Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 5.] NEW YORK FEBRUARY 2, 1850. [NUMBER 20.

THE
Scientific American,
CIRCULATION 14,000.
PUBLISHED WEEKLY.
At 128 Fulton Street, New York, (Sun Building,) and 13 Court Street, Boston, Mass.
BY MUNN & COMPANY.
The Principal Office being at New York.
Barlow & Payne, Agents, 89 Chancery Lane, London
Geo. Dexter & Bro., New York City
Stokes & Bro., Philadelphia.
R. Morris & Co., Southern.
Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS--$2 a year--$1 in advance, and the remainder in 6 months.

Rail Road News.

Railways in Cities.

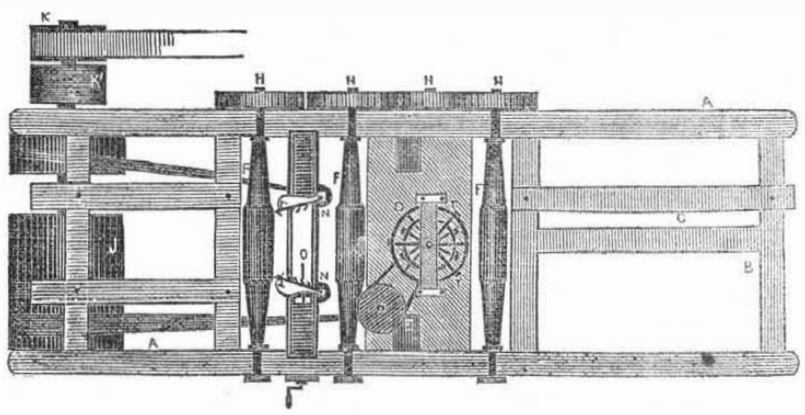
The following is an opinion of the Supreme Court, relative to the running of railways through streets, delivered on an application for an injunction to arrest the laying down of the rails of the Hudson River Railroad through Hudson street, in this city.

Chief Justice Jones stated that "Hudson street was ceded by the corporation of Trinity Church to the coporation of the City of New York, to be kept as a highway forever, the street, except in the line of block between Read and Chamber street where it is somewhat narrower, is from 85 to 90 feet wide and the double track, which in the middle of the road takes up less than 16 feet, and Canal street is 100 feet wide. The owners of the lots do not own the street, it having been ceded to the corporation, who by law, own the fee, they have a cmmon interest in the street with others, but no greater interest, as to actual legal right, than the public at large. By the city charter the corporation have a right to regulate streets, and there is no good reason, but the contrary, why the power of permitting a railroad track to be laid down in a portion of any street or streets, for the public accommodation and use, should not come within the power of regulation; it is a different mode of use from what was originaly thought of, but it is necessary with a view to the improvements in machinery, the advance of the age, and the facilities of this mode of travel. The Legislature gave permission to this Company to construct a railroad from the City of New York to a point opposite Albany, and to lay down their rails in such streets of New York as the Common Council should give them permission to do. The vote of the Board of Aldermen merely, granting this permission, was not a law such as required the the vote of a majority of all members; in the Board of Assistants the vote was 13 to 5 in favor, and if minor matters were disposed of by a vote in joint ballot, it would be equally as good any way. The Court thinks that the corporation has a right to give permission for railroad tracks to be laid down in the streets—the owners of lots on the line have no more right than owners of adjoining property with the common right of use of the street. Should the business or premises of any be injured by the acts of the Company, they have their remedy in a suit at law. The motion for injunction must be denied. [Judge Edwards stated that the opinion of the Chief Justice was concurred in by himself and Judge Edmonds, being the unanimous opinion of the Court before whom the case was argued.]

Hudson River Railroad.

The bill to amend the charter of the Hudson River Railroad was taken up in the Assembly on Friday last, in Committee of the whole, and amended so that the rights of the old creditors shall not be impaired by the securities given for the new loan contemplated. An amendment was also adopted, designed to insure the payment of laborers by contractors. The bill was then ordered to a third reading.

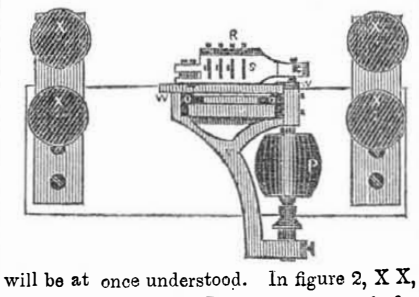
IMPROVEMENTS IN MACHINERY FOR TONGUING AND GROOVING.--Figure 1.



This is an invention of Mr. Robert Kittle, of Dansville, N. Y., and for which letters patent were issued on the 15th of January, 1850.

Figure 1 is a top view, looking down on the machine; and figure 2 is a side section of the tonguing and grooving machinery. In figure 1 the planing machinery is represented by the Bramah disc, D, having its series of planing cutters, T T. A is the framing, B, is a cross bar; C is the guide fence; E is a pulley from which a band passes, giving motion to the planing disc. F F F are the feed and pressure rollers. H H H H are connecting gear wheels; K is the loose pulley, with the belt on it, and K 1, is the driving pulley; J is a band drum, with a band passing around the pulley, E at one side, and there is a band passing around the small pulleys N N, which operate the matching knives. One of these bands is left out, but when we say, the two pulleys, N N, are driven by bands, this office will be at once understood. In figure 2, X X, are the feed rollers. R is the head stock for the matching knives, S. This head rests upon the vertical shaft, P, being secured to it by a crank pin at W. The grooving cutters are let into the cutter head, R, in such positions as to form the groove in the edge of a plank or board during a portion of the forward movement of the cutter head, and the rear cutter knife, T, is placed in its head, in such a manner that it will cut into and finish the groove during a portion of the reverse movement of the head. It will therefore be observed that the tonguing and grooving knives have a reciprocating motion, derived from being connected eccentric with the driving pulleys. The cutter head is guided to work steadily by guide pins working in slots placed between the finishing knives, and the first knives. O is a set screw, to move one cutter head nearer or farther from the other, to set it for boards of different widths. V, fig. 2, only represents the matching tools frame, set screws being shown for setting it, and for connecting the various parts of it together. The motions of the tonguing and grooving cutters are peculiar, and are said to operate with great satisfaction. The machinery is simple, easily constructed, easily repaired, and easily superintended, which are very important considerations, especially in saw mills at a distance from machine shops.

FIG. 2.



The inventor and patentee is now ready to sell rights or enter into engagements relating to the use of the same. Any communication (*p. p.*) addreesed to him at the above place, will receive prompt attention.

Proposed Water-works at Quebec.

A large public meeting was recently held at the city of Quebec for the purpose of adopting measures for carrying into effect the project for some time entertained there of furnishing the city with an abundant supply of water. The present and late mayor of the city and other gentlemen addressed the meeting, and stated a variety of interesting facts. Several resolutions were adopted, one of which recommended the forming of a joint stock company for the introduction of water, with a capital of £100,000, and that a rate of sixpence in the pound should be levied on all the property in the city, to be appropriated in aid of the water company, and to furnish the corporation with water for the extinguishment of fires.

A Scientific Religious Answer.

A gentleman was once riding in Scotland by a bleaching ground, where a poor woman was at work watering her webs of linen cloth. He asked her where she went to church, what she had heard on the preceding day, and how much she remembered. She could not even tell the text of the last sermon. "And what good can the preaching do you," said he, "if you forget it all?" "Ah, sir," replied the poor woman, "if you look at this web on the grass, you will see that as fast as ever I put the water on it the sun dries it all up; and yet, sir, I see it gets whiter and whiter."

Substitute for the Potatoe.

The root said to be discovered in South America, by an eminent French naturalist, and thought to be an excellent substitute for the potatoe, contains, out of 100 parts, 67.21 of alimentary farinaceous matter. Three or four hundred bushels are raised upon an acre. It is time that we had some cheap substitute for potatoes, for they are now selling in this city at $1 per bushel, and have been for the past two years.

Decrease of Sunday Travel.

In a recent circular of the American and Foreign Sabbath Union, it is stated that more than forty railway Companies now stop their cars on the Sabbath, and that on more than 2000 miles of railroad the men employed enjoy the rest and privileges appropriated to that day.

Mobile and Ohio Railroad.

The Ladies of Mobile have determined to do their part towards raising funds for the prosecution of this great work, and are about to hold a grand bazaar for that purpose.

