feasible, it is usual to tie up a live animal as a bait, and sit up over it during the night in a machan or platform lashed to the nearest tree; but this is usually an unsatisfactory and disappointing proceeding. In parts of Asia other than British possessions, tigers are found as far apart as the shores of the Caspian Sea and the island of Saghalian. Europeans recover with difficulty from the bites of a tiger, since blood-poisoning is the almost inevitable result owing to the septic condition of the animal’s teeth and claws, and a supply of antiseptic lotion and solution should always form part of the tiger-shooter’s equipment. Panthers, though more plentiful than tigers, are less frequently bagged, as they are exceedingly difficult animals to beat out of covert; they are usually killed by sitting up over a bait, or by smoking them out of the caves they frequently make their homes. A wounded panther has the reputation of being a more dangerous animal than a tiger. Other varieties of the felines are the cheetah, the clouded panther,
the lynx, and most beautiful and rarest of all, the ounce or snow leopard only found above the snow line.

Of other Asiatic carnivora the bears are the most important from the sportsman's point of view. A great variety of them exists, ranging from the great Kamchatkan bear to the small blue bear of Tibet, but the methods of their pursuit call for no special mention.

The Indian elephant is rather smaller than the African variety, and has other well-marked differences, the chief as regards shooting being the fact that the cavity at the top of the trunk is not protected by the roots of the tusk as in the African elephant, thus enabling a frontal shot to reach the brain. This point, one at the side of the temple, and another at the back of the ear, are most usually selected for their aim by Indian sportsmen, who do not favour the shoulder shot so commonly employed in Africa.

A charging elephant can often be turned by a well-planted, though not necessarily fatal, bullet, but a really determined animal, especially a female with a calf, will not cease its attack until either it or the hunter be killed. Though elephants will usually fly from the report of a rifle, the sound of a human voice will often make them charge.

Four varieties of rhinoceros, of which two are one-horned, and two double-horned, are found in Asia, ranging eastwards from Assam through Burma and Siam as far as Sumatra. The rhinoceros is almost invariably found in heavy grass swamps, and can consequently only be hunted by means of elephants. It is usually beaten out by means of a long line, but is occasionally tracked to its lair on a single elephant. In common with many animals of the deer and antelope tribes, the rhinoceros always deposits its droppings in the same place, a peculiarity which enables native shikaris to locate it with tolerable ease.

Although a rhinoceros, even when wounded, will rarely charge home, it has a peculiarly terrifying effect on tame elephants, and specially trustworthy ones are necessary for this sport.

The Indian rhinoceros differs in many important details from the African variety.

Of bovines, Asia produces the buffalo, three species of the gaur—miscalled the Indian bison—and the yak, the latter a rather uninteresting beast of the chase only found on the open ground of the Tibetan plateau. Very different is the pursuit of the gaur in the dense forests of India and Burma, where it is usually stalked on foot; and to track a wounded bull through thick jungle affords one of the most exciting experiences of big game shooting. Such an animal will almost invariably turn at right angles to its trail, and watch for its pursuer, whom it will charge from a distance of perhaps a few yards, even feet. The wild buffalo, too, is an exceedingly plucky animal, and will on occasion even attack a European,—whose smell appears distasteful to it,—unlike the gaur it shares with the tame variety.

The numerous species of deer and antelope scattered over the continent of Asia are usually obtained by stalking, but the former being essentially forest-haunting animals, while the latter are usually found on open ground, the methods of approaching them naturally vary with local conditions. Of deer the best known are the sambar, the chital and the swamp deer, but the Hangul or Cashmere stag, the Altai wapiti and the Maral or Asiatic red deer afford the finest trophies. Of Asiatic antelope the handsomest and commonest variety is probably the blackbuck, found practically all over India as far east as Assam.

To many sportsmen the most fascinating form of Asiatic big game shooting is the pursuit of the many varieties of wild goats and sheep, common to the various mountain ranges and high-lying plateaus of the continent. While such sport lacks the risk of attack from the animal hunted, it exacts remarkable powers of endurance and perseverance on the part of the hunter, coupled in most cases with the dangers inseparable from Alpine climbing.

There is scarcely a mountainous or elevated part of Asia which does not contain a variety of wild goat or sheep, of which the best known are the ibex and markhor of the Himalayas and Hindu Kush among the former, and the Oris Poli and O. Ammon of Tibet among the latter. As a general rule all wild goats can only be obtained under conditions which exact the highest mountaineering qualities on the part of the stalkers, but with regard to the sheep of the vast tablelands of High Asia—"the roof of the world"—a good deal of work has to be done on pony back, as the rarefied atmosphere of these great altitudes precludes much physical exertion. Exception, however, in this respect must be made of the burshel—Oris Nahuro—which haunts the same inaccessible crags as the ibex or markhor. The sportsmen who essays to bag an Oris Poli, or O. Ammon, who probably have had ample opportunity of testing his climbing powers on the march from India to his shooting-ground.

Ibex-shooting begins with the melting of the snows on the lower slopes, and ends in June, when the flies and the flocks of native herdsmen, driven to the Alpine pastures, force the wild animals to seek ground absolutely inaccessible to man. "First come first served" is a recognized rule in Himalayan shooting, and once a sportsman has claimed a nullah, or mountain valley, by priority of possession, it is his alone as long as he chooses to retain it; consequently the "race for the nullahs" in early spring is not the least exciting part of Himalayan big game shooting.

In addition to ibex, markhor and such animals, the season's bag should also include two varieties of bear, and, with extreme good fortune, an ounce or snow leopard.

Like the fox in Great Britain, the wild boar is never shot in any part of British Asia where it can be hunted on horseback.

Thanks to the improvements in modern firearms, and particularly to the adaptation of cordite ammunition to sporting rifles, the battery necessary for Asiatic big game shooting has been considerably reduced, both in weight and number of weapons required. It is not long since 8-, or even 4-bore rifles, weighing respectively 18 and 24 lb., or at least a .577 Express, were considered indispensable for the pursuit of the pachyderms and larger bovines, yet nowadays a 450 rifle of 11 lb. weight, in conjunction with cordite powder, is held amply sufficient for the heaviest or most dangerous game, the penetration or expansion of the bullet being regulated by the extent of its covering of cupro-nickel or steel. For soft-skinned animals, deer and mountain game, a .250 or .303 magazine rifle is the most useful weapon, and it may be confidently said that the introduction of these and similar small-bore rifles has extended the killing zone in stalking by at least 100 yds. For forest or jungle shooting a 10- or 12-bore Paradox gun is an admirable weapon, capable of use as a rifle against large and dangerous animals, or as an ordinary shot gun for small game. A double-barrelled rifle is essential for dangerous game, the saving of time, short as it is, in merely shifting the finger from one trigger to another, being an enormous advantage as compared with the action of ejecting and re-loading from a magazine. Finally it may be said that a sportsman would be completely equipped for big game shooting in Asia, or indeed any part of the world, with one of these soft-skinned rifles, a 10- or 12-bore Paradox gun and a .250 or .303 magazine rifle.

As regards the rest of his outfit, if he propose to shoot in any part of British Asia, he can procure this on the spot, as well, and far cheaper, than in England.

Useful works dealing with big game shooting in Asia are: Baldwin, Large and Small Game of Bengal; Forsyth, Highlands of Central India; Sanderson, The Deer and Game Birds of the Wild Beasts of India; Kinnloch, Large Game Shooting in Tibet, etc.; MacIntyre, Hindu Kós; Steindale, Natural History; Demidoff, Sport in Central Asia; Ronaldshay, Game Hunting in the Pamirs; and Fife-Cookson, Tiger-Shooting in the Doon and Uwar.

The shooting field of African big game is the antelopes, which exist in great variety; such widely different animals as the noble sable antelope and the tiny dik-dik being classified among them. African gazelles and antelopes may be roughly divided into two classes, those found on plains or open ground, and those frequenting forest or bush, and the methods of hunting them naturally vary with the locality. Still, as a general rule, it may be said that not only the finer animals, but also the more vulnerable and less available species of small game, afford more enjoyable sport in the stalk, combined with the advantage of a climate free from malaria. There is practically no part of Africa where antelopes do not exist in one variety or,
another, but probably British East Africa or Somaliland offer the best field for sportsmen. On open ground a good deal of hunting can be done on horseback—except in those districts where the tsetse fly exists—and antelopes are occasionally ridden down, but a very stout-hearted horse is required to overtake such animals as sable antelopes, eland and gemsbok. Caution should always be exercised in approaching the larger varieties of antelope when at bay, whether wounded or not, as some of them, notably the roan and sable, and the oryx, are inclined to be very savage, and will charge desperately home. It is said that even a lion is chary of attacking the oryx, owing to its long tapers, like bamboo. The African carnivora include the lion, leopard, cheetah, hyena and other smaller varieties, but it is only necessary to deal with the first named, which, where not exterminated or driven away by civilization, may be said to be common to the whole continent. As with all game, big or small, the conditions of lion-shooting vary with the locality; thus, on the open plains of Somaliland, lions can be spied from a distance and stalked on foot, or even ridden to bay on horseback, while in densely bushed districts, unless chanced on in open ground, the most usual method is to sit up at night over a halt or kill, inside a zareba of thorn bushes. This method, however, makes aiming with any degree of accuracy a matter of difficulty, but a German, Herr Schillings, has demonstrated the use of a flashlight in such circumstances. Lions frequently lie up or shelter in detached patches of scrub, whence they may be driven by a “bobbery” pack of dogs, or as a last resource the bush may be set on fire, the sportsman having previously concealed himself down wind. Lions when emboldened by hunger will fearlessly attack human beings, especially at night, and, like tigers that have once developed a taste for human flesh, become positive scourges of their neighbourhood. Mr F. C. Selous, than whom there are few better authorities, considers the lion the most dangerous of all African big game, a distinction that other writers award to the buffalo.

Of the pachyderms the commonest is the rhinoceros (R. bicornis), usually termed the black rhinoceros to distinguish it from the so-called “white” variety now almost extinct. Though the first-named is by no means so widely distributed as formerly, it is still plentiful in Equatorial Africa, and to a lesser extent in Somaliland. It bears rather a mixed character for ferocity, but most hunters agree that while it will charge with little or no provocation, it does so blindly, and rarely turns to renew the attack. This is probably due to its exceedingly poor sense of sight, but its sense of smell is correspondingly extraordinarily acute, while an additional cause that renders it a difficult beast to stalk is the presence of the “rhinoceros birds” which are its almost invariable companions, and which warn it of danger. Though so huge an animal, the rhinoceros is easily killed by a bullet in front of the base of the ear, or midway along the neck, the shoulder shot is only employed when the hunter has stepped aside to avoid a charge. The hippopotamus is still plentiful throughout most parts of uncivilized Africa. In narrow rivers where they can be shot from the bank, they are easily killed by a brain-shot, the best spot to aim at being the base of the ear. If the bullet be properly placed the animal will sink to the bottom of the stream and rise to the surface within a few hours. Hippopotami are nocturnal feeders, and can be occasionally shot at night when at a considerable distance from water; but owing to the difficulty of placing the bullet accurately, they are apt to escape wounded. Hippopotamus shooting does not rank high as a sport, but the meat, when young, is excellent, and the huge size of the animal enables a hunter to provide a large number of followers with food; this can be the only excuse for killing these comparatively harmless animals in any number.

Elephants still exist in considerable numbers in parts of Africa, but, unless more stringent methods of protection are afforded, their ultimate extermination at the hands of professional ivory-hunters, white or coloured, is inevitable. What can be done in the preservation of elephants is shown in Cape Colony, where elephants, which have been rigidly protected for many years, now exist in considerable, and increasing, quantity. Elephants have an extraordinarily keen sense of smell, which, coupled with their habit of roaming over vast expanses of country, forms their chief safeguard against the relentless persecution to which they are subject. They may be hunted either on foot or horseback; where feasible, the latter is the preferable method, as it not only enables the hunter to follow up his quarry with greater ease—and when startled, or wounded, elephants will travel enormous distances—but in open country gives him a better chance of escape from a charge. The heart, or broadside, shot is usually employed. Incredible as it may seem, these enormous creatures can be taken by a bullet placed in the heart of the body, delivered from a .303 rifle. A weapon of heavier calibre is, however, to be recommended, and a .450 rifle, or 10 or 8 bore Paradox gun, are most suitable; the closer the hunter can safely get to the animal the better. A charging elephant can usually, but not invariably, be turned by a shot in the chest; to fire at the head is useless.

The buffalo (Bos caffer), formerly one of the commonest of African wild animals, has been practically exterminated in many parts by the plague of rinderpest, but is still plentiful in the malignant swamps between the mouths of the Limpopo and the Zambezi, and even more so in the Beira district of Portuguese East Africa. Like most wild animals, the buffalo is naturally disinclined to take the offensive, but when roused to action, it will pursue a hunter with relentless ferocity, and is held by many authorities to be the most dangerous of African big game. The greatest care should therefore be exercised in following up a wounded animal, or in approaching one that is apparently dead, for as long as a spark of life lingers in it, it will endeavour to destroy its destroyer. A wounded buffalo will nearly always make for the nearest thicket, where it will await its pursuer, and in such circumstances, it should be left alone for an hour or two, when it will probably lie down, and be less active in attack owing to its wound having stiffened. A charging buffalo always carries its head at such an angle that a frontal shot is useless, unless the bullet penetrates through the nose into the throat or chest; a .500 or .450 rifle with a solid bullet, or an 8-bore Paradox gun is the best weapon for buffalo-shooting. Other varieties of the African bovines are the smaller, Abyssinian, the Senegalian, and the dwarf, or Congo buffaloes.

The only other species of African big game calling for special mention is the giraffe, which is usually ridden down and killed by a raking shot at the root of the tail; but except when required for food or specimens, the destruction of this inoffensive animal, which offers no trophy of the chase, is to be deprecated. Great numbers are annually destroyed by professional skin hunters, and their carcasses left to rot. Bears, though little known, exist in North-West Africa, and the ubiquitous wild goat, or ibex, is also found in the north of the continent. A .450 cordite rifle, a .500 small bore, and a 10 or 8 bore Paradox gun, is an ample battery for African big game shooting.

Useful books of reference for African shooting are: Selous, A Hunter's Wanderings in Africa; Travel and Adventure in S.E. Africa, by the same author; Baker, Wild Beasts and their Ways; Swayne, Seventeen Trips through Somaliland; Powell Cotton, Through the Adventure in the Congo Free State, A Sport of Adventure to Abyssinia; Melissa, Lion Hunting in Somaliland; Wilson, East Africa and its Big Game; Neumann, Elephant Hunting in East Equatorial Africa; Hay, Western Barbary; Bryden, Kool and Pigs in Africa; Mills's, A Breath from the Veldt; Thomson, Through Mazzar-land, and Theodore Roosevelt, African Game Trails (N.Y. 1910).

Big game in North America has been rapidly disappearing for several decades before the advance of civilization armed with breech-loading rifles. Among the carnivora, bears and pumas are the only species that need be taken into account as far as shooting is concerned. Of the former three varieties exist, the grizzly, rarely found east of the Rocky Mountains, the brown bear, and the black bear, common to practi-
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cally the whole of the continent, though now rarely killed in the Eastern states. The best country for bears is Alaska, where the
grizzly grows to an enormous size, and the Kodiak Island bear
is probably the largest variety of its genus in the world, except
perhaps the Yezo bear of Japan. In Alaska, bears are frequently
shot along on the river-banks, to which they resort in autumn to
feed on the salmon which then crowd the rivers. Otherwise
no fixed rule can be laid down for American bear-shooting; the
quarry may be hunted with dogs, which “tree” the black bear,
or bring the grizzly, which is unable to climb, to bay; it may be
ekilled over a half; it may be spied and stalked; and, most commonly
of all, it may be accidentally “jumped” and shot by the hunter.
The neck or heart is the most vulnerable spot to aim for, but
bears are very tenacious of life, and astonishingly active, despite
their clumsy appearance. Their eyesight is bad, but their sense
of smell and hearing very acute. The biggest of grizzlies will
rarely charge unprompted, unless it be a female with cubs, but
when molested or wounded it will push its attack home with the
greatest temerity, and caution should always be exercised
in approaching a wounded animal, even when apparently
inoffensive.

Of North American Ceridae the finest is the wapiti, invariably
miscalled elk, once as plentiful as the bison, but now extinct east
of the Rockies, where, though still fairly abundant, it is found in
saddly diminished numbers. It is especially common in Van-
couver, but as is almost invariably the case with insular deer,
the heads are small compared to those of the mainland. Wapiti-
hunting is probably the finest sport in America, not only from
the magnificent trophy these splendid deer afford, but also on
account of the beautiful country they frequent in the United
States; open rolling ranges of hills interspersed with patches of
timber. Wapiti are almost invariably killed by stalking during
the rutting-season, when the big bulls betray themselves by their
defiant challenge. The largest deer in the world is the North
American moose, which, except for a difference in size, is precisely
the same animal as the elk of Northern and Eastern Europe.
It is essentially a forest-haunting animal, which in the Eastern
States and Canada is frequently killed by “calling” i.e. imitating
the call of the cow, and so attracting the rutting bull to within
shot of the hunter. This is usually effected by means of a species
of trumpet made of birch-bark, and in this art of “calling”
both white men and Indians become exceedingly skilful. In
Alaska, where the finest moose are found, they are usually
stalked or “still-hunted” on foot, and to “still-hunt” these
animals in dense timber successfully is a most delicate piece
of wood craft. Unless struck in a vital part a wounded moose will
travel enormous distances, but a single shot in the heart, or
better still, the neck, is usually fatal. A wounded moose can be
dangerous and should be approached with caution.

The North American caribou, which is practically the same
animal as the European and Asiatic reindeer, may be classed
into two varieties: the Barren Ground caribou, found in the north,
and the Woodland caribou, found all over the forests of Canada,
and in a few localities in the United States. The former is
probably the only wild animal existing on the American continent
in practically the same numbers as formerly, while the latter,
thanks to careful preservation, is still abundant. The Barren
Ground caribou of the northern regions of North America are
frequently hunted by white men. They form the staple food of
the natives of Arctic North America, and huge quantities of
them are killed during the spring and autumn migration, especial-
ally when swimming lakes or rivers. The woodland caribou is
easily stalked in fairly open ground, and a bullet in the heart or
neck will kill the largest bull. Caribou and reindeer are the only
animals of the Cervidae in which the females have horns as
well as the males. The two most widely separated districts of
Canada, Newfoundland and British Columbia, probably afford
the best ground for woodland caribou. Other American deer
are the mule, or black-tailed, and the Virginian, or white-tailed,
both of which exist throughout the continent, but the latter, which is essentially a denizen of thick forest, is much the
most difficult beast to stalk. It is occasionally “hounded” or
hunted with dogs, which drive it to runways where the hunter
has previously concealed himself. A smaller variety of the
black-tail is found on the Pacific coast.

The prongbuck, invariably, but incorrectly, styled an antelope,
is a sporting little animal only found on open plains. It was
formerly exceedingly plentiful, but is now sadly diminished in
numbers. It can only be obtained by fair stalking, and the shot
has almost invariably to be taken at long range. It affords
excellent sport when coursed with greyhounds. It is the only
hollow horned ruminant which annually sheds its horns.

Now that the bison is extinct as far as shooting is concerned,
the only bovine of North America is the musk ox or the Arctic
Circle, but few sportsmen care to undergo the discomforts
attendant on the pursuit of this animal, which moreover is an
exceedingly uninteresting beast of sport and offers but a poor
trophy. The same may be said of the Rocky Mountain goat,
a curious animal, which zoologically is an antelope, and which,
though its pursuit exacts great powers of endurance and moun-
taineering ability, is so stupid, or self-confident a creature, that
practically no science is required to stalk it. Very different
is the chase of the magnificent big horn or wild sheep, now scarce
in the United States, but fairly plentiful in the Kootenay district
of British Columbia, and which, when killed by fair stalking,
affords a trophy that may be considered the Blue Ribbon of
American big game shooting. It is occasionally hunted with
dogs, which hold it at bay until the hunter can get within range,
or it may be killed by watching the so-called “licks,” or beds of limestone clay, to which these animals are fond of resorting,
and which they lick or gnaw, presumably as a form of corrective.
Big horn, varying according to locality, are found as far north
as the shores of the Bering Sea, and south to Northern Mexico.
The only other wild animal of North America that needs mention
is the puma or panther. This is invariably hunted with dogs,
which “tree” it or hold it at bay until the arrival of the hunter,
while a good pack of daschhunds will kill it themselves.
To seek it without the aid of dogs is useless, and it is therefore
an uninteresting beast of sport. Certain American writers
have claimed a rather spurious courage for the puma, but the
genral consensus of opinion is that it is a skulking, cowardly
beast.

