

Figure 2.

#### To soften Putty, and remove Glass without Breaking.

As it is often of importance to glaziers, and others to remove glass from frames without breaking it, they will be glad to know that a very strong solution of caustic potash, or caustic soda, applied round the panes for a few hours by laying upon them an old rag dipped in the solution, will have the desired effect.

[The potash combines with and separates the oil from the whitening of the putty, thus forming a soap.

#### To Preserve Leeches.

At the bottom of the jar containing the leeches, place a layer about half an inch thick of common sand, well washed to remove any extraneous matter.

Ground Coffee should be kept in a tight vessel; if this is not done, it soon loses its fine flavor-the aroma disappears with its volatile oil.

### Health--How to Preserve it.

Medicine will never remedy bad habits. It

believe that a railroad will be absolutely ne cessary in two years, for the union of our Atlantic with our Pacific States, but as far as it regards the splendid and alluring prospects that have been held out by some, to absorb all the East India trade of Europe by such a railroad, it is all hypothetical.

expense nor the difficulties of building such a

road, nor can any other person that we know of. It will require the survey of three differ-

ent routes, by competent engineers, to produce

a work upon which we can safely rely for ac curate information, regarding the exact amount

of funds required to construct such a road.

There is another point upon which informa tion is desired, viz., its payability. New York

and Boston would be little benefitted by it as

cities-in fact it would not be of any benefit to them at all, as sea-ports. Is there an un-

derwriter here who supposes for a moment

that he could bring tea cheaper from Canton to this city, by first carrying it to San Fran-

cisco, unloading it, and then bringing it by

railroad across the Continent than merely to

ship it direct by the 'longest route around the

Cape of Good Hope to this city ? We trow

not. Neither France nor Egypt have yet be-

come depots for the British India merchant

trade, although the overland routes by them is

much shorter than by a Pacific Railroad, We

Reduction of Fare on the Jersey Rail, road.

We see it stated in some of our exchanges. that the Camden and Amboy Railroad Company have reduced their fare to three cents a mile. We believe that this company see\* the necessity of sets wise measures. The public ΠP are interest in "A Citizen of Burlington" pulley on a drum, which is driven by a band it inwards. G is the trunk up which the for the ; from a pulley, R, on the inside of the wheel



figures, and this is the reason why we have to B. D is a pulley on the drum of C, from refer to the cuts on the other page in this in- which passes a band over the pulley, E, t troduction. A is a stout frame fitted up on drive the threshers, which move in the inside the wagon, with upright, transverse and dia- of the case, F. The front of this case is open gonal braces to support the machinery. B is and at its bottom, projecting outwards, there the wagon wheel; it has pins or projections is the scythe or cutting blade, while the thresh on its periphery, to make it adhere to the ers come down and wipe the straw inwards ground while passing over it. C is a ratchet bending it over the cutting scythe and biting

(Continued on Fourth Page.)

erly futile to think of living мy, intemperance, and every excess, and keeping the body in health by medicine. Indulgence of the appetite, and indiscriminate dosing and drugging, have ruined the health and destroyed the life of more persons than famine, sword and pestilence. If you will take advice, you will become regular in your habits, eat and drink only wholesome things, sleep on a mattress, and retire and rise very regularly .--Make a free use of water to purify the skin, and when sick take counsel of the best physician you know, and follow nature.

We have received a short account of the Fair of the Baltimore Institute, from a correspondent. It could not appear this week,

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## Scientific American.

# Miscellaneous.

#### Surgical Operation.

A very difficult and skilfully performed surgical operation is noted in the New Orleans Bulletin. The subject was a negro girl about 15 years of age. For some ten years past the girl has had a bony tumor growing on the side of the lower jaw, which had increased to such a size that it almost prevented the utterance of speech. She was placed under the care of Dr. Stone, who, with his assistant, Dr. McIlheny, performed the required operation in the most successful manner. Having been put under | indicating as many distinct species. the influence of chloroform, a semi-circular incision was made from the centre of the chin. and extending over the cheek, as far back as manned by six or eight men. The season for his howling. It was then proposed by Dixon to Washington, only to find that patents have the point of the jaw nearest the ear. The whole of the left side of the face was then laid All the men dive in turn. They remain in the bare by the knife, and exposed to the bone. Dr. Stone then, with the saw, divided the bone through the centre of the chin, and through tween five fathoms and twenty, or even, what is called the "symphysis," a point though rarely, thirty. Very few of the divers about an inch from the joint near the ear; and then, with a surgeon's chisel, took the piece out. The whole operation lasted about eight such case. In deep water, a rope weighed by minutes, and the wound was bandaged properly before the patient awoke from her sleep .-Without any assistance, she got up from the table, and walked to her room, perfectly ignorant of what had been done until informed of it by the servants. Dr. McIlheny followed her up stairs, in a few minutes, and found her sitting in a chair, and enjoying with great glee a recital of the operation. The weight of the tumor with the bone was about ten ounces. The girl has since been pronounced entirely cured.

#### Handsome Editor.

We noticed at the Fair of the American Institute several splendid specimens of the "Daguerre Art," executed by Messrs. Roots, of Philadelphia. We also noticed a large swarm of ladies constantly in attendance, expressing much admiration. Our curiosity had become somewhat excited to know the cause of the immense attraction; which, however, was soon gratified upon discovering the likeness of Thomas Fitzgerald, Esq., the able editor of the "City Item." We have heard considerable said in regard to "Fitz's" beauty, but never supposed he was perfectly irresistable until we saw his daguerreotype. We would com pliment Messrs. Roots, if they needed it.

#### Turkish Plan of Curing Founder in Horses.

PLAP

The following is a singular circumstance, as Peter II., King of Arragon. In 1305, Cleby the coast which became suddenly deep .-related by the N. A. Farmer :- The late Com ment V., at the instigation of the King of He attributes the superior fineness of texture modore Porter, when Envoy of the United France, removed the Papal see from Rome to in these deep-sea kinds to the greater uniform-States at Constantinople, had a horse cured of Avignon, when the Vatican remained in a ity of temperature of water in such places .founder by a Turkish farrier in the following condition of obscurity and neglect for more When alive, and before they are washed, they manner: The Turk said the horse must be quiries : are black. Their canals are often inhabited than seventy years. But soon after the return Volume 1,-Entirely out of print: not a bled in the inside of the deceased leg. He put of the pontifical court to Rome, an event which by little crustacea. a nipper on his nose to keep him steady-then umber left. had been so earnestly prayed for by the poet Volume 2-Complete sets entirely exhausted. took up the left leg, and crossing it over the Expedition of Sir John Franklin. Petrarch, which finally took place in 1376, the right, gave it to an attendant; he then struck The Cleveland Plaindealer, of Oct. 5, has Vatican was put in a state of repair, again enhis lancet into the vein, a little above the fetpies only : price \$3. a letter dated "St. Marie River." September larged, and it was thenceforward considered lock joint, and took from it about three and a Volume 4-Complete, Bound : \$2,75-none 28th, announcing the arrival or Sir John Richas the regular palace, and residence of the half pounds of blood. The vein bled freely. in sheets. ardson, from the fruitless search after the lost popes, who, one after the other, added fresh We have left a few incomplete sets of vo-He now said he had taken enough; he then Polar expedition of Sir John Franklin, of whose buildings to it, and gradually enriched it with went to the very opposite side of the leg, and dreadful fate among the ices of the Arctic Oceantiquities, statues, pictures, and books, until striking his lancet into a vein above the kneean, there is left little or no room to doubt. Sir t became the richest repository in the world. joint, a single drop drop of blood exuded, and John Richardson having failed to find even Its library was commenced fourteen hundred both that and the first opened vein instantly the remotest clue to the Franklin Expedition. years ago. It contains 40,000 manuscripts, ceased bleeding. There may be no novelty in is now on his way back to England. He left among which are some by Pliny, St. Thomas, this, but it certainly astonished me to find furnished for one dollar. there in April, 1848, and from the Sault Ste. St. Charles, Borromeo, and many Hebrew, Sy-There are but a few sets of the above vothat opening two veins in the same limb stop-Marie has made a voyage in canoes, and boats, iac, Arabian and Armenian Bibles. The ped both from bleeding; such, however, is the and overland, a distance of three thousand fact, for I witnessed it. He desired that the and five hundred miles and back, by way of Vatican, are filled with statues, found beneath horse should rest the next day-that he should numbers. Lake of The Woods, Makenzie's River, &c. the ruins of ancient Rome; with paintings, then be rode with great violence until he was After reaching the Arctic Ocean, they travelby the great masters, and with curious medin a profuse perspiration-the diseased limb led five hundred miles along the coast. He als, and antiques of almost every description. then to be rubbed with wet salt-(to which I speaks confidently of the existence of a northadded a pint of hot brandy)-then rubbed dry, ern passage ; practicability, he says, is anothmed more than 60,000 statues from the ruined and then walked about until cool, and covered er question, the summers being only from 38 temples and palaces of Rome, the reader can with blankets: the same process to be repeated to 60 days long. He goes by the way of Toform some idea of the riches of the Vatic an. next day-which was done, and all lameness demands for them. ronto and Montreal to Boston. from that time disappeared; the horse the  $`` {\rm Can} \ {\rm you} \ {\rm tell} \ {\rm us} \ {\rm when} \ {\rm the} \ {\rm cars} \ {\rm leave} \ {\rm the}$ An Oil Spring has been discovered in the third day was perfectly well. depot ?" "As soon as the seats are all taken, country inhabited by the Chickasaws, at a that will make the car-go." Bishop Chase told his congregation a short water-fall near Fort Wachita. It is similar dollars more than the same period in 1848. time since, in one of his sermons, 'that there was among his females auditors corset boards sufficient to shingle a hog-pen." Mr. Taylor, a correspondent of the Tribune, to British oil, exudes from a rock overhanging the falls, and is said to have effected astonishsaw children digging gold in the streets of San with the still abundant supply of gold. ing cures of rheumatism and kindred diseases. Francisco.

#### Sponge Fishing.

Within the past month our city has exhibitsponge peellars. Pieces which used to be sold of Halifax. The animal was stuffed and sent in the shops for one shilling, were sold by to Boston. these pedlers for 3 cents. The first pedlars nean, and the greatest sponge fishers are the Greeks.

The sponge of commerce is found attached bluish black above, and of a dirty white beneath. There are several qualities, possibly

The sponge divers go in little fleets of the fishery lasts from May until September, water from one to three minutes. They descend to the bottom at various depths, becan descend so deep as the above-named depth, and it is doubtful whether they can work in a stone is let down, by which the divers ascend when they have gathered the sponges. They carry nothing about their person except a netted bag, which is attached to a hoop suspended round their necks ; in this they place the sponges. A sponge is dried in the sun after being cleansed in sea-water; fresh water rots it and turns it black. The slimy or animal matter is stamped out by the diver's feet. When dried, the sponges are strung in eircles.