Handel's Organ.

At a small but beautiful chapel in the parish of Whitechurch, Little Stanmore, ten miles from London, is placed the organ once belonging to Handel, and on which he performed, being organist to the Chandos family.

Useful Receipts.

To Gild Iron or Steel.

Make a neutral solution of gold in nitro-muriatic acid (aqua regia) and pour in to it a quantity of sulphuric ether; the ether will take up the gold and float upon the denser acid The article is then to be washed with this auriferous ether (with a hair pencil); the ether flies off, and the gold adheres.

To Silver Clock Faces.

Take 1 part chloride of silver (the white precipitate which falls when a solution of common salt is poured into a solution of nitrate of silver or lunar caustic), 3 parts of pearlash, 1 of whiting, and 1½ of common salt, or 1 part chloride of silver and 10 parts of cream of tartar, and rub the brass with a moistened piece of cork, dipped in the powder.

Artificial Gold.

Imitation gold, which not only resembles gold in color, but also in specific gravity and ductility, consist of 16 parts of platinum, 7 parts of copper, and 1 of zinc, put in a crucible, covered with charcoal powder, and melted into a mass.

Boiling Potatoes.

An Irish paper gives the following directions for cooking potatoes. Put them in a pot or kittle without a lid, with water just sufficient to cover them. After the water comes nearly to a boil, pour it off, replace it with cold water, into which throw a good portion of salt. The cold water sends the heat from the surface to the heart and makes the potato mealy. After they are boiled and the water poured off, let them stand on the fire ten or fifteen minutes to dry.

Cure of Cancer.

We see it stated that a preparation of arsenic is employed successfully, by some of our physicians, to cure cancer. Of course no one but a physician can prepare and prescribe the mixture.

For Varnishing Figures.

Fuse half an ounce of tin with the same quantity of bismuth, in a crucible; when melted, add half an ounce of mercury. When perfectly combined, take the mixture from the fire and cool it. This substance, mixed with the white of an egg, forms a very beautiful varnish for plaster figures, &c.

Pinchbeck.

Put into a crucible five ounces of pure copper: when it is in a state of fusion, add one ounce of zinc. These metals combine, forming an alloy not unlike jewellers gold; pour it into a mould of any shape. This alloy is used for inferior jewllery.

To Stop Mouse Holes.

Take a plug of common hard soap, stop the hole with it and you may rest assured you will have no further trouble from that quarter. It is equally effectual as regards rats, roaches and ants.

Chrono Thermal Medicine.

The author of the chrono thermal system thus remarks in concluding his work: "I will just make a remark upon the subject of the doses of all medicines. Perceiving, as you might have done by this time, the utter impossibility of fortelling in many cases, especially of chronic disease, the particular agent by which you are to obtain amelioration or cure, and as in almost every case where an agent does not act favorably it does the reverse, you must see the necessity of commencing you treatment with the smallest available doses of the more potent remedies—of feeling your way, in short,—before you venture upon the doses prescribed by the schools."

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, Dec. 26, 1850.

At the Patent Office a considerable number of workmen are employed in working the marble blocks to be in readiness for spring. This beautiful material will outlast any other in the City. It is expected that Congress will make an early aperopriation for the completion of the building. The interior of the department is daily thronged with visitors at the rate of four hundred per day. Messrs. Varden and Campbell are making great improvements in the gallery by a re-arrangement of the splendid pictures. Within the past two weeks $60 has been contributed, through the box in the gallery to the Washington monument.

The Baltimoreans are rejoicing over the invention by a mechanic of that city, of a fan which is kept in motion by clock-work running ten hours. When stationed on the top of the bedstead, it will keep the sleeper cool and comfortable during sultry nights. It will be a decided luxury. A person named Parker is here endeavoring to procure a patent for a *Water Guage*, but I understand that a Caveat for a similar invention was filed about a year since by an English inventor.

The Virginia and Tennessee Railroad Co. are about to build a Rolling Mill for the manufacture of their own iron; they think that a saving of about $300,000 per annum will be effected by it. A pair of Georgia Burr Mill Stones have recently been received at a mill in Norfolk, Va., from Savannah. They have excited considerable attention; formerly such kind of stones were all imported from France, but Mr. Hoyt, of Savannah, made the discovery of the Georgia Burr bed, which promises to supersede the foreign. The stones are fitted for a 4½ feet circle, weigh about 1600 pounds each, and are of a superior quali y.

The fire-proof calico, prepared with the phosphate of magnesia, is now finding an extensive sale in this section. It is an admirable thing for children. The war steamer Saranac is expected to receive steaming orders in a few days. There is a great want of engineers in this branch of the service, owing to the fact that so many of them resign for private vessels. A couple of very elegant cars have just been completed for the Washington and Baltimore Railroad. They are 34½ feet long, and will hold 52 passengers each. They are furnished with mahogany spring seats, covered with plush velvet. One of these cars rests upon 16 eliptic springs, on Perkins' plan. The other is upon the same number of gum elastic springs of Fuller's patent. Both have the side swing motion of Davenport and Bridges' plan, which resembles the gentle rocking of a cradle. On the whole these cars are said to excel anything of the kind in this part of the country. The account in your last number of a negro whose skin was changed to white by the bite of a rattle-snake, is an interesting fact, and a celebrated scientific gentleman here intends to allude to it in his forthcoming lecture, on "The various Colors of the Human Race." The petition referred to the Patent Committee of the House for renewing the Patent of Moore & Haskell on a Harvesting Machine, has been reported on favorably.

The lectures of Professor Alexander, at the Smithsonian Institute, were well attended. It is a pity the architect made the room so small. It does not accommodate one half of the people who desire to attend. *

[The machine to which our correspondent refers, invented by a Baltimore mechanic, for sleeping softly, is a good thing, but the Baltimore inventor has been anticipated: old Commodore Barron took out a patent for the same kind of invention in 1831, we think. A model of such a machine was in our office for months in the beginning of last year, and the inventor of it had used it in the tropics a number of years.

We are happy to hear from our correspondent about the introduction of the Georgia Burrs into Virginia. We have had some specimens of the stone for a long time, in our possession, and we noticed it in our last Volume. —[ED.

Patent Office Report.

The New York Tribune has published about one half of the unprinted Report of Mr. Ewbank. It is a very long document, but a very able one. We hereby publish some extracts from it, to show its power:

ERRORS ENTERTAINED OF INVENTORS.

It is a prevalent opinion that both ordinary and extraordinary inventions cost their authors little labor and thought to develope; nothing is more erroneous. It is an essential element of man's being, and of the constitution of things under which he exists, that all truths, mechanical or philosophical, can only be realized by strenuous and continued effort. Our perceptive faculties are too obtuse, and happily for us it is so, to apprehend them at a glance. In that case, they would be held too cheap to be looked for, and deemed worthless when seen. If inventions required no exertion to discover, where would be their value? If virtue cost nothing, it would cease to be virtue. No fact is clearer than that man's destinies are in his own hands, and that he alone can exalt and debase them. To rouse him to be faithful to himself is Nature's ceaseless care. With powers dormant in him and equal to every exigence, she leaves him to exert them or not. She does naught for him that he can do for himself, and has taken care that he shall know nothing, have nothing that he does not strive for. Then how common is it to hear ingenious men disparaged by ascribing their best things to lucky or random suggestions—whereas chance inventions, if such things ever were, are much rarer than supposed. Though appearing fortuitous, they may be traced to previous reasonings or reflections:—sprouting seeds whose transient plantings had been little noticed and forgotten. They had never sprung up had they not fallen on soils prepared by previous culture to receive them. Sparks set not sand on fire, nor do fruitful ideas germinate in barren minds. Flashes of thought, like those of the electric fluid, may dart suddenly and unexpectly,—but they are not less the regular effects of inducing causes. Inspiration descends not in its highest or its lowest forms but on those who seek to be inspired.

It is not given to man to perfect aught without toil and seldom without long continued toil. The smith forges not a plowshare with a blow, nor any new device, however simple, matured save by re-percussions of thought. *Nul bien sans peine*—a universal truth.