No special battery need be taken to America; a .303 rifle is
sufficient for all the big game of the continent, but a .400 or .450
cordite rifle is probably preferable for dealing with the big
Alaskan grizzlies.

Useful works of reference for American shooting are: Roosevelt,
Hunting Trips of a Ranchman; Van Dyke, The Still-Hunter; Pike,
The Barren Grounds of Northern Canada; Grohmann, Camps in the
Rocky Mountains; Caton, The Antelope and Deer of America; American Big
Game Hunting (edited by Roosevelt); Davis, Caribou Shooting in
Newfoundland; Buxton, Short Stalks; Whitehead, Camp Fires of
shutters; and two volumes of the “Badminton Library” dealing
with the subject.

Although two or three sorts of unimportant deer are found in
South America, as well as the puma and jaguar, it does
not call for special mention in respect of big game
shooting, an extraordinary fact in view of the enormous
size of the continent. The best work of reference is Kennedy,
Sporting Sketches in South America.

Arctic big game shooting appeals to such a small class of
sportsmen, and is so limited in its variety of game, that it need not be touched on here. Full information
on the subject can be found in the works of Lamont,
Nansen, and other Arctic explorers.

Some of the finest deer stalking in the world can be obtained
in New Zealand, by those able to spare the time for so long a
journey.

Big game shooting is not only an exceedingly expensive
amusement, but one of which the cost has been continually
increasing, and no expedition of any length outside
Europe could be enjoyed under an expenditure of from
£200 to £400; but in view of the enormous difference in
local conditions, no less than individual requirements;
no hard and fast scale can be laid down. East Africa
and Somaliland are probably the most expensive localities in which
to hunt, on account of the numbers of porters, and followers, with which a sportsman is obliged to encumber himself, while British India is relatively the cheapest. South of the Zambezi in Africa, it is usual to transport stores and equipment in an ox-wagon, and though the initial cost is heavy, great part of this can be recouped by selling the equipment at the end of the trip. No matter in what part of Africa it is purposed to hunt, it is advisable to bring everything; camp-equipment—Weissman tent, mosquito curtains, camp bedstead, table and chair—and all stores from England should be packed in strong boxes, each branded with the nature of its contents, to weigh when full 65 lb, the weight an African porter can conveniently bear. Beads and presents for natives should not be overlooked. In India, on the other hand, nearly everything can be procured cheaper and better there than in England, while as regards North America, as indeed everywhere, the expense of a shooting trip varies largely with locality; the outfit of wagons, horses and attendants requisite for Wyoming or Montana, being useless in British Columbia or Alaska, where everything has to be "packed" on Indian porters. Of Central or Northern Asia it is difficult to speak with any degree of accuracy as regards expense; but on this important point, no matter in what part of the globe an expedition may be planned, information should be sought from only the latest and most reliable authorities.

The hunter's personal equipment, rifle, clothing, saddlery, &c., should be the best procurable. Where a camp bed is not practicable, a warm sleeping-bag should be taken. Clothing must of course be adapted to the climate, but flannel must always be worn next the skin, and a choker belt is a necessity. A long-sleeved shirt bearing shoulder-straps on the cool side of warmth; a chill can be contracted in the tropics just as easily as in a temperate clime, and is far more dangerous in its effects. A small medicine-chest should form part of the equipment, and must medicaments now be obtained in easily portable tablets. Warburg's fever tincture, and quinine, are essential in tropical or malarious districts. Cheap rubber-soled shoes, to be thrown away when worn out, are excellent; felt rocks or otherwise can be made from an English shooting-boot. Good field-glasses are preferable to telescopes, on account of their compactness. Now that big game shooting has become the "fashion," and facilities for world travel are increasing every year, people are prone to enter on the sport with but vague ideas as to its dangers, hardships and responsibilities. Presumably no one not of sound constitution would undertake an expedition to, say, Central Africa, or Asia, but even granted this necessary qualification, he may be naturally unfeathered to deal with the discomforts and drawbacks inseparable from big game shooting, even under the most favorable circumstances. He may be unaccustomed to the "bull's-eye" of a stationary iron target, yet this is a very different matter from finding the shoulder of an animal moving through surroundings which closely assimilate with its own colouring, or from identifying the "beast" with exactness, the spot to be shot at being the neck, or perhaps the ears, of an infuriated wild-beast. In such a situation, if eye, hand, or nerve fail him, the odds are that the creature will kill him instead of his killing it, for, as the saying goes, "the man or woman who has become reconciled beyond endurance, will hunt a human being as a terrier does a rabbit." In dealing with coloured retainers, whether Asiatic or African, the hunter should above all remember that he is a white man, and exact implicit obedience and respect, by combining firmness with scrupulously fair treatment. Again, to instance a minor, but none the less important, essential, how many would-be big-game hunters are there who can trust themselves to find their direction by a compass, or steer a course at night by the aid of the best-known constellations? Yet this is merely one of a hundred other requirements necessary to travel in a wild country.

SHOP, a term originally for a booth or stall where goods were sold, and in most cases also made, now used chiefly in the sense of a room or set of rooms in a building where goods are displayed for sale and sold by retail, also the building containing the rooms. Another application of the word is to the building or rooms in which the making or repairing of articles is carried on, a carpenter's shop, a repairing-shop, at engineering works and the like. In America, in the smaller towns and rural districts the "shop" is usually styled a "store" (O.F. storer, Late Lat. staurum, instaurare, to build, construct, in later use, to provide, necessary). While in America in the larger cities the word "store" is commonly applied to the places of sale, in English usage "store" has in recent years been recognized for the large retail places for universal supply.

SHORE, JANE (d. 1527), mistress of the English king Edward IV., is said to have been the daughter of Thomas Wainstead, a prosperous London mercer. She was well brought up, and married young to William Shore, a goldsmith. She attracted the notice of Edward IV., and soon after 1470, leaving her husband, she became the king's mistress. Edward called her the merriest of his concubines, and she exercised great influence; but, says More, "never abused it to any man's hurt, but to many a man's comfort and relief." After Edward's death she was mistress to Thomas Grey, marquess of Dorset, son of Elizabeth Woodville by her first husband. She also had relations with William Hastings, and may perhaps have been the intermediary between him and the Woodvilles. At all events she had political importance enough to incur the hostility of Richard of Gloucester, afterwards King Richard III., who accused her of having practised sorcery against him in collusion with the queen and Hastings. Richard had her put to public penance, but the people pitied her for her loneliness and womanly patience; her husband was dead, and now in poverty and disgrace she became a prisoner in London. There Thomas Lymon, the king's solicitor, was smitten with her, and wished to make her his wife, but was apparently dissuaded. Jane Shore survived till 1527; in her last days she had to "beg a living of many that had begged if she had not been." More, who knew her in old age when she was "lean, withered and dried up," says that in youth she was "proper and fair, nothing in her body that you would have changed, but if you would have wished her somewhat higher." Her greatest charm was, however, her pleasant behaviour; for she was "merry in speech, and never answered but in a cheerful manner." She had a great regard for all animals, and was always prompt to protect them. The king, in exasperation, was once seen to strike her. She made up her mind to take a journey, and was with difficulty prevailed with not to do so. She was possessed of extraordinary knowledge, and was a great favourite with the king. She was a great reader, and is said to have been the first woman who ever wrote in English. She died in 1527, and was buried in the church of St. Mary-le-Bow, London.


SHORE, a word meaning (1) the margin or edge of land when bordering on a large piece of water, whether of an ocean or sea or lake, "bank" taking its place when applied to the borders on either side of a river; for the legal aspect of the "shore," i.e., the space bordering on tidal waters between high and low water mark, see FORESHORE; (2) a prop of timber, used as a support, temporary or permanent, for a building when threatening to fall or during reconstruction (see SHORING), and more particularly a timber support placed against a ship's side when building on ship or before launching, and when ready for launching on the slips; the props which are the final supports knocked away at the moment of launching are called the "dog-shores," one of the very numerous uses of "dog" for mechanical devices of many kinds (see SUR-BUILDING). Both words are to be derived ultimately from the same source, viz., the root seen in "shear," to cut off; in sense (1) the word means a part cut or "shorn" off, an edge, and appears in M.Eng. as shore, from O. Eng. xeacan, to cut, shear; in sense (2) it is of Scandinavian origin and is an adaptation of the Nor. skor, a piece of timber cut off to serve as a prop or stay.

SHOREDITCH, an eastern metropolitan borough of London, England, bounded N.W. by Islington, N.E. by Hackney, E. by Bethnal Green and Stepney, S. by the City of London, and W. by Finsbury. Pop. (1901), 18,637. It is a poor and crowded district extending east and west of Kingsland Road, and has a large artisan population. Chain-making, cabinet work, and other industries are carried on. An old form of the name is Soersditch, and the origin is lost, though early tradition connects it with Jane Shore, mistress of Edward IV. The parliamentary borough of Shoreditch includes the Hoxton and Haggerston divisions, each returning one member. In Hoxton is the Shoreditch technical institute. The borough council consists of a mayor, 7 aldermen and 42 councillors. Area, 657-6 acres.
SHOREHAM, a seaport in the Lewes parliamentary division of Sussex, England, near the mouth of the river Adur, 6 m. W. of Brighton on the London, Brighton & South Coast railway. Part of the structure (fig. 1) of the town is usually pushing or liable the by the building. The town is sometimes known as New Shoreham, in distinction from the village of Old Shoreham, a mile up the river, which was the former port. The church of St Mary the Virgin lacks almost the entire nave, but the remainder shows fine working from Norman to Early English. Of no less interest is the church of St Nicholas, Old Shoreham, a cruciform Norman structure retaining some remarkable early woodwork. There are public gardens containing a museum and theatre. The trade of the small port is chiefly in coal, pump and timber. Shipbuilding is also carried on. The important public boys' school of St Nicholas, Lancing, near Shoreham, is part of a wide scheme which within the district includes the middle-class school at Hurstpierpoint, that for sons of tradesmen, &c., at St Saviour's, Ardingly, and the girls' school of St Michael's, Bognor. The scheme was originated by the Rev. N. Woodward in 1849. It seems probable that soon after the Conquest the increasing prosperity of New Shoreham (Searesham, Sorham, Schotham) resulted in the decay of Old Shoreham, and that the borough grew up within the walls. Shoreham owed its early importance to the natural harbour formed by the river Adur. In the time of the Confessor it was held by Azor of the king, but in 1066 was among the lands granted to William de Braose. From here Charles II. escaped to Fécamp after the battle of Worcester, 1651. It became a port of great consequence in the 13th and 14th centuries, but in the 15th and following centuries was much reduced, doubtless owing to the encroachment of the sea. The port revived during the reign of George II., when acts were passed for securing and improving the harbour. Shoreham was called a borough in 1336. In 1368 there was a mayor, and the "mayor and bailiffs of Shoreham" are mentioned in a Close Roll of 1346, but no charter of incorporation is known. The town adopted the Local Government Act of 1888 in 1866. It returned two members to parliament from 1205 until it was disfranchised in 1885. In the reign of Edward I., William de Braose held at Shoreham by prescriptive right weekly markets on Wednesdays and Saturdays, and a two-days' fair at the Exaltation of the Holy Cross. In 1702 the market-day was Saturday and a fair was held on the 25th of July, but these are not now held. Ship-building has always been the chief industry, and was largely carried on in the 13th and 14th centuries.

SHORING (from "shore," a prop), an operation connected with building. It is often necessary before actual building is begun to support adjoining premises while the work of excavating for underground apartments is being carried out. The art of shoring comprises the temporary support of buildings, and may become necessary because of the failure or settlement of some portion of the structure or for the purpose of uplifting the upper portion while alterations are being made in the lower. There are several different forms of shoring, each adapted to suit peculiar circumstances. Much of the shoring for ordinary cases is done with heavy, roughly sawn timbers strongly braced together, but for especially heavy work steel members may be introduced and prove of great value. There is the trouble in connexion with their use, however, that connections between steel members are not made with the same facility as between pieces of timber.

The form of shore in most general use is that known as the raking shore. It consists of one or more timbers sloping from the face of the structure to be supported and bedded upon the ground. As the ground is usually of a more or less yielding nature, a stout timber plate termed a sole-piece, of sufficient area to withstand being driven into the soil, is placed to receive the base of the raking timber or timbers. A wall-plate, with the object of increasing the area of support, is fixed to the face of the wall by means of hooks driven into the wall. Where space is available an angle-iron is the best to adopt for the main shore, the auxiliary members ranging in their slope from 45° to 75°. In many cases, especially in towns, the angle of slope is governed by outside influences such as the width of the footway. Raking shores are erected in "systems" of two or more members placed in the same vertical plane at right angles to the face of the wall. The different members rise fanwise from the sole-plate to support the wall at different levels. The distance horizontally between the systems depends on the condition of the building being propped up, and also upon the spacing of its window and other openings. The usual spacing is 10 ft. or 15 ft. apart, but this distance has often to be varied according to the positions of the openings in the wall. The application of the shores should be carefully made and support given only where there is a corresponding thrust inside, such as from a floor or roof, as without this the shore is liable to act more as a destructive agent than a supporting one, and cause further damage. The purpose is to have the effect of pushing it over. The members, therefore, should be so placed as to meet the wall at a point somewhat below the floor or roof, so that if their length were continued they would meet and support the end of the floor or roof inside. Perhaps the best idea of the positions and functions of the various component parts of a system of raking shores can be obtained from a description of the various members, coupled with some little study of the illustrations (fig. 1). The names of the different timbers are therefore set out here, and against each part is given a short description of its use and position.

Raking Shore, or Raker.—This is a piece of timber sloping up from the sole-plate to the wall-piece. For a detailed drawing of the connexion between the raker and wall-plate see fig. 2. The top and longest shore is often formed in two pieces, in form it can be more conveniently handled. The upper piece is termed the raking shore or raker, and the lower member which supports it is known as the back shore. At the junction of the raker and back shore a pair of folding wedges is introduced and driven in to give the head of the shore a firm bearing against the needle and wall-plate above. The sole-piece has already been mentioned as the timber base upon which the shores take their bed or bearing. It usually consists of a piece of 11 by 3 plank, but when the ground will or the load supported very great it should be bedded on a platform of timber to spread the weight over a large area. The sole should be placed sloping down towards the building at something less than a right angle (say 80°) with the inside of the shore to enable the latter to be gradually levered to a firm bearing with the aid of a crowbar. Wedging should not be resorted to or the already shaky building may sustain further injury from the vibrations. When in position the foot of the shore is fixed by dog-irons to the sole-piece, and for additional security a cleat is spiked on the sole tight up to the shore to prevent any slipping.

Braces.—When more than one shore takes a bearing upon the sole-piece the feet of the several members are stiffened and braced either by having rough boarding nailed right across them or by being bound together with a number of rounds of hoop-iron. For further strength a plate of 1-in. boards, 6 to 9 in. wide, are taken across from the wall-plate to the topmost shore and spiked to each intervening member, binding the whole together. These braces could be fixed below the junctions of the heads of the shores with the wall-plate. The wall-plate has already been referred to. It is usually a deal 9 in. wide by 3 in. thick, secured tightly against the face of the wall with wrought-iron wall hooks, forming a good abutment for the shores and serving to spread the support.
afforded by them. Holes are cut through this plate to receive the needles (or joggles as they are sometimes termed) to distinguish them from the needles used in dead shoring, which are large horizontal members usually of balk timber), which are pieces of wood about 1 ft. long and 4 in. square in section, cut with a shoulder to butt against the wall-plate. A portion of a brick or stone is removed from the wall and the end of the needle is passed through the rectangular hole in the wall-plate and fitted into the recess in the wall.

**Fig. 3.—(1/2 in. to foot.)**

The head of the needle projects about 4 1/2 in. beyond the face of the wall-plate and forms an abutment for the head of the shore. The head of the shore is notched to fit the underside of the needle to prevent any movement sideways. If this is not done the shore is liable to be acted upon by the wind and be blown down. A small block of wood, cut somewhat after the fashion of a wedge and termed a cleat, is fixed above the needle to keep the latter quite firm. Cleats are used also in other positions to keep timbers in position. Wedges are used to obtain a tight bearing for the rider shores and are used at their base. As little force as possible must be employed in driving them as vibration is liable to injure the already weakened wall.

**Fig. 4.—(1/2 in. to foot.)**

**SHORING**

**Fig. 5.—(1/2 in. to foot.)**

**Fig. 6.—(1/2 in. to foot.)**

Horizontal shores, or flying shores as they are more often termed by the workman, may be employed for spans up to about 35 ft. They are used to support the party walls of the houses adjoining the premises being rebuilt. They are erected during the pulling down operations and removed as the new building is raised and there is no further need for them. A system of flying shores consists of one or more horizontal timbers, sometimes known as dog shores, cut in tightly between the wall-plates fixed with hooks to the faces of the walls of the adjoining buildings (fig. 3). These horizontal members are supported at each end by cleats and needles fixed in the wall-plate as described for raking shoring. The shores are supported in their length by inclined braces springing from needles fixed near the lower ends of the wall-plates and serving to strut the shore at a point about a third of its length from the wall. Corresponding braces are carried from the upper surface of the shore and abut against needles at the upper ends of the plates. Straining pieces are secured to the upper and lower faces of the shore to serve as abutments for the ends of the braces. The best angle for these braces is one of 45°, but a smaller inclination than this is frequently adopted. Wedges are inserted, usually at the end of the fiber so as to tighten this up between the wall-plates, and sometimes between the braces and the straining piece, and carefully driven to tighten up the whole and cause each timber to find a close bearing. If the adjoining premises are of considerable height and especially if it is proposed to undertake extensive excavations, the systems of flying shores may need to be somewhat complicated, each consisting of several horizontal members spaced from 10 to 13 ft. apart and well strutted one to another and to the wall-plate (fig. 4). In the application of this form of shoring, as in raking shores, the same rules apply as regards placing the shores on the face of the wall in a proper position to obtain a solid abutment on a floor or roof on the other side. The members should be securely dogged and spiked together to form a homogeneous framework capable of resisting the attacks of a strong wind, which in an exposed position will sometimes destroy a poorly constructed framework.

Horizontal shores should be adopted wherever possible in preference to raking shores. Besides being more economical, they are more convenient and more effectual than rakers springing from the ground, especially if the height of the building is considerable and the span at the most not much over 30 ft. Apart from the economy effected, they present a direct resistance to the thrust and are an obstacle in the way of any building operations that may be carried on below them, so that there is no risk of their being accidentally disturbed, whereas the feet of raking shores are generally in the way of the workmen, and if not disturbed by accidental blows from materials or carts will likely be loosened and rendered useless by the digging and pumping which is going on around them.

Needle shoring is the next method of temporary support to come under consideration. It is known also as vertical shoring and dead shoring, and is the means usually adopted to support temporarily...
the upper portion of the walls of a building when it is found necessary to reconstruct the foundations or to make large openings in the lower parts of the wall, as, for example, when putting a shop front in an existing building. This form of shoring consists of horizontal members of balk timber termed needles (very different from the needles used in raking and flying shoring), which are passed through holes in the wall to be supported at a sufficient height to give full length of the insertion of any arch or lintels that may be necessary above the opening it is proposed to cut (figs. 5 and 6). The needles are supported at each end by an upright timber or dead shore, one on each side of the wall to each needle. These should not be allowed to rest upon any floor or vault but be carried down to a solid foundation and set upon and securely dogged to a timber sleeper running parallel to the wall. If it is not practicable to take the inner dead shore through intervening floors down to the solid ground in one piece, and it is necessary for its base to be set upon the floor or upon sleepers placed on the floor, the strutting must be continued in a direct line below it until a firm foundation is obtained. Between the needle and the head of the dead shores folding wedges are inserted to force the horizontal supporting balk firmly up to the underside of the masonry. Connections between the dead shores and the needles and sleepers are made with wrought iron dogs. The spacing of the systems of dead shoring depends to a large extent upon the material with which the wall is constructed; for brickwork they should be placed at intervals not greater than 6 ft. With this form of shoring especially it is often found necessary to adopt other methods auxiliary to the main shoring. These take the form of raking or flying shores from the face of the building. All the openings in the wall above should be well strutted between their reveals to prevent any alteration of shape taking place. Inside the building vertical shores or strutting must be carried up independently in a direct line between the floors with head and sole plates at floor level and ceiling. This strutting must start from a firm foundation at the bottom of the building and be tightly wedged up so as to relieve the wall of any weight from the floors and roof. To obviate settlement as much as possible, work done in underpinning should be built slowly with Portland cement mortar mixed in strong proportions. Before the shoring is removed at least a week should elapse to allow the work to set hard and firm. Then the needles should be carefully loosened and removed and the holes from which they were withdrawn made good. The remainder of the props can then be "struck," leaving the raking or flying shores until the last. If possible this work should be spread over several days, an interval of a day or two being left between the removal of each portion of timbering to allow the work gradually to set on its new bearings.