The sponge fisheries were probably conducted among the ancient Greeks as they are now. Aristotle distinguishes sponges under two heads, those that might be cleaned, and those which could not. Of the last, he states that their substance was compact, but perforated by large canals. They were more viscous than other sponges, and when dried remained black. The description exactly applies to the common coast line sponges of the Ægean, useless for economic purposes. His account of the sponges of commerce is more detailed. He distinguishes three varieties : those which were lax and porous those of thick and close texture; and a third kind, called sponges of Achilles, finer, more compact, and stronger than the othors. These last were rarest, and used to be placed in helmets and in boots, as projections from pressure for the head and feet. They all grow on the rocks, adhering not by one point only, nor by the whole surface, but

A Polar Bear. A Polar Bear was recently shot, on the coast

Two of the crew of the Lord Exmouth were appeared to be Mediterranean French. All cruising in a boat, when they discovered the American" always is full of most interesting and our finest sponges come from the Mediterra- bear upon the Island. They immediately returned to the vessel, took in six others of the crew, and eight muskets, with which they returned to the vicinity of the Island. Upon apto rocks in various depths between three fa- proaching within gun-shot, the bear perceived for obtaining information on this subject of any thoms and thirty.-When alive it is of a dull and came towards them. The first discharge wounded him in several places, but did not in ventions are being brought forward, it is often the least check his approach. Finally however, after receiving quite a number of balls in his body, he turned and slowly retreated, ma- time and expense. We have frequently known caiques, each of six or seven tons burden, and king his attackers shudder by the fierceness of instances where individuals have sent models that they should land upon the Island, in order been already issued for the same invention. to consummate the victory. To this the majority of the crew demurred from fear. Three of the crew, however, including Dixon, landed, having armed themselves with two loaded guns apiece. The bear, as soon as he saw them upon land turned about and began to approach, when six more balls were put into his body without apparently checking his approach. Before, however he got near enough to harm them, Mr. Dixon succeeded in loading another gun. At this moment the bear presented his side which he had not done before, and a bullet was lodged in his throat which caused the animal to fall, It was more than half an hour however before they dared to approach, as every few minutes the bear would by a desperate effort, get upon his feet with the intention of reaching them. After it was deemed safe. they ventured near, and found him to be dead. He was, with considerable labor, taken to the vessel. and found to be sixteen feet long and to weigh 2200 pounds. Five hundred pounds of fat were taken from him in Halilax and it was found that sixteen balls had lodged in his body. The contest lasted for an hour and a half, and the roars of the infuriated animal might have been heard for many miles.

#### The Vatican at Rome.

buildings, covering a space of 1200 feet in morality which is much in his favor as a young length, and 1000 feet in breadth. It is built editor. Success to him. upon the spot which was occupied by the gardens of Nero. It owes its origin to the bishops of Rome, who erected an humble residence on its site, in the early part of the sixth century. Pope Eugenius III, rebuilt it on a magnificent scale, about the year 1150. A few years afterwards, Innocent II. gave it up as a lodging to

#### The Scientific American.

The small size of the "Western World" proed the spectacle of great numbers of itinerant of Labrador, by the crew of the Lord Exmouth hibts us from giving our readers all the valuable information that we could wish. We can however often inform them where they can find the best and most reliable. The "Scientific valuable matter upon scientific subjects. It contains a complete account of all new inventions, especially those for which a patent had been taken. In fact they have the best means paper in the country. When so many new inof great importance to the discoverer to know whether he has been forstalled, and thus save

> It contains a full account of scientific meetings in this and other countries, and chronicles all improvements in manufactures, agriculture, &c. &c. It is published weekly by Messrs, Munn & Co., at 128 Fulton st. New York, at the low price of \$2 per annum. Our readers well know that we do not often puff any work but when we know of one that really benefits society, we feel it to be our duty to let society know it also. Number 1, Vol 5, was issued September 22. It appears in new type, and with many improvements that materially enhance its value. Back members can be ob. tained of the present volume, if ordered soon

[The above notice we copy from the Western World, published monthly at No. 50 Broadway, at 25 cents per year, by that prince of all good fellows Joshua F. Bridge. We are especially grateful to himfor the many occasions he has taken to speak favorably of the Sci. Am. without the least hint or solicitat!on from us. It is always a matter of great encouragement to editors to find their labors, approved by their contemporaries. In this instance we have more than the usual acknowledgement to make as Mr. Bridge has asked nothing from us to render him under obligations to speak in our favor. Although but a young man, his articles The Vatican, which crowns one of the seven compare favorably with Editorial experience, hills at Rome, is an assemblage or group of and are characterized by a sound and healthy

#### Things as they Exist.

Almost daily are we receiving orders from various parts of the Union, for all the back volumes of the Scientific American; or letters of enquiry reading thus: "Can you furnish me with your valuable work from the commencement ?" In reply to such enquiries we are induced to make the following statement, thereby saving many the trouble of making enquiries for volumes that we cannot furnish, and ourselves the time of replying to such en-

Volume 3-COMPLETE, Bound-A few co-

umes 2 and 3, comprising about 50 Nos., which may be had by remitting one dollar; and we have sets of between 40 and 50, Vol. 3, which we can furnish at the above price, and also about 40 Nos. of Vol. 4, which will be

lumes left, as complete as stated above, and those who order first will receive the most The back Nos. of Volume 5 we are yet able to furnish, butat the rate they are "going off" at present, we shall be unable to send the first When it is known that there has been exhu- Nos. in a few weeks, although at the commencement of the volume 4000 extra copies were printed for the purpose or filling future The amount of British manufactures now exported is said to be enormous. Up to August of this year, it was twenty-five million The last accounts from California are rife

# Scientific American.

#### For the Scientific American. Design in the Natural World.

In the lower animals, who want both the accessory means of cleaning the eye and the ingenuity to accomplish it by other modes than the eyelids, an additional eyelid, a new apparatus is provided for this purpose. In fishes, whose eye is washed by their element, all the exterior apparatus is unnecessary, and is dismissed; but in the crab, the very peculiar and horny prominent eye would be quite obscured were it not for a particular provision. There is a little brush of hair above the eye, against which it is occasionally raised to wipe off what may adhere to it.

The forms of the bones and joints, and the tendons which play over them, afford a variety of instances of the most perfect mechanical adjustment. Sometimes the power is sacrificed for rapidity of motion, and rapidity for power. Our patella throws off the tendon, attached to it from the centre of motion, and hence adds to the power of the muscles of the thigh, which enables us to rise or leap. In the toes of the ostrich the material is different, but the mechanism the same. An elastic cushion is placed between the tendon and joint, which, whilst it throws off the tendon from the centre of motion, and therefore adds to the power of the flexor muscle, gives elasticity to the bottom of the foot. These cushions serve, in some degree, the same office as the elastic frog of the horse's hoof, or the cushion in the bottom of the camel's foot.

The web-foot of the water-fowl is an inimitable paddle; and all the ingenuity of the present day exerted to improve our steamboat makes nothing to approach it. The flexor tendon of the toes of the duck is so directed over the heads of the bones of the thigh and leg, that it is made tight when the creature bends its leg, and is relaxed when the leg is stretched out. In another class of birds, the same mechanism enables the animal to grasp the branch on which it roosts without any effort on its part.

A bird's egg consists of three parts: the chick, the yelk in which the chick is placed, and the white in which the yelk swims. The yelk is attached to the white at two points joined by a plane below the centre of gravity of the yelk. The chick, therefore, is always uppermost, roll the egg how you will; consequently it is always kept nearest to the breast of the mother while she is sitting.

The hexagonal form of the cells of honey-[The above is from the Boston Medical and The strip of skin is stretched in an inclined some articles relative to the crank and loss of comb is proved to be that which the most re-Surgical Journal. It puts us in mind of Gray's plane, with its upper edge attached to hooks, power by the use of the crank. I do not befined analysis has enabled mathematicians to incomparable Elegy. and its under one loaded with weights, in which lieve in any loss of power directly attributable discover as of all others the best adapted for " Full many a flower is born to blush unseen position it is thinned off with a proper semito the crank, but I do believe in a loss of pow-And waste its fragrance in the desest air." the purpose of saving room, work, and matelunar knife, but not so much as to touch the er which I call incidental to the crank; I find There is a common factory operative in this rials. And this form is the same in every bottom of the seed-pits or depressions. By practically a loss, which I say is occasioned by State, who can make telescopes, and microcountry-the proportions accurately alike-the maceration in water, the skin is then made to not cutting off the steam soon enough, and scopes of a high order, and who has made size the very same to the fraction of a line, swell, and the pits become prominent over the exhausting soon enough, in the unexpended some first class optical instruments. the wide world over. The discovery was made surface which had been shaved. The swelling momentum of the reciprocating parts, at the There is another who is a good portrait painabout a century ago; and the instrument (the is completed by steeping the strips in a warm end of the stroke, which must be counteracted ter, and has talents of no common order for exefluxional calculus,) that enabled us to find it solution of soda, after which they are cleansed cuting artistic works of art. There may be by an equal amount of steam, making the loss out, was unknown half a century before that by the action of salt brine, and then dyed. many more such men walking in the humblest application of its powers. Yet the bee had double the amount of such unexpended mo-In the East the following processes are purranks of life. Their chief wants are friends mentum. I find by cutting off one quarter of been, for thousands of years, in all countries, sued. Entirely white shagreen is obtained by brass in the face, and brass in the pockets. the steam and beginning to exhaust before the unerringly working according to this fixed rule, imbuing the skin with a solution of alum, covpiston arrives at the end of the stroke, a saving choosing the same exact angle of 120 degrees ering it with the dough made with Turkey American Indigo. of fuel is made, amounting in some cases to for the inclination of the sides of its little room, wheat, and after a time washing this away The Indigo plant in a native of South Carfifty per cent., the engines working much which every one had for ages known to be the with a solution of alum. The strips are now olina and it grew spontaneously among its smoother, passing the centers much easier, best possible angle, and also chose the same rubbed with grease or suet, to diminish their weeds and woods. More than one hundred and the wear and tear less. Such amount of exact angles of 110 and 70 degrees for the parigidity, then worked carefully in hot water, years ago the planters there commenced its saving cannot be attributed to the expansion, rallelograms of the roof, which no one had ever cul tivation. In the year 1748 South Carolina curried with a blunt knife, and afterwards as it is greater than any theory of expansion discovered till the 18th century, when Macdried. They are died red with a decoction of exported to Great Britain 200,000 pounds and will account for. I wish to call the attention Laurin solved that most curious problem of cochineal or kermes, and green with fine cop- the Parliament granted a bounty of 12 cents of steam engine builders to the subject, maxima and minima, the means of investigaper filings and sal ammoniac, the solution of perlb to induce its greater cultivation. In 1748 W. S. H ng which had not existed till the this salt being first applied, than the filings bewhen that ordinance was passed. Indigo was fore, when Newton invented the calculus. The The Cotton Experiment in Australia. ing strewed upon the skin, which must be one of the staples of South Carolina, and we bottom of each cell on one side abuts against A sample of cotton grown in Australia has rolled up and loaded with weights for some believe of Georgia also. Now in 1849 not a three on the other, and is supported by the dilately been exhibited in London. It is said time; blue is given with indigo, quick-lime, single pound of Indigo is raised in South Carvisions between them. It is formed of three to be of very good quality, and superior to the soda, and honey; and black with galls and olina, or as far as we know, in all the South. plates meeting at an angle, and this angle has A plant, which is indigenous to that region, average American cotton imported into Livercopperas. been ascertained, by a very intricate matheand which in itsearly cultivation was exceedpool. Two varieties have been raised-one a Fast Running on the Central Road. matical calculation, to be precisely that which The Central Georgian says: the Express ing profitable, has been driven from existence white cotton, the other a light drab or brown enables the greatest strength to be attained cotton. The former is distinguished by a silkby the cheap labor of India. Great Britain Train on the Central Road, which left Savanwith the least material. The celebrated maness of texture, which is said to be very rarely nah at eight o'clock on Saturday night, with now pays seven million of dollars a year for thematician, Maraldi, brought the results of noticed in American cotton. The question has Indigo raised in India. the passengers who came out on the Tennesyet to be solved whether the price which could his calculation to agree with the observed ansee, arrived at Tennille at two o'clock, making [The above we derive from an exchange, gle within two minutes of a degree. This near be obtained for it in England would be suffithe distance, 135 miles, in six hours. approximation has been generally considered and we must say that we don't believe it. A great deal of indigo is raised for domestic dyecient to pay the expenses of culture and pre-[This run was made at night, and it shows quite close enough to establish the fact; but paring for market, and freight, &c., to Engthat Georgia is not a whit behind any of our ing in South Carolina, and other of our South-臣 Lol Brougham has recently investigated the land. Northern States in railroad speed. ern States.

subject afresh, and shown that the bees were perfectly right and the mathematician wrong J. W. O.