The power inventors wield is not less manifest in the changes they have wrought in the habits, customs and occupations of females, than it is obvious in the pursuites of the other sex, in the outdoor world. They have not only broken up the honored arrangements of the kitchen, wash-house and dairy, but have invaded the parlor and even boudoir. A century ago the rock and spindle were common;—in Europe are women who still twist thread with their fingers. Fifty years since the wheel had a place in every dwelling, and carding no less than spinning, was a domestic duty. With thrifty housewives the shuttle, too, was not a stranger, within twenty years knitting was indispensable; not a few of our farmers still wear home-made hose. Then straw plaiting, tambour working, lace making, plain and fancy embroidery, with other delicate operations of the needle, were and are still taught as necessary accomplishments such they will hardly be held much longer, since these and various other performinces are new done by automatic fingers with a precision, regularity, dispatch, delicacy of touch and finish that no human organs can rival.

Most, if not all, the Fine Arts have been subdued by mechanism. The lathe is still to be met with in its primitive forms, in the potters wheel, the spring-pole, and in the modern Egyptians arteloior—(seated on the ground, this artist empolys one hand to revolve the object to be formed, holds the cutting tool in the other, and presses it on the rest with his toes.) The lathe, so long confined to shape articles whose sections were circles, now produces oval, elliptical, epicycloidal and eccentric work; copies, medallions, and even busts in equal enlarged or reduced proportions—performing the work of the engraver, die-sinker and statuary or sculptor.

The richest figured tapestry and damask in relief are now produced by magic mechanism. Looms rival the palette and burin; beside gorgeously colored carpets they weave landscapes equal to oil paintings and portraits after the finest line engravings. Then, from the increase in number of sewing machines, the time would seem not distant when the needle itself and thimble will be exhibited in museums with distaffs, spinning-wheels, knitting wires, tambor frames, hand-looms, lace-making bobbins, spillons, and other antiquarian curiosities, as evidences of imperfect civilization. In chromolithography, automaton artists rival the finest touches of old masters, and shortly will multiply by millions their most esteemed productions.

Passengers' Baggage and Railroad Regulations.

A radical reform is demanded by the public, from the majority of our railroads, in receiving and delivering the baggage of passengers.—Every railroad should have outside porters to receive and take charge of passengers' baggage as soon as it is landed on the sidewalk, and they should direct the passengers where to get their tickets, and to the right cars. They might have hats with some mark on them, or some other insignia, to point them out. There should also be temporary sign boards hung up on the side of the cars in the depot, such as—"These cars take passengers for New Haven, and also the Housatonic route, and start at 8 A. M." This sign could be removed when the cars start. Some of our railroads appear to blunder into success against the worst possible regulations. At the depot in Canal street, New York, the owner of baggage is required to deposite it on board the baggage car, or upon the top of a table near it, before the porters of the company take any cognizance of it. Now this is always exceedingly inconvenient and often almost impossible. When ladies are travelling alone, their baggage is set upon the sidewalk by the hackman, who considers his task ended; and it then becomes a serious difficulty to get it placed in the baggage car. She must then search for the ticket window, about the size of a decent bat's wing, and known only by a crowd around it, barring access to a lady until the very last moment, when the cars are to start. This should not be—there should be two windows, always one for the ladies. In some depots, at the end of the journey, the delivery of baggage is managed in a very miserable manner. The baggage cars from Philadelphia are opened on the ferry boat—and every passenger is expected to come forward and claim his baggage when the number is called. This, with hundreds crowding around and pushing in every direction, is almost impossible, especially for the "women folks." At Greenbush, opposite Albany, at Albany, Utica, and other places, the baggage is thrown upon a platform, and each one is required, in a dense crowd of hundreds, to come forward and claim his own. On the road from Baltimore to Philadelphia a man is allowed by the company to go through the cars and ask permission to take charge of baggage belonging to passengers on reaching the city. He receives their checks, takes the street and number at which each trunk is to be delivered, and gives in return a card certifying his security for the baggage to the amount of $100. This ends the traveller's care as to his baggage. When the train reaches Philadelphia, he goes to his hotel or his house, and in half an hour his baggage is deposited at his door, for which he pays twenty-five cents. Those who do not choose to avail themselves of the offer, can of course take charge of the baggage themselves, and then the annoyance and trouble are voluntarily assumed. Some other railroads have the same regulations, and every one should adopt it, along with those we have suggested. The extra expense would be, we are persuaded, a saving in the long run. There are many ladies who would think nothing of taking a journey alone, if our railroads were better managed at the different stations, but with the present regulations they are wise to stay at home.

Mechanics in Congress.

It is said that nearly one-half of the members of the present Congress were once journeymen mechanics. If so, (says the Washingtan correspondent of the Charleston News,) this is an interesting fact, and shows what perseverance can accomplish. These men have become great, not so much from the facilities for a common knowledge, which our systems of education afford, as from a self-reliance which a sense of independence confers. It has been truly said that the moment you make a man politically equal with his fellow, you give him a consciousness that he is so in all respects.

Serious Accident in a Rolling Mill.

A letter dated Danville, January 8th, says that in the rolling mill there, the large fly-wheel, weighing from twenty-five to thirty tons, burst asunder, and scattered the roof and machinery at a fearful rate. Pieces weighing 3, 4, and even 6 tons, were hurled through the rof, crushing everything before them. One man only was slightly injured. The damage cannot be less than $10,000—it may reach $30,000. It is believed to have been done by some villain, who threw a piece of iron between the cogs of the main wheels. This unfortunate affair throws hundreds of laborers out of emment.

Discovery in Tanning.

We are informed by a correspondent from New Oxford, Pa., that Mr. Wm. H. Rosensteel, of that place, has discovered a new and valued improvement in the mode of Tanning Leather, which has been tried for nine months, and which, it is said, will save "one-fourth of the bark and make the stock weigh at least three lbs. more per hide, tanning in one-third of the usual time, and making a better looking article." These are very important improvements, especially as only one-fourth of the customary number of vats are employed, consequently no less than one half of the usual labor is saved. We are not able to describe the process, but our correspondent is one on whom we place every confidence in what he asserts.

Great Launch.

More than twenty-five thousand persons congregated at the Dry Dock, last Monday morning, to see the novel spectacle of the launch of three steamers, one of them with her engines ready to work, and one the gigantic ocean steamship Arctic. Every roof, window, balcony, fence, pile of timber, pier, carriage, adjacent ship, or floating craft that could afford a point of view, was crowded with eager spectators. There can hardly be a doubt that more people were collected on this occasion than any one purpose has drawn together for years. The steamer New World was launched with all he machinery aboard and the steam up. The Arctic is 3,500 tons burden, and is one of Mr. Collins' line. The launch was splendid.

An Equestrian Feat.

The Swansea, (Eng.) Herald publishes the following item of sporting intelligence: "Last week, a hare, pursued by some greyhounds, after several turns, and being hardly pressed, jumped on the back of a young horse, where she fixed herself astride. The affrighted animal not being accustomed so such a rider, bounded off at full speed, kicking and plunging, accompanied by the dogs. This continued from four to five minutes, when, choosing a favorable situation, puss hopped off, and very gallantly made her escape."

Utica Water Works.

Utica has just completed her water works, which give them a copious supply of pure water at the cost of only $75,000. It has a great head, and the hydrants carry water 30 feet above the spires of their churches. Its benefits in cases of fire will more than pay the whole cost of the works.

Six large American eagles alighted upon the ice, in Sandusky Bay, a few days since, where they remained for some time, probably waiting for their skates.

The city track of the Harlem Railroad will soon be laid with heavy rail.

Colt, the inventor of the famous pistol, has been presented to the Sultan of Turkey.

The Electric Telegraph.

"It is dangerous to dance on fabrications."

The New York Presbyterian copies a long article on the Electric Telegraph, from the New York Evening Post, which is a real curiosity in its way, distinguished for plagiarism and a want of correct information. The article is taken from the Edinburgh Review, and the names of places changed, so as to make it an acceptable dish for the American palate. It would answer very well, only that there are some substances mixed with it, of so indigestable a character to the epicure of science, that we must point them out to the unwary. As the article is copied from a British work, it describes the British Telegraph, and had it not been palmed off for the American, all would have been well; but let us correct the errors. It says:—

"Our first concern is with the source of electricity, which in telegraph lines is generally the voltaic battery. A voltaic battery, in its simplest form, consists of a plate of copper and a plate of zinc, arranged side by side, without touching each other, in a vessel, containing diluted sulphuric acid. An iron wire, coated with zinc to keep it from rusting, is attached to the copper plate of the battery, and then stretched the entire distance to which the communications are to be sent, say from New York to New Orleans, and suppose the battery at New York. The wire is supported by wooden posts, and insulated, i. e., passed through rings of glass, or porcelain, which are non-conducting substances, attached to the posts to prevent the electricity being carried off into the earth, by means of the moisture which might be contained in the wood, so that there is no choice left but to proceed in the direction of the wire."