Shoring should be the subject of careful calculation to ascertain the most suitable sizes of timbers and to determine the most appropriate points of support. This is not always done, however, and much work of this character is carried out by rule of thumb methods. The usual result is that the timber used is of a much greater size than is really necessary, although as the material is not much injured and is available on removal for re-use this fact is not of great consequence. Such methods perhaps work very well for ordinary buildings, but in special cases they may very well lead to shoring being constructed in too fragile a manner, with serious results. Some rules which experience has shown to work satisfactorily for ordinary work are given below, together with the approximate scantlings of the timber required.

**Rules and Sizes for Raking Shores.**—Walls 15 ft. to 30 ft. high should have 2 shores to each system; if 30 ft. to 40 ft. in height, 3 shores each system; if 40 ft. or more in height, 4 shores, with an additional shore for each 10 ft. increase. Shoring is rarely seen more than 5 shores high. The angle of the main shores is usually about 60°, and none of the timbers should exceed an angle of 75°. Some of the lower shores will slope much less than this, at angles between 40° and 60°. The systems should not be placed at a greater distance apart than 15 ft. It is often found convenient to place them at the piers between window openings. As regards the sizes of the timbers used for walls 15 ft. to 20 ft. high, the shores may be 4 in. or 5 in. square in section; for walls 20 ft. to 30 ft. high, 5 in. by 6 in., or 6 in. by 8 in.; for walls 30 ft. to 35 ft. high, 12 in. by 6 in., or 8 in. by 8 in.; for walls 40 ft. to 50 ft. high, 12 in. by 9 in.; for walls above this height 12 in. by 9 in.

**For Horizontal or Flying Shores.**—For spans not exceeding 15 ft. the principal struts may be 6 in. by 4 in.; with raking struts 4 in. by 4 in.; for spans exceeding 15 ft. but not exceeding 35 ft. the size of the principal strut should be 8 in. by 6 in. and the raking struts from 6 in. by 4 in. to 9 in. by 6 in.

Interesting examples of shoring on a large scale may frequently be seen applied to large buildings in the course of repair or restoration. The rebuilding of the foundations of the retro-choir and lady chapel of Winchester cathedral which was carried out in the autumn...
of 1906 necessitated the erection of a very elaborate and complicated arrangement of shoring to uphold the masonry while the work of underpinning the walls was being carried on. The foundations of the eastern portions were therefore found to be demolished into large blocks, the fact being laid upon a bed of soft marl only 10 ft. below the surface of the ground, in spite of the fact that at a depth of 16 ft. a hard solid stratum of gravel, at least 6 ft. thick, is arrived at. The difficulties were further increased by the extremely variable nature of the ground, with hard boulders and a mass of soft material, as to the sustaining power of their proposed foundation, and so to ensure stability, as they thought, strengthened it by placing below the masonry horizontal layers of beech trees, filling up the interstices between the trees with hard materials, until they were able to prevent the gradual sinking, through succeeding centuries, of the heavy mass of masonry. This not only affected the footings of the building, but caused fissures of an alarming nature in the masonry of pillars and walls. Under the direction of Mr. T. G. Jackson a carefully designed arrangement of shoring was applied, consisting of raking shores, lying shores and needling, for the purpose of the underpinning. The large designed shores were laid on an inclined plane, and underpinning and vaulting while they were undergoing repair. The foundations were found to be much undermined by water, which filled the excavations made for the underpinning of the Institute of Civil Engineers in 1883. It was necessary to employ a diver to deposit cement concrete in bags upon the gravel bed to which the new foundations are taken down. The illustration (fig. 7) readily explains the external shoring above described, while fig. 8 shows the interior shoring of the presbytery.

AUTHORITIES.—The principal works of reference on this subject are: C. H. Stock, Shoring and Underpinning; Tredgold, Rile- 
memory Principles of Carpentry; E. Blagrove, Shoring and its 
Application. (J. Br.)

SHORNCIFLE, a military station in Kent, England, on a high ground immediately north of Sandgate and 3 m. W. of Folkestone.

It was first established in 1803, when Sir John Moore here trained the troops which afterwards formed the Light Division. It is now, however, in a very deserted condition. Its position was never of much strategic position on the flank of the French invader who was expected at the time to descend upon the English coast.

SHORT, FRANCIS JOB (1837—1907), English engraver, was born at Stourbridge, Worcestershire, on the 19th of June 1857. He was educated to be a civil engineer, and was engaged on various works in the Midlands until 1881, when he came to London as assistant to Mr Baldwin Latham in connexion with the Parliamentary Inquiry into the pollution of the river Thames. He was elected a Associate member of the Royal Institute of British Architects in 1883. Having worked at the Stourbridge School of Art in his early years he joined the National Art Training School, South Kensington, in 1883. He also worked at the life class under Professor Fred Brown at the Westminster School of Art, and for a short time at the Schools of the Royal Institute of Painters in Water-colours. His real life-work now became that of an original and translator engraver. He was a keen student of the works of J. M. W. Turner; and his etchings and mezzotints from Turner's Liber Studiorum (1885 seq.), wonderful examples of painting and drawing undivinable skill were among the first results of this period. His excellent impressions, showing the deepest sympathetic study of the originals combined with a full knowledge of the resources of engraving and unwearied patience. Short received the highest praise and constant advice and encouragement from Ruskin, and the co-operation of students of Turner such as Mr W. G. Rawlinson and the Rev. Stepford Brooke. After completing the series from the existing plates of Turner's Liber Studiorum, Short turned to the subjects which Turner and his assistants had left incomplete. Several fine plates resulted from this study, bearing the simple lettering "F. Short, Sculp., after the W. M. Turner, R.A.," which told very little of the work expended on their production even before the copper was touched. Short also reproduced in fine mezzotints several of the pictures of G. F. Watts, "Orpheus and Eurydice," "Diana and Endymion," "Love and Death," "Hope," and the portrait of Lord Tennyson, all remarkable as faithful and imaginative renderings. His own fine quality as a water-colour painter made him also a sympathetic engraver of the landscapes of David Cox and Peter de Wint. His subtle drawing of the receding lines of the low banks and shallows of river estuaries and flat shores is seen to perfection in many of his original etchings, mezzotints, and aquatints, notably "Low Tide and the Evening Star" and "The Solway at Mid-day." Other plates that may be mentioned are—

"Gathering the Flock on Maxwell Bank," a soft-ground etching; "The Ferry over the Byth," "Walberswick Pier," soft-ground; "Dutch Greenegrocery," "Noon on the Zuilder Zee," "De- 
venter," "Strolling Players at Lydd," "An April Day in Kent," and "Staintes," all etchings; "A Wintry Blast on the Stour-
ridge Canal," "Peveril's Castle," and "Niagara Falls," dry 
points; "The Curfew," "A Span of old Battersea Bridge," and "Sunrise on Whitby Scaur," aquatints; "Eolith, Putney 
Bridge," "The Weary Moon was in the Wane," "Salway Fishers," "The Lifting Cloud," and "A Slant of Light in Polper-
bour," mezzotints. Short was elected A.R.A. in 1906 when the rank of associate-engraver was revived. As head of the Engraving School at the Royal College of Art, South Kensington, he had great influence on younger engravers. Short was elected to the Royal Society of Painter-Etchers and Engravers in 1885, and took a prominent part in conducting its affairs. In 1910 he succeeded Sir Seymour Haden as president. He received, amongst other distinctions, the gold medal for engraving at the Paris International Exhibition, 1889, and another gold medal (Rappel) 1900.

The Etched and Engraved Work of Frank Short, by Edward F. Strange (1908), describes 285 plates by the artist. (C. H.*)

SHORTHAND, a term applied to all systems of brief hand 
writing which are intended to enable a person to write legibly 
at the rate of speech. Synonyms in common use are steno-
graphy (from στενός, narrow or close), and tachygraphy (from ταχύς, swift), or occasionally brachygraphy (from βραχύς, short). Greek and Roman Tachygraphy.—The question of the existence among the ancient Greeks of a system of true tachygraphy, that is, a system of shorthand writing, has not yet been solved. From surviving records we know that there were, both in the 4th century B.C. and in the early centuries of the Christian era, as well as in the middle ages, systems in practice whereby words could be expressed in shortened form by signs or groups of signs occupying less space than the ordinary method of longhand writing. But such systems appear to have been systems of brachygraphy or stenography, that is, of 
shortened writing, which were not necessarily also systems of tachygraphy properly so called. If, however, as there is some reason to believe, the Roman system of tachygraphy, as 
exhibited in the Tironian notes (see below) was derived from a 
Greek system, it may fairly be inferred that the latter system was also a developed system of tachygraphy. But, be that as it 
may, no very early specimens of Greek shorthand have hitherto come to light; and the key to the decipherment of the steno-
graphic inscriptions in the waxen book of the 3rd century in the British Museum (see below) still remains to be discovered. We 
are therefore in the dark whether we have in this MS. an example of true tachygraphic writing. Here it may be noticed that 
certain records of Diogenes Laertius have been taken to imply that 
Xenophon wrote shorthand notes (τροχομειατικα) of the lectures of Socrates; yet a similar expression in another passage, 
which will not bear this meaning, renders it hardly possible that 
tachygraphy is referred to. 

The surviving records of Greek shorthand are not very numerous, although they are scattered through a long period of time, beginning with the 4th century B.C. and extending to the 14th century. They have been arranged in three groups. At the head of the first group, which embraces all that has been found dating down to the 3rd 
century, is a remarkable inscription preserved on a marble slab discovered by the Acropolis of Athens in 1884, which is 
attributed to the 4th century B.C.; and it is on this discovery that 
the actual claim of tachygraphy to have been practised among the 
early Greeks chiefly rests. The inscription describes a system, or rather part of a system, whereby certain vowels and consonants can be expressed by strokes placed in various positions. But here, too, it has been urged that we have the explanation of a system of shorthand writing only, and that the tachygraphic symbols described also belong a few specimens of shorthand writing on papyri of the 2nd and 3rd centuries, and, above all, the most important MS. of ancient Greek tachygraphic symbols hitherto discovered. This is the waxen 
book already referred to (Brit. Mus., Add. MS. 33,727), consisting of seven wooden tablets coated with wax on both sides, and two covers thus coated on the inner sides, which seems to have been the exercise-
book of a shorthand scholar who had been taught by papyrus symbols, which in places are repeated again and again as if for practice.
In these symbols we may have an actual system of tachygraphic shorthand, and not a mere syllabary; but unfortunately they have not come down in this form.

The second group of examples of Greek shorthand is confined to a few fragmentary papyri and wax tablets ranging from the 4th to the 9th centuries, and the fragments do not give us any idea of the tachygraphic Greek tachygraphy of the 10th century. First stands the Paris MS, of Hermonenes, with some tachygraphic writing of that period, of which some fragments are still extant, but not deciphered. The largest amount of material is found in the Vatican MS, 1809, a volume in which as many as forty-seven pages are covered with tachygraphic writing of the 11th century, Cardinal Angilbert. Mai first published a specimen of it in his Scriptorium veterum nova collectio, vol. vi. (1832); and in his Novae patrum bibliothecae tom. secundus (1844) he gave a second, which, in the form of a marginal note, contained a fragment of the book of Enoch. But he did not quote the number of the MS, and it has only been identified in recent years. The tachygraphic portion of it has been the subject of special study by Dr Githbauer for the Vienna Academy. It contains fragments of the works of St Maximus the Confessor, the confession of St Cyprian of Antioch, and works of the pseudo-Dionysius Areopagita. There are also certain MSS, written at Grottaferrata belonging to the same period.

But here again this medieval shorthand is not a tachygraphy in the true sense of the word, but a syllabic system having very little in common with the ordinary tachygraphy in hand in respect of rapidity of writing, excepting that the scribecute could pack more of the text into a given space. The medieval system therefore cannot be regarded as a development of any ancient system of tachygraphy, but rather as a stunted descendant or petrified fragment, as it has been called, of an earlier and better system. Other medieval varieties or phases of Greek shorthand have also been traced in the 14th and even in the 15th century.

Evidence that in the medieval handwriting among the Romans is to be found in the writings of authors under the empire. It appears to have been taught in schools, and, among others, the emperor Hadrian had been skilled therein. According to Suetonius the first introduction of shorthand signs or notae was due to Ennius; but more generally Cicero's freedman M. Tullius Tiro is regarded as the author of these symbols, which commonly bear the title of Notae Tironianae. The Tironian notes belonged to a system which was actually tachygraphic; that is, each word was represented by a character, alphabetic in origin, but having an ideographic value. The notes, as we have them, have come down to us in a medieval dress, and are probably amplified from their shapes of early times with various discrétional additions which attached to them after the practice of the system had died out. But in the medieval manuscripts in Tironian notes a syllabic system was made use of in such cases; and hence arose variations in different countries in the syllabic method of expressing words; an Italian system, a French system and a Spanish system, each with its own identification. Such a system of writing is comparable with the "African" and "Italian" varieties of the medieval Greek shorthand system noticed above.

There is, however, one important difference between the Tironian notes and the ordinary medieval shorthand in the use of shorthand signs. In the former, the treatment of the traditional employment was, especially in the chanceries of the Merovingian and Carolingian dynasties of the Frankish empire; and a limited use of them was made by the officials of the royal domain in France. The Tironian systems generally accompany the subscription of the referent, the earliest instance being in a diploma of Chlothar II. A.D. 625. From the 9th to the 12th century, these fragments were frequently used to give brief indications referring to the composition of the deed, the name of the person moving for it, that of the official revising it, &c. Such uses may be regarded as safeguards against forgery. A more extensive use of the shorthand signs may be noted in the notarial records of Roman and Italian monarchs. Official MSS. were written in these characters as, for example, the formulæ of the chancellor of Louis the Pious. They appear in subscriptions, often attached to the rubrics (see Diplomatic, p. 220). Sometimes they were used as a conventional notation at the beginning of a deed; sometimes they themselves formed the invocation or a pious formula. Such notes continued to appear in royal deeds down to the end of the 9th century; and so inverter had been derived from the employment of these characters for shorthand to the extension of learning on the part of the scribes. Even in the 11th century a few notes lingered on, their meaning fast dying out.

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In the 10th century all practical acquaintance with the shorthand systems of Greece and Rome faded completely away, and not till the beginning of the 17th century can the art be said to have revived. But even during that interval systems of writing seem to have been practised which for speed approximated to modern shorthand.

Shorthand in English-speaking Countries.—England was the birthplace of modern shorthand. The first impulse to its cultivation may possibly be traced to the Reformation. When the principles of that movement were being promulgated from the pulpit, there was a pressing need for a means of keeping track of the sermon. This need suggested the idea of accelerated writing. It is certainly striking that in the early systems so many brief arbitrary signs are provided to denote phrases common in the New Testament and Protestant theology. In the early systems of Dr Timothy Bright and Peter Bales almost every word is provided with an arbitrary sign. Dr Bright (c. 1551-1615) was a doctor of medicine who afterwards entered the church. His Characterie. An Arte of

1 For instances, see Zeilige's Geschichte u. Lit. der Geschwindeschreib- kunst (Dresden, 1878), p. 67, and for John of Tilbury's system (c. 1175), see especially Charthoud, No. 3. and Hermes, viii. p. 353.

2 The Bodleian Library contains the only known copy of Bright's book. For a description of the system, see Phonetic Journal (1884).

3 In the case of the British, 16th century and later, the number indicates the number of letters which could be written under each letter of the alphabet, and therefore the signs written had to be made of an equal number of letters. By adding certain external marks these signs were applied to other words: thus by writing a dot in one of two positions with a, b, c, d, &c. There were four to twelve letters to each word, and with dots and lines on the characters forty-eight words could be written under each letter of the alphabet if necessary. Thus the sign for h with different terminal marks and written in four different directions signified a number of different words. This system of writing was called subtiligraphia, and its alphabet was called alphabetum tironianum. By the dot and lines on the characters the sound was indicated, and the writing and speaking of the same sound was called elocutores.

4 For examples of Bales' method, see the group of words in dozen hanlons, of which three are given under the head of "steam" and the others to be placed between each letter in their appropriate situations, so as to distinguish the words from each other.
Shorthand, Swift and Secret Writing by Character (1588), which set forth a system of writing by character or shorthand, was dedicated to Queen Elizabeth, who rewarded the author with a Yorkshire living, and granted to him the sole right for fifteen years of teaching and printing books "in or by Character not before this tyme commonly knowne and use by any other our subjects" (Patent Roll, 30, Eliz. part 12). Peter Bales (1547-1610) promised his pupils that "you may also learn to write as fast as a man speaketh, by the Art of Brachigraphie by him devised, writing but one letter for a word"; his "Art of Brachigraphie" is contained in his Writing Schoolemaster (1590). Only with a gigantic memory and by unremitting labour could one acquire a practical knowledge of such methods.

The first shorthand system worthy of the name which, so far as is known, appeared in England is that of John Willis (d. c. 1627), whose Art of Stenographic (London, 14 editions from 1602 to 1647) is substantially based on the common alphabet; but the clumsiness of his alphabetic signs, and the confused laborious contrivances by which he denotes prefixes and terminations, involving the continual lifting of the pen, would seem to render his method almost as slow as longhand. Of the numerous systems which intervened between J. Willis's and Isaac Pitman's phonography (1837) nearly all were based, like Willis's, on the alphabet, and may be called, a, b, c systems. But seven were, like phonography, strictly phonetic, viz. those by Tiffin (1759), Lyle (1762), Holdsworth and Aldridge (1766), Roe (1802), Phineas Bailey (1819), Towson (1831) and De Stains (1589). A few general remarks apply largely to all the a, b, c systems.

Each letter is designated by a straight line or curve (vertical, horizontal, or sloping), sometimes with the addition of a hook or loop. C and q are rejected, k being substituted for hard c and s for soft c. Signs are provided for ch, sh, th. G and j are classed under one sign, because in some words g is pronounced as j, as in giant, gem. Similarly each of the pairs f, v and s, z has only one sign. A few authors make the signs for j, s, z heavier than those for f, t, s. Some class p and t, d and each under one sign. The stenographic alphabet is therefore—a, b, d, e, f, g, h, i, j, k, l, m, n, o, p, r, s, t, u, w, x, y, ch, sh, th. Letters which are not sounded may be omitted. Gh, ph may be counted as j in such words as cough, Philip; but the th in thing is never distinguished from the ths in them. Thus the a, b, c systems are largely phonetic with respect to consonant-sounds; it is rather with regard to the vowels that they disregard the phonetic principle. No attempt is made to provide adequately for the many vowel-sounds of the language. Thus the signs for ike and tick, for rate and rat, &c., are the same. In the case of vowel-sounds denoted by two letters, that vowel is to be written which best represents the sound. Thus in meat the e is selected, but in great the a. In some a, b, c systems, including the best of them (Taylor's), a dot placed anywhere does duty for all the vowels. This practice is, of course, a fruitful source of error, for paster, and paper, gas and goose, and hundreds of other pairs of words would according to this plan be written alike. In the early systems of Willis and his imitators the vowels are mostly written either by joined characters or by lifting the pen and writing the next consonant in another line. In all preceding respects these plans are bad; for lifting the pen involves expenditure of time, and vowels expressed by joined signs and not by marks external to the word cannot be omitted, as is often necessary in swift writing, without changing the general appearance of the word and forcing the eye and the hand to accustomed themselves to two sets of outlines, vocalized and unvoiced. In the better a,b,c systems the alphabetic signs, besides combining to denote words, prefixes and suffixes. Thus in Harding's edition of Taylor's system the sign for d, when written alone, denotes do, did, the prefixes de-, des-, and the terminations-dom, -end, -ened, -ed. This is a good practice if the words are well chosen and precautions taken to avoid ambiguities. Numbers of symbolical signs and rough word-pictures, and even wholly arbitrary marks, are employed to denote words and entire phrases. Symbolical or pictorial signs, if sufficiently suggestive and not very numerous, may be effective; but the scheme of "figures" is objectionable because they are so difficult to remember. In many shorthand books the student is recommended to form additional ones for himself, and so of course make his writing illegible to others. The raison d'être of such signs is not far to seek. The proper shorthand signs for many common words were, so clumsy or ambiguous that this method was resorted to in order to provide them with clearer and easier outlines. For the purpose of verbatim reporting the student is recommended to omit as a rule all vowels, and decipher his writing with the aid of the context. But, when vowels are omitted, hundreds of pairs of words having the same consonant skeleton (such as minister and monastery, frontier and furniture, libel and label) are written exactly alike. This is one of the gravest defects of the a, b, c systems.