Cingalese Jewellers and their Forges. ALBION, OCT. 1, 1849.

MESSRS. EDITORS :- Noticing in the first number of the Scientific American a portable blast furnace, has induced me to send you the following: the Cingalese work in gold and silver with considerable dexterity and taste; and, with means that appear very inadequate. execute articles of jewelry-articles that would certainly be admired in this country, and not very easily imitated. The best jeweller requires only the following apparatus and tools : -a low earthen pot full of chaff or saw dust, on which he makes a little charcoal fire; a small bambo blow-pipe, about six inches long, with which he excites the fire, and through which the artist directs the blast of the blowpipe; two or three small crucibles made of the fine clay of ant-hills; a pair of tongs, an anvil, two or three small hammers, a file, and, to conclude the list, a few small bars of iron and brass, about two inches long, differently pointed for different kinds of work. It is astonishing what an intense little fire, more than sufficiently strong to melt silver and gold, can be kindled in a few minutes in the way just described. Such a simple portable forge deserves to be better known; it is perhaps even deserving the attention of the scientific experimenter, and may be useful to him when he wishes to excite a small fire, larger than can be produced by the common blow-pipe, and he has not a forge at command. The success of the little Cingalese forge depends a good deal on the bed of the fire being composed of a combustible material, and a very bad conductor of heat. The smiths of Ceylon use a composition as a hone in sharpening knives, and cutting instruments, that is worth noticing. It is made of the capitia resin and corundum. The corundum, in a state of impalpable pow der, is mixed with the resin, rendered liquid by heat and well, incorporated. The mixture is poured into a wooden mould, and its surface levelled and smoothed while it is hot: for when cold it is extremely hard. It is much valued by the natives, and preferred by them to the best of our hones. Respectfully yours, L. F. MUNGER.

### Experiments on the Steam Engine.

MESSRS. EDITORS :- Having been a subscriber to your paper some time, I have noticed

#### Shagreen.

The true oriental shagreen is essentially different from all modifications of leather and parchment. It approaches the latter somewhat, indeed, in its nature, since it consists of a dried skin, not combined with any tanning or foreign matter whatever. Its distinguishing characteristic is having the grain or hair side covered over with small rough round specks or granulations.

It is prepared from the skins of horses, wild asses and camels; of strips cut along the chine, from the neck towards the tail, apparently be cause this stronger and thicker portion of the skin is best adapted to the operations about to be described. These fillets are to be steeped in water till the epidermis becomes loose, and the hairs easily come away by the roots; after which they are to be stretched upon a board, and dressed with the currier's fleshing knife. They must be kept continually moist, and extended by cords attached to their edges, with the flesh side uppermost upon the board. Each strip now resembles a wet bladder, and is to be stretched in an open square wooden frame by means of strings tied to its edges. till it be as smooth and tense as a drum-head. For this purpose it must be moistened and extended from time to time in the frame.

The grain or hair side of the moist strip of skin must next be sprinkled over with a kind of seeds called Allabuta, which are to be forced into its surface either by tramping with the feet, or with a simple press, a piece of felt or other thick stuff being laid upon the seeds. These seeds are lenticular, hard, of a shining black color, farinaceous within, about the size of poppy seed, and are sometimes used to represent the eyes in wax figures.

The skin is exposed to dry in the shade, with the seeds indented into its surface ; after which it is freed from them by shaking it, and beating upon its other side with a stick. The outside will then be thorny, and pitted with small hollows corresponding to the shape and number of the seeds.

When we make impressions in fine-grained dry wood with steel punches or letters of any kind, then plane away the wood till we come to the level of the bottom of these impressions, afterwards steep the wood in water, the condensed or punched points will swell above the surface in relief. Snuff-boxes have sometimes been marked with prominent figures in this way. Now shagreen is treated in a similar manner.

Self-Made American Opticians There are two self-taught men in Massachusetts, who are learned without pretence, and who, were they inhabitants of Europe instead of this Commonweath, would long since have been honored with the fostering attentions of philosophers for their distinguished attainments as Lolland and Fraunhofer were, in the same difficult but exceedingly important department of science, viz., optics,

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One is Alvan Clarke, of Boston, a minature painter who has constructed several telescopes under circumstances very unfavorable indeed. partly during those fractions of time when he could not pursue his regular vocation, but chiefly late at night. These instruments are scarce. ly excelled, and not surpassed by those of the most celebrated foreign manufacturers. Mr. Clarke makes every part with his own handsgrinds and polishes the lenses, and has astonished those who are competent to appreciate the magnitude of his mechanical achievements, in the construction of a really splendid refractor. This, however is only a small part of the marvel. Mr. Clarke is profoundly familiar with the laws of light, and with his own beautiful instruments has made himself as familiar with the permanent and the telescopic objects of the heavens, as with the canvass on which he daily labors for bread.

The other, equally deserving for his moral qualities, mechanical ingenuity, and profound knowledge in the same field of science, is J. B. Allen, of Springfield, a modest, retiring, deserving individual, who, as in the other case, without a patron, without an instructor, and almost without the approving recognition of those who are reputed to be wise above the multitude, has few equals in the domain of optics. He, too, has fabricated excellent reflecting telescopes-and it would be an honor to the great town of Springfield to purchase one of them for the use of the public schools, as the period may come when it will be a boast that Mr. Allen resides there. At the late session of the American Association for the Advancement of Sciences, at Cambridge, Mr. A. exhibited a microscope which he had made.-If we are not misinformed, he had never seen one himself before. It was admired for its wonderful defining powers, and is enough to give him a permanent reputation. Amos Lawrence, Esq., of Boston celebrated for his acts of generosity and encouragement, purchased it at once, and Mr. Allen was elected a member.

### 36 Inventions. New

#### Improved Journal Box.

Mr. Nelson W. Clarke, of Independence, Oakland Co., Michigan, has made a very valuable improvement on Journal Boxes, which must in time come into general use. He employs for the bearings of the journal, wood peculiarly prepared, fitted into recesses of two metallic blocks, which are confined into two outside casings, which are coupled together, forming the journal box. The bearing blocks are of such a form that they, with the outside casing, form an oil or lubricating reservoir, which conveys a plentiful and continuous supply of oil to every part of the journal. The journal box is packed like a stuffing box to make it oil tight, and there is a key or follower to adjust the tightness of the packing, thus making a self-adjusting-oil-tight-journal-box. Mr. Clarke has taken measures to secure a patent.

#### Heal's Patent Process for Purifying Feathers.

We are indebted for the following article to our excellent exchange, the London Patent Journal, Barlow & Payne : "It will be of no small interest to many of our readers. At the present period when the prevailing epidemic is making such fearful ravages, that stringent precautions are absolutely necessary, it may not be ill-timed to draw the attention of the public to the fact, that nothing is more injurious to health than sleeping upon a bed of impure feathers, the ease with which this can be obviated, and the comparative inexpensiveness of the process, will, we trust, induce parties to avail themselves of the advantages of Messrs. Heal's process. The feathers are first placed in what is termed a steam-cistern. a chamber of iron, having its floor formed of perforated metal, through which a current of steam is made to enter with considerable force, to fill every portion of the cistern, and thoroughly saturate the mass which it contains. This continues for some time, the effect upon the feathers being analogous to that produced upon metallic substances when exposed to the red heat of a furnace. Every particle of animal matter they contain is fused and driven off being carried away by the steam as it rushes through the mass and escapes by an aperture for the purpose in the roof of the cistern. The feathers, now, of course in a damp state, are next placed in a large hollow cylinder of iron, into which by means of a blowing machine, is carried a rapid current of air, heated by furnace to a temperature of 300 degrees. This, like the first cylinder, contains a revolving instrument of iron, but having arms, or bars, of iron; and these, driven at a great velocity, pass through and through the mass, thoroughly separate it, and keep the feathers constantly in motion : thus allowing the current of hot and drying air to permeate them freely, and effectually separating every fibre of them, while through a floor of wire-work passes away a large quantity of dust and refuse, which must be disengaged. Lastly, the feathers are placed in a hollow cylinder of perforated metal, in which revolves a "fan," composed of four plates of metal, fixed at equal distances from Each other, into a horizontal bar. This is driven with immense velocity making about 900 revolutions in a minute, and carrying round the feathers, with it, the dust not already removed in the drying cylinder is separated by the powerful current of air which is driven through them, and, passing the perforations of the cylinder, is carried away by a drain beneath. By this means the feathers are rendered perfectly sweet, pure, and dry."

# Scientific American.

#### Improved Fire-arm.

We have had our attention called to a new Gun, which is the invention of Mr. Milo M. Cass, of Utica, N.Y. This gun is loaded at the breech with ball cartridge, having chambers for twenty-six charges. It is also capped at the same time that it is charged. These twenty-six charges can be fired in about three minutes without using any particular haste. The cartridge is introduced into the barrel of | The wheel is divided, as it were, on the face, the gun through the breech-pin, which is constructed something in the manner of a common faucet, being turned one quarter round by | from the sides to the middle, forming, with a a small lever underneath the barrel, and thus admitting the charge, which is thrust forward from its chamber by a small ramrod operating at the middle of the wheel, for the water to from behind by means of another small lever. | escape.

This is a very ingenious contrivance, and we decided opinion is, that the invention is wor should think it admirably adapted to the battle  $|_{thy}$  of the immediate and earnest attention of field.