The above is quite correct in describing the way to connect the machines, only it should have mentioned that copper, instead of zinced iron wire, was generally employed; but here comes the beau ideal of plagiarism:—

"At New-Orleans, the wire is placed in connection with the signal apparatus, and then is brought back to New-York, through separate glass or porcelain tubes, as before, and finally terminates at the detached zinc plate of the battery.

There are many kinds of signal apparatus in use; among the most convenient are the step by step, which is worked by a pedal like a pianoforte key, and the dial plate.

As the dial plate is the one most in use, we will describe it. It is formed of a dial, similar to a compass box, but instead of being fixed in a horizontal position, it is placed vertically.—Two magnetic needles are suspended on a pivot, in the centre of the dial plate, the north pole of one needle is placed opposite the south pole of the other, and the needles are balanced, so as to remain in a vertical position when the telegraph wire is at rest—that is to say, when no current of electric fluid is passing through it. One of these dials would be hung at New-Orleans, and the telegraph wire would be coiled several times round its case. The wires are provided, near their ends at New-York, with two moveable pieces, which are arranged in such a manner as to be detached from the copper and zinc plates in the battery, at the pleasure of the operator, or they may be changed so as to bring either end of the wire in contact with either of the plates of the battery.

As the current of electricity passes through the wire round the casing of the dial, it will deflect the needles from a vertical position to a position right and left across the dial plate, but when one of the moveable detached pieces, at the station at New-York, is taken away, the circuit will be broken, and the needle will resume its former vertical position; and when the connection is changed, that is to say, when the end of the wire which was formerly in connection with the copper plate, is brought into connection with the zinc plate and the other end to the copper, the direction of the current will be changed, and the needles will again stand right and left across the dial plate, but the end which formerly pointed to the right, will now point to the left. Now it is understood by the rule of the managers of the telegreph, that one move to the right shall mean one letter, say R, and two moves shall mean I, one more to the left shall mean G, and two moves T; we have then the word RIGHT."

Now no such telegraph as that described here, is used in the United States. The words "New York and New Orleans" are changed from "London and Edinburgh," in the article of the Edinburgh Review. The Signal Telegraph described is that of Cooke & Wheatstone's, in Britan. But let us hear more of this sublime worthy-of-a-copyright article:—

"One of the latest improvements in the telegraph has been, to use the moisture of the earth as a conducting medium for completing the circuit. We will imagine the wire, after being coiled round the dial case at New-Orleans, to be broken off, and the end inserted in the ground, and a piece of wire from the zinc plate of the battery at New-York, to be also led into the ground; the electricity, after passing along the wire from the copper plate of the battery, and travelling round the dial at New-Orleans, and deflecting the needle, will return through the earth to the wire plate at New-York. We have only described the transmission of messages in one direction, as the answers from New-Orleans are sent by exactly the same operations, a battery being there also in connection with the telegraph wire, which is made to act on a dial at New-York; and the wires are so arranged, that when the operator at one end turns his needle in any position, the needle of the other dial at the opposite end will assume a corresponding ne."

"We are indebted to the experiments of scientific men of all countries for the great efficiency of the present telegraphs: among these may be mentioned Morse, Wheatstone and Bain; and it is extremely probable that in our generation, the means of printing the communications as they are transmitted will be discovered. Already it is possible to make marks upon paper, which operation may be considered as the first step towards the great desideratum."

The improvement spoken of, in making the earth form part of the circuit, was the discovery of a Frenchman named *Ampere*, and was made more than fourteen years ago. Bain made a like discovery in 1842, and Alfred Vail in 1844; and the single circuit has always been employed in the United States, and is not Wheatstone's invention. Let us explain this: On all our telegraphs two wires at least are used, but two wires are not necessary to send a message from New York to Orleans, one will do,—but in order to send and return messages, two must be used. It is a very strange thing that messages cannot be sent until the circuit is closed, that is, a current of electricity must be flowing from the positive to the negative pole. For example, here at New York is the battery to send a message to New Orleans; well it has two electric poles, a positive one at the zinc plate and a negative one at the copper or platinum: these two poles must be connected together, or no current will flow along the wire. The discovery alluded to tells us that the earth forms part of this connection, it answers the part of a wire. It is strange—passing strange, but true, that the earth—not a wire—forms part of the circuit, to unite the two poles, and the current from the positive pole at New York will flow on the wire to Philadelphia, then it comes through the earth back to the negative pole at New York—quick as the lightning it darts through mountains and over rivers; reminding one of the old nursery ballad—

"I had a little sister that came from the sky,
She climbed up the mountains high, high, high,
She waded the waters deep, deep, deep."

This is a most wonderful phenomenon:—many have tried to explain it, but have befogged the subject greatly.

There are three different kinds of Telegraphs employed in the United States, viz., Morse's, House's, and Bain's. Not one like that described above. Nay, instead of the above being correct, when it says, "that already it is possible to make marks on paper," every American Telegraph does this. Morse's, the oldest Telegraph of all, marks on the paper, and leaves a mechanical impression on it.

Morse's Telegraph may be thus described:—There is a metal pen at New Orleans, fixed on a pivot like a walking beam. When one end is drawn down, the other end flies up, and having a steel point on it, it marks a strip of paper, running along a roller, which is drawn along between other two rollers. Now, by letting the other end of this pen come up, the steel point drops, and then it is thrown up again, leaving a space between the two marks on the paper. Now, as the paper is always moving, and as the point is held to it for a longer or shorter time, marks are made of dots, spaces and dashes—thus . for E, and — for L, and .—. for F, and thus by a combination of dots, spaces and dashes, the whole alphabet is formed, and these letters made into words, and the words into sentences—compose the message. An "Electro Magnet" is used on Morse's Telegraph, to operate the walking beam pen. This, by breaking and closing the circuit by some non-conducting substance (a key made of ivory or dry wood) at New York, writes the messages in Boston. Morse is the inventor of the "Electro Magnet" Telegraph, a very different thing from the Signalling Telegraph, and much better.

So far from the above being correct about *printing* communications, why, House's Telegraph does print all its messages in plain Roman letters. The operator at New York plays upon his machine, like a lady at her piano, and at Boston a little arm is seen revolving round and round, singing click, clack, click, and printing, in black letters, R, O, Y, A, L, E, H, O, U, S, E, on a strip of paper. On Morse's Telegraph the messages have to be re-written by a penman into plain English. The messages by House's Telegraph are sent to the printer, and set up, to use a homely phrase, "right off the reel."

Bain's Telegraph also prints, but makes marks of a chemical nature, in character nearly like that of the Morse Telegraph, but no "Electro Magnet" is used. By breaking and closing the circuit at New York, the pen which is in contact with chemically prepared paper at Phila., makes blue marks on the paper, and these blue marks make the message. There is one part of this invention which is a curiosity in its way. That is, he writes the message first, on a strip of paper, by perforating it with small holes, for the dashes and the dots, and by making this, in a very ingenious manner, break and close the circuit, he can send a message of 1000 letters in one minute, to any place. When there is time to prepare messages, this is a grand way to transmit them rapidly. This invention embraces the idea of printing a pattern of calico in Philadelphia by breaking and closing the circuit in New York,—a most wonderful thing indeed.

We have thus explained the operation of the three Telegraphs that are now in use in America, and every person can see how very different they are from the Signalling one mentioned above. Oh what blunders we see the learned commit for want of learning. It is a very dangerous thing for our papers to make home out of foreign scientific articles. We regret to see such things as the above done. If it had exhibited a Spartan ingenuity in the abstraction of the article, we might have overlooked the act, but the ignorance displayed of the subject, easily led *us* to detect the imposition.

This article is somewhat long, but we trust that the nature of the subject, and the information elicited by our review, will be acceptable, at least we know that much knowledge will be gained by many in reading it.