John Willis's system was largely imitated but hardly improved by Edmond Wills (1618), T. Shelton (1620), Witt (1630), Dix (1633), Maud (1635), and Theophilus Metcalfe (1635). T. Shelton's system, republished a great many times down to 1687, was the one which Samuel Pepys used in writing his diary. It was adapted to German, Dutch and Latin. An advertisement of Shelton's work in the Mercurius Politicus of 3rd October 1650 is one of the earliest business advertisements known. The book of Psalms in metre (206 pages, 2½ x 1½ in.) was engraved according to Shelton's system by Thomas Cross. Metcalfe's Radio-Stenography, or Short-Writing, was republished again and again for about a hundred years. The 35th "edition" is dated 1653, and a 55th is known to exist. The inefficiency of the early systems seems to have brought the art into some contempt. Thus Thomas Heywood, a contemporary of Shakespeare, says in a prologue 4 that his play of Queen Elizabeth "Did through the seats, the boxes and the stage So much that some by stenography drew A plot, put it in print, scarce one word true."

Shakespeare critics would in this manner explain the badness of the text in the earliest editions of Hamlet, Romeo and Juliet, Taming of the Shrew, Merry Wives of Windsor, and Henry V. Perhaps a study of J. Willis's system and of E. Willis's (which, though not published till after Shakespeare's death, was practised long before) may shed light on corrupt readings of the text of these plays. Rich's system (1646, 20th edition 1792) was republished with slight modifications by Addison, including W. Addy, Stringer, and Dr Philip Doddridge (1759 and three times since). The New Testament and Psalms were engraved in Rich's characters (1659, 956 pages, 2½ x 1½ in., 2 vols.), and Addy brought out the whole Bible engraved in shorthand 4 (London, 1687, 396 pp.). Locke, in his Treatise on Education, recommends Rich's system; but it is encumbered with more than 300 symbolical and arbitrary signs. In 1847 it was still used by Mr Plowman, a most accomplished Oxford reporter.

In 1672 William Mason, the best shorthand author of the 17th century, published his Pen Pluck'd from an Eagle's Wing. The alphabet was largely taken from Rich's. But in his Art's Advancement (1682) only six of Rich's letters are retained, and in his Plume Volante (1707) further

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1 The first edition, published anonymously, is entitled The Art of Stenographic, and contains certain rules, to the capacities of the meanest, and for the use of all professions, the way to Compendious writing. Wherein is annexed a very easy Direction for Stenography, or Secret Writing, printed at London in 1602 for丘尔布特. The three known copies are in the Bodleian and British Museum libraries.

2 See a paper by J. E. Bailey, "On the Cipher of Pepys' Diary," in Papers of the Manchester Literary Club, vol. ii. (1876). Shelton (1601-1650) is not to be confounded with the translator of Don Quixote.


5 See M. Levy's Shakspeare and Shorthand (London), and Phonetic Journal (1885), p. 34.

6 This curiosity is described in the Phonetic Journal (1885), pp. 158, 196. The Bodleian Library has a copy.
SHORTHAND

changes are made. Initial vowels are written by their alphabetic signs, final vowels by dots in certain positions (a, e at the beginning; i, y at the middle; o, u at the end), and medial vowels by lifting the pen and writing the next consonant in those same three positions with reference to the previous. Mason employed 423 symbols and arbitraries. He was the first to discover the value of a small circle for ſ in addition to its proper alphabetic sign. Mason's system was republished by Thomas Gurney in 1740, a circumstance which has perpetuated its use to the present day, for in 1737 Gurney was appointed shorthand writer to the Old Bailey, and early in the 19th century W. B. Gurney was appointed shorthand-writer to both Houses of Parliament. Gurney reduced Mason's arbitraries to about a hundred, inventing a few special signs for particular combinations. The Gurneys were excellent writers of a cumbrous system. Thomas Gurney's Brachygraphy passed through at least eighteen editions.

In 1767 was published at Manchester a work by John Byrom, sometime fellow of Trinity College, Cambridge, entitled The Byrom. Universal English Shorthand, distinguished for its precision, elegance, and systematic construction. Byrom had died in 1763. Having lost his fellowship by falling to take orders, he made a living by teaching shorthand in London and Manchester, and among his pupils were Horace Walpole, Lord Conway, Charles Wesley, Lord Chesterfield, the duke of Devonshire and Lord Camden. Shorthand, it is said, procured him admission to the Royal Society. He founded a stenographic club, to the proceedings of which his journal,1 written in shorthand, is largely devoted. In the strangers' gallery of the House of Commons in 1728 Byrom dared to write shorthand from Sir R. Walpole and others. In 1731, when called upon to give evidence before a parliamentary committee, he took shorthand notes, and, complaints being made, he said that if those attacks on the liberties of shorthand men went on he "must have a petition from all counties where our disciples dwell, and Manchester must lead the way." Thomas Molyneux popularized the system by publishing seven cheap editions between 1703 and 1825. Modifications of Byrom's system were issued by Palmer (1774), Nightingale (1811), Adams (1814), Longmans (1816), Gawtress (1819), Kelly (1820), Jones (1832) and Roffe (1833). Byrom's method received the distinction of a special act of parliament for its protection (15 Geo. IV. c. 23, for twenty-one years from 24th June 1812). To secure linearity in the writing and facility of consonantal joins he provided two additional signs for b, h, j, w, x, sh, th, and three for i, e, i, o, u, represented by a dot in five positions with respect to a consonant. Practically it is impossible to observe more than three (beginning, middle and end). With all its merits, the system rapidly lost the continual recurrence of the loop seriously retarding the pen.

In 1788 was published An Essay intended to establish a Standard for a Universal System of Stenography, by Samuel Taylor (London).2 This system did more than any of its predecessors to establish the art in England and abroad. Equal to Byrom's in brevity, it is simpler in construction. No letter has more than one sign, except w, which has two. Considering that five vowel places about a consonant were too many, Taylor went to the other extreme and expressed all the vowels alike by a dot placed in any position. He directs that vowels are not to be expressed except when they sound strong at the beginning and end of a word. Arbitraries he discarded altogether; but Harding, who re-edited his system in 1823, introduced a few. Each letter when standing alone represents two or three common short words, prefixes and suffixes. But the list was badly chosen: thus m represents my and many, both of them adjectives, and therefore liable to be confounded in many sentences. To denote in and on by the same sign is evidently absurd. Taylor's system was republished again and again. In Harding's edition (1823) the vowels are written on an improved plan, the dot in three positions representing a, e, i, and a tick in two positions o, u. Several other persons brought out Taylor's system, in particular G. Oedd, whose book was re-edited or republished not less than sixty-four times, the later replications appearing at New York. The excellence of Taylor's method was recognized on the Continent: the system came into use in France, Italy, Holland, Sweden, Germany, Portugal, Rumania, Hungary, &c.

The Universal Stenography of William Mavor (1780) is a very neat system, and differs from Taylor's in the alphabet and in a more definite method of marking the vowels. A, e, i, are indicated by commas, o, u, y, by dots, in three places. Arbitraries, respect to a letter, namely beginning, middle and end. Other systems were introduced by J. H. Lewis (1812) and Moat (1833). The vast mass of a, b, c systems are strikingly devoid of originality, and are mostly imitations of the few that have been mentioned. Nearly all may be briefly described as consisting of an alphabet, a list of common words, prefixes and suffixes, expressed by single letters, a list of arbitrary and symbolical signs, a table showing the way of joining any two letters, a few general rules for writing and a specimen

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1 "Byrom's private journal and literary remains have been published by the Chetham Society of Manchester. See, too, a paper by J. E. Holland in the London # Miscellaneous Journal # of 1846, p. 374, and a letter in the # Times # of 24th June, 1812.

2 Taylor, it was only lately discovered, died in 1811; see M. Levy in The Times (April 10, 1902), and Notes and Queries (May 24, 1902).

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2 For early English systems, see especially some careful papers by Mr A. Paterson in Phonetic Journal (1886).
SHORTHAND
th (as in vision)
I, r ;
w, y, h. The sounds
m, n, ng (as in thing)
t, ch, k are represented respectively by the four straight strokes
;

;

p,

\

I/

;

and the corresponding voiced sounds

b, d,

]',

g by exactly

the same signs respectively written heavy. F, th (as in thing), s,
sh are indicated by^-O^s respectively ; the same signs written
heavy and. tapering to the ends are used for v, dh, z, zh respec-

R

is
M, n, I, r are denoted by ^^.-^( ^respectively.
also represented by
written upwards and in a more slanting
direction than the sign for ch. The signs for sh and / may be written

tively.

^"

up or down when in combination, but standing alone sh is written
downwards and I upwards. The signs for w, y, h are t/6 d*" >
all written
upwards. H has also / down. Ng, mp (or mb), rch (or
17), Ir, are represented by the signs for n, m, r, I respectively written

heavy. Signs are provided for the Scotch guttural ch (as in loch),
the Welsh //, and the French nasal n. S is generally written by a
small circle. The long-vowel sounds are thus classified d (as in

balm), e (as in bait), ee (as in feet), aw (as in law), d (as in coal),
The vowels d, e, ee are marked by a heavy dot
do (as in boot).
placed respectively at the beginning, middle, and end of a consonantsign; aw, d, do by a heavy dash in the same three positions, and
generally struck at right angles to the direction of the consonant.
The short vowels are a (as in pat), e (as in pet), i (as in pit), 6 (as
The signs for these are
in pot), ii (as in but), and oo (as in put).
the same as for the corresponding long vowels just enumerated,
except that they are written light.
Signs similarly placed are
provided for the diphthongs oi (as in boil), da or de, di (as in Boanerges, poet, coincide), for the series yd, ye, yee, &c., and for the
The signs for ei (as in bite) and ou (as in
series wa, we, wee, &c.

cow) are A and may be placed in any position with respect to a
consonant. A straight line mav receive four hooks, One at each
side of the beginning and end, but a curve only two, one at each
end in the direction of the curve. Hooks applied to a straight
line indicate the addition of r, I, n, and / or v respectively, thus
,

'\

^

\

pr,

and^ pn e ftr, = kl, s k), ^kn
Hooks applied to a curve denote the addition

pl,~\> pf or pv,

/"

rf or rv,

rn.

;

respectively, thus ^v_ fr, \^> fn ; c~^ mr, / s mn. Vowelsigns placed after (or, in the case of horizontal strokes, under) a
consonant having the n or f, v hook are read between the consonant
3
i
v
^v
and the n or / / thus
crow,
pray.
cough, \s fun, but c-j
large hook at the commencement of a curve signifies the addition of /, as Q__ fl. The hooks combine easily with the circle s,

of

r,

n

N

A

thus

\ sp

\v

spr (where the hook r

N,

is

implied or included in the
V

pns (the hook n being included), \>pfs,&c. The
halving principle is one of the happiest devices in the whole history
spl,

>>

The halving of a light stroke that is, writing it
of shorthand.
half length
implies the addition of t; the halving of a heavy stroke
that of d, the vowel placed after (or under) the halved stroke being
read between the consonant and the added

/

or d, thus

(.

thaw,

*~

\

note, &c.

y

By

thought,
Dee,
cat,
deed,
fat,
pit,
this means very brief signs are provided for hosts of syllables ending
t
in
and d, and for a number of verbal forms ending in ed, thus
ended. The halving of a heavy stroke may, if necessary, add
I.

|.

^and

that of a light stroke d, thus \* beautified. By combining
the hook, the circle, and the halving principle, two or three together, exceedingly brief signs are obtained for a number of consonantal series consisting of the combination of a consonant with
t,

one or more of the sounds

^

sprts;

N

Vi fnt, ^s fnts

pi,
o

',

i

\. spl,\

^

frn,

n,

s, r, I,

spit,

?

splnt,

frnd, &c.

\sp, \spr, *
\splnts; Vj fn, Va

thus

f, t,

fns,

As a vowel-mark cannot con-

veniently be placed to a hook or circle,

we

are easily led to a

between such words as

of distinguishing in outline

sprt,

'

^

way

cough and

race and ^J racy, &c.
Vj coffee, .\ pen and \^-. penny,
This distinction limits the number of possible readings of an unvocalized outline. A large hook at the end of a stroke indicates
the addition of -shon (as in fashion, action, &c.). This hook easily
'

IOII

or lower side of a straight stroke implies the n hook and so
signifies
as in :curve (or a straight stroke
against, j danced.
with a final hook) written double length implies the addition of tr,

A

nst,

dr, or thr, as in

\

v

father,

f'

circle s

made

circle s,

large indicates ss or

vowel between

and

s

i

(z)

^
-j-f

exercise,

st,

may

^f> subsistence.
o

signifies

as in

as in

X

step,

sz,

actions,

as in \}' pieces,

C^

be marked inside the

The

circle s

losses.

The
The

circle,

as in

TR positions.

lengthened to a loop

^> post, while a longer

loop indicates

sir,

as

The loop may be continued through
the consonantal stroke and terminate in a circle to denote sts and
The loop written on the left
^> boasts, ^-tf2> minsters.
sirs, as in

in /<p muster,

^~^>

minster.

fender,

This practice is quite safe in the case of curves, but
a straight stroke should not be lengthened in this way when there
is danger of reading it as a double letter. The lineal consonantsigns may stand alone to represent certain short and common
words as in many of the old, a, b, c systems, with this difference,
that in the old systems each letter represents several words, but in
in almost
every case, only one.
phonography,
By writing the
horizontal strokes in two positions with respect to the line (above
and on) and the others in three positions (entirely above, resting
on and passing through the line) the number is nearly trebled, and
very brief signs are obtained for some seventy or eighty common
short words (e.g. be, by, in, if, at, it, my, me, &c.). A few very
common monosyllables are represented by their vowel-marks, as
N
X
render.

.the,

A

tracted,

%

remnant of V^_
'on, remnant of
,
words which occur frequently are congenerally by omitting the latter pajt, sometimes a middle

remnant

certain

of

(.

number

;

;

of longer

\

part of the word, as in
(krk sk) characteristic,

\~.

(ksp) expect,

(nd f

t)

h

(djr)

indefatigable.

danger,

The connective

phrase of the is intimated by writing the words between which it
occurs near to each other.
The is often expressed by a short
slanting stroke or tick joined to the preceding word and generally
^f
struck downwards, thus
in the, S
for the.

Three principles which remain to be noticed are of such importance
and advantage that any one of them would go far to place phonography at the head of all other systems. These are the principles
of positional writing, similar outlines and phraseography.
(i) The
first slanting stroke of a word can generally be written so as either
to lie entirely above the line, or rest on the line, or run through the

LI

,

>

|

\\

]

composed wholly

jkZI^V

of horizontal strokes the last

I*1

the case of words

two positions

(on

and

.
as **
These three positions
second and third respectively. The first is specially
connected with first-place vowels (d, a; aw, o; i; oi), the second
with second-place vowels (e, e; d, u), and the third with third-place
vowels (ee, i; do, oo; ou). In a fully vocalized style position is not
the reporting style it is of the greatest use. Thus
employed, but

through the

are called

line) coincide,

first,

m

the outline (tm) written above the line Jca must be read either

Tom when written resting on the line L s tome or tame
when struck through the line .L. teem, team or tomb. By this
method the number of possible readings of an unvocalized outline
is greatly reduced.
That word in each positional group which occurs
time or

;

;

the most frequently need not be vocalized, but the others should.
In the case of dissyllables it is the accented vowel which decides the

thus methought should be written first position
L
method second position '""K
(2) Another way of distinguishing
between words having the Same consonants but different vowels
to vary the outline. The possibility of variety of outline arises from
the fact that many consonant sounds have duplicate or even triplicate
For instance, r has two lineal signs and a
signs, as we have seen.
hook sign, and so each of the words carter, curator, creature and creator
obtains a distinct outline. A few simple rules direct the student
to a proper choice of outline, but some difference of practice obtains
among phonographers in this respect. Lists of outlines for words
having the same consonants are given in the instruction books;
the Reporter's Assistant contains the outline of every word written
with not more than three strokes, and the Phonographic Dictionary
gives the vocalized outline of every word in the language. Aided
by a true phonetic representation of sounds, by occasional vocalization, variety of outline, and the context, the phonographic verbatim
1
reporter should never misread a word.
(3) Lastly, phraseography.
It has been found that in numberless cases two or more words may
be written without lifting the pen. A judicious use of this practice
position

;

1

combines with the

Under, \.

letter,

Phonography is so legible that the experiment of handing the
shorthand notes to phonographic compositors has often been tried
with complete success. A speech of Richard Cobden, on the Corn
Laws, delivered at Bath on iyth September 1845, and occupying an
hour and a quarter, was reported almost verbatim, and the notes,
with a few vowels filled in, handed to the compositors of the Bath
Journal, who set them up with the usual accuracy. A notice of the
occurrence appeared the next day in the Bath, Journal, and was
immediately transferred to the columns pf The Times and other
newsptpers. Mr Reed tried the same experiment with equal success,
the notes being handed to the compositors in their original state
(Phonetic Journal, 1884, p. 337).

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promotes legibility, and the saving of time is very considerable. Words written thus should be clearly conducted in sense and awkward joinings avoided. Such phrases are: I am, I have, you are, you may, it would, it would not, we are, we have, we have not, my dear friends, as far as possible, for the most part, and many thousands of others. For the sake of obtaining a good phraseogram for a common phrase, it is often advisable to omit some part of the consonant outline. Thus the phrase you must recollect that may very well be written (you must recollect that). Lists of recommended phraseograms are given in the Phonographic Phrase Book, the Legal Phrase Book and the Railway Phrase Book.

Specimens of Phonography. Corresponding Style.

\[
\begin{align*}
\text{Key.} & \quad \text{If all the feelings of a patriot glow in our bosoms on a perusal of those eloquent speeches which are delivered in the senate or in those public assemblies where the people are frequently convened to exercise the birthright of Britons—we owe it to shorthand. If new fervour be added to our devotion, and an additional stimulus be imparted to our exertions as Christians, by the eloquent appeals and encouraging statements made at the anniversaries of our various religious societies—we owe it to shorthand. If we have an opportunity in interesting judicial cases, of examining the evidence, and learning the proceedings with as much certainty, and nearly as much minuteness, as if we had been present on the occasion—we owe it to shorthand.}

\text{Reporting Style.}

\end{align*}
\]

Key (the phraseograms being indicated by hyphens).—Characteristics of the Age.—The peculiar and distinguishing characteristics of the present age are in every respect remarkable. Unquestionably an extraordinary and universal change has commenced in the internal as well as the external world—in the mind of man as well as in the habits of society, the one indeed being the necessary consequence of the other. A rational consideration of the circumstances in which mankind are at present placed must show us that influences of the most important and wonderful character have been and are operating in such a manner as to bring about if not a reformation, a thorough revolution in the organization of society. Never in the history of the world have benevolent and philanthropic institutions for the relief of domestic and public affection; societies for the promotion of manufacturing, commercial and agricultural interests; associations for the instruction of the masses, the advancement of literature and science, the development of true political principles, for the extension in short of every description of knowledge and the bringing-about of every kind of reform—been so numerous, so efficient and so indefatigable in their operation as at the present day.

An enumeration made in 1894 showed that 95% of British newspaper reporters used Pitman's system; but there are still numerous varieties preferred by individuals. Of the systems published since the invention of phonography, the principal are A. M. Bell's Stenophonography (Edinburgh, 1852), Professor J. D. Everett's (London, 1877), Pocknell's Legible Shorthand (London, 1881), and J. M. Sloan's adaptation (the Sloan-Duployan) of the French system of Duployé (1882). More recent essays in English shorthand are almost entirely in the direction of script characters connected with vowels, as contrasted with the geometric forms and disjoined vowels of Pitman's phonography. The majority are founded on the French system of the brothers Duployé, but Cursive Shorthand (Cambridge, 1889), by Prof. H. L. Callendar, and Current Shorthand (Oxford, 1892), by Dr Henry Sweet, may be noted as original methods, the first having a phonetic, and the second both an orthographic and a phonetic basis.

The distinctive features in recent shorthand history have been the widely extended employment of the art, the increased attention paid to instruction and the growth of stenographic societies. Throughout the civilized world the systems employed are those of the leading authors of the 19th century; earlier systems have now a numerically small number of practitioners. Shorthand has become an almost indispensable qualification for the amanuensis, and practical stenographic ability is a necessary equipment of the typewriter operator. In professional and commercial offices, and more recently in the services, dictation to shorthand writers has become general. Shorthand has been included among examination subjects for the army, navy, civil service and medicine in the United Kingdom, and to a certain extent in other countries. Its inclusion in the Technical Instruction Act of 1889 was the first recognition of shorthand by the British parliament, and it was subsequently comprised in the codes of elementary day and evening continuation schools. It first became an examination subject for secondary schools in the Oxford Local Examination in 1888, but the Society of Arts has examined students of polytechnics, &c., in shorthand since 1876. Examinations in connexion with the phonographic system of Isaac Pitman date from 1845.