#### New Paddle Wheel.

Mr. Abner Chapman, of Fairfax, Vermont, has invented a new paddle-wheel, for which he has taken measures to secure a patent, and which has been represented to be liable to none of the two evils-lift of water and slip in it. with two wheels exactly alike, with the paddles of a curved winding form, converging flange on their extreme edge, a bucket of a horse-shoe form, with a space between the two

Figure 3.---Continued from First Page.



threshed stuff is driven to the separating cham- it below, O is the seat of the driver. Th ber, T, fig. 2, which has a screen bottom, U; uses of the bands and the pulley, H, will be through this screen the grain falls down an inobvious, as seen in the three first figures, to incline, S, into a receiver, fig. 3. There is a designate their different offices. N is a part of blower, M, which winnows the grain from the the wagon pole. chaff, &c., blowing it out at U, fig. 2. K is a Figure 3 being a side view of the thresher, spout, on the lower end of which is fastened a with the case removed, its office will now be bag to receive the clean grain; V is a slide of rendered more easy of explanation. A section

this spout to shut up the lower opening at of the case is shown with pins or projections, pleasure. The clean grain is received into a Z Z, on its bottom; W is the shaft which is grainary or receiver below a set of revolving | driven as has been explained. On this shaft buckets on the broad band, I, fig. 3, the which FIG. .4 there are a triple set of radiating arms. The



buckets scoop up the cleaned grain, and deliver it into the spout, K. The back view will give a good idea of the manner this is accomplished. The screen in fig. 2 receives a reciprocating motion, like all such screens, by a small sliding arm, worked by a rocking beam, which is moved by cams on the pulley of the tion (p. p.) may be obtained of Mr. Rembert blower, indicated by the band, J, passing over at Memphis.

ew	Way	to Mak	e Red	Hot	Shot.	became	quite r	ed hot i	n a	few	seconds.	

landed proprietors and farmers, as well as those engaged in the baking trade, and all interested in the progress of British agriculture. The flour of oats has been analyzed by well known chemists, and is found to contain a much larger quantity of nutritious qualities than the wheaten flour, and is calculated to give a greater amount of nourishment and strength to the muscle, bone, and blood of man. -In carrying out this discovery, there will, we understand, be required but little alteration in the present system of grinding, an advantage that is evident, as the manufacture may immediately be entered upon by those engaged in the manufacture of flour from wheat. In point of price the benefit will be largely in favor of the consumer, while the invention will create a demand for oats which will be very acceptable to the growers of that grain in the present depressed state of the market.

[It is true, that oats contain more nourishment for the bones of man than wheat, but it is news to us to be told that they contain more nourishment for the muscles and blood. We know not what the above improvements may be, but we think they may be good, and we copy the above article to call the attention of some of our readers to the subject, who live in Canada, or in the northern mountainous districts of the Northern States, where oat meal is used as a part of their food.

### The Great Rotary Engine.

A late number of the London Times gives an account of a wonderful rotary engine invented by Capt. Hon. W. E. Fitzmaurice, and a Mr. Hartford. It says, "the engine is very simple, merely censisting of two pieces so mathematically arranged that the interior part works in the outer with the greatest ease, being free from dead points and without the slightest vibration, however great the velocity. It has no springs or packing and the parts meet each other so harmoniously as only to give a humming noise like a spinning top, and it is not in the least liable to get out of order, the wear being perfectly uniform throughout. The entire motion being a rolling instead of a cutting one the engine will last long without repair, as the surfaces become case-hardened in a very short space of time. The trials took place in the presence of several scientific gentlemen and engineers of eminence, in their profession, in a frigate's pinnace, the engine being constructed for the Government."

It also states that it propelled a boat of 30 tons burden at the rate of 8 miles per hour, with a screw, and that an engine of 100 horse power, would only take up a space of 4 by 2 feet: we venture to say that the Hon. Fitzmaurice's rotary engine will soon be numbered with the things that were.

#### Preparation of Sugar.

The London Standard of the 18th ult., thus comments on the use of the "lead material" in clarifying and refining sugar :

That the acetate or, as it is in the British Small wheels may be placed under the threshpatent described, the di-acetate of lead," faer case, and the cutting blade may easily remiliarly known to all as "the sugar of lead" ceive a reciprocating motion, if desired. It is of the oil shops, is a deadly poison, must be intended that the horses should walk on the known to every one. That it is chemically combined with sugar in the patented process From the foregoing a clear understanding (which we assert upon the best authority to be will be acquired of the operation, nature, and the process in use in Cuba and the Brazils.) is design of this invention, and more informanot denied. It may be that a skillful and very careful chemist can separate all the mortal poison from the sugar, with which it is chemically combined, although we have heard that a  $\mathbf{T}\mathbf{h}\mathbf{e}$ perfect separation has been found impracticable, four per cent of poison always remaining in the sugar; but be this as it may, the utmost skill and the greatest care are confessedly necessary to relieve the sugar of the oxide of lead. In France a law passed shortly after the visitation of the cholera in 1832, and passed upon the suggestion of the best chemists of the country, prohibiting universally the employment of metallic oxides in the preparation of any article of food. This law has opposed the introduction of the Cuba and Brazil process into France. [We believe that there should be a specia law in every country against the employment of metallic oxides in the preparation of any

#### New Algebraic Method.

We see it reported that Mr. Cauchy, the or three fuse-holes are made in the shot, so eminent French Mathematician, has explained to the Paris Academy of Sciences a new method for the solution of Algebraic equations of whatever degree.

We hope that this report will prove true. We have not so much doubt about it as we demy about the men with tails. Give us Paris for discoveries yet.

199-61-0

The Glasgow Chronicle, (Scotch Paper) meninventor states, that when fired from a gun a tions a peculiar and apparently most valuable red heat will be attained in less than 20 secmode of obtaining red-hot shot for large guns, onds from its leaving its mouth. The comporecently invented in that city by a Mr. Scouller. sition will burn under water, and is said to be The invention consists in the filling the hollow easilv made. shot with a highly combustible powder. Two

### Patent Oat Flour.

-which is as long inside as the cutter blade-

centre set are double the number of side arms,

so that oblique paddles are fitted on to the

arms, as represented ; these paddles have pro-

jections, X X, on their outer edges, the which

projections pass between the projections, Z Z,

on the bottom of the case and thus thresh

the grain. Y is the cutting blade, which is

four feet long, and the arms of the thresher

wipe in the grain over the cutting blade.-

one side, on the clean cut swath.

The Aberdeen, Scottish, Journal says : Mr. that, when fired from the piece, ignition takes place, and the shot is made red-hot before it Smith, factor, for Lord Douglass of Douglass. arrives at its destination. In that witnessed who attended the show at Aberdeen, exhibited to the members of the committee of the assoby the editor, the shot, which was about two inches aud a half in diameter, was simply laid ciation, and others, specimens of various kinds of oat flour bread, manufactured by his imporon the ground and the composition ignited by a tant patented discovery. All parties expreshave of that wonderful report of the Aca- light applied to the fuse-hole. Violentcombustion immediately ensued, liquid fire appeared to sed themselves highly pleased with the quality, stream from its three fuse-holes, and the metal 'flavor, and good color of the bread ; and our article used as food.

# Scientific American.

### white light. These lamps range in price from Scientific American <sup>white light.</sup> \$2 to \$2,25.

#### NEW YORK, OCTOBER 20, 1849.

#### Great Fair of the American Institute. No. 2.

During the past week, the Fair has been unusually attractive and visited by quite a number of distinguished personages, among years, as it may be said, it was water burning. whom was Millard Fillmore, Vice President of the United States Republic, N. A. On Friday evening, the Hon. Levi Woodburry delivered the Annual Address in the Tabernaele. He alluded to the boast England made (which we believe never was made) that America had once to come to her for a mouse-trap, and he pointed exultingly to the machines and works of art displayed, as a proof of the advancement of America in Manufactures, and works of art. He endeavored to combat the opinion held by many, that, "improvements in machinery, by lessening labor, was an injury to the working classes." He said that "the great improvements which had been made in machinery, instead of destroying labor, had multiplied it." This is true, but the grand object of improvement in machinery, is to relieve mankind from the drudgery of severe and unhealthy toil, and place his occupation in a more intellectual position, viz., to superintend, instead of being the machine.

On last Saturday evening, George Gifford Esq., N. Y., delivered an address on Patent Laws. The audience was small, but select. A copy of it was requested by the Institute for publication. We will notice it when it is published. In one notice (headed New Ball Axle), in our last article on the Fair, we would make a correction, and state that Mr Alfred E. Smith of 93 Maiden Lane, N. Y., is one of the proprietors to whom orders may be addressed. We would again state that the wheel can be shipped and unshipped in an instant by this invention, without the aid of hammer or wrench. And lest any one should mistake its nature from the title then given it, we would say, as is there explained, that no ball is used to couple, as in the case of Chinnock's, the swell on the axle as stated, is conical.

STILLMAN'S STEAM ENGINE INSTRUMENTS.

There is a case of Steam Engine Instruments, by Mr. Paul Stillman, of the Novelty Works, N. Y., which are of undoubted merit, and which we can confidently commend to all those who require such things. There is a Steam Guage of the usual form, Patent Manometer Steam Guage, Patent Manometer Vacuum Guage, Patent Register, Engine Indicators, &c. For beauty of finish, and correctness of workmanship, no instruments of the kind surpass Mr. Stillman's.

SMITH'S VERTICAL PARALLEL GATE.

The Vertical Gate, about which so much was said, and regarding the operation of which we were decidedly in the dark, from the accounts we had of it, and as seeing is believing, so we must say of this gate, that it is a very simple and good invention. The inventor is Mr. Lorenzo Smith, of Easton, Mass., and his Agent is Mr. D. Keith of 133 Fulton street, N.Y. The gate is made like two parallel rulers, of four bars, secured to two upright side bars, and by swinging each side leaf of bars upon their axis, they are raised up at the sides. vertically and closely parallel.

LOCKS.

A beautiful and capital lock is exhibited as

HYDRO-CARBON GAS.

For some evenings past the machine shop was lighted up with gas made on the premises, by White's invention, which was noticed in our last volume. It was a beautiful light, and was an evidence of the great advancements made in science within the past ten The gas is made by decomposing water, by dropping it into a red hot retort, in which there is a chain or pieces of iron, which absorb the oxygen of the water, and the hydrogen escapes into another retort, in which is some resin submitted to fire. There the two gases combine, forming the hydro-carbon gas. From this retort, the gas passes through cooling pipes, and then away to the reservoir. At first, Mr. White did not pass the hydrogen into the resin retort, but mixed them in a separate chamber, but by mixing them in the retort a saving is effected.

#### ALCOHOLIC VAPOR ENGINE.

A very neat apparatus for heating rooms, &c., was exhibited by Mr. Farewell, as applied to the generating of steam, by the vapor of alcohol. The object of showing it, as thus applied, was to exhibit its nature and the extensiveness of the application, either for generating heat, to boil water, roast meat, to the blow-pipe, or to a lamp for illumination. The invention is patented by Mr. Thos. K, Anderson, and is owned by Anderson, Farewell & Erwin, of Painted Post, Steuben, Co., N. Y. The nature of the apparatus is, by its own heat, to generate the substance for combustion sufficient to become a self-feeder. We will publish an engraving of the lamp next week, and say some more about it then.

### NEW, OLD, HYRO-STEAM WHEEL.

A gentleman exhibited a wheel contained in a tin case, at the one end of which was ejected a jet of steam, which boiled the water in the tin case, and set the wheel a galloping at no small speed. It is a machine well qualified to wash and boil potatoes at one operation.

#### OLD FASHIONED BUCKET WHEEL.

On the Bridge there stood for some days (but is now stowed in a corner) one of the old fashioned revolving bucket wheels, which dates back to the days of Cyrus. When we first saw it, a son of Africa was descanting upon its merits with an eloquence which was quite amusing, as it was a subject to which he did ample justice, owing to the dark ages in which it originated.