On Water Wheels,

MESSRS. EDITORS—I humbly believe that there are some errors committed in the communication of J. S., headed "Useful Information about Water Wheels," No. 17, page 131 of this volume. Smeaton has not, to my knowledge, laid down any rules such as J. S. speaks of, for re-action wheels, or other wheels. John Smeaton, in 1752–3, made some very valuable experiments upon under-shot and over-shot wheels, and says, in his paper communicated to the Philosophical Society of London, in 1759, he had put those experiments to a practical test, that he might know whether his deductions would answer in real practice or not. Indeed, he scarcely trusted to theory in any case where he could have an opportunity to investigate it by experiment. The deductions that he made from these experiments (to which J. S. refers) was, that the velocity of the water to the wheel, should be as 5 to 2, on under-shot wheels (not as 3 to 2.) Bossut and Fabre as 5 to 2, agreeing with Smeaton; Ferguson and Parent as 3 to 1; Brewster and Waring, deducing from Smeaton's experiments, as 2 to 1. Others forming conclusions from the same—Evans, &c., as 3 to 2. Smeaton says,—the velocity of the circumference of the over-shot wheel being known, the proper velocity of the water is easily computed by the common rules of hydrostatics.—It is well known that many good mechanics differ some, as to the best velocity of the gravitation wheel. So much were Smeaton's investigations and practical knowledge regarded, that, during many years of his life, he was a constant attendant upon Parliament—his opinions being continually called for.

J. S. gives the rule for the construction of the wheel he speaks of, from which I abstract the following: "then use 1000 lbs. of water per second for each bushel per hour," &c.—nothing relative to fall. Now, according to well known principles of hydrostatics, I consider such a rule to be erroneous; for if 1000 lbs. of water, *only*, is necessary to do what J. S, says it will, in the case of "eight feet five and one-half inches head," more than 1000 lbs. of water is necessary to do the same labor under a head of four feet head; and less than 1000 lbs. of water is necessary to do the same labor under twelve feet head. The quantity of water being the same, the effect is as the square roots of their velocities, or as their pressures. The same neglect of this principle is seen in the case J. S. mentions, of Major Heightley: "it (the wheel) will run until the water runs down some inches below the covering of the wheel; so that the water rises several inches higher than its head, and drives the saw with the *same power* the wheel would at 4½ feet head."

Now, taking the centre of the wheel and measure up for the head, and allowing the wheel to be constructed according to J. S.'s rule, and the saw to make 125 strokes per minute, we shall have the wheel about 29 inches diameter, and that the water has fallen 36 inches, or more, in the case of "Maj. Heightley." It is very remarkable that the wheel should give the same power when the water had fallen 36 inches, or more, as it would "under 4½ feet head." The conclusion is, if J. S. be correct, and his wheel adapted to different falls, which it should be to be useful: that the effect of water is as its quantity, without regard to its velocity; but if the effect is as the pressure, or the square root of the velocity, J. S.'s statement disproves itself, unless there is a co-agent with the water when it has fallen 36 inches or more, to make the power equal to "4½ feet head," or that the water undergoes a strange metamorphosis when it gets down some inches below the covering of the wheel. Facts are stubborn things—they carry with them an evidence, when discovered, that the most sceptical cannot fail to believe. S. L.

Alfred, Me., Jan. 16th, 1850.

GENEVA, N. Y., Jan. 16, 1850.

MESSRS. EDITORS,—I have observed with regret that my plan for explaining my theory requires more space than I had supposed it would, or than you can spare. I will try to condense the remainder.

In order to make my articles more complete and satisfactory, I did intend making more thorough practical experiments than I have yet made. I have a number of models prepared for that purpose, but having too long delayed, the ice will now prevent my having a good opportunity, perhaps for some time, though I hope not more than a few weeks. G. E.

Valuable Paper Rags.

The Cooperstown (N.Y.) Journal says a draft of $900 on Albany Bank, was found in the paper rags at a mill in that place. Accompanying it was the P.O. envelope and way bill. It was addressed to Richfield, and it is supposed that the P. M. at that place accidentally dropped it among the waste paper, which he afterwards sold.

There are 1,131 miles of Telegraphic lines in Canada.

New Inventions.

For Early Risers--Repeating and Alarm Clock.

Mr. H. O. Morrill writes us respecting a notice which appeared in the Scientific American of Dec. 29th, describing a clock, said to be invented by a mechanic in London, which would strike an alarm at any hour to which it was set, and ignite a lamp at the same time, so as to awaken him at any hour during the night, and show him how to dress himself. Mr. Morrill is the inventor of a clock of the same nature, which was exhibited at the late Fair of the Maryland Institute, and we see by the Baltimore Sun that it was noticed :—"No. 81. A brass eight-day and repeating and alarm clock, made and deposited by Mr. H. O. Morrill, of Baltimore. This clock is handsomely got up : it may be set to give an alarm at any moment, and while a man is getting up, it, by the same action, will light a lamp—a convenient article."

It is the first time that we have heard of Mr. Morrill's beautiful invention. We believe that the two clocks is a remarkable coincidence of mechanical invention, both original—the one in America, the other in England. Since the previous article appeared in our columns we have seen the Manchester Guardian, which thus further describes the invention previously spoken of :—

A mechanic, residing at 104 Newcastle street, Hulme, has constructed a little machine for the purpose of awaking himself early in a morning. To a Dutch clock in the kitchen he has attached a lever, from which a wire communicates through the ceiling in the bedroom above, in which he has fixed his novel invention. Having set the lever to any hour at which he may be wished to be awakened, when the time arrives, it is realised by the clock, and the machinery up stairs rings a bell, then strikes a match, which lights an oil lamp. The lamp runs upon four wheels, and it is at the same instant propelled through a tin tube on a miniature railway, about five feet long, which is raised by a small iron support, a few inches above the bedroom floor. Near the end of the "line" is fixed an elevated iron stand, upon which a small tea-kettle is placed, (holding about a pint,) and immediately under it by the aid of a spring, the lamp is stopped, and its flame boils the water in the kettle in twenty minutes, thus enabling him to take a cup of tea or coffee prior to going to his work. The bell attached is so powerfull that it awakes his nighbour, and the machine altogether is of a very neat appearance, the mechanism being of polished iron. The inventor has made it during his leisure hours, and has been about eighteen months in bringing it to a state of completion. He has also combined economy with utility, as the working of it does not cost more than a halfpenny.

Valuable Invention.

It is stated, as an illustration of the influence which inventive genius exercise upon manufactures, that some gentlemen in Boston, a short time since, employed an ingenious American machinist to devote some study to a mode of cleaning and separating into different qualities the wool from the River of Platte. The attempt was successful. The machine was produced. The wool was thrown into it and throughly cleansed and divided into three kinds good, better, and best, and is thus turned out assorted and cleansed and ready for market or manufacture. The wool costs six cents a pound, and the first sort procured from it is worth forty cents a pound.

[We hope the above is true but do not vouch for it.

Novel Rat Trap.

Mr. C. Jillson, of Worcester, Mass., has invented a singular rat trap to destroy rats without bait. The trap is placed over a rat hole and as sure as the rat attempts to go through it, he is pierced through with a sharp pointed spear, which is darted into his body. A trap of this kind is quite small, not weighing over an ounce or two to destroy the largest rat.

The inventor is about to secure his invention by a patent.

New Saw Mill.

Mr. Amos Jackson, of Pottawatamie county, Iowa, is exhibiting, at St. Louis, an invention of his—a saw mill which derives its propelling power from the weight of the log to be sawed. The principle is simple, and the invention will do away with all steam and water power saw mills.

[We copy the above from an exchange, and must say that the thing is not impossible when the log has a fall, like the weight which operates a clock, but what is to raise the log ? Why, the same power is required to do this that is given out to saw it. In some situations —in fact, in a number, this invention (we think) might be applicable, but steam and water power will still occupy their own domains.