In 1887 the tercentenary of the origin of modern shorthand by Timothy Bright and the jubilee of Isaac Pitman's phonography were celebrated by the holding of the first International Shorthand Congress in London. Subsequent congresses were held at Paris (1889), Munich (1890), when a statue of Gabelsberger was unveiled; Berlin (1891), Chicago (1893), Stockholm (1897), Paris (1900), &c. These gatherings have promoted the improved organization of stenographic practitioners in the respective countries. After the first congress, three national organizations were established in Great Britain by Pitman writers, which take the place of the Phonetic Society (established in 1843 and dissolved in 1865). In America the formation of national associations for reporters and teachers followed the fifth congress.

As regards speed in shorthand writing, it may be mentioned that at the exhibition at Olympia (London) in 1908, the "World's Shorthand Championship" was awarded for 220 words a minute for five minutes. But it has been claimed that a rate of 250 words a minute has been accomplished. It may be pointed out, however, that such a rate cannot be wanted for any practical purpose, since the fastest public speaker never speaks anything like 250 words a minute, even though for demonstration such a thing could be done. The average rate of public speaking is from 120 to 150 words a minute.

Foreign Shorthand Systems.

To complete the history of the subject, the following notes on systems introduced in various European countries may be useful. German.—C. A. Ramsay's Tachographia (Frankfort, 1679, and several times afterwards until 1743) was an adaptation of T. Shelton's English system. Mosengell (1797) first practically introduced short-
Adaptations of Gabelsberger's method have also come into use in other countries.

In 1884, Habib Hosain, at the Mahomedan Educational Conference of 1905 in India, introduced a system of Urdu and Hindi shorthand, called "Habib's Samā,' for which he was awarded a gold medal. Pitman's system has also been adapted for some Indian languages.

Authors.—J. W. Zehl's Geschichte u. Literatur der Gesetzschreibkunst (Dresden, 1878) contains a historical sketch of the use of shorthand up to 1878. A. von Beyme, A. A. E. Krieg's and F. F. E. Krieg's systems. A. A. E. Krieg's system, E. Krieg's system (reprinted in the Phonetic Journal of 1884), J. E. Rockwell, contains a very complete and accurate bibliography of English and American shorthand publications, a chronological list of 483 English and American shorthand authors, a full bibliography of shorthand literature in all languages, a number of lithographed specimens, and a useful index. Circulares of Information of the Bureau of Education, No. 2, 1884 (Washington, 1885), by J. E. Rockwell, contains a very complete and accurate bibliography of English and American shorthand publications, a chronological list of 483 English and American shorthand authors, a full bibliography of shorthand literature in all languages, a number of lithographed specimens, and a useful index. Circulares of Information of the Bureau of Education, No. 2, 1884 (Washington, 1885), by J. E. Rockwell, contains a very complete and accurate bibliography of English and American shorthand publications, a chronological list of 483 English and American shorthand authors, a full bibliography of shorthand literature in all languages, a number of lithographed specimens, and a useful index.

The author draws largely on J. H. Lewis's Historical Account of the Rise and Progress of Stenography (London, 1816). Other histories of shorthand are by F. X. Gabelsberger (prefixed to his Anleitung zur deutschen Rechtszeichenkunst, Munich, 1834), A. Fossé (prefixed to his Cours théorique et pratique de sténographie, Paris, 1849), Scott de Martinville (Paris, 1849), M. Levy (London, 1862), and F. Anderson (London, 1882). Here too should be mentioned J. Heger's Bemer- kennswörter über die Stenographie (Vienna, 1841), generally historical, and A. A. E. Krieg's system, E. Krieg's system (reprinted in the Phonetic Journal of 1884), J. E. Rockwell, contains a very complete and accurate bibliography of English and American shorthand publications, a chronological list of 483 English and American shorthand authors, a full bibliography of shorthand literature in all languages, a number of lithographed specimens, and a useful index. Circulares of Information of the Bureau of Education, No. 2, 1884 (Washington, 1885), by J. E. Rockwell, contains a very complete and accurate bibliography of English and American shorthand publications, a chronological list of 483 English and American shorthand authors, a full bibliography of shorthand literature in all languages, a number of lithographed specimens, and a useful index.

There are...
which is deeply mystical and imaginative, has for its central idea the dangers of bigotry and superstition, and the necessity of intuitive religion to progress and culture. It is a work full of opulent colour and crowded life, no less than of philosophy and spiritual beauty. Shorthouse’s work was always marked by high earnestness of purpose, a luxuriant style and a genuinely spiritual quality. He lacked dramatic oratory and his manner of expression, before he had almost every other quality of the born novelist. He died at Edgbaston on the 4th of March 1903.


SHOSHONG, a town in the British protectorate of Bechuanaland, formerly the chief settlement of the eastern Bamangwato. It is about 200 m. N.N.E. of Makete and 30 m. N. of Shoshong Road Station on the Cape Town-Bulawayo railway. The site is situated 3000 ft. above the sea in the valley of the Shoshong, an intermittent tributary of the Limpopo. The site was originally chosen as the headquarters of the Bamangwato as being easily defensible against the Matabele. At the time of the declaration of a British protectorate in 1885 Shoshong had 20,000 to 30,000 inhabitants, including about twenty Europeans. Being the meeting place of trade routes from south and north it was of considerable importance to early explorers and traders in South-Central Africa, and a mission station of the London Missionary Society (preceded for many years by a station of the Herrmannsburg Lutheran Missionary Society) was founded here in 1882. Owing, however, to the scarcity of water at Shoshong, Khama, the chief of the Bamangwato, and most of his followers removed about 1890 to Palapye—50 m. N.E. of Shoshong—and later to Serowe to the north-west of Palapye. Like Shoshong, these places are built in valleys of tributaries of the Limpopo. Shoshong was not entirely deserted and has a population of about 800 (see BECHUANALAND).

SHOTTS, a mining and manufacturing parish of Lanarkshire, Scotland. It comprises eight villages, parts of two others, and the town of Cumbernauld (the original Shotts or Old Shotts) and is served by the North British and Caledonian railways. Pop. (1871) 11,957; (1901) 15,562. The parish contains large ironworks, tile, fire-clay and brick-works, and quarries, and includes the Lanark district asylum and a fever hospital. The curious name of Omoa is supposed to have been given to his property by some soldier or sailor who had settled here after the wars in Honduras, of which Omoa is a seaport. Matthew Baillie (1761-1823), famous for his researches in morbid anatomy, and Janet Hamilton (1795-1873), the wife of Dr. Sh., are both in the parish of Shotts.

SHOULDER (in O.E. sculder, cognate with Ger. Schulter, Dutch schouder, Swed. skuldra, &c.; the root is unknown), the name of that part of the body of man and animals where the upper arm or fore-leg articulates with the collar bone and shoulder-blade (see JOINTS).

SHOVEL, SIR CLOWDISLEY [or Clowdesley Shovel as he seems to have spelt the name himself] (c. 1560-1707), English admiral, was baptised at Cockthorpe in Norfolk on the 25th of November 1560, and went to sea under the care of his kinsman Sir Christopher Mylns. He set himself to study navigation, and, owing to his able seamenship and brave and open-hearted disposition, became a general favourite and obtained quick promotion. In 1674 he served as lieutenant under Sir John Narborough in the Mediterranean, where he burned four men-of-war under the castles and walls of Tripoli, belonging to the pirates of that place. He was present as captain of the "Edgar" (70) at the first fight at Bantry Bay, and shortly afterwards was knighted. In 1690 he convoyed William III. across St George’s Channel to Ireland; the same year he was made rear-admiral of the blue, and was present at the battle of Benskey Head on 20th July. In 1692 he was appointed rear-admiral of the red, and joined Admiral Russell, under whom he greatly distinguished himself at La Hogue, by being the first to break through the enemy’s line. Not long after, when Admiral Russell was superseded, Shovel was put in joint command of the fleet with Admiral Killigrew and Sir Ralph Delaval. In 1702 he brought home the spoils of the French and Spanish fleets from Vigo, after their capture by Sir George Rooke, and in 1704 he served under Sir George Rooke in the Mediterranean and co-operated in the taking of Gibraltar. In January 1704 he was named rear-admiral of England, and shortly afterwards commander-in-chief of the British fleets. He co-operated with the Earl of Peterborough in the capture of Barcelona in 1705, and commanded the naval part of the unsuccessful attempt on Toulon in October 1707. When returning with the fleet to England his ship, the “Association,” at eight o’clock at night on the 22nd of October, struck on the rocks near Scilly, and was seen by those on board the “St George” to go down in three or four minutes’ time, not a soul being saved of 800 men that were on board. The body of Sir Cloudesley Shovel was cast ashore next day, and was buried in Westminster Abbey. It is said that he was alive when he reached the shore at Porthclicke Cove, but was murdered by a woman for the sake of his rings.

See Life and Glorious Actions of Sir Cloudesley Shovel (1707); Burnett’s Own Times; various discussions in Nones and Queries, 7th series, vols. x. and xi.; and T. H. Cooke, Shipwreck of Sir Cloudesley Shovel (1883).

SHOVEL (O.E. scof, from root of scyf, to shove, push, cf. Ger. Schaufel, also Schäpppe, scoop), an implement or tool, consisting of a broad flat blade with edges or sides turned up fixed to a wooden handle terminating in a bow like a spade. It is used for lifting or removing such loose substances as coal, gravel, etc.

SHOVELER, formerly spelt SHOEYER, and more anciently SHELIVER, a word by which used to be meant the bird now almost inavariaibly called Spoonbill (g.v.), but in the latter half of the 16th century transferred to one hitherto generally, and in these days locally, known as the Spoon-billed Duck—the *Anas clypeata* of Linnaeus and *Rhynchospatia* or *Spatula clypeata* of modern writers. All these names refer to the shape of the bird’s bill, which, combined with the remarkably long *lamellae* that beset both maxilla and mandible, has been thought sufficient to distinguish it from the Linnaean *Spatula clypeata*. Except for the extraordinary formation of this species, which carries with it a clumsy look, the male Shoveler would pass for one of the most beautiful of this generally beautiful group of birds. As it is, for bright and variegated colouring, there are few of his kindred to whom he is inferior. His golden eye, his dark green head, surmounting a breast of pure white and succeeded by underparts and flanks of rich bay, are conspicuous; while his deep brown back, white scapulas, lesser wing-coverts (often miscalled shouldors) of a glaucous blue, and glossy green speculum bordered and white present a wonderful contrast of the richest tints, heightened again by his bright orange feet. On the other hand, the female, excepting the blue wing-coverts she has in common with her mate, is habited very like the ordinary Wild-Duck, *A. boschas*. The Shoveler is not an abundant species, and in Great Britain its distribution is local; but its numbers have remarkably increased since the passing of the Wild-Fowl Protection Act in 1876, so that in certain districts it has regained its old position as an indigenous member of the Fauna. It has not ordinarily a very high northern range, but inhabits the greater part of Europe, Asia and America, passing southwards, like most of the *Anasidae* towards winter, constantly reaching India, Ceylon, Abyssinia, the Antilles and Central America, while it is known to have occurred at that season in Colombia, and, according to Gould, in Australia. Generally resembling in its habits the other freshwater ducks, the Shoveler has one peculiarity that has been rarely, if ever, mentioned, and one that is perhaps correlated with the structure of its bill. It seems to be especially given to feeding on the surface of the water immediately above the spot where diving ducks (*Palaestina* etc.) employ themselves beneath. On such occasions a pair of Shoelers may be watched, almost for the hour together, swimming in a circle, about a yard in diameter, their heads turned inwards towards its centre, their bills immersed vertically in the water, and engaged in sifting, by means of the long *lamellae* before mentioned, the floating matters that are disturbed by
their submerged allies and rise to the top. These gyrations are executed with the greatest ease, each Shoveler of the pair merely using the outer leg to impel it on its circular course.

The genus *Sorex* includes, in North America, species of the family *Soricidae*, all possessing the characteristic light blue "shoulders," have been described: one, *S. platyurus*, from the southern parts of South America, having the head, neck and upper back of a pale reddish brown, freckled or closely spotted with dark brown, and a dull bay livery; a second, *S. capensis*, from South Africa, much lighter in colour than the female of *S. dyspeza;* a third and a fourth, *S. hypogea* and *S. variegata*, from Australia and New Zealand respectively—these last much darker in general colouration, and the males possessing a white crescentic mark between the bill and the eye, very like that which is found in the South-American Blue-winged Shrew. (Cystura mexicana), but so much lighter in each other that their specific distinction has been disputed by good authority.

A. N.

**SHREVEPORT.** A city and the capital of Caddo Parish, Louisiana, U.S.A., on the Red river, in the N.W. part of the state, near the Texas border. Pop. (1890) 11,979; (1900) 16,013, of whom 8,532 were negroes; (1910 census) 28,015. It is the second city of the state in population. It is served by the Vicksburg, Shreveport & Pacific, the Houston & Shreveport, the Kansas City Southern, the St. Louis & South-Western, the Louisiana Railway & Navigation Company, the Texas & Pacific (main line and two branches), the Louisiana & Arkansas, the Kansas City Southern, and the Missouri, Kansas & Texas railways and by boats on the Red river. In the city are the State Charity Hospital (1872), the T. E. Schumpert Memorial Hospital (1910), the Genevieve Orphanage (1890) and the Shreveport Training School (1908). Owing to its situation and excellent transportation facilities the city has a large trade. The surrounding country is a rich agricultural region, mainly devoted to the production of cotton, for which Shreveport is the principal shipping point. Live-stock and cattle products are trade items of importance. The situation of the city (about 170 m. from Dallas, and somewhat farther from Little Rock, Houston, and New Orleans) makes it a natural centre of wholesale trade of varied character, and the development since 1906 of the important Caddo oil and gas fields north of the city has added greatly to its industrial prominence. The city contains planing mills, cotton gins, compresses and cotton-seed oil mills, machine and railway shops, and ice and molasses factories. In 1905 its factory product was valued at $2,921,923 (87.8% more than in 1900). Shreveport was settled about 1835, incorporated as a town in 1839, and chartered as a city in 1871. It was named in honour of Henry Miller Shreve (1785-1854), a native of New Jersey, who in 1815 ascended the Mississippi and the Ohio rivers to Louisville in the "Enterprise," the first steam vessel to make this trip, introduced improvements in the steamboat, and in 1826-1841 had charge of river improvements of western rivers, removing during this period the great Red river obstacles. After the capture of Baton Rouge, the state capital, and New Orleans by the Unionists in 1862, Shreveport was occupied by the Confederate officials of the state. In the spring of 1863 and again in that of 1864 it was the objective of combined naval and land expeditions made by the Union forces up the Red river under command of Admiral David D. Porter and General N. P. Banks, the Confederate commander in Louisiana being General Richard Taylor, with General E. Kirby Smith in charge of the entire Trans-Mississippi department. In 1863 Shreveport was not seriously threatened. In 1864 when the Federals were within two marches of the city they were worsted by Taylor at Mansfield (on the 8th of April); on the next day the Confederates in their turn met with a demoralising repulse at Pleasant Hill.

**SHREW.** A term applied to the species of the family *Soricidae* of the mammalian order insectivora (q.v.), but in the British Isles to the common and lesser shrews (Sorex araneus and *S. minutus*).

The common shrew, or, properly, shrew-mouse, which in England is by far the commoner of the two, is a small animal about the size of a mouse, which it somewhat resembles in the shape of its body, tail and feet. But here the resemblance ends, for, unlike the mouse, it possesses a long and slender muzzle, with prominent nostrils, which project far beyond the lower lip; the small eyes are almost concealed by the fur; the ears are wide, short and provided internally with a pair of deep folds, capable when laid forwards of closing the entrance; the tail, which is slightly shorter than the body, is quadrangular in section and clothed more or less densely with moderately long hairs, terminating in a short tuft, but in old individuals almost naked; the feet are five-toed, the toes terminating in slender, pointed claws. The dentition is very peculiar and characteristic: there are in all thirty-two teeth, tipped with deep crimson; of which twelve belong to the lower jaw; of the remaining twenty ten occupy each side of the upper jaw, and of these the first three are incisors. The first incisor is large, with a long anterior canine-like cusp and a small posterior one; then follow two small single-cusped teeth; which are succeeded by three similar progressively smaller teeth, the first being a canine and the other two premolars; the next, a premolar, is large and multi-cuspid, and this is followed by three molars, of which the third is small with a triangular crown. In the lower jaw there are anteriorly three teeth corresponding to the seven anterior teeth above, of which the first is almost horizontal in direction, with its upper surface marked by three notches, which receive the points of the three upper front teeth; then follow two small teeth and three molars. The body is clothed with closely set fur, soft and dense, varying in colour from light reddish to dark brown above; the under surface of both body and tail being greyish; the basal four-fifths of all the hairs above and beneath are dark bluish grey. On each side of the body, about one-third of the distance between the elbow and the knee, is a gland covered by two rows of coarse guard hairs, which secrete a fluid with an unpleasant cheesy odour, and which is protective, rendering the creature secure against the attacks of predaceous animals.

The lesser or pigmy shrew (S. minutus) is not so abundant in England and Scotland, but common in Ireland, where the other species is unknown. It appears at first sight to be a diminutive variant of that species, which it closely resembles in external form, but the third upper incisor is shorter, or not longer than the next following tooth, whereas in *S. araneus* it is longer, and the length of the forearm and foot is less in the former species than in the latter.

Both these shrews live in the neighbourhood of woods, making their nests under the roots of trees or in any slight depression, occasionally even in the midst of open fields, inhabiting the disused burrows of field-mice. Owing to their small size, dark colour, rapid movements and nocturnal habits, they easily escape observation. They seek their food, which consists of insects, grubs, worms and slugs, under dead leaves, fallen trees and in grassy places. They are pugnacious, and if two or more are confined together in a limited space they invariably fight fiercely, the fallen becoming the food of the victorious. They are also exceedingly voracious, and soon die if deprived of food; and it is probably to insufficiency of food in the early dry autumnal season that the mortality among them at that time is due. The breeding-season extends from the end of April to the beginning of August, and five to seven, more rarely ten,
SHREWSBURY, EARLS OF—SHREWSBURY, DUKE OF

young may be found in the nests; they are naked, blind and toothless at birth, but soon run about snapping at everything within reach.

The alpine shrew (S. alpinus), restricted to the alpine region of Central Europe, is slightly longer than the common shrew and differs in its longer tail, which exceeds the length of the head and body, in the colour of the fur, which is dark on both upper and under surfaces, and in the large size of the upper antepenultimate premolar.

The water-shrew (Neomys fodiens), the third species inhabiting England, differs from the common shrew in being larger with a shorter and broader muzzle, smaller eyes and larger feet adapted for swimming—the sides of the feet and toes being provided with comb-like fringes of stiff hairs. The tail is longer than the body, and has a fringe of moderately long regularly ranged hairs, which extend along the middle of the under surface from the end of the basal third to the extremity. The fur is long and dense, varying in colour in different individuals; the prevailing shades are dark, almost black, brown above, beneath more or less bright ash tinged with yellowish; but occasionally we find individuals with the under surface dark-coloured. In the number and shape of the teeth the water-shrew differs from the common shrew: there is a premolar less on each side above; the bases of the teeth are more prolonged posteriorly; and their cusps are less stained brown, so that in old individuals they often appear white. This species is aquatic in habits, swimming and diving with agility. It frequents rivers and lakes, making burrows in the banks, from which when disturbed it escapes into the water. Its food consists of water insects and their larvae, small crustaceans and probably the fry of small fishes. It is generally distributed throughout England, is less common in Scotland and not recorded in Ireland.

The geographical range of the common shrew is wide, extending eastwards through Europe and Asia to Amurland. The lesser shrew extends through Europe and Asia to Sakhalin Island; and specimens of the water-shrew have been brought from different parts of the world. Another species, found in Siberia the common shrew is abundant in the snow-clad wastes about the Olonok river within the arctic circle. Other species of red-toothed shrews are restricted chiefly to North America, where they are found in greater variety than in the Old World, though Neomys is not represented. Its place is taken by Sorex palustris east of the Rocky Mountains, and S. hydrodromus in Unalaska Island, which, like the water-shrew, have fringes of teeth on the feet, but the unfringed tail and dentition of the common shrew. Of the American forms S. bendiri is the largest. Other red-toothed shrews belonging to the genus Blarina, distinguished from Sorex by the dentition and the shortness of the tail, are common in North America. All red-toothed shrews (except the aquatic forms) closely resemble one another in habits, but the short-tailed North American shrew supplements its insectivorous fare by feeding on beechnuts. In destroying numbers of slugs, insects and larvae, shrews aid the farmer and merit protection. Although their odour renders them safe from rapacious animals, they are destroyed in numbers by owls.