#### PIANOS.

Among the many splendid Pianos on exhibition at the Fair we notice one from the manufactory of Messrs. Boardman & Grey, of Albany which has an attachment of a new and peculiar kind, invented by themselves and for which they have secured letters patent. It is called the Dolce Compana Attachment, and gives to the Piano a sweetness of tone, of which we did not think it capable under any circumstances. It can be applied to any Piano, being so constructed as to be attached or detached at pleasure. It is operated by the pedal, and at the will of the performer swells the tones of the instrument loud and full, like the organ. or modulates to the soft and melodious tones of the Æolian. We shall no longer look upon the Piano as a harsh and unmelode ous parlor ornament, as with this attachment of Messrs. Broadman & Grey's it is capable of discoursing most eloquent music. The lalies we know will endorse our sentiments in

Scientific Memoranda. DISCOVERY OF VENTILATION

The London Literary Gazette says that a Dr. Chown of London has enrolled a patent Improvement in Ventilating Rooms and Apartments, for the perfect efficacy of which, we believe, there cannot be a doubt, and on a principle at once most simple and unexpected the improvements are based upon an action in the syphon which had not previously attracted the notice of an experimenter, viz., that iffixed with legs of unequal length, the air rushes into the shorter leg, and circulates up, and discharges itself from the longer leg. It is easy to see how readily this can be applied to any chamber, in order to purify its atmosphere. Let the orifice of the shorter leg be disposed where it can receive the current, and lead it into the chimney (in mines, into the shafts,) so as to convert that chimney or shaft into the longer leg, and you have at once the circulation complete. A similar air-syphon can be employed in ships, and the lowest holds where disease is generated in the close births of the crowded seamen, be rendered as fresh as the upper decks. The curiosity of this discovery is that air in a syphon reverses the action of water, or other liquid, which enters and descends or moves down in the longer leg, and rises up in the shorter leg! This is now a a demonstrable fact; but how is the principle to be accounted for ? It puzzles our philosophy. That air in the bent tube is not to the surrounding atmosphere as water, or any heavier body, is evident; and it must be from'this relation that the updraft in the longer leg is caused, and the constant circulation and withdrawal of poluted gases carried on. This action is not prevented by making the shorter leg hot while the longer leg remains cold, and no artificial heat is necessary to the longer leg of the air syphon to cause this action to take place. Extraordinary as this may appear, says the editor, we have witnessed the experiments made in various ways, with tubes from less than an inch to nearly a foot in diameter, and we can wouch for the fact being perfectly demonstrated.

It will take an experiment or two, to demonstrate the correctness of the above, but we point it out in order that some of our readers, (and there are many of them,) who have time to spare, may try a few experiments to test the truth or falsity of this alledged discovery.

#### ANOTHER GREAT LONDON DISCOVERY.

In one of the late numbers of the London Illustrated News, there is an illustrated description of a wonderful machine to annihilate every conflagration that dares to raise its head. A certain Mr. Philips, it seems, is the inventor, and the Fire Annihilator consists of a small machine, charged with a composition of charcoal, nitre, and gypsum, moulded into the form of a brick. There is what is called an igniter, consisting of a glass tube enclosing two bottles, one containing a few drops of sulphuric acid, placed over another containing a mixture of the chlorate of potassa and sugar. This glass tube is placed in contact with the brick, and there is an outside water chamber in connection withithe brick. (Who would have ever thought that a brick could knock out the eye of fire here, but London is the place.) Well this simple apparatus is carried to the fire, slung over some stout fellows' shoulders, we suppose, or borne in triumph on a Charley's baton, and no sooner is the fire approached, than by striking the glass containing the acid with a vertical iron pin, it is shivered to pie-

#### Notice to Editors.

Our friends of the "Standard," Greenwich N. Y. inform us by letter that they have not received the Sci. Am. since they published the new prospectus. We thank them for it, and shall consider it a favor from all editors if they will do the same in case they do not receive the paper. We hope not to overlook a single instance. Within the past year a few complaints have appeared in print against us for not sending the paper. We hope not to hear any this year, and if publishers will only inform us of a non-fulfillment on our part, we will promptly forward the paper. We presume that no respectable editors will attempt to complain of us through the columns of their papers when they fail to receive ours in exchange. We have never known an instance.

#### Patent Office Report for 1848.

We have received another section of this Report. It contains very valuable matter and some good engravings of apparatus used in the sugar manufacture. The information con. tained in it is mostly agricultural. We like the matter well enough, but here we are nearly at the years's end, and the 5000 copies of the Report with the Patent claims, are not vet issued. This is scandalous, but we believe that it is all the fault of the miserable contract with the printers. The matter of this report is found in very bad company, viz., bad print and paper. We are much obliged to Commissioner Ewbank for this Report-the contents of which we value highly.

#### What Water can Do.

The Boston Bee says that Abby Hutchinson -that was-is at a water-cure establishment in that city; and is recovering very rapidly, having gained in weight three pounds during the past week. She has lived twenty-one days without taking a particle of food-swallowing nothing during the time, with the exception of cold water.

[If the above don't set a bee in some ears, we don't know what will. Just think of Mrs. Paton living 21 days without food. Why talk of miracles ceasing-not while Abby is alive.

#### New Discovery in Agriculture.

An extraordinary fact mentioned the other day at the sitting of the Academy of Sciences. One of the members stated that the agricultural society of Brest had, upon the proposition of a member of the committee, sown some wheat upon land without any preparation of plowing or digging, and in one of the worst soils possible, and after having merely walked over the ground to press the grain on the surface, had it covered with fresh straw to the thickness of two inches. The product was, it is asserted, more abundant and much superior in quality to wheat raised from the same seed in the ordinary way. Some ears of corn, the seed of which had been placed upon windowglass covered with straw, were also exhibited.

[The above is now fourteen years old, and has proved to be a fallacy. We take the article from a late exchange, to point out the moral.

#### Riots at Philadelphia.

There was a great riot at Philadelphia last week ;-houses were burned, and a number of persons were shot dead, and others wounded. Why does the State of Pennsylvania not throw all the suburbs around Philadelphia, under the jurisdiction of the city proper. It is the most disgraceful place for riots in the wide world. and certainly there is little to boast of in the way of true liberty, where Franklin lived and

the invention of Mr. Lewis Lillie, of Ida st., Troy, and sold by Mr. Starbuck, of No. 69 Nassau st., N. Y. This lock is recommended by a great number of bankers and men well qua lified to judge of its merits.

#### SOLAR LAMPS.

A very beautiful kind of miniature solar was to come up before the C. Court in Boston, lamp, for those who have much writing at last week, likewise that of Wilson vs. Barnight, was exhibited by Messrs. Endicott & num, about planing machines at Philadelphia, Summer. The light of one is equal to that of and that of Morse vs. Bain, before Judge Mun six sperm candles, and it can burn either oil or roe. An injunction has been applied for by lard. A pound of lard lasts about twenty Morse. According to the custom of the Courts hours. The air is admitted to the flame all of Equity, this cannot be granted, until the around it, inside and out, thus supplying it validity of the plaintiffs patent has been eswith plenty of oxygen, consequently there is tablished at a Court of Law, which has not no part of the flame blue, but all is a bright yet been done.

this matter from the manner in which they flocked around the instrument at the Fair.

#### Patent Suits.

This month seems to be rife with patent suits. The Case of Blanchard vs. Kimball ed in building Fire Engines, that we have no invention.

so is steam from the water chamber, and these whisk out the fire in less than no time. We can assure our friends, who have stock investfears of their shares falling on account of this

#### New Dam at Hadley Falls.

This great work is nearly completed, as we learn from the Springfield Republican. We hope that it will stand the shock of the Connecticut, and brave for many years its angry waters, and that its fate may be more glorious than the last one.

ces, then the acid falls on the sugar and po- died. Something should be done, and that tassa, the brick burns, gases are evolved, and quickly, by the State Legislature, for the pre vention of such scenes in future.

#### Centre of Gyration.

We have received a communication on the "Centre of Gyration," which is unavoidably delayed for a week or two, from the number of long communications which we have received before it came to hand.

#### A Hard Lot.

A Scotch gentleman recently sold 700 shares of the United States Bank, at \$2,50 per share the same having been purchased at \$127 cash in 1836. His loss was \$68,550, besides eigh years interest.



ISSUED FROM THE UNITED STATES PATENT OFFICE.

For the week ending October 9, 1849.

To Calvin Doane, of Wareham, Mass., for improvement in portable Ovens. Patented Oct. 9, 1849.

To William G. Masterson, of Amesbury, Mass., for improvement in Water Wheels. Patented Oct. 9, 1849.

To Thomas Maskell, of Franklin, La., for improved Jointed Centre Board. Patented Oct. 9 1849.

To James Leffel, of Springfield, Ohio, for improvement in Cooking Stoves. Patented Oct. 9, 1849.

To Charles Wilson, of Williamsburgh, N. Y., for improvement in Hydraulic Presses for Cotton. &c. Patented Oct. 9, 1849.

To Alexander Hall, of Loydsville, Ohio, for improvement in Churns. Patented Oct. 9, 1849.

To Charles G. Sargent, of Lowell, Mass., for improvement in Burring Cylinders. Patented Oct. 9, 1849.

To L. R. Livingston, J. J. Roggen & Calvin Adams, of Pittsburgh, Pa., and Amos Kendall and Alfred Vail, of Washington, D. C., for improvement in Supporters for Telegraph Wires. Patented Oct. 9, 1849.

To Edward Bancroft, of Philadelphia, Pa., for improvement in hanging Shafts in Mills Patented Oct. 9, 1849.

To Jacob Pritchett, of Philadelphia, Pa., for improvement in Ore Washers. Patented Oct. 9, 1849.

To Henry W. Hewet, of New York, N. Y., for improvements in Reciprocating Propellers. Patented Oct. 9, 1849.

To William Tabele, of New York, N.Y., for improvement in the manufacture of Band Boxes. Patented Oct. 9, 1849.

To William Clarke, of Dayton, Ohio, for improvement in Bed-plates for Paper Engines. Patented Oct. 9, 1849.

To Samuel Campbell of New York Mills, N. Y., for improvement in Lapping Machines. Patented Oct. 9, 1849.

#### DESIGNS.

To A. Cox & Co., (Assignees of Geo. W. Chambers,) of Troy, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To A. Cox & Co., (Assignees of Geo. W. Chambers,) of Troy, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To J. H. Burton, of Cincinnati, Ohio, for Design for Stoves. Patented Oct. 9, 1849.

To Sherman S. Jewett & F. H. Root, of Buffalo, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To William Savery, of New York, N. Y., for Design for Stoves. Patented Oct. 9, 1849.

To J. Cross & Son, of Morrisville, N. Y., (Assignces of Samuel W. Gibbs, of Albany, N. Y.,) for Design for Stoves. Patented Oct. 9, 1849.

#### RE-ISSUES.

To Erastus B. Bigelow, of Clintonville. Mass., for improvement in Power Looms for Weaving Plaids, &c. Patented April 10, 1845. Re-issued Oct. 9, 1949.

## Scientific American.

Trial by Jury in Patent Cases .- No. 5. We promised in our last number to give our own views respecting the action of some of the United States, Circuit Courts in granting injunctions for alledged infringement of Patents, and we will now proceed to fulfil our promise. In our last number we quoted an article from the Charleston Mercury, citing case upon case to prove that the practice of the English Supreme Court was different from the decisions made by Judge Wayne, in South Carolina, and Judge Kane in Pennsylvania, and the reverse of the opinions set forth by Ex-Governor Seward, that is, "in the court granting an injunction, and assessing damages for plaintiffs, without a trial by jury, when the validity of the plaintiff's patent is ques tioned, and infringement denied."