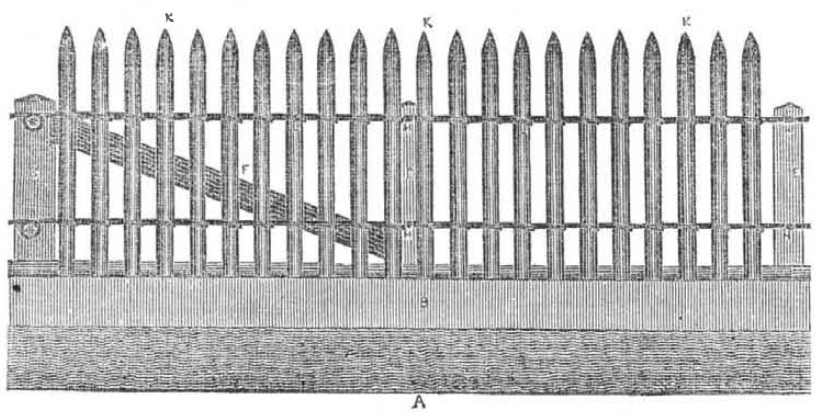
Glasses with Double Vision.

Mr. Gall, of Albany has, after a great deal of labor, succeeded in manufacturing spectacles with two distinct visions in a single lens. The one vision is for ordinary distances, the other for remote. The improvement has been examined by gentlemen skilled in such matters, and they pronounce it "good." So says an exchange.

Courts of Conciliation.

Governor Fish has proposed to the Legislature of New York the establishment of Courts of Conciliation, by means of which parties disposed to a just settlement of their differences can do so amicably, promptly and without the expense of lengthy and tedious suits at law.

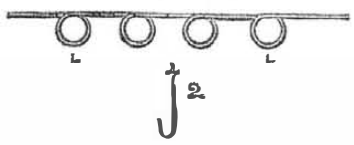
WIRE TELEGRAPH FENCE.--Fig. 1.



This fence is the invention of Mr. Lucius Leavensworth, of Trumansburgh, Tompkins Co., N. Y., and for which letters patent were issued on the 13th of last October.

Figure one is a front view end ; figure 2 is section. A is the ground ; B is the bottom board ; C, D, E, are the posts ; K K K are the pickets. L, fig. 2, is the wire ; H H are the binding hooks—one hook is represented in fig. 2. The bottom board is bevelled at the top, and the bottom of each picket has a notch in it to sit on the upper edge of the board. This makes the fence very firm. The pickets can be all wired apart from the place designed for the fence ; in other words, built in sections, and then the section at the left hand is swung into its place last, and the brace board F, is employed as a lever to stretch and tighten the fence, and make it perfectly firm. The hooks, H H, pass through the posts, to allow the wires to be drawn, and they can be tightened by the

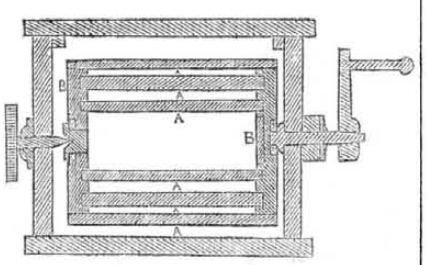
Fig. 2.



nuts in their heads, like screw bolts. The wires are first secured on the post, C, by the screws on it, so that the whole parts are of the most simple description. The wires are formed by a machine of Mr. Leavenworth, so as to retain the pickets in the most simple manner, like tieing them together. The wires are formed by the machine to suit any kind of pickets.—Cast iron posts, with stone seats, would make a fence that would last for generations. The tennons, in that case, should be of wrought iron well varnished. The pickets can be made of the most durable wood, at but little expense, for a very small quantity of timber will make a very long fence. The parts can be well painted and varnished with a cheap varnish at first, so as to preclude the possibility of rusting or decay for the future. On lands where a moveable fence is required, this fence is just the thing required. In a field of turneps, for example, sheep could be fed during winter in a very simple manner, by allowing them a small portion of the turneps to feed upon, and when that was consumed, to remove the fence to a greater distance, and then let them feed on the next section in the field, and so on, all winter. This fence offers but little obstruction to the wind, consequently no snow wreaths are heaped around it. It will prevent fowls from getting into any garden enclosed by it, and with suitable machinery, where timber is plenty, it is calculated that pickets can be got out for about 30 cents per rod, and the wire will cost about 25 cents. It is a good fence for exportation, and is well adapted for farmers on the western prairies, who generally have considerable ingenuity, and no doubt could build their own fences from the description we have given.

Communications (*p. p.*) addressed to Mr. Leavenworth will meet with prompt attention.

Telegraph Churn.

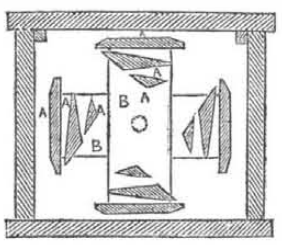


This Churn is the invention of Mr. Z. C. Robbins, of the City and County of St. Louis, Mo. It was patented on June 1st, 1849, and re-issued on the 1st of last January.

Figure 1 is a longitudinal vertical section, and figure 2 is a vertical transverse section. The same letters refer to like parts. The nature of this invention is to agitate the cream or milk by the operation of the rotation of the beaters, (formed for that purpose) like to the action produced by knives for whipping eggs. The specification says :—

I produce this effect by forming the beaters on the agitator, of thin slats or boards, A A, secured to radial arms, B B, or discs, in such

Fig. 2.



positions as to bring their sides at right angles, or nearly so, with the radii of the agitator. I generally construct the agitator of four series of beaters, as represented in the drawings, each series being composed of two, three, or more beaters, one placed within the other, with narrow spaces between each beater. I generally have the beaters of each series diminish in width from the outermost to the inner one, so as to bring their edges into radial lines from the axis of the agitator, and their rear edges within said line, for the purpose of gathering the butter. The front edges of the beaters are bevelled off nearly or quite, to sharp edges ; their rear edges are blunt, and on a line with each other. When the agitator is rotated in milk or cream placed on the churn box, the sharp edges of the beaters cut into and divide the particles, and gather the milk or cream between their converging surfaces ; and as the beaters ascend, they carry up quantities of milk or cream in the spaces between them, which is discharged in thin curved sheets at their rear edges in the atmosphere in the upper part of the churn, in such quantities as to completely envelope the agitator : producing thereby a complete agitation of the whole body of the milk or cream, and a mingling of the minutely separated particles of cream, with the atmosphere in the upper portion of the churn-box."

Unless the agitator is driven at a high velocity, the particles of milk, &c., are not thrown off tangentially. It can operate in a round vessel as well as a square one, and produces butter at the usual temperature, in about ten minutes. When the butter has been made, it is collected into a roll in the centre, by reversing the motion.

We herewith publish the claim of this excellent machine :

"What I claim is the series of parallel floats or beaters, A A, formed and arranged within the agitator, substantially as above described, so that when their motion is reversed, their thick inclined rear edges will gather the butter into a roll in the centre of the agitator, substantially as herein set forth.

Zenas C. Robbins, Solicitor for Patents, Washington City, is the owner of the above patent, who will promptly answer all (*p. p.*) letters, requesting information in reference to it.

Melsen's Process of Sugar Making Introduced into America.

The Franklin (La.) Banner states that Messrs. Lyman and Todd of that parish have adopted Melsen's process in sugar making and met with decided success. The sugar, according to the Banner, is a splendid article and the contrast between it and sugar made by the old process is represented as quite wonderful.—The sugar yielded but a very small amount of molasses, and what it did yield was uncommonly thick. The process by which this result has been obtained is as follows : A small quantity of the bisulphate of lime was mixed with water, and the mixture placed in a tin vessel over one end of the mill-bed in such a position that a small stream issuing from the vessel would mingle with the cane juice as it passed from under the cylinders to the spout leading to the cistern. By this means the fresh juice, as soon as it left the cans, mingled at once with the liquid, and such is the character of the bisulphate of lime that it at once neutralize every tendency to acidity that previously existed in the juice. Professor Melsen is of the opinion that the moment the juice leaves the cell of the cane it commences changing to an acid, and that if the bisulphate of lime is at once mixed with it, this tendency, so injurious to crystalization, is at once destroyed.

Action and Reaction Elastic Joint.

Mr. Levi Bissell, an excellent machinist of New York, has invented an improvement in making an elastic joint, or a bearing, to be an assisting medium between the power and resistance, or at those points where a change of motion takes place, such as the connection between the *rod* and the crank pin, and this makes it an improvement of great value for locomotives and marine engines. The bearing or joint in the link of the connecting rod, is placed between thin plates on both sides, which have an elastic medium between them of india rubber, or some such suitable substance, all firmly secured by the straps, and can be keyed or graduated by a screw. It will allow the crank pin to be firmly clasped, and enable the joint to work sweetly. At the point of action and re-action, it will graduate the breaking force, thus preventing shocks in the rods of pumps, and the breaking of straps on the links. One of these is about to be placed on a large locomotive on the Baltimore and Ohio Railroad. We will try and present an engraving of it at some future day not far distant. A patent is applied for.