SHREWSBURY, EARLS OF. The earldom of Shrewsbury, one of the most ancient in the English peerage, dates from the time of William the Conqueror. Roger de Montgomery (c. 1030-1094), son of another Roger de Montgomery, known as "the Great," was a councillor of William, duke of Normandy, before his invasion of England, and was probably entrusted by William with the government of Normandy during the expedition of 1066. Roger came to England in the following year and received extensive grants of land in different parts of the kingdom. Obtaining a great estate in the county of Shropshire, he became the pre-eminent residence at the castle of Shrewsbury, he like his successors was generally styled earl of Shrewsbury. He probably exercised palatine authority. He was the founder of Shrewsbury Abbey in 1083. His first wife was Mabel, daughter of the seigneur of Belesme and Alençon; hence his son Robert, who, after the death of another son, Hugh, succeeded to the earldoms of Shrewsbury and Arundel, was generally known as Robert de Belesme (q.v.), one of the most celebrated of the feudal nobles of the time of Henry I. Robert having crossed to Holland to aid his English estates and honours in 1102, the earldom of Shrewsbury was next conferred on John, 5th baron Talbot, whose descendants have borne the title to the present day. (See Talbot; and Shrewsbury, 1st Earl of, below.)

SHREWSBURY, CHARLES TALBOT, DUKE OF (1660-1718), only son by his second wife of Francis Talbot, 11th earl of Shrewsbury, was born on the 24th of July 1660. His mother was a daughter of Robert Brudenell, 2nd earl of Cardigan, and the notorious mistress of the 2nd duke of Buckingham, by whom his father was killed in a duel in 1668. Charles was a godson of King Charles II., after whom he was named, and he was brought up as a Roman Catholic, but in 1679 under the influence of Tillotson he became a member of the Church of England. On his father's death in 1688 he succeeded to the earldom of Shrewsbury; he received an appointment in the household of Charles II., and served in the army under James II. But in 1687 he was in correspondence with the Prince of Orange, and he was one of the seven signatories of the letter of invitation to William in the following year. He contributed towards defraying the expenses of the projected invasion, and having crossed to Holland to join William, he landed with him in England in November 1688. Shrewsbury became a secretary of state in the first administration of William and Mary, but he resigned office in 1690 when the Tories gained the upper hand in parliament. While in opposition he brought forward the triennial bill, to which the king refused assent. In 1694 he again became secretary of state; but there is some evidence that as early as 1690, when he resigned, he had gone over to the Jacobites and was in correspondence with James at St Germaines, though it has been stated on the other hand that his later political views were decided on account of his connexion for reasons of policy. However this may be, William appears to have had no suspicion of Shrewsbury's loyalty, for on the 30th of April 1694 the latter was created marquess of Alton and duke of Shrewsbury, and he acted as one of the regents during the king's absence from England in the two following years. In 1696 definite accusations of treason were brought against him by Sir John Fenwick, which William himself communicated to Shrewsbury; and about this time the secretary of state took but a small part in public business, again professing his anxiety to resign. His plan of 1690 was a genuine one, and in 1700 the king reluctantly consented to his retirement into private life.

For the next seven years Shrewsbury lived abroad, chiefly at Rome, whence in 1701 he wrote a celebrated letter to Lord Somers expressing his abhorrence of public life and declaring that if he had a son he "would sooner bind him to a cobbler than a courtier, and a hangman than a statesman." On the accession of Queen Anne the whig leaders made an ineffectual attempt to persuade Shrewsbury to return to office. When, however, at last he did return to England in 1707 he gradually became alienated from his old political associates, and in 1710 he accepted the post of lord chamberlain in the Tory administration to which the queen appointed him without the knowledge of Godolphin and Marlborough, while his wife was at the same time made a lady of the bedchamber. After a diplomatic mission to France for the purpose of negotiating preliminaries of peace, Shrewsbury became lord lieutenant of Ireland in 1713; but he was in London in July 1714 during the memorable crisis occasioned by the impending death of Queen Anne. On the 27th of July, when the queen was dying, he appeared before her and received his long-delayed dismissal from the office of lord treasurer. On the 30th Shrewsbury and other ministers assembled at Kensington Palace, and being admitted to the queen's bedchamber Bolingbrooke recommended the appointment of Shrewsbury to the vacant treasurership; Anne at once placed at staff of that high office in the duke's hands. When
the queen died on the 1st of August Shrewsbury was thus in a position of supreme power with reference to the momentous question of the succession to the crown. He threw his influence into the scale in favour of the elector of Hanover, and was powerfully influential in bringing about the peaceful accession of George I., and in defeating the design of the Jacobites to place the son of James II. on the throne. His disinclination for the highest political offices remained, however, as great as before; and having resigned the lord-lieu tenancy and the lord-lieutenancy of Ireland, he was appointed lord chamberlain. This place he resigned in July 1715, and he died on the 1st of February 1718.

The duke of Shrewsbury was one of the greatest noblemen of the time of Queen Anne. Strikingly handsome in person, his demeanour was dignified and his manners full of grace and courtesy. Swift described him as "the finest gentleman we have," and as "the favourite of the nation," while William III. spoke of him as "the king of hearts." Like most of his contemporaries he endeavoured to keep himself in favour both with the exiled house of Stuart and with the reigning sovereign in England; but at the two critical junctures of 1688 and 1714 he acted decisively in favour of the Protestant succession. At other times he appeared weak and vacillating, and he never withstood the dictates either of his whim or of his affection, though he co-operated with each in turn. His magna nis disposition saved him from the vindictiveness of the party politician of the period; and the weak health from which he suffered through life probably combined with a congenital lack of ambition to prevent his grasping the power which his personality and talents might have placed in his hands.

In 1705 Shrewsbury married Adelaide, daughter of the Marquis Paleotti of Bologna. This lady, who is said to have had a great many engaging qualities besides many accomplishments, was the subject of much malicious gossip. She was also the widow, or as some declared, the mistress of a Count Brachiano; and Lady Cowper reported that the lady's brother had forced Shrewsbury to marry her "after an intrigue together." After Shrewsbury's return to England the duchess became conspicuous in London society, where the caustic wit of Lady Mary Wortley-Montagu was exercised at her expense. On the accession of George I., the duchess of Shrewsbury became a lady of the bedchamber to the princess of Wales, a position which she retained till her death on the 29th of June 1756. Shrewsbury left no issue by his marriage, and his place was filled in the earldom of Shrewsbury passing to his cousin Gilbert Talbot (see Talbot).


SHREWSBURY, ELIZABETH TALBOT, COUNTESS OF (1518–1608), better known by her nickname "Bess of Hardwick," was the daughter and co-heiress of John Hardwicke of Hardwicke in Derbyshire. At the age of fourteen she was married to a John Barlow, the owner of a large estate, who did not long survive the marriage, and as his estates had been settled on her and her heirs, she became a wealthy widow. She remained single until 27th August 1549, when she married Sir William Cavendish, who, to please her, sold his lands in the south of England and purchased the Chatsworth estates in Derbyshire. Six children were born of the marriage, three sons and three daughters. One of the sons was the founder of the ducal family of Devonshire, and another of the ducal family of Newcastle. Sir William Cavendish having died on the 25th of October 1557, her third husband was Sir William St Lo (or St Loe or St Lowe), captain of the guard to Queen Elizabeth and owner of an estate at Tormarton in Gloucestershire. She insisted that his lands should be settled on her and her heirs, and when Sir William died without issue, she made good her claim to all his property to the detriment of his sister and cousins. Bess of Hardwick was now the wealthiest subject in England. Her income was calculated to amount to £60,000, which was relatively a far more important sum than it is to-day. She still retained much of her good looks; her charms and her wealth outweighed her reputation for rapacity, and she was much sought in marriage. With the approval of Queen Elizabeth, who was not by habit a matchmaker, she was married in 1568 for the fourth time to George Talbot, 6th earl of Shrewsbury. Bess made her usual good bargain as to settlements, and also insisted on arranging marriages between two of her children—William Cavendish and two of the earl's by a former marriage. In 1574 the countess took advantage of a visit of the countess of Lennox to marry her daughter Elizabeth to Charles Stuart, the younger son of the Lennoxes and brother of Lord Darnley, the second husband of the queen of Scots. She acted without the knowledge of her husband, who declined to accept any responsibility. As the Lennox family had a claim to the throne this match was considered as a proof of the ambition of the countess of Shrewsbury, and she was sent to the Tower by the queen, but soon released. The child of the marriage was James VI., who was treated with the most tenderness by his grandmother treated at first with favour but later on with cruelty and neglect.

By this time the earl of Shrewsbury and his wife were on very bad terms with one another, and the former tried to obtain a divorce. The countess revenged herself by accusing him of a love intrigue with the queen of Scots, a charge which she was forced to retract before the council. In the meantime she had told some filthy scandal about Queen Elizabeth to Queen Mary, who made use of it in the extraordinary letter she wrote some time in 1584. In 1581 the countess of Shrewsbury went to live apart from her husband, with whom she was afterwards reconciled formally by the queen. After his death in 1590 she lived mostly at Hardwicke, where she built the noble mansion which still stands. She was indeed one of the greatest builders of her time at Hardwicke, Chatsworth and Oldcoates. It is said that she believed she would not die so long as she was building. Her death came on the 13th of February 1608 during a frost which put a stop to her building operations. She was buried in All Saints' Church, Derby, under a fine monument with a laudatory description which has been published. A number of portraits of her exist at Hardwicke, one taken in her youth, while the second, by Cornelius Jansen, engraved by Vertue, represents her as an old woman. She had no children except by her second husband, and to them she left the vast estates she accumulated by her successive marriages.

See White Kennett, Memoirs of the Cavendish Family (London, 1708); and Mrs Murray Smith (Miss E. T. Bradley), Life of Arabella Stuart (London, 1869); Mrs Stepney Rawson, Bess of Hardwicke (1910).

SHREWSBURY, JOHN TALBOT, 1ST EARL OF (d. 1453), was second son of Richard, 5th baron Talbot, by Ankaret, heiress of the last Lord Strange of Blackmore. He was married before 1404 to Maud Neville, heiress of the barons Furnival, and in her right summoned to parliament from 1409. In 1421 by the death of his niece he acquired the baronies of Talbot and Strange. From 1404 to 1413 he served with his elder brother Gilbert in the Welsh war. Then for five years from February 1414 he was lieutenant of Ireland, where he held the honour of Wexford. He did some fighting, and had a sharp quarrel with the earl of Ormond. Compounding was then against him both for harsh government in Ireland and for violence in Herefordshire. From 1420 to 1424 he served in France. In 1425 he was again for a short time lieutenant in Ireland. So far his career was that of a turbulent lord of the Marches, employed in posts where a rough hand was useful. In 1427 he went again to France, where he fought with distinction in Maine and at the siege of Orleans; but his exploits were those of a good fighter rather than of general, and it was his stubborn rashness that was chiefly to
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Blame for the English defeat at Patay in June 1429. After Patay, Talbot was four years a prisoner. On his release he became one of the foremost of the English captains. In 1434 he recovered the city of Clermont, next year took part in the siege of St. Denis, and in 1436 by reducing and harrying the revolted Pays de Caux saved Normandy. He was rewarded with the offices of captain of Rouen and marshal of France. During five years as a dashing fighter he was the mainstay of the English cause. His chief exploits were the defeat of the Burgundians before Crotory in 1437 and the recovery of Harfleur in 1440. In 1442 during a visit to England he was created earl of Shrewsbury. In November he was back in France besieging Dieppe; "for to foul with his men that they could no longer live with him" and was forced to break the siege (Chronicles of London, p. 150). In March 1445 he was once more sent to Ireland, where he used his old methods, so that the Irish said "there came not from the time of Herod any one so wicked in evil deeds." In 1449 he served for a short time in Normandy. When in 1452 the Gascons appealed for English help, Shrewsbury was the natural leader of the expedition. He landed in Aquitaine on the 17th of October. Bordeaux and the surrounding district returned guilfs to his old allegiance, and in the following year Shrewsbury captured Fronsac. In July the French besieged Castillon. Shrewsbury hurried to its relief, and with foolhardy valour attacked the enemy in their entrenched camp without waiting for his artillery. The English and Gascon footmen charged in vain in face of the French cannon, until Shrewsbury and the flower of his troops had fallen. This happened in July 1453 and was the end of the English rule in Gascony. Shrewsbury's fighting qualities made him something of a popular hero, and in the dogged of the day he was "Talbot our good dog," whose valour was brought to nought by the treason of Suffolk. But in truth though a brave soldier he was no general. He was twice married, his second wife being Margaret, eldest daughter of Richard Beauchamp, earl of Warwick. He was alleged to be eighty years old at his death; probably he was about sixty-five.

Bibliography.----For Shrewsbury's French campaigns see especially the Chronique de E. de Montrelet, Jehan de Waurin and Matthieu d'Escouchy (all these are published by the Société de l'Histoire de France), and the Chronicles of London (ed. C. L. Kingsford, London, 1905). Also H. Ribaudié, Conquête de Gascogne (1866); J. T. Gilbert, Viceroy of Ireland (1885); and J. H. Wylie's Henry the Fourth (1884-1898) for his early career. (C. L. K.)

Shrewsbury, a municipal and parliamentary borough, market town and the county town of Shropshire, England. Pop. (1901), 28,395. It is situated on both banks of the river Severn, but mainly on a peninsula formed by the river on the left bank. It is served by the London & North-Western and Great Western railways, being 163 m. N.W. from London. The companies use a joint station, and jointly work the line S. to Hereford. There is water communication eastward by the Shrewsbury canal, and by the Severn below the town. Eastward from the peninsula the English bridge crosses the river, westward the Welsh bridge; southward the Kingsland and Greyfriars bridges. The joint railway station is on the peninsula, and is reached from the south by a massive iron bridge. The streets, many retaining ancient names curiously corrupted, are hilly and irregular, but strikingly picturesque from their number of antique timber houses, among which may be mentioned that in Buttercough, formerly the town residence of the abbots of Lilleshall; the council-house overlooking the Severn, erected in 1610 for the presidents of the council of the Welsh marches; and the two adjacent mansions of Robert Ireland and Richard Owen, citizens c. 1500. Of the town ramparts built in the reign of Henry III. the principal remain is a portion to the south-west, used as a public walk, on which stands a square embattled tower. The castle built by Roger de Montgomery was dismantled in the reign of James II., and is modernized as a residence, but there remain the archway of the interior gateway, the walls of the inner court and two large round towers of the time of Edward I. The rich abbey of St Peter and St Paul was also founded by Roger, on the site of an earlier church. Of the abbey church (Holy Cross) the nave of massive Norman work remains, especially imposing owing to the warm red stone in which it is built; there are further two Early English arches and the western tower. Of the monastic buildings little is left, save a remarkable roofed pulpit of ornate Decorated work. Among other churches St Mary's, founded in the 10th century, is a fine cruciform structure with a lofty tower and spire, displaying examples of various styles of architecture from early Norman to Perpendicular, the base of the tower, the nave and the doorways being Norman, the transept Early English and the aisles 15th century, while the interior is specially worthy of notice for its elaborate details, its early stained glass, including a Crucifixion, and its ancient monuments. Some 10 ft. of the spire fell in 1894, severely injuring the church and necessitating extensive restoration. St Julian's was originally built before the Conquest, but rebuilt in 1748, except the tower, the older portion of which is Norman and the upper part of the 13th century. St Alkmund's also dated from the 1oth century, but was rebuilt towards the close of the 18th century, with the exception of the tower and spire. It has a beautiful half-timbered rectory. St Giles's, originally the church of the leper hospital, dating from the time of Henry I., was altered at various periods. The hospital chamber remains, and bears a name of the Pest Basin, because the citizens cast alms into it in the 16th century during the visitation of the plague, which, according to tradition, first appeared here. The old church of St Chad, supposed to have occupied the site of a palace of the princes of Powis, was destroyed by the fall of the tower in 1788, and of the ancient building the bishop's chancel alone remains. The new church of St Chad was built on another site in 1792. Shrewsbury is not fortunate in its ecclesiastical architecture of the late 18th century. There are slight remains of a Franciscan house (Grey Friars) founded in 1291, of an Augustinian friary (1253) and of a Dominican house (1222). The old buildings completed in 1630 for the grammar school of Edward VI., founded in 1551, are now occupied by the county museum and free library, the school having been removed in 1882 to new buildings in the suburb of Kingsland S. of the river. It takes rank among the first public schools in England. The ground it occupies in Kingsland was formerly the scene of the Shrewsbury show, a pageant and festival held during the festival of Trinity. Among the principal secular buildings of the town are the fine market house in the Elizabethan style (completed according to an inscription over the northern arch in 1595), the shire hall and guildhall (rebuilt in 1837, and again, after a fire, in 1883), the general market and corn exchange (1860), and the drapers' hall, a timbered structure dating from the 16th century. The principal benevolent institutions are the county infirmary (1747), Millington's hospital (1734) and the eye, ear and throat hospital (1881). A monument to Lord Clive, who was member for the borough 1761-1764, was erected in the market-place in 1860, and a Doric memorial pillar to General Lord Hill in 1816 at the top of the Abbey Foregate. The town race-course occupies a portion of the "Soldiers' Piece," where Charles I. addressed his army in 1642. To the south-west of the town is a park of 23 acres, known as the Quarry, with beautiful avenues of lime-trees, descending to the river. Glass-staining, the spinning of flax and linen yarn, iron-founding, brewing, malting, the preparation of brawn and the manufacture of the well-known Shrewsbury cakes are now the principal industries. Shrewsbury is a suffragan bishopric in the diocese of Lichfield, and the seat of a Roman Catholic bishop. The parliamentary borough returns one member. The town is governed by a mayor, 10 aldermen and 30 councillors. Area, 3572 acres.

Shrewsbury (Pengwernia, Scrobybury, Salopshire), then known as Pengwern or Pengwyn, was the capital of the kings of Powis during the 5th and 6th centuries, but was taken in 770 by Offa king of Mercia, who changed its name to Shrewsbury (Scrobybury). Owing to its position on the Welsh borders it became one of the chief cities of the Saxon kings, and a mint was established here in the reign of King Æthelstan. After the Conquest the town was included in the earldom of Shrewsbury, and the Domesday Survey shows that the Saxon burgesses
Sundevall, northern general 1645. parliament During considerable succeeding wealth Linnaeus in a 1283 the was Charles which it is. The according England, is England, or. Few nearly is. On these few, with others included in the genus Lanius, which there is no room here to specify, have, according to their respective power, the very remarkable habit (whence they have earned their opprobrious name) of catching insects, frogs, lizards or small birds and mammals, and of spitting them on a thorn or of fixing them in a forked branch, the more conveniently to tear them in pieces and eat them. The shrikes belong to the Passerine family Laniidae, the limits of which are doubtful, but which is divided into five sub-families: Gymnorhinhinae, Malacanotoninae, Pachycephalinae, Laniinae and Prionopinae. The Laniinae or true shrikes occur in the Old and New Worlds, the other sub-families are limited to the Old World. The shrikes and their immediate allies are active and powerful birds, with stout bills often strongly hooked. Their diet is chiefly insects and small frogs, lizards and mammals, but they also take seeds and fruits. The “greenlets” of North and South America are active and fearless birds, similar in general habits to the Laniidae and formerly regarded as forming a sub-family of that group, but now placed in a separate family the Vireonidae. (A. N.)

SHRIMP, a name applied in general to the smaller crustaceans of the order Macrura and in particular to an edible species found on the coasts of northern Europe (Crangon vulgaris). The shrimps and their allies are distinguished from the larger Macrura, such as the lobsters and crayfishes, by greater development of the paddle-like limbs of the abdomen or tail, which are used in swimming. The abdomen is usually sharply bent between the third and fourth segments and has a characteristically humped appearance when straightened out.

The common shrimp is found abundantly on the coasts of the British Islands, in shallow water wherever the bottom is sandy. It is 2 or 3 in. long, slightly flattened and with the rostrum or beak, in front of the carapace, very short. It is of a transverse variation in colour, speckled white, brown and black, and resembles the sand in which it lives. On many parts of the coast the shrimp fishery is of considerable importance. The instrument generally employed is a bag-shaped net attached to a semicircular hoop, provided with a long handle and pushed over the surface of the sand by a fisherman wading in the water at ebb-tide. When boiled, the body becomes of a brownish colour and on this account the species is sometimes termed the “brown shrimp.” The name of “pink shrimp” is given to Pandalus montagui or annulicornis, which turns red on boiling and which resembles in form the larger “prawns” having a long rostrum or beak, saw-edged above and below. The smaller species of Leander, especially L. squilla, are sold as “cup-shrimps” in some places.