The author of the articles in the Charleston Mercury is right, and he is wrong. The opinions and cases which he cites, do not give a clear view of the case, because they go to prove that it is not the custom of the Court of Chancery, in England, to grant any kind of injunction, in any case, upon application made for the same, whereas it is the custom, as we shall prove, in certain cases, viz., where the patentee's title had before been established at law (by jury) or when in long possession of the patent. In the case before Judge Wayne, in Charleston, the patent of the plaintiff had already been established at law, and there was exclusive possession for some duration. See Curtis, sections 324-5, and Carpmael on the Law of Patents, page 112. The Court of Chancery, in England, is the place where injunctions are granted, and Lord Eldon said, "The principle upon which the Court acts in cases of application for injunctions, is as follows :- where a patent has been granted and exclusive possession of some duration under it, the Court will interpose its injunction without putting the party previously to establish the validity of his patent by an action at law. But where a patent is but of yesterday, and an application made for an injunction, and there is opposition made to the goodness of the specification, or otherwise, the Court will not grant an injunction, but send the patentee to a court of law to establish the validity of his patent. (Curtis, sec. 324, and Carp. R., vol. 1, page 374; Webster's Digest, case 65.) It is the common custom in the Courts of Equity, in England, to grant no injunction, before the patent has been proven valid at a court of law. No Judge of our Federal Courts would be acting according to the spirit of equity, were he to grant an injunction for an alleged infringement of a patent, if the said patent had ne ver been tested, as to its validity at a court of law. But neither the case in Charleston, nor the one in Philadelphia, Wilson vs. Barnum, were at all like any others that ever happened in England, and should not happen here.

We will now undertake to point out the new ground upon which we stand.

The complainants in the cases referred to, were the owners of a twice extended patent on a machine for planing boards. The defendants, in both cases, also owned patents for machines for planing boards. Before the trial in Charleston, in more than one case the owners of the Woodworth patent, (plaintiffs in that case) had obtained judgment that the machine for which Gay secured a patent was an infringement of the Woodworth patent. Now is it right that a man, who is proven to be an infringer by an intelligent jury in one place, to go and set up the same machine in another place, and demand by law a second jury trial ployed in manufactures that the place would

feres with the first-is an infringement-it tomers; for they will always go, in the greatproper way to settle such things, viz., the conflicting claims of patentees. But is this commonly done? No. Any other course pur-

sued by the Circuit Courts we hold to be ille. gal. Let us quote the law, to prove our point : Sec. 16, (Patent Laws.) " And be it further enacted, That whenever there shall be two interfering patents, or whenever a patent or application shall have been refused on an adverse desision of a board of examiners, on the ground that that patent applied for would interfere with an unexpired patent previously granted, any person interested in any such patent, either by assignment or otherwise in the one case and any such applicant in the other case, may have remedy by bill in equity; and the court having cognizance thereof, on notice to adverse parties, and other due proceedings had, may adjudge and declare either the patents void in the whole or part, or inoperative and invalid in any particular part or portion of the United States, according to the interest which the parties to such suit may possess in the patent or the inventions patented, and may also adjudge that such applicant is entitled, according to the principles and provisions of this act, to have and receive a patent for his invention, as specified in his claim, or for any part thereof, as the fact of priority of right or invention shall, in any such case, be "made to appear. And such adjudication, if it be in favor of the right of such applicant, shall authorize the Commissioner to issue such patent on his filing a copy of the adjudication, and otherwise complying with the requisitions of this act. Provided, however, That no such judgment or adjudication shall affect the rights of any person except the parties to the action, and those deriving title from or under them subsequent to the rendition of such judgment."

We candidly admit that the one half of this section is very opaque,—it is a badly constructed law, and should be revised; but there is enough in it to bear us out in the position we have assumed. It plainly says, by a bill at equity, notice to adverse parties, and other due proceedings had, the Court may declare either the patents void in the whole or in part. Now is this not plain—is there not enough in this to prove Judge Kane's decision wrong, and other decisions also ? It surely does. Our remedy for such evils is to brush up this neglected section of the Patent Laws.

[Remainder next week.]

#### Atlanta, Ga.

We have received from our friends in this thriving place, the report of a committee upon its manufacturing advantages, which seem not to be inferior to those possessed in any other place throughout the South. We would especially call the attention of capitalists, carpenters, machinists, mill-wrights, cabinet makers, and men of all the different mechanical branches, to some of the statements presented by the committee. The first one of these advantages is the central position that Atlanta occupies and the direct communication with the great emporiums of New York, St. Louis, New Orleans, Mobile, Savannah and Charleston, and all the intermediate towns and cities, it not being more than four days run to the farthest of them. A second advantage that Atlanta has as a site for manufactures, is that it is now the intersecting point of three railroads, and a fourth will soon be completed; and if only one-fourth of the capital was em-

should be declared null and void. This is the est numbers, to the point where the greatest variety can be had.

> The committee also represent the city of Atlanta as being pre-eminently healthy, with excellent water, and scarcely a swamp marsh or pond for several miles around. They advocate the advantages of erecting steam mills as the fuel for generating steam is abundant and cheap for miles around, and can be easily transported over the different railroads, that concentrate at this place. We rejoice to see our Southern brethren awaking to the importance of stimulating manufacturing and mechanical enterprize to come among them. There is no good reason why the North should be so much in advance of the South, in the great manufacturing interests. The field is open for larger operations in every branch of the arts, and the interests of the South and West demand that their resources should be developed.

#### That Fossil Ape.

The last Scientic American makes the following strange editorial announcement:

"A fossil ape is said to have been found lately in the upper tertiary stratum at Montpelier, Vt. This is an interesting fact, taken in connection with the fossil elephant discoverəd by Prof. Agassiz, in New England."

This is the first word that we who have always lived here on the ground ever heard of such an affair. We may have living apes among us, perhaps-such as have been imported from the cities-but no fossil ones. There was never any thing indigenous of the ape kind in Vermont, either man or brute, to become fossil. Where did the editor pick up this queer piece of information ?- [Vt. Green Mountain Freeman.

"We expect he meant to 'come' a joke on the Montpelier boys-or, perhaps, get up a take off 'on priest Thompson's fish and Agassiz's elephant."-[Vermont Family Gazette. [The Editor of the Green Mountain Freeman is not so green as he pretends to be on the subject. He knows well enough that Vermont is the most wonderful State in the Union. Was it not there where Capt. Thunderbolt lived and died with his sham leg and all that? And does he not know that the Green Mountains, as geologists say, were away over by Africa, or some such place, with monkeys and apes running helter skelter up and down the great big cocoa nut trees, in

#### " Those days of lang syne, When geese were swine, And pigeons chewed tobacco ?"

To be sure he does ; so he need not be quizzing us. Did not Josiah Priest prove that Orange County, N. Y., was once the Garden of Eden, from an old stump that was found there? Surely he does. Well, then, he need not be a bit surprised because he did not see the fossil ape, for we are not, and we han't seen it, neither.

### Taxation for Free Schools.

The people of Indiana have declared in favor of taxation for the benefit of Common Schools. The amount of tax is to be ten cents on each hundred dollars' worth of real and personal property. The property of the State being \$140,000,000, the tax will be, next year, \$140,000. In adition to this arethe profits of the bank stock; the surplus revennes, and Saline funds; and three dollars on every policy of insurance on property within the State, by companies not chartered by the State. The ources will yield about \$200,000, which ad-



# Scientific American.

1900

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TO CORRESPONDENTS. "R. P. C. of Geo."—We are glad to hear that you have derived so much benefit from an attention of this paper. We particularly com-mend it to the attention of the young men of your place. They will find much information in its columns that will be a benefit to them in afy position. The fartherest way round is not the nearest "T. A. T., of St. Louis."—The question at issue is one of peculiar interest, and it will be necessary for us to give it an extended ex-amination. We shall communicate our views by letter in a few days. Your reasoning in the matter savors too much of bitterness OPINIONS OF THE PRESS. any position.

"J. T. of Mass."-Regarding the quantity of gas consumed per hour it depends upon the size of the burners. The common burner consumes about one cubic foot per hour, and one gallon of whale oil makes 90 cubic feet. There is however a far better apparatus than the one described, in Parnell's work-besides, the above plan contains no way of purifying.

"J. W. K. of N. H."-We published in volume 2 of the Sci. Am., the rule referred to by you. \$4 received.

"N. M., of C."-We have forwarded all the back numbers you ordered, that we had on hand. One half of a volume would be of no value to us. In regard to the fan blast, we think it always best to have it as near as possible to the cupola. Straight pipes are undoubtedly the best.

"M. J. E., of N. Y."-Your plan, as a substitute for the crank, is not new. You will find it described in Hebert's work. We do not understand your first question. What kind of a valve do you mean. There are a great number of kinds, such as ballance valves and slide valves, &c. There are some of the spring packing of iron. It answers very well, but any good steel will answer better. We like a cylinder not of too great length of stroke, but we could not say what is a long and what a short stroke. It all depends on the bore of the Mass., and W. R. C., or N. C,-Your specificylinder.

"W. F. M. of Ala."-Four numbers of Ranlett's Architect were forwarded by mail. on the 12th inst. The bound vol. 3, will be sent to Mobile by the St. John, which sails on the 17th.

"A. F. of Tenn,"-We forwarded two numbers of Ranlett's Architect on the 12th.

"H. W. P. of N. Y."-Your statement is right and compares with our books. The remaining numbers of Arnott's Architecture will be issued together, between this time and the 1st of January, and will all be forwarded at one time to the subscribers. Leonard's Principa sent by mail.

"Rev. L. J. of Ind."-You can order Vol. 4 bound for \$2,75. It cannot be supplied complete in sheets.

S. C. K. of Wis."-Ranlett's work on Architecture is considered by us as the best adapted to your wants, it comes at 50 cents per No.-20 Nos. complete the work.

"G. N. H. of Ky."-Can be furnished with Vols. 3 and 4 bound. Price \$2,75 per copy. We do not know of anything at present that would answer the purpose indicated in your letter. Nothing seems to take now a days, except it be got up on the most extensive scale.

"A.C. G., of Mass."-The case refered to by you was decided by Judge Cranch in 1846. It established the claims of Ziba Parkhurst as being the first inventor of the application of the zig-zag or pointed guard to the burring machine.

"J. C. F., of N. H."-Wrote you by letter on the 15th inst., giving our views in regard to your carriage wheel.

"B. F. R., of Ala."-The fan is preferred for the blast furnace, but we cannot tell you now where one can be obtained. We shall make enquiries and write you the full particulars sought for. We are very much hurried

the matter savors too much of bitterness against the examiners in the Patent Office .-They are not perfect however by any means. "H. D., of N. Y."-India rubber is made from distilling india rubber in a retort. A good tooth wash is a solution of borax and common salt. A little finely powdered charcoal is as good a tooth powder as you can use. It is not easy to tell which is the best linament. We could not do it-one will do well for one thing, but not for another : Opodeldoc is almost as good as any : the great secret is to use it as material to assist the hand in rub. bing the sprain, which should be done gently, patiently and often.