Scientific American

NEW YORK, FEBRUARY 2, 1850.

Respiration--Ventilation.

Having been unfortunate enough, a short time ago, to experience the most disagreeable sensation, in a densely crowded, ill-ventilated room, we think that a few practical remarks on the subject, will not be out of place at this time, as we perceive that, for all we and others have said and written, it has been, to some people, like "water spilt upon the flinty rock."

It cannot now be denied, that the heat of the human body is kept up by a process of slow combustion, like that of fire in our stoves :—the body is supplied with carbon in the shape of food, and the slow combustion of it producing heat, consists in its combination with oxygen, supplied by respiration. The heat of the human body, by a law of the great Creator, is the same in all countries, viz., 99°; and whether man be a dweller on the snow-capped cliffs of the Andes, or basks under the red brazen sky of the tropics, the heat of his body, if tested by a thermometer, is the same to a degree. The combustion of carbon, then, being the means of animal heat, every man requires a supply of oxygen for the lungs; in proportion to the carbon (fat) consumed in food. In warm countries less carbon is required, because internal combustion need not be so rapid. This is the reason why vegetable and lean food is most healthy in warm climates, and why the people at the Northern and Southern poles can devour, without hurt, tallow and oil. In the combustion of our food, or act of respiration, our lungs absorb oxygen and give out carbonic acid gas, and water. It is therefore positively necessary to inhale pure oxygen, and drive away the carbonic acid as fast as possible, out of the room in which people are assembled for any purpose—either in public or private dwellings. Each grown up person takes about twenty respirations in one minute, or 28,800 in twenty-four hours. Sir Humphrey Davy estimated the emission of carbonic acid gas from the lungs every minute to be about 26½ cubic inches. We can, therefore, very easily judge how soon the atmosphere of a crowded room becomes vitiated; and this accounts for the faintings and sick headaches, so common to many people in such cases. When the same air is breathed over and over again, about ten times, respiration becomes oppressive, and insensibility takes place. Such air, when submitted to chemical tests, is found to contain 79 parts of nitrogen, 10 of carbonic acid, 4 of oxygen, and 7 of a peculiar oxide of carbon. How necessary, then, to health, is a good and plentiful supply of fresh air for ventilation. In crowded meetings, where the apartment is illy ventilated, no person can find enjoyment, for the lungs soon become oppressed, and the unoxygenized blood knocks with terrific blows upon the brain, as a warning of danger. Carbonic acid gas produces suffocation, hence the oppression on the chest, and pressure on the brain, in close apartments. Nitrogen gas is also the occasion of death, by producing deleterious effects upon the blood. Surely, then, it is essentially necessary that every house and hall, where there are living beings, should be well supplied with fresh air. Yet in this nineteenth century, in this enlightened land, and in the great city of New York—the more than London of the New World—the laws of ventilation seem to be less understood by many than by the wild Indian that roams with bow and spear on our Western wilds.

It is well known that one individual, constitutionally as well as by the nature of his occupation, requires more atmospheric air than another. Those who labor hard require more than those engaged in sedentary occupations. Those employers who neglect good ventilation, are ignorant of that philosophy which leads to the greatest amount of product. During our winter seasons, it would greatly promote the health of our women folks, if they depended more for heat on warm clothes and exercise than close apartments and red hot stoves. We commend this subject to their attention, with the positive assurance, (if they obey its teachings) of a perfect preventative for many headaches and other maladies—of mind as well as body.

A Caveat.

"Does, or does not, a Caveat give any sort of protection after one year? If A should enter a Caveat for an invention, but should find himself unprepared to attend to it, would the Patent Office grant B a patent for the same thing, if he should apply two years after A put in his Caveat? I am aware that A would be entitled to a notice during the first year, but would he not be entitled to a patent at any time, and would not others be prevented?"

The above are a few queries of a correspondent, who adds, "the public want some light on this point of the Patent Laws." The Law should be rendered more plain; but after the first year from the filing of a caveat, the Patent Office must issue a patent to another person for the same thing, if applied for. No defence against granting a patent can be set up for a caveat, when another is not entitled by law to a notice of three months. Our Patent Laws, however, are very defective in drawing clear lines of distinction between the time when an inventor forfeits all title to receive a patent. According to the present law, the Caveat should cover a period of two years instead of one, for it is specifically provided in Sec. 7, Act of Aug., 1842, that a machine may be in use for two years before applying for a patent, without invalidating the inventor's right. Any person can, at any time, contest the right of a patentee to priority of invention by a Bill in Equity. See Sec. 16, Act. 1836. If a person files a Caveat, and allows it to expire (one year), and another secures a patent afterwards for the same invention, the only remedy is to apply for a patent, when he will be rejected, provisionally. He then must request the Commissioner of Patents to "declare an intereference, and allow evidence to be submitted to prove priority of invention. The Caveat is then of benefit. The Commissioner will appoint a day for the hearing of evidence, and make his decision on the facts of the same. If either of the parties are displeased, an appeal can be taken to the Chief Justice of the District of Columbia. Interfering applications are decided only upon evidence—the first inventor has the right by law to the patent, but by the strict construction of law, no patent of a machine would be valid, if in public use more than two years, before application was made for a patent. The secret use of a machine, cannot be offered in evidence to establish prior right. Any judicial Court, however, has the power to annul a patent—to declare it void, in whole or in part.

Cheap Postage.

The New York Cheap Postage Association has expressly stated that one of its original and fundamental objects, is to effect a postal reform by which pre-paid letters, under half an ounce, shall be carried to any part of the United States for two cents. We hope that Congress will pass such a Bill this Session. We have no fears of a decrease in the revenue—not the shadow of a fear.

We also advocate an ocean two cents postage law for the whole world. We heartily concur in the views of Elihu Burritt, in regard to the limits of such a system. A letter from New York to Liverpool costs 24 cents—nearly as much for carriage as a barrel of flour. In the name of common sense, how is it that a letter becomes so heavy on sea beside what it is on land? In England, a letter of half an ounce will be carried for one penny from Dover to John O'Groats, but whenever it gets on board an ocean steamship, somehow or other it gets very heavy all at once—passing into the scale at half an ounce, and out on the other side six times heavier. It is a strange process, that of postal transformation. Chemistry has its wonders, and so has Geology, but none to equal this. It surely must be built on that scientific deduction, ascribed to Faraday, that "a drop of water contains as much electricity as would sink a ship."

There were 3114 admitted into the Bellevue Hospital last year :—Irish, 2,050; Americans, 616; Germans, 193; English, 138; Scotch, 63, other countries 50.

Works on Science and Art.

MANUFACTURE OF IRON.

By Frederick Overman, published by Henry C. Baird, successor to E. L. Carey, corner of Market and Fifth streets, Philadelphia.

This Book stands alone in its peculiar field. The author is a Mining Engineer, and the publisher deserves great praise for the neat and beautiful manner in which it is executed. It is a complete octavo volume of 500 pages, illustrated with 150 excellent wood engravings. It treats of the manufacture of iron in all its various branches; and the aim and spirit of the author, was to make it a work of practical utility, and he has succeeded. The first part of it is a chemical classification of the Iron Ores, describing their nature, locations; their behavior before the blow pipe, when treated with alkalies and acids: also the theory of reducing the ores to metals—embracing the roasting of them, cleansing of the roasted ores, &c., and has a very excellent section devoted to the art of mining; concluding with instructions for assaying the ores. Of this no man, who has charge of a mining establishment, or a blast furnace, should be ignorant.

The next chapter is a treatise on Fuel—the manner of mining coal, charring it, and wood also. This section is beautifully illustrated with engravings of all the various kilns and modes of charring.

The next section is on the Reviving of Iron, or Smelting the Ores. All the various kinds of furnaces are shown and described. The best kind of fluxes for the different ores set forth, and the fuel best adapted for each, considered. This is a part of the iron manufacture, which is of the utmost consequence to be well informed upon. On the skillful management of the smelting, the success or failure of every *iron* manufacturing enterprise depends. We are sure that something new will be found in this section, for the most experienced.