The larger shrimp-like crustaceans are generally known as “prawns,” the name being especially applied in Britain to the species Leander serratus, formerly called Palaemon serratus, which is highly esteemed for the table. In warmer seas many other kinds of prawns are caught for food. These are generally species of the genus Palaemon (like P. carnatus of the Mediterranean), which are distinguished from all those already mentioned by having pincers on the first three, instead of only on the first two pairs of legs. The large river-prawns of the genus Palaemon particularly observable in Eastern examples—barred with dusky markings. The quill-feathers of the wings, and of the dorsally black, with mostly the former, though what there is of the latter shows very conspicuously, especially at the base of the remiges, where it forms either a single or a double patch. Much smaller than this is the red-backed shrike, L. collurio, the best-known species in Great Britain, where it is a summer visitor, and, though its distribution is rather local, it may be seen in many parts of England and occasionally reaches Scotland. The cock is a sightly bird with his grey head and neck, black cheek-hand, chestnut back and pale rosy breast, while the hen is distinguished by a dull brown, barred on the lower plumage. A more highly coloured species is called the woodchat, L. auriculatus or rutilus, with a bright bay crown and nape, and the rest of its plumage black, grey and white. This is an accidental visitor to England, but breeds commonly throughout Europe. All these birds, with many others included in the genus Lanius, which there is no room here to specify, have, according to their respective power, the very remarkable habit (where those that have earned their opprobrious name) of catching insects, frogs, lizards or small birds and mammals, and of spitting them on a thorn or of fixing them in a forked branch, the more conveniently to tear them in pieces and eat them. The shrikes belong to the Passerine family Laniidae, the limits of which are doubtful, but which is divided into five sub-families: Gymnorhinhinae, Malacanotoninae, Pachycephalinae, Laniinae and Prionopinae. The Laniinae or true shrikes occur in the Old and New Worlds, the other sub-families are limited to the Old World. The shrikes and their immediate allies are active and powerful birds, with stout bills often strongly hooked. Their diet is chiefly insects and small frogs, lizards and mammals, but they also take seeds and fruits. The “greenlets” of North and South America are active and fearless birds, similar in general habits to the Laniidae and formerly regarded as forming a sub-family of that group, but now placed in a separate family the Vireonidae. (A. N.)

SHRINE—SHRIMP 1019

paid the same danegeld as in the reign of Edward the Confessor. Until Wales was annexed to England in the 13th century, S. was a group of the civil border towns, and as such it was besieged by Owen Gwynnedd in 1667, but was relieved by William the Conqueror. In the reign of Henry I. it was garrisoned by Robert de Belesme, but surrendered to the king in 1120. It was several times burnt by the Welsh and was taken and held by them from 1215 to 1221. During the Welsh war in the reign of Edward I., the king made the town his headquarters, and in 1283 David, the last native prince of Wales, was tried and condemned to death by a parliament held here. In 1403 Henry Percy, son of the earl of Northumberland, was defeated and killed at Shrewsbury by Henry IV. At the beginning of the Civil War, Charles I. stayed in the town for some time, but it surrendered to parliament in 1645. The first extant charter, dated 1190, is a grant by Richard I. to the burgesses of the town at a fee farm of 40 marks, but Henry II. is known to have granted an earlier charter which was confirmed by King John in 1200. The same king granted two other charters, one in 1200 giving the right of electing the reeves, and the other in 1205 providing that their lands and tenements should be governed by the “laws of Bretueil, the laws of the Baronies and the laws of the English.” Henry II. in 1217 granted a gild merchant with a house. Besides these charters there are numerous confirmations before the incorporation charter of Elizabeth of 1586. Charles I. in 1638 altered the corporation to a mayor, 24 aldermen and 48 assistants. In 1684 the burgesses surrendered their charter to the king and received a new one in the following year which, however, did not change the form of government. From 1295 to 1885 Shrewsbury returned two members to parliament, but then the number was reduced to one. See H. Owen and J. C. Blakeway, A History of Shrewsbury (1825); Thomas Phillips, The History and Antiquities of Shrewsbury (1837); Victoria County History, Shropshire.

SHRIKE, a bird’s name, so given by Turner (1544), but solely on the authority of Sir Francis Lovell, for Turner had seen the bird but twice in England, though in Germany often, and could not find anyone else who so called it. However, the word1 was caught up by succeeding writers; and, though hardly used except in books—for butcher-bird is its vernacular synonym—it not only retains its first position in literary English, but has been largely extended so as to apply in general to all birds of the family Laniidae and others besides. The name Lanius, in this sense, originated with C. Gesner2 (1555), who thought that the birds to which it gave he had not been mentioned by the ancients. C. J. Sundeall, however, considers that the Malacocroanen of Aristotle was one of them, as indeed Turner had before suggested, though repelling the latter’s supposition that Aristotle’s Tyrranou was another, as well as P. Belon’s reference of Calliprion. These species designated as shrike by Turner is the Lanius excisitor of Linnæus and nearly all succeeding authors, nowadays3 commonly known as the greater butcher-bird, ash-coloured or grey great shrike—a bird which visits the British Islands pretty regularly, though not numerously, in autumn or winter, occasionally prolonging its stay into the next summer; but it has never been ascertained to breed here, though often ascertained to have done so. This is the more remarkable since it breeds more or less commonly on the continent from the north of France to within the Arctic Circle. Exceeding a song-thrush in linear measurements, it is a much less bulky bird, of a pearly grey above with a well-defined black back passing from the forehead to the ear-coverts; beneath it is nearly white, or—and this is

1 Few birds enjoy such a wealth of local names as the shrikes. M. Rolland (Fauna pop. de la France, ii. 145-151) enumerates towards of ninety applied to them in France and Savoy; but not one of these is applicable to our wilderness.

2 He does not seem, however, to have known that butcher-bird was an English name; indeed it may not have been so at the time, but subsequently introduced.

3 He was not well known by the name of Würper, Rae and Charlton, it was in their day called in many parts of England “Wierangle” (Ger. Würpangel and Würger, the strangler); but it is hard to see how a bird which few people in England could know by sight should have a popular name, though Chaucer had used it in his Assembly of Foules.
SHRINE—SHROPSHIRE.

Sandstone and Shineton Shales are the local representatives of the Cambrian system. These are followed by the Ordovician formations which occupy three areas: the Breidden Hills, the Shelve district and the Caer Caradoc district, and include strata referable to the Arenig, Llanvirn and Silurian periods. The sandstones, shales, grits and volcanic ashes, with dolerite intrusions. The Silurian rocks which follow unconformably are represented in the Long Mountain and Clun Forest regions by sandstones and shales, and also in the Rock Edge district and at the Monk Mylne Hill (Wenlock) for the schists of Rushton, the lavas and ashes of the Wrekin, Caer Caradoc and Pontesford, and the purple slates, grits and conglomerates of the Longmynd. The Wrekin Quartzite, Comley

SHRINE

Small Titterstone, and are abundant in the sea round our coasts, are often called "Opossums" from the fact that the eggs are provided with a ventral pouch or "marsupium" in which the eggs and young are carried.

(‚T. C.A.

The name of shrims is sometimes given to members of the order Schizopoda, which differ from most of the Macrura in having swimming branches or exopodites on the thoracic legs. In particular the Schizopoda of the family Mysidae, which are abundant in the sea round our coasts, are often called "Opossums" from the fact that the eggs are provided with a ventral pouch or "marsupium" in which the eggs and young are carried.

(F. kerin, Ital. scrobige), the term given to the repository or chest to hold sacred relics. Sometimes shrims are merely small boxes, generally with raised tops like roofs; sometimes actual models of churches; sometimes large constructions like that at St Albans, that of Edward the Confessor at Westminster, of Ste Genevieve at Paris, &c. Many are covered with jewels in the richest way, such as the example at St Taurin, at Evreux in Normandy, and that of San Carlo Borromeo, at Milan, of beaten silver; the largest series are those entered in the enamel catalogues. Sometimes the term is given to the chapel in which the shrine is deposited.

SHROPSHIRE (Salop), a western county of England on the Welsh border, bounded N. by Cheshire and a detached portion of Flint, E. by Staffordshire, S.E. by Worcestershire, S. by Herefordshire, S.W. by Radnorshire, W. by Montgomeryshire and N.W. by Denbighshire. The area is 1343 sq. m. The name of Salop, in common use, comes from an early name of the county town of Shrewsbury. Towards the west Shropshire partakes of the hilly scenery of Wales, from which several ranges are continued into it. South of the river Severn and partly in Montgomeryshire, the Breidden Hills rise abruptly in three peaks; and in the south-west there is a broad range of rough rounded hills known as Clun Forest, extending from Radnorshire. South and west of the Severn there are four other principal chains of hills extending from S.W. to N.E.—the Long Mynd (1674 ft.), west of Church Stretton; the Caradoc Hills, a little to the north, which are continued across the Severn and terminate in the isolated sugarloaf hill of the Wrekin (1335 ft.); Wenlock Edge, east of Church Stretton, a sharp ridge extending for 20 m., and at some points rising above 1000 ft.; and the Clive Hills near the south-eastern border (Brown Clive, 1805 ft.; Titterstone Clee, 1749 ft.). The remainder of the county is for the most part pleasantly undulating and well cultivated. It lies almost entirely in the basin of the Severn, which enters from Montgomeryshire and flows eastwards to Shrewsbury, after which it turns south-eastward to Ironbridge, and then continues in a more southerly direction past Bridgnorth, entering Worcestcr near Bewdley. The scenery on its banks is striking at some places, as near the finely situated town of Bridgnorth, but it is spoilt in one of the most beautiful stretches, that near Coalbrookdale, by the great factories in the neighbourhood. Its principal tributaries within Shropshire are: from the right the Rea, the Cound and the Borle; from the left the Vyrnwy, a well-known trout-stream forming part of the boundary with Montgomeryshire, the Perry, the Tern, which receives the Roden, and the Worfe. The Dee and its tributary the Ceiriog touch the north-western boundary of the county with Denbighshire. In the south the Teme, which receives the Clun, the Onny and the Corve, flows near the borders of Herefordshire, which it occasionally touches and intersects. Salmon are taken in the Severn, and the Teme with its tributaries are frequented for trout and gravel fishing. There is a cluster of picturesque mere or small lakes in the north-west near the borders of Denbighshire, of which the largest is Ellesmere, and there are a number of others in various parts of the county.

Geology.—The Pre-Cambrian rocks of Shropshire include the great series of the Coalbrookdale and Long Mynd formation. The Coalbrookdale and Wenlock Beds, the schists of Rushton, the lavas and ashes of the Wrekin, Caer Caradoc and Pontesford, and the purple slates, grits and conglomerates of the Longmynd. The Wrekin Quartzite, Comley

Sandstone and Shineton Shales are the local representatives of the Cambrian system. These are followed by the Ordovician formations which occupy three areas: the Breidden Hills, the Shelve district and the Caer Caradoc district, and include strata referable to the Arenig, Llanvirn and Silurian periods. The sandstones, shales, grits and volcanic ashes, with dolerite intrusions. The Silurian rocks which follow unconformably are represented in the Long Mountain and Clun Forest regions by sandstones and shales, and also in the Rock Edge district and at the Monk Mylne Hill (Wenlock) for the schists of Rushton, the lavas and ashes of the Wrekin, Caer Caradoc and Pontesford, and the purple slates, grits and conglomerates of the Longmynd. The Wrekin Quartzite, Comley

Sandstone and Shineton Shales are the local representatives of the Cambrian system. These are followed by the Ordovician formations which occupy three areas: the Breidden Hills, the Shelve district and the Caer Caradoc district, and include strata referable to the Arenig, Llanvirn and Silurian periods. The sandstones, shales, grits and volcanic ashes, with dolerite intrusions. The Silurian rocks which follow unconformably are represented in the Long Mountain and Clun Forest regions by sandstones and shales, and also in the Rock Edge district and at the Monk Mylne Hill (Wenlock) for the schists of Rushton, the lavas and ashes of the Wrekin, Caer Caradoc and Pontesford, and the purple slates, grits and conglomerates of the Longmynd. The Wrekin Quartzite, Comley
Shropshire (5271). The more important towns not mentioned above are Broseley, Coalbrookdale, Madeley (this parish including Ironbridge and Coalport) and Much Wenlock, which are embraced wholly or in part by the borough of Wem; market Drayton (5167) and Shifnal (5321). Lesser towns are Clun (5165) which gives name to Clun Forest, and Cleebrury Mortimer (1810) in the south. The county is in the Oxford circuit, and assizes are held at Shrewsbury. It has one court of quarter sessions, and is divided into 18 petty sessional districts. The boroughs of Bridgnorth, Ludlow, Oswestry, Shrewsbury and Wenlock have separate commissions of the peace and courts of quarter sessions. There are 267 civil parishes. Shropshire is divided between the diocese of Lichfield and Hereford, with a small part within the diocese of St Asaph, and contains 284 ecclesiastical parishes or districts, wholly or in part. There are four parliametary divisions—Mid or Wellington, North or Newport, South or Ludlow, and West or Oswestry, each returning one member, while Shrewsbury returns one member.

History.—The district which is now Shropshire was annexed to the kingdom of Mercia by Offa, who in 763 constructed Watt's Dike to defend his territory against the Welsh, and in 779, having pushed across the Severn, drove the King of Powys from Shrewsbury, then known as Pengwern, and secured his conquests by a second defensive earthwork known as Offa's Dike, which, entering Shropshire at Knighton, traverses moor and mountain by Llanymynech and Oswestry, in many places forming the boundary line of the county, and finally leaves it at Bron y Garth and enters Denbighshire. In the 9th and 10th centuries the district was frequently overrun by the Danes, who in 874 destroyed the famous priory of Wenlock, said to have been founded by St Milburg, granddaughter of Penda of Mercia, and in 896 wintered at Quatford. In 912 Ethelred, the lady of Mercia, erected a fortress at Bridgnorth against the Danish invaders, and in the next year at Chinford. Mercia was mapped out into shires in the 10th century after its recovery from the Danes by Edward the Elder, and Shropshire stands out as the sole Mercian shire which did not derive its name from its chief town. The first mention of it in the Saxon Chronicle occurs under 1000, when the king crossed the Thames and wintered there. In 1016 Edmund Ethelred plundered Shrews-

bury and the neighbourhood.

After the Conquest the principal estates in Shropshire were all bestowed on Norman prelates, pre-eminent among whom is Roger de Montgomery, the 1st earl of Shrewsbury, whose son Robert de Belesme forfeited his possessions for rebellion against Henry I., when the latter bestowed the earldom on his queen for life. At this period a very large portion of Shropshire was covered by its vast forests, the largest of which, Worf Forest, at its origin extended at least 8 m. in length, and 6 m. in breadth, and became a favourite hunting-ground of the English kings. The forest of Wrekin, or Mount Gilbert as it was then called, covered the whole of that hill and extended eastward as far as Sheriff Hales. Other forests were Stiperstones, the jurisdiction of which was from time immemorial annexed to the barony of Caus, Wyre, Shirlot, Clee, Long Forest and Brewood. The constant necessity of defending their territories against the Welsh prompted the Norman lords of Shropshire to such activity in castle-building that out of 186 castles in England no less than 32 are in this county. Of these the most famous are Ludlow, founded by Roger de Montgomery; Bishop's Castle, which belonged to the bishops of Hereford; Clun Castle, built by the Fitz-Alan; Cleebrury Castle, built by Hugh de Montgomery; Caus Castle, once the barony of Peter Corbett, from whom it came to the Barons Straford; Rowton Castle, also a seat of the Corbetts; Red Castle, a seat of the Audleys. Other castles were Bridgnorth, Corfeham, Holgate, Pulverbatch, Quatford, Shrewsbury and Wen.

Among the Norman religious foundations were the Clunia
c Priory at Wenlock, re-established on the Saxon foundation by Roger Montgomery in 1080; the Augustinian abbey of Haugh-
mont founded by William Fitz-Alan; the Cistercian abbey of Buildwas, now a magnificent ruin, founded in 1155 by Roger, bishop of Chester; Shrewsbury Abbey, founded in 1083 by Roger de Montgomery; the Augustinian abbey of Lilleshall, founded in the reign of Stephen; the Augustinian priory of Wombridge, founded before the reign of Henry I.; the Bene-
dictine priory of Alberbury founded by Fulk Fitz-Warin in the 13th century; and Chirbury Priory founded in the 13th century.

The fifteen Shropshire hundreds mentioned in the Domesday Survey were entirely rearranged in the reign of Henry I., and only Overs and Conover retained their original names. The Domesday hundred of Rueset was replaced by Ford, and the hundred court transferred from Alberbury to Ford. Hodnet was the meeting-place of the Domesday hundred of Odenet, which was combined with Recordin, the largest of the Domesday hundreds in the county, to form the hundred of Caus, and the latter also including part of the Domesday hundred of Pimhole in Staffordshire. The hundred of Baschurch had its meeting-place at Baschurch in the time of Edward the Confessor; in the reign of Henry I. it was represented mainly by the hundred of Pimhill, the meeting-place of which was at Pimhill. Oswestry represents the Domesday hundred of Mercete, the hundred court of which was transferred from Maesbury to Oswestry. Munslow hundred was formed in the reign of Henry I., but in the reign of Richard I. a large portion was taken out of it to form a new liberty for the priory of Wenlock, the limits of which correspond very nearly with the modern franchise of Wenlock. The Domesday hundred of Alnoldestreu, abolished in the reign of Henry I., had its meeting-place at Membrefeld (Morville). The hundreds at the present day number fourteen.

Shropshire was administered by a sheriff, at least from the time of the Conquest, the first Norman sheriff being Warin the Bald, whose successor was Rainald, and in 1156 the office was held by William Fitz-Alan, whose account of the fee-farm of the county was entered in the pipe roll for that year. The shire court was held at Shrewsbury. A considerable portion of Shropshire was included in the Welsh marches, the court for the administration of which was held at Ludlow. In 1397 the castle of Oswestry with the hundred and eleven towns pertaining thereto, the castle of Isabel with the lordship pertaining thereto, and the castle of Dalaley, were annexed to the principality of Chester. By the statute of 1535 for the abolition of the marches, the lordships of Oswestry, Whittington, Maibroke and Knockin were formed into the hundred of Oswestry; the lordship of Ellesmere was joined to the hundred of Pimhill; and the lordship of Down to the hundred of Chirbury.

The boundaries of Shropshire have otherwise varied but slightly since the Domesday Survey. Richard's Castle, Ludlow, and Fitz-Alan, however, were then included in the Herefordshire hundred of Cutsenor, while several manors now in Hereford-
shire were assessed under Shropshire. The Shropshire manors of Kings Nordley, Avelley, Claverley and Worfield were assessed in the Domesday hundred of Saisdon in Staffordshire; and Quat, Romsley, Rudge and Shipley in the Warwickshire hundred of Stanlet. By statute 34 and 35 Henry VIII. the town and hundred of Aberton, till then part of Merionethshire, were annexed to this county.

Shropshire in the 13th century was situated almost entirely in the dioceses of Hereford and of Coventry and Lichfield; and formed an archdeaconry called the archdeaconry of Salop. That portion of the archdeaconry in the Hereford diocese included the deaneries of Burford, Stottesdon, Ludlow, Pontes-

bury, Clun and Wenlock; and that portion in the Coventry and Lichfield diocese the deaneries of Salop and Newport. In 1555 the Hereford portion included the additional deanery of Bridgnorth; it now forms the archdeaconry of Ludlow, with the additional deaneries of Montgomery, Bishops Castle and Church Stretton. The archdeaconry of Salop, now entirely in the Hereford diocese, includes the deaneries of Conover, Edgmond, Ellesmere, Hodnet, Shifnal, Shrewsbury, Wen, Whitchurch and Wrockwardin. Part of Welsh Shropshire is included in the diocese of St Asaph, comprising the deanery of Oswestry in the archdeaconry of Montgomery, and two parishes in the deanery of Llangollen and the archdeaconry of Mezham.
The early political history of Shropshire is largely concerned with the constant incursions and depredations of the Welsh from across the border. The Saxon Chronicle relates that in 1053 the Welshmen slew a great many of the English warriors at Westbury, and in that year Harold ordered that any Welshman found beyond Offa’s Dike within the English pale should have his right hand cut off. Various statutory measures to keep the Welsh in check were enforced in the 11th and 12th centuries. In 1379 Welshmen were forbidden to purchase land in the county save on certain conditions, and this enactment was reinforced in 1400. In 1379 the men of Shropshire forwarded to parliament a complaint of the felonies committed by the men of Cheshire and of the Welsh marches, and declared the gale of Shrewsbury Castle to be in such a ruinous condition that they had no place of imprisonment for the offenders when captured. In 1442 and again as late as 1535 acts were passed for the protection of Shropshire against the Welsh. But apart from the border warfare in which they were constantly engaged, the great Shropshire lords were actively concerned in the more national struggles. Shrewsbury Castle was garrisoned for the empress Maud by William Fitz-Alan in 1138, but was captured by Stephen in the same year. Holgate Castle was taken by King John from Thomas Mauduit, one of the rebellious barons. Ludlow and Shrewsbury were both held for a time by Simon de Montfort. At Acton Burnell in 1283 was held the parliament which passed the famous Acton Burnell statute, and a parliament was summoned to meet at Shrewsbury in 1398. During the Percy rebellion Shrewsbury was in 1403 the scene of the battle of Radnor’s Cot, in which Hotspur was slain. On the outbreak of the Civil War of the 17th century the Shropshire gentry for the most part declared for the king, who visited Shrewsbury in 1642 and received valuable contributions in plate and money from the inhabitants. A mint and printing-press were set up at Shrewsbury, which became a refuge for the neighbouring royalist gentry. Wem, the first place to declare for the parliament, was garrisoned in 1645 by Richard Baxter. Shrewsbury was forced to surrender in 1644, and the royalist strongholds of Ludlow and Bridgnorth were captured in 1646, the latter after a four weeks’ siege, during which the governor burnt part of the town for defence against the parliamentary troops.