"H. C. G., of N. Y."-We cannot better answer your enquiry, than by giving the law in relation to models which reads thus: "Every application must be accompanied by a model, when the invention adm ts of one. It must be neatly and substantially made, of durable material, and if possible not over one cubic foot in contents. In case models are made of pine or other soft wood, they should be painted, stained or varnished. The name of the inventor (and assignee, if assigned) must be printed or engraved upon, or affixed to it, in a durable manner."

A. P. of N. Y., P. Van B., of N. Y., N. W. C., of Mieh., J. D. T., of Ct., C. & B., of cations have bean lodged in the Patent Office since our last issue.

Money received on account of Patent Office business, since Oct. 10, 1849 :---

D. T., of Mass., \$10; A. L. of Me., \$30; T. F., of Mass. \$20; A. P., of N. Y., \$20; N. & Co., \$20; G. W M., of Tenn., \$20; P. Van B., of N. Y., \$20; T. P., of N. Y., \$20; W. B., Jr., of N. J., \$30.; N. W. C., of Mich., \$25; M. F. H., of Ala., \$10; L. M. H., of Pa. \$30.

A few of our correspondents must not feel displeased, because they are not yet answered. It is not easy at all times to answer some questions and get some kinds of information. $\rightarrow$ We take a good deal of trouble however to do these things.

We are much obliged to Geo. Gifford, Esq., of this city for a copy of the decision of Judges Nelson and Betts in the case of S.R. Parkhurst vs. Kinsman & Goddard, in relation to an agreement in the use and manufacture of the Patent Burring Machines of Parkhurst.

We have received a communication from Junius Redevivus on the Convention of Inventors at Baltimore. We will give it a place as soon as possible.

We want some grand subject in this city to make an excitement just now. If something does not come upon the carpet soon there will certainly be deaths in the editorial camp.

### ADVERTISEMENTS.

### Patent Office.

128 Fulton St.

128 FULTON ST. OTICE TO INVENTORS. the the production of letters patent, or filing ca-ting to the procuration of letters patent, or filing ca-

OPINIONS OF THE PRESS.

THE YANKEE BLADE.—Our readers need not be told that the Yankee blade is an excellent paper. The told that the Yankee blade is an excellent paper. The fact is known and undisputed amoig all communities into which the paper has been introduced and where-ever the name of Mathews, its worthy and accomplish-ed editor, has been made familiar. It gives us plea-sure to notice that the labors bestowed on the Blade are justly appreciated by the reading public, and that the editor finds consolation and reward, as well in its popularity, as in the more substantial evidences of friendship and patronage. Very recently, the Blade came to us as bright and shining, and as clear of the least particle of rust, as though it had never before been in use, and when we took it up and turned it over and over, examining its smoothness and keen glitter-ing edge, we could not feel less than gratified at the success of our Yankee friend, and could not do less, the first opportunity, than express all that we felt. the first opportunity, than express all that we felt.--[Godey's Philadelphia Dollar Newspaper.

DIDEN'S DOLLAR MAGAZINE. The **INOLDEN'S DOLLAR MAGAZINE**. The present proprietor of this popular Magazine in continuing its publication, is determined that it shall lose none of its merits and attractions which it pdssess-ed under its former one, and which has made it so de-sirable a Periodical for Family Reading. It is made up of Tales, Translations, Essays, Biography, Poetry, Sketches of History, Sentiment and Humour, Reviews, Criticisms and 'Iopics of the month, by writers of the highest order of talent and its literary merits are un-surpassed. It is furnished at the low price of One Dollar a-year, in advance, the yearly volume contain-ing 708 pages, making it the best and cheapest Dollar Magazine published. Five copies will be furnished for \$4, and twenty copies for \$15. Letters must be ad-dressed, HotDEN'S DOLLARMAGAINE, No. 109 Nassau Street, New Yerk, (post-paid). Money may be sent at the risk of the proprietor, provided a description of the bills are kept, and mailed in the presence of the post-master as evidence of the fact. W. H. DIETZ, No. 109, Nassau St., 4 1 m\* Proprietor.

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Haven, Ct. Munn & Co., Scientific American Office, are Agent: for the above Lathes. Universal Chucks for sale a \$15. 4.3m.\*

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Superior TURNING LATHES.---James Stewart, 15 Canal st., and 106 Elm st. is con-stantly manufacturing and has now on hand between 50 and 60 superior Lathes of the following descrip-tions and a treasonable prices, namely : Dentist's Lathes, very highly finished. com

" " common, Brass and Wood Turner's Lathes. Jeweller's and pencil-case maker's, very superior. J. STEWART is also authorized to act as agent for the sale of the celebrated Lathes manufactured by James T. Perkins of Hudson, of large size and at pri-ces from \$250 to \$600. A specimen of this descrip-tion may be seen at his factory as above. j27 tf

TO MANUFACTURERS OR CAPITAL-ISTS ABOUT TO COMMENCE THE MANU-FACTURE OF COTTONS.—The subscriber, brought up with Messrs. Samuel & Jno. Slater, at operating and building cotton machinery, and for the last twen-ty years has traveled through several of the United ty years has travelled through several of the United States, setting up and building, on the most approved plans of modern invention, now offers his services as Superintendent, and is ready to introduce a new sys-tem, greatly reducing the cost of manufacture, and at the same time making better goods than ever was in the market. Please direct, post paid, to G. W. HOW-ARD, 228 Eddy street, Providence, R. I. 49 2m\*

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Instructions to Inventors can be had gratis, on ap-plication to Mr. THOMAS PROSSER, 28 Platt street, New York; as also the necessary forms of Petition and Declaration for British Patents.

m1 tf

PATENTOFFICE. 166 Fleet street, London.

OHNSON'S IMPROVED SHINGLE MA. **OHNSON'S IMPROVED SHINGLE MA** CHINE.—The subscriber having received letters patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the im-provements he has made, as one-eight more shin-gles can be sawed in the same given time than by any other machine now in use. Manufactured at Augusta Maine, and Albany, 'New York. J. G. JOHNSON. Augusta, Me., Oct. 28, 1848. 022 1y

AP WELDED WROUGHT IKON TUDES, for Tubular Boilers, from 1 1-2 to 8 inches in di-ameter.—These are the only Tubes of the same qual-ity and manufacture as those so extensively used in England, Scotland, France, and Germany, for Loco-motive, Marine and other Steam Engine Boilers. THOMAS PROSSER, Patentee, 28 Platt street, New York. AP WELDED WROUGHT IRON Tubes,

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**DEE'S AMERICAN CAST STEEL** Works, (at the foot of 24th st., E. River, N. Y.) The above works are now insuccessful operation, and the proprietor would respectfully call the attention of machinists and all consumers of the article to an examination of his Steel, which he is warranted by the testimony of the principal machinists and edge tool makers of this city, in recommending as fully equal in

A full assortion of the problem of the different sizes constantly on hand, which the public are respectfully invited to call and examine at the office of DANIEL ADEE, 51 forms 107 Fulton street, New York.

D LAKE'S PATENT FIRE PROOF **ID** PAINT, from Ohio, which in a few mom nts turns to slate or stone, protecting whatever covered from the action of the weather and from fire. Pur-chasers should be particular and see that every barrel is marked "Blake's Patent Fire Proof Paint," as there is any amount of worthless counterfeit stuff in the market, called fire proof paint. The genuine arti-cle for sale by the patentee, at No. 3 Broad st, N.York. 51 12\*/

**POREIGN PATENTS.**—PATENTS procured pBgium, Holland, &c., &c., with certainty and dis-atch through special and responsible agents appoint-d, by, and connected only with this establishment.— Pampilets containing a synopsis of Foreign Patent laws, and information can be had gratis on application JOSEPH P. PIRSSON, Civil Engineer, 3 td Office 5 Wall street, New York.

just now. "A. R. R., of Miss."—Mr. C. B. Hutchinson of Waterloo, N. Y., has an excellent stave cut- ting Machine. (See engraving and description in No. 2, of this Vol. which has been sent you	Messrs. Munn & Co., can be consulted at all times in regard to Patent business, at their office, and such ad- vice rendered as willenable inventors to adopt the safest means for securing their rights, MUNN & CO.,	UN FOR SALE. A fine sporting Shot Gun,	U mand for these useful instruments has been so great, we are yet able to supply orders for them. Everydraughtsman and every person that desires to foster a taste for the beautiful art of sketching should surely have one. Just received, anew and more beautiful article than
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We have forwarded, as per your order, 1 copy Cook's Condensing Engine Plate and Book, 2	ligent and active young men, in every County, by ad- dressing postpaid, FOWLERS & WELLS, Publishers.	for sale: Minifie's Mechanical Drawing Book, bound in	paratus for Colleges and Schools, and Engineer- ing Instruments.—JAMES GREEN, 175 Broadway,
numbers of Ranlett's Architecture. "J. M. W., of Mass."—Your ideas are new to us, but we doubt their usefulness; floats are	129 and 131 Nassau-st, New-York. P. S.—A small capital, with which to commence, will be necessary. Agents who engage in this enter- prise will be secured from the possibility of loss.	Cook's Condensing Engine, Plate and Book, 3,00 Leonard's Mechanical Principia 1,50	New York, and 43 South street, Baltimore, Manufac- turer and Importer of every kind of Philosophical and Chemical Apparatus, and Optical and Mathemati- cal Instruments, Barometers, thermometers, tele-
used for the very purposes you intend to ac- complish, by the oscillating boiler, and would	<u>5 3m*</u> <b>Z. C. ROBBINS,</b>	Scribner's Mechanics,	scopes, Drawing Instruments, pocket Compasses, &c. wholesale and retail. Experimental Apparatus and Models made to order. 1 3m*
in our opinion he less liable to get out of order.	PATENTEES. Office on F street, on posite Patent Office. Washington.	Arnott's Gothic Architecture " - 25	BConsulting Engineers, 89 Chancery Lane London m12 tf Patent Journal Office.
р. ]рлg			

# Scientific Museum.

#### For the Scientific American. Elastic Force of Steam.

No one can fail to recognize a certain degree of regularity in the progress of the increasing force of vapor as the temperature is successively augmented. In the dilation of ings from them have a smooth surface. aeriform fluids, Nature seems to affect a certain law. From experiments, it is inferred, that equal increments of temperature produce nearly equal multiplications of bulk; that the temperatures being in arithmetical progression, the corresponding elasticities are nearly in the continued proportions of 1 to 2; thus: Temperatures - - 100° 130° 160° 190° Correspondent elasti-

2.19 4.97 10.21 19.43 cities - - - -Although the re-duplication does not proceed with a constant regularity, still it is satisfactory to know that the deviation from this progression is itself the subject of a tolerably simple law. Many have been the endeavors made to form adequate representations of the mathematical law which connects the elastic force of steam with its temperature. Formulæ have been obtained by Robinson, Dalton, Prony, Laplace, Biot, Ivory, Schmidt, Soldner, Koche, Young, Creighton, Southern, Tredgold, Coriolis, Dulong, Arago, Committee of the Franklin Institute, Russel, Regnault, and recently by Alexander of America. But nearly all of them are inaccurate at high temperatures. Tregaskis has given a theorem : that one-fifth of the temperature above 32 degs. added to vapor, will double its elasticity. It furnishes a rough approximation to experiment. The formula obtained by Alexander for ascertaining the tension of vapor of water at any temperature, agrees more closely and consistently with observations than any other.

p =pressure in inches.

t=temp. in deg. Fahr.  $p = \left(\frac{t}{190} + \frac{990}{1695}\right)^{6}; \text{ and}$ 

 $t = 180 \ e_1 / p - 105^{\circ} \ 13'$ . By this equation it appears that the pres-

sure of steam in inches of mercury at 100° is 2.19; at 200°, 23.73; at 212°, 29.91; at 300°, 130.02; at 350°, 297.74.

From the many formulæ obtained by different philosophers, have been deduced the following :

BULE-To find the pressure corresponding to any given temperature of steam above 212 degs.: To the temperature add 121 degs., from the logarithm of the sum subtract 2,5224442, and multiply the remainder by 6.42-the product is the logarithm of the pressure in atmospheres of 30 inches of mercury.

RULE-To find the pressure corresponding to any given temperature of steam below 212 degs .: To the temperature add 175 degs., subtract 2.587711 from the logarithm of that sum and multiply the remainder by 7.71307-the product is the logarithm of the pressure in decimal parts of an atmosphere.

RULE-To find the temperature of steam, having any given pressure greater than that of the atmosphere : Multiply the logarithm of the pressure in atmospheres by 0.1557634, and add to the product 2.5224442-the sum is the lo-

urb. The formation of libraries and scientific fore described, the core being prolonged to be and literary institutions, museums, and lecsteam will have a given elastic force less than supported in its bearings formed by the patthat of the atmosphere : Multiply the logatures, and the daily intercourse between the all kinds of MACHINERY, TOOLS, &c. &c. It is printed with new type on beautiful paper, and being adapted to binding, the subscriber is possessed, at the end of the year, of a large volume of 416 pages, illustrated with upwards of 500 mechanical engravings. TER S: Single subscription, \$2 a year in advance; \$1 for six months. Those who wish to subscribe have only to enclose the amount in a letter to the to MUNN & CO., Publishers of the Scientific American, 128 Fulcon street New York tern, though it matters not if it should be rithm of the pressure in decimal parts of an different orders of society-in a word, all that longer than necessary. Fig. 7, represents the can advance and refine the mind and taste of a atmosphere by 0.12965, and to the product add core-bar with its pivots at the ends, and the 2.587711-the sum is the logarithm of the temgreat population, are facilitated by the contact vent holes scatteted over its surface. of the rich and poor. In addition, therefore, J. W. O. perature In the constructing of pipe moulds, as well to the importance given to the lower and midas the moulds of all other large hollow arti-128 Fulton street, New York. All Letters must be Post Paid. Fatal Steamboat Accident. dle classes by the political institutions of Amecles, it is necessary that the core be both rigid As the steamboat Isaac Newton was receivrica, I cannot but think it was a fortunate geo-Inducements for Clubbing. and porous; these conditions are obviously ing her passengers one night last week at Albalogical arrangement for the civilization of the 5 copies for 6 months, \$4 00 5 " 12 " 8 00 10 " 12 " 15 00 20 " 12 " 28 00 necessary, when it is remembered that the ny, an elder Quaker gentleman from Putman cities first founded on this continent, that the least flexibility in the core must alter the county, while attempting to pass from the anthracite coal fields were all placed on the Southern and Western money taken at par for sub-scriptions. Post Office Stamps taken at their fullvalue. thickness of the casting; besides, that the wharf to the boat, was crowded off or stepped eastern side of the Alleghenv mountains, and from the plank, and was swept out of sight in core, being itself so much confined externally all the bituminous coal fields on the western A PRESENT ! by the liquid metal when poured, the ends A PRESENT! To any person who will send us Three Subscribers, we will present a copy of the PATENT LAWS OF THE UNITED STATES, together with all the information rela-tive to PATENT OFFICE BUSINESS, including full direc-tions for taking out Patents, method of making the Specifications, Claims, Drawings, Models, buying, selling, and transferring Patent Rights, &c. N. B.—Subscribers will bear in mind that we em-ploy no Agents to travel on our account; a list of our local agents will be found in another column—all of whom are duly authorized to act as such, and none other. a moment by the tide. All efforts to rescue side." alone serving as channels of escape for the inhim proved in vain. His afflicted wife, who terior air, must offer within itself facilities for but a moment before was leaning on his arm **Meteorological Observations.** the escape of the gases generated. Both of A system of meteorological observations returned from the boat a widow, without a sinwill soon be commenced under the supervision these objects are accomplished by employing a gle acquaintance in Albanv ! tube of iron, forming the centre of the core, | of Proff. Henry, of the Smithsonian Institute. ' [When will the steamboats be taken in tow ΠΦ by the public and made to have better harbor and perforated at regular distances for the who was here a few weeks ago about the in-regulations. 臣 escape of the air. For the smallest sizes of struments. other. 

## Scientific American.

Hollow Iron Moulding. Pit sand mixed with fresh sand in general is the substance used without coal powder, for dry sand moulding. When mouldings are finished they are placed into drying stoves or ovens, and exposed to a strong heat till their moisture is banished. These moulds are good to allow the gases to escape readily, and cast-



Fig. 1 is a view of one-half of a mouldingbox for pipes, the other half being an exact counterpart. Fig. 2 is a cross section, showing parallel sides. Fig. 3 is a similar section of a wedged-shaped box for heavier castings. It is formed with flanges along the sides. which meet those of the other box. By means of these flanges the two halves are bound together by glands. Fig. 4 is a cross section of a flanged rib. A pair of swivels is attached to the ends of each box, by which they are raised and inverted as occasion requires. Another pair is usually fixed on the middle of the sides, upon which, when the boxes are hung, they may turn in a direction perpendicular to the preceding, that they may set vertically at their destined position, which is commonly in a pit dug to receive them.

F1G. 5.



Pipe moulds are always either set upright on one end, or laid in a position very considerably inclined, on a bed of sand prepared for the boxes, at an angle of 30 deg. to 40. deg. When practicable, the larger sizes of pipe moulds are placed in a vertical position, as well as other comparatively tall articles; the general object being to raise all the slag that collects on the surface of the iron, while being poured, clear off the cast into the gate-way, securing thereby soundness to the cast. It is evident that, were pipes, for example, cast horizontally, the metal, at any given period in the running, would expose a large horizontal surface, which is unfavorable to the soundness of the casting, and impurities besides would infallibly lodge in the upper portion of the mould. Both of these objections are removed by setting the mould in an inclined or



1990 MIRCHANICAL ENGRAVINGS of NEW INVENTIONS. I⊃The Scientific American is a Weekly Journal o Art, Science and Mechanics, having for its the advancement of the INTERESTS OF MECHANICS, MANUFACTURERS and INVENTORS. Each num-ber is illustrated with from five to TEN original EN-GRAVINGS OF NEW MECHANICAL INVEN-TIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Sci-entific American. It also contains a Weekly List of American Patents; notices of the progress of all Me-chanical and Scientific Improvements; practical di-rections on the construction, management and use of all kinds of MACHINERY, TOOLS, & &. Fig. 5 is a longitudinal section of a pipe, in ham, Leeds, or Sheffield. Here the dress and which the exterior and interior outlines are furniture last longer and look less dingy. Flowrepresented. The lines at each end indiers and shrubs can be cultivated in town garcate the additions necessary in the patdens, and all who can afford to move are not tern as core-prints. Accordingly, Fig. 6, regarithm of the temperature. driven into the country or some distant subpresents the core as formed upon the bar be-BULE-To find the temperature at which

<sup>c</sup>ores common gas-pipes are used, with holes drilled in them at about nine inches distance, on alternate sides. Wrought-iron tubes of a larger size are employed for larger pipes ; and, for the largest sizes, cast-iron pipes are adopted, with rows of oblong holes cut at equal distances for ventilation. These cast-iron corebars-the general appellation to all the va-

FIG. 7.



rieties enumerated-have wrought-iron double knees fitted and bolted to their extremities for the purpose of sustaining journals or bearings, upon which they may be turned on their own axis. The hollow ends of the wrought-iron pipes are formed square to receive a winch by which they also may be made to turn upon themselves, the use of which operation will be explained hereafter.

#### Scientific Art.

The day when men practised the various processes of the arts by the light of hereditary experience are just at their close. Famous re cipes, the heir-looms of successive generations, are daily becoming less and less valuable. And now, toward the middle of the nineteenth century, behold the birth of scientific art. Until now there was not such a thing dreamed of as a reduction to principles, of the various ma nufactures into which chemistry enters, and in the success of which she plays so important a part. Did the great grandfarther, after years

of toil, and thousands of vain, because unscientific experiments, light on a valuable discovery at last/? Then, each generation down cherished the precious document, or committed it on the dying couch, fenced round with solemn adjurations, to the superstitious reverence of the next. And men were thus content to plod the beaten track, as little troubling themselves as to the laws whose guidance they were following, as he who fortuitously hit, after countless failures on the right method atlast. Long after chemistry received all the character and aspect of a science, experience was still the guide of the arts; and though, doubtless, generally a safe, and also a slow, and sometimes a most extravagant companion. The blind led the blind, and the ditches into which they sometimes fell, were both deep and miry. Experience knew a way to the desired end, but in comparison with what it might have been had science marked it out, it was as a crosscountry scramble to the straight and leyel pene tration of the rail.

#### City Life.

Mr. Lyell say :- I have often mentioned the absence of smoke as a striking and enviable peculiarity of the Atlantic cities in a mora point of view, I regard freedom from smoke as a positive national gain, for it causes the rich and more educated inhabitants to reside in cities by the side of their poorer neighbours, during a longer part of the year, which they would not do if the air and the houses were as much soiled by smoke as Manchester, Birming-

This State has taken the lead in this scientific enterprise. New York State is also pursuing the collection of historical documents, with a spirit and liberality (by patronage of the Legislature) worthy of all praise.

### Floatng Bee-House.

In lower Egypt. says Dr. Bevan, where the flower harvest is not so early by several weeks as in the upper districts of that country, the practice of transportation is carried to a considerable extent. About the end of October, the hives after being collected together from the different villages, and conveyed up the Nile, marked and numbered by the individuals to whom they belong, are heaped pyramidically upon the boats prepared to receive them, which floating down the river and stopping at certain stages of this passage, remain there a longer or shorter time, according to the produce which is afforded by the surrounding country. After travelling three months in this manner, the bees having culled the perfumes of the orange flowers of the Said, the essence of roses of the Facium, the treasures of the Arabian jessamine, and a variety of flowers, are brought back, about the beginning of February, to the places from which they have been carried. The productiveness of the flowers at each respective stage is ascertained by the gradual descent of the boats in the water, and which is probably noted by a scale of measurements. This industry produces for the Egyptains delicious honey and abundance of bees wax.

#### LITERARY NOTICES.

THE WATER CURE JOURNAL is a valuable periodical for illustrating the nature of the WATER CURE, and spreading abroad useful information relating to health, life, and happiness.

We have received from Mr. Peterson the November number of the LADIES' NATIONAL MAGAZINE. It contains 8 original embellishments, and 12 extra pages of fine letter press.

We perceive by reference to the Prospectus for the new volume, about to be commenced, that an extra amount of labor is to be bestown upon it, rendering competition impossible. His clubbing prices are very reasonable.

Persons wishing sample numbers of the work can order them (p.p.) from C. Peterson, Philadelphia. Dewitt and Davenport, Tribune Building, have a supply of this number.

See advertisement of the YANKEE BLADE in another column, an excellent family journal, full of wit and humor, and that too of no common kind.



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