Shropshire is noted for the number and lustre of the great families connected with it. Earl Godwin, Sweyn, Harold, Queen Edith, Edward the Confessor and Edwin and Morcar are all mentioned in the Domesday Survey as having held lands in the county before the Conquest. The principal landholders at the time of the survey were the bishop of Chester, the bishop of Hereford, the church of St Remigius, Earl Roger, Osbern Fitz-Richard, Ralph de Mortimer, Roger de Laci, Hugh Lasne and Nicholas Mediucis. Earl Roger had the whole profits of the Conover hundred and also owned Alnestred hundred. The family of Fitz-Alan, ancestors of the royal family of Stuart, had supreme jurisdiction in Oswestry hundred, which was exempt from English law. Richard Fitz-Scrob, father of Osbern Fitz-Richard and founder of Richard’s Castle, was lord of the hundred of Overs at the time of the Conquest. Gatacre was the seat of the Gataces. The barony of Pulverbatch passeth from the Pulverbatchs, and was purchased in 1193 by John de la Pole. The family of Cornwall were barons of Burford and of Harley in 1259. The family of Lestrange owned large estates in Shropshire after the Conquest, and Fulk Lestrange claimed the right of holding pleas of the crown in Wrockworth in 1202. Among others claiming rights of jurisdiction in their Shropshire states in the same year were Edmund de Mortimer, the abbot of Cumbermere, the prior of Lanhorne, the prior of Great Malvern, the bishop of Lichfield, Peter Corbett, Nicholas of Audley, the abbot of Lilleshall, John of Mortayn, Richard Fitz-Alan, the bishop of Hereford and the prior of Wenlock.

The earliest industries of Shropshire took their rise from its abundant natural resources; the rivers supplying valuable fisheries; the vast forest areas abundant in timbers; the coal and iron in the products of the county had been exploited from remote times. The lead mines of Shelve and Stiperstones were worked by the Romans, and in 1220 Robert Corbett conferred on Shrewsbury Abbey a tithe of his lead from the mine at Shelve. In 1260 licence was given to the Clee Fell Company, of which Robert de Crecy was a member. Arncroome received the profits of a coal-mine at Caynham. Iron was dug in the Clee Hills and at Wombourne in the 16th century. Wenlock had a famous copper-mine in the reign of Richard II, and in the 16th century was a centre of copper mining; the limestones at Lilleshall and at Ditton Priors, Caynham and Donnington. As the forest areas were gradually cleared and brought under cultivation, the county was more exclusively agricultural. In 1343 Shropshire wool was rated at a higher value than that of the English county, and in the 13th and 14th centuries Buildwas monastery exported wool to the Italian markets. Shropshire has never been, as the counties of the north of England and the north of Scotland were, a cotton manufacturing county, and the old handloom clothing trade arose about Shrewsbury and Bridgnorth, and Oswestry was famous in the 16th century for its fine Welsh cottons.

Antiquities—The ecclesiastical ruins and buildings of Shropshire are of various and interesting periods. The buildings the finest remains are those of Shrewsbury Abbey, Lillleshall near Newport, Much Wenlock Abbey and Bromfield priory near Ludlow (see the town). Besides these, Haughmond, 5 m. N.E. of Shrewsbury, an Augustinian foundation of the 12th century, has left extensive remains including a chapter-house, hall, monks’ well and other domestic buildings. Of Buildwas Abbey, on the Severn above Coolebrookdale, a Cistercian foundation of 1135, there are fine Norman and Early English remains of the church and chapter-house, together with the abbot’s house and other cloister buildings. Among the larger towns, those of Bridgnorth and Llanymynech, with their market places, are of interest. Among village churches, those of Stottesdon and Stanton Lacy in the south of the county, show considerable traces of pre-Conquest construction. Of the Norman remains of those of Newport, where the fragments from Uriconium are incorporated, Claverley E. of Bridgnorth, Holgate or Holgate in Corvedale and Clun, are good examples, but there is a remarkable number of Norman doors and fonts throughout the county. The church of Cluchery Mortimeria good Early English character and that of Tong near Shifnal fine Perpendicular with a splendid series of tombs, while the churchyard cross at Bitterley, near Titterstone, is a beautiful specimen of the work of the 14th century. The solitary church of Battlefield, N. of Shrewsbury, marks the scene of the fight between Henry IV, and the Percies in 1403. The remains of castles are generally slight, but the noble ruins at Ludlow, a notable ruin of the 13th century. The castle at Bridgnorth and the castle at Holgate are Norman. Of the 13th century are those at Hopton near Clun and Acton Burnell, S.E. of Shrewsbury, where Edward I. held parliament in 1263, Middle Castle between Shrewsbury and Wen shows small ruins of the 14th century. At Moreton Corbet on the Roden, N.E. of Shrewsbury, there is an old castellated mansion, but by far the finest example of this type in the county, and one of the best in England, is Stokesay Castle near Craven Arms. This beautiful relic dates from the 13th century, and is almost perfect, having a large hall and massive southern tower, and a remarkable half-timbered gateway. Shropshire is also rich in domestic and rural architecture, and in timbered and panelled houses. Shropshire has many beautiful examples of half-timbered architecture. Among old country mansions may be specially noted the splendid Pitchers Hall, near Shrewsbury and Benthall Hall, near Broseley, dating from 1535.

See Victoria County History, Shropshire; W. Pearson, Antiquities of Shropshire (London, 1807); W. K. Eyton, Antiquities of Shropshire (London, 1831-1833); A. S. Hope, The English Church and its Early History and Antiquities (London, 1864); C. H. Hartshorne, Salopia Antiqua (London, 1841); Walcott, Introduction to Sources of Salopian Topography (Shrewsbury, 1879); I. A. Touché, Handbook to the Geology of Shropshire (1886); Borderer, Hunting and Sporting Notes in Shropshire (London, 1885-1886); Hughes, Sheriffs of Shropshire, 1831-1886 (Shrewsbury, 1886); Walker, An Old Shropshire Family (4 vols., London, 1886-1891); Fletcher, Religious Census of Shropshire in 1577 and 1610 (London, 1887); Anderson, Geology of Shropshire; for early and modern Survey and Natural History Society (1877, &c.); Salopian Shreds and Patches (1874-1891).

SHROUD (O. Eng. scrud, garment; cf. Icel. skrud, in the second sense of rigging, allied with “shred,” O. Eng. scrode, a piece, strip), originally a word meaning garment, clothing or covering, but now applied to the garment in which a dead body is wrapped preparatory to burial, a winding sheet. The shroud is usually a long linen sheet wrapping the entire body. This was formerly dipped in melted wax (Lat. cera, hence the name cerements) and written more generally as “seracloth or searcloth” and “cerements.” In nautical usage the Icelandic meaning of skrudth, Gäste, rigging of a ship, has been adopted in English; the “shrouds” of a ship are the set of
ropes which stretch from the heads of a ship's masts to the sides as Ropes or Ropes (see Roping).

SHROVE TUESDAY, the day before Ash Wednesday, the first day of Lent, so called as the day on which "shift" or confession was made in preparation for the great fast. Skeat (Elyn. Dict.) derives the word "shrive" of which "shrove" is the past tense, ultimately from the Lat. scribere, to write, to draw up a law, and hence to prescribe (cf. Ger. schreiben), through the Anglo-Saxon scrifan, to shove, impose a penance, to judge. Shrove Tuesday is called the French Mardi gras, "Fat Tuesday," in allusion to the fat ox which is ceremoniously paraded through the streets. The Germans know it as Fastenedienstag. It is celebrated in Catholic countries, as the last day of the carnival, with feasting and merrymaking, of which, in England, the eating of pancakes alone survives as a social custom, the day having been called at one time "Pancake Tuesday." The association of pancakes with the day was probably due to the necessity for using up all the eggs, grease, lard and dripping in stock preparatory to Lent, during which all these were forbidden.

SHRUB. (1) A bushy plant whose stem is woody and branches out thickly from the ground, not attaining sufficient height to be called a tree; this smallness of vertical growth is natural or is effected by cutting and lopping at an early stage or at stated seasons. The term is loose in application and the line between shrubs, trees and certain woody herbaceous plants is not easy to draw. The holy, the yew, the laurel, if allowed to grow from a single stem, become trees, other plants such as rhododendron, syringa, the eucalyptus are properly shrubs. The word is the same as "scrub," low, stunted undergrowth, in O. Eng. "shrub;" the root, which is also seen in "shrimp" and "shrive," means to contract. Many English place-names contain the word, the most familiar being Shrewsbury (Scrob-lesbyrig) and Wormwood Scrubs. (2) The name of a drink or cordial, now rarely found except in country districts. It is made of currant juice boiled with water and sugar to which some spirit, usually rum, is added. Another form of the drink is made of rum, orange and lemon juice, pel, sugar and water. The word is an adaptation of the Arabic sharb or sharab, beverage, drink, sharabi, he drank, and is thus directly related to "sherbert" and "syrup" (q.v.).

SHUFFLEBOARD, or SHOVEL-BOARD (originally "shove-board"), a game in which wood or metal disks are "shoved" by the hand or with an implement so that they shall come to a stop on or within certain lines or compartments marked on the "board"—a table or a floor. It was formerly very popular in England, especially with the aristocracy, under the names shove-groat, slide-groat and shovel-penny, being mentioned as early as the 15th century. It was a favourite pastime at the great country houses, some of the rooms having benches of exquisiteworkmanship. That at Chartley Hall in Staffordshire was over 30 ft. long and was made up of 260 pieces. Shuffleboard enjoys considerable vogue in the United States, the board being from 28 to 30 ft. long and from 18 to 20 in. wide, of pine, poplar or white wood, with a gutter 4 in. wide extending entirely round the board. The surface is slightly sanded and sometimes oiled. About 5 in. from each end of the board is drawn a line called the deuce line. Each side, whether composed of two or four persons, used four disks of polished brass or iron, generally about 2 in. in diameter and ¾ in. thick. When two persons play they shove first from one end of the board and then from the other; but when four play one of each side remains permanently at each end. The disks, four of which are marked A and four B, are shoved alternately by each side. A disk resting between the deuce line and the end of the board is in and scores two. One protruding over the end sufficiently to be lifted by the finger is called a ship and counts three. A disk resting on the board but not crossing the line counts one. In scoring only the best of the eight disks counts, unless one side has two that are better than their opponent's, in which case both count. The side first scoring 21 points wins.

A variety of shuffle-board is very popular as a deck game on board steamers and yachts. It is played by pushing wooden disks by means of crutch-shaped cues, or shovels, into which the disks fit, so that they come to a stop within the lines of a large rectangle drawn with chalk on the deck and divided into squares numbered from 1 to 10 with an extra square nearest the player, numbered 10. The game is usually 21 points.

SHUKRIA, a large tribe of African nomads living in the "Island of Meroë," i.e. the country between the Atbara and the Blue Nile. The family name of the principal branch of this tribe is Abu Sin, and Gedaref, an important town in the centre of Shukria country was formerly called Sulk Abu Sin.

SHUMLA (Bulgarian Shumen, Turkish Shumus), a fortified town of Bulgaria, 50 m. W. of Varna, on the railway from Trnovo to Shumla Road (a name given to a station on the Varna-Rustchuk railway by the English builders of the line). Pop. (1906) 22,290, about one-third being Moslems. The town is built within a cluster of hills, northern outliers of the eastern Balkans, which curve round it on the west and north in the shape of a horse-shoe. A rugged ravine intersects the ground longitudinally within the horse-shoe ridge. From Shumla roads radiate northwards to the Danubian fortresses of Rustchak and Silistra and to the Dobrudja, southwards to the passes of the Balkans, and eastwards to Varna and Balchik. Shumla has, therefore, been one of the most important military positions in the Balkan Peninsula. A broad street and rivulet divide the upper quarter, Gorni-Mahle, from the lower, Dolni-Mahle. In the upper quarter is the magnificent mausoleum of Jezairi Hassan Pasha, who in the 18th century enlarged the fortifications of Shumla. The principal mosque, with a cupola of very interesting architecture, forms the centre of the Moslem quarter. The town has an important trade in grain and wine, besides manufactures of silk, red and yellow slippers, ready-made clothes, richly embroidered dresses for women, and copper and tin wares. In 811 Shumla was burned by the emperor Nicephorus, and in 1087 it was besieged by Alexius I. In 1388 the sultan Murad I. forced it to surrender to the Turks. In the 18th century it was enlarged and fortified. Three times, in 1774, 1810 and 1828, it was unsuccessfully attacked by Russian armies. The Turks consequently gave it the name of Gazi ("Victorious"). In 1854 it was the headquarters of Omar Pasha and the point at which the Turkish army concentrated (see CRIEMEW WAR). On the 22nd of June 1878 Shumla capitulated to the Russians.

SHUSSHA, a town, formerly a fortress, of Russian Transcaucasia, in the government of Elissavetpol, in 30° 46' N. and 46° 25' E., 170 m. S.E. of Tiflis, on an isolated rocky eminence, 3865 ft. above sea-level and accessible only from one side. Pop. about 25,000, consisting of Armenians and Tatars. Shussha was formerly the capital of the khanate of Kara-bagh. The town is locally renowned for its carpets, and the district for its excellent breed of Kara-bagh horses. Leather and silk are also made. The fortress, constructed in 1760, successfully withstood a siege by Aga Mahomed of Persia in 1795, but was constrained to surrender two years afterwards. In 1805 Ibrahim Khan of Kara-bagh invoked the protection of Russia, but the annexation was not completed until 1822.

SHUSHTER, a district and town of the province of Arabistan (former Khuzistan) in Persia, S. of Dizful, and N. of Ahvaz. The district contains the town of the same name and 22 villages, and, including about 3500 nomad families of the Kunduzi, Saad, Anafia and Ali Kethir tribes, has a population of about 15,000, and pays a yearly revenue of £6000. The district produces grain, opium, cotton, wool, limes (their juice, made into green extract, is exported in little earthenware jars), and manufactures gilims (woollen carpets without pile).

The town of Shushter, with a population of 1,5000, is situated at the point where the river Karun, after breaking through the Fedeckil hills, bifurcates into the Gerger canal, flowing E., and the Shuitait river flowing W. of it, in 32° 3' N. and 48° 53' E., and built on slightly elevated ground which rises gradually from the south-west to the citadel, Kalah Salas, standing in the

Considered to represent the Sele of Ammianus Marcellinus (xiii. c. 6, 26), a city in Susiana, and of Ptolomy (Tab. v.).
SHUTER—SHUTTLE

north-eastern corner on a sandstone hill ending with a precipice about 50 ft. in height towards the river on the north. The ground covered by the citadel measures nearly 350 by 150 yds., and the town occupies a space of a square mile.

At the point of the divergence of the Gerger from the Karun, 600 yds. above the town, an artificial dike constructed of large blocks of hewn stone is thrown across the opening of the former. It was known as the Band i Kaisar (the Caesar’s Dike), but after having been repaired by Mahommed Ali Mirza, a son of Fath Ali Shah, in the early part of the 19th century, it was called Band i Shahzadeh, or Prince’s Dike. A little distance below this dike begins the artificial cutting in the sandstone rock and at half a mile from it is a second band, 60 yds. long, 65 ft. high, which completely blocks the progress of the stream. It has a roadway on the top, and, as it connected the town with the village Bulaiti (now deserted) on the other side, was called Pul i Bulaiti, i.e. Bridge of Bulaiti. At a short distance above it some tunnels have been pierced in the rock below the canal level on either side of the Gerger. From the point where the principal river parts with the Gerger down to a point 500 yds. below the citadel the river bed was paved with great flags of stone, the pavement being called Shadurvan. At the end of the pavement stand the band and bridge ascribed to the Roman emperor Valerian. The band is called Band i Mizan, the bridge Pul i Kaisar. The bridge has been built and rebuilt several times and its forty-one arches differ in material, style and size. Its length is 560 yds., and its roadway is 7 yds. wide. Seventy yards of band and bridge were swept away in 1885. Between the bridge and the Gerger opening and cut into the rock on which the western part of the citadel stands is a tunnel leading to a canal formerly called Darian, now Minab, i.e. Mian-do-ab, "between two rivers," because it waters the district south of the town lying between Gerger and Shutait. With the break of the band in 1885 the level of the main river has fallen and the Minab canal is not properly filled, causing much damage to cultivation in the district.

Persian tradition has it that Ardashir (either Artaxerxes of the old Persian kings or Ardashir of the Sassanians) built the first dike across the river in order to raise the water of the river to the level of the Darian canal. The dike became destroyed and was renewed under the Sassanian Shapur I. By Roman workmen sent for by Valerian who had been captured by the Persian king in 260. That Valerian had a part in constructing these remarkable works does not rest upon any historical basis; we may, however, believe that the Sassanian Ardashir, or his son Shapur I., finding that the river, having its bed in friable soil, was daily getting lower and finally threatened to leave the town and the Mian-do-ab district dry by not filling the Darian canal, engaged Roman workmen. The Gerger canal was cut and the river diverted from west to east of the town. The old river then became emptied and its bed was raised and, to prevent further erosion and washing away of the soil and a consequent fall of the river, was paved with huge flags. Then the Band i Mizan and the great bridge were erected across the river and finally a dam was constructed across the Gerger canal, where is now the Pul i Bulaiti, so as to turn back the Karun into its original channel, but, later, by means of sluices and tunnels, the flow of water was regulated in such a manner that two-sixths of the water flowed east and four-sixths west of the town. This gave rise to the later appellations Do-Dank and Chahar Dank, i.e. two-sixths and four-sixths for the Gerger and Shutait respectively.

SHUTTER (O. Eng. shuter, &c.; from the same word as "shut"), a boat-shaped implement used in weaving to pass a thread of weft to and fro between two lines of warp. The origin of this implement is lost in the mists of a remote antiquity, and yet it was long preceded by the loom. Several wall paintings at Thebes depict looms that are apparently provided with a hooked rod for drawing weft through the warp, but with such a device either two weft threads would be simultaneously placed in one division of the warp, or the selvages would be imperfect. Since neither of these conditions obtain in the ancient Egyptian fabrics that have been recovered, it may be concluded that some other plan was also adopted. Netting needles have been found in Egyptian tombs, and as these would be more suitable for weaving than a hooked rod, it is conceivable they were so employed. Or a spinning spindle charged with weft might be conveyed through the warp, as was customary, at a much later period, with Greek, Roman and other weavers. So long as a shuttle was thrown from hand to hand, the breadth of cloth which one weaver could produce was limited to his ability to reach from selvage to selvage of the piece. But from 1733, when John Kay invented the "fly shuttle," these implements have been made straight, and propelled mechanically, also, to secure light running, they have been mounted upon rollers which project slightly on the underside. Shuttles are now made in various forms and sizes from box, and other hard-grained, smooth woods, as well as from vulcanised fibre and metals. For silk weaving by hand, they are approximately 12 in. long by 1 in. square in section, and weigh about 3 oz.; those for calico weaving by power, are about 12½ in. long, 1½ in. wide, 1½ in. deep, and weigh about 9½ oz.; they are also provided with conical steel tips which abut upon short coiled springs let into the shuttle. The construction, fixing and control of shuttle tongues that hold the weft, together with numerous devices for putting the thread under an elastic tension, have formed the subjects for many patents. The tongues intended to hold cops are split to form a spring whose strength suffices to fix the cop in position while the thread is drawn from the outer end through a porcelain eye in the shuttle front, the tension being regulated by deflection.

The small shuttles employed to weave ribbons, and other narrow goods, are bowed in front, recessed to hold a spool of weft, and have an eye fixed at the centre of the bow for the thread to pass through as it unrolls. These shuttles are formed into sets, which correspond with the number of fabrics to be manufactured simultaneously and may be placed on one level, or in tiers; in either event, all in one horizontal plane are moved to and fro together across different webs, by means of racks and pinions; for a rack is inserted lengthwise in each shuttle, and by engaging the racks with intermittently driven pinions, the shuttles receive their requisite movements.

For further information regarding weaving and looms, see Weaving and Weaving Machinery.

(T. W. F.)

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