The next section treats of the manufacture of iron—making wrought iron. The different kinds of forges are illustrated—American, English and German, and the various modes of operation described. This embraces the puddling furnaces, both for anthracite and charcoal, and the different processes of manufacturing the various kinds of iron. This is an exceedingly valuable section. The next treats of the forging and rolling, illustrating the subject with cuts of the different machines.

The next five sections treat of Blast Machines, Hot and Cold Blast, Waste Heat and Gas, Fire Brick and Refractory Stones, and Motive Power, and concludes with a splendid and practical treatise on the Manufacture of Steel—Damascus, German, Blistered, and Cast.

We have been thus particular with this book because we have had many enquiries made asking "Whether there was a good American work on the subject or not." This is the *work*. The price is $5.

THE SEVEN LAMPS OF ARCHITECTURE.—This is a work published by John Wiley, Broadway, New York. It is a remarkable book, quite original; in fact it is unique in itself. The author of it is John Ruskin, author of Modern Painters. It is divided into seven sections :—1st. The Lamp of Sacrifice; 2. The Lamp of Truth; 3. The Lamp of Power; 4. Lamp of Beauty; 5. Lamp of Life; 6. Lamp of Memory; 7. Lamp of Obedience. The object of the author is to elevate the mind of the architect with a sense of "the sublime and beautiful," as connected with his profession, to lift him up to study other objects than the mere mechanical and mathematical details of it. He makes a grand distinction between Architecture and Building, and views the former, as "the Art which disposes and adorns the edifices raised by man, for whatever uses, that the sight of them contribute to his mental health, power and pleasure," while building is but "to put together and adjust the several pieces of any edifice." The nature of the different styles of architecture is admirably treated, and no man who looks above the mere drudgery of his profession, can fail to acquire many new, excellent and original ideas from it. The price is $1,25.

DICTIONARY OE MECHANICS, ENGINE WORK AND ENGINEERING.—No. 2 of this excellent work, by D. Appleton & Co., New York, is a very beautiful and good number. It finishes the article on the Croton Acqueduct. It has engravings of the Archimedian Screw Propeller, Machinery for Boring Artesian Wells, with all the appropriate tools, and has some excellent cuts and descriptions of engines, among which are Richard Coffin's and Wm. Ash's, which appeared in our last volume. There are also good engravings of the axles for turning narrow curves, invented by Messrs. Morse & Mansfield of Canton, Mass., described in our Vol. 4. These inventions, selected from the Scientific American—the American Repertory of Inventions, shows that the work is edited with judgment and ability. It will no doubt have a very extensive circulation and it deserves it.

New York Institute of Civil Engineers.

This Institute, which was organized January, 1840, as noticed by us in our last volume, has furnished a set of rooms in the City of Albany, and laid the foundation of a large and valuable collection of books, maps, models and geological specimens. Its members are men of no common stamp, both for scientific attainments and respectability of character. We are informed by our friend Mr. Saml. McElroy, C. E., Albany, that "of some 300 engineers in the State, the Institution now numbers about one-third." Our President, he says, "is a gentleman who never deserves an enemy nor loses a friend."

The officers for the ensuing year are : President, Richard V. De Witt, Esq.; Vice Presidents, E. W. Serrell, C. W. Wentz, G. W. Carpenter, and C. R. Babbitt; Actuary, Wm. Pitt.

We believe that this institution will yet be eminently useful, and confer honor upon the Empire State. The President is a Civil Engineer of great experience, and is a son of old Simeon De Witt, whose name and fame gilds the pages of our nation's history.

New York State Agricultural Society Prizes.

At the recent meeting of the State Agricultural Society, a Report was presented and read by Mr. Delafield, (Vice President,) on essays, experiments and works for schools. Mr. Delafield remarked that the science of Force and Motion was essential and important to the perfection of the farmer's work—that some knowledge of practical mechanics was necessary to a right understanding of the tools used in cultivating the earth, their uses, strength and proper construction : that the forces of fluids as well as solids, were useful and needed his study, as facilitating operations in draining, in irrigation and protecting his soil from injury by running streams :—that the common occupation of loading wagons and other farm operations, evidence the need of knowledge of the laws of gravity; with these impressions, it was urged that a premium be offered for the best essay on Mechanics, on the science of Force and Motion, to be divested as far as practicable of technicalities, and illustrating the importance of this branch of science, in prosecuting successfully the ordinary pursuits of agriculture.

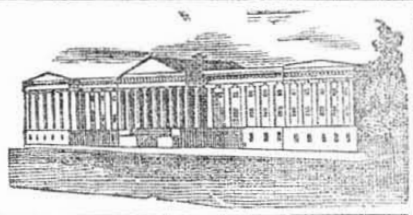
We learn that the society determined, at a subsequent meeting, to offer a premium as recommended.

A good Water Wheel

There is in the village of Walden, Orange Co., N. Y., an over-shot wheel, of 16 feet diameter, 12 feet buckets, (30 horse power) which was built in 1822, at a cost of $600, and has only cost $50 for repairs in 27 years. It is completely protected from ice. The whole cost of the wheel, dam and repairs, has not exceeded $150 per annum.

The Telegraph Controversy.

We have received a printed circular defending the Morse's Lines of Telegraphs, and which is somewhat severe on the House and Bain's Lines. We are sorry to see so much controversy and ill-feeling existing between the different lines. The question is, "who began the war?" We know something about it. We do not know who the author of this circular is, —it is signed L. G., and we had to pay the postage.



LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending January 22, 1850.

To Wm. R. Battle, of Powelton, Ga., for improvement in Trusses for Hernia.

I claim the peculiar bend of the elliptical springs, as described in the foregoing specification, so as to cross them in front, and make the spinning on one side support the opposite side, thereby giving a better pressure with more ease and comfort to the wearer.

To Hiram Camp, of Dunkirk, N. Y., for Candle Mould Apparatus.

I claim the before described mode of making candles by using the candles previously drawn from the moulds, to hold the wicks for the succeeding candles, in the centres of the moulds, until the latter become sufficiently hard to sustain their own wicks, as described.

Second, I claim the combination of the frames, recesred candle holders, frames, and spools, containing the continuous wicks with the candle moulds, as described.

Third, I claim the employment of the rerevolving platform in combination with the hinged mould, constructed as aforesaid, arranged and operated in the manner and for the purpose set forth.

Fourth, I claim the manner of raising the outer end of the spout of the vat, simultaneously with lowering the gate for the purpose of stopping the dripping of the tallow whilst turning the frame of moulds, by combining the spout with the gate by the stirrup, roller, and lever, as described.

I do not however, intend to confine my claim to the precise construction described, in the foregoing specification, but to use such a form of construction as may be the best adapted to accomplish the desired objects, by means substantially the same.

Neither do I claim any portion of the machine above described, that has been practised successfully by others, prior to its being invented by myself.

David Eberly, of Strasburg, Pa., for improvement in gearing and ungearing seeding apparatus.

I do not claim the four double bevel cog wheels, nor the horizontal bevel cog wheels, as my invention, as they have been heretofore used in machinery, and are old devices, but I claim the devices used herein for gearing and ungearing the seeding apparatus, as described.

To Matthew Elder of Mansfield, Ohio, for improvement in Bedstead Fastenings.

I claim the giving the portion of the fastener that is secured to the ends of a rail, of a tubular shape and of such a size that the portion thereof that projects from the end of a rail will embrace the fastening plate that is secured to the side of a post; when this arrangement is combined with the lugs, projecting inwards from the extremity of the fastener and notches, and inclined planes on the plate, substantially as herein set forth, by means of which the respective parts of the bedstead fastener can be secured to the posts and rails of a bedstead, without forming a mortise in either the one or the other.

To Daniel Hoats, of Milton, Pa., for improvement in the concave of cornshellers.

I claim, first, connecting the opposite sides of the concave, substantially as herein described, whereby they may be moved simultaneously towards or from the cylinder, without changing their relative distances from the same.

Second, I claim the combination of the screen or grate with the punches for freeing its meshes from obstructions, substantially as set forth.

To Wm. W. Hubbard, of Boston, Mass., for improvement in the gridiron slide valve.

I claim the peculiar arrangement of the exhaust mortises or spaces, (six) in the sliding valve, between and around the inducting and educting passages, (4), through said valve, in combination with the elongated side slots or passages, through the valve seat, leading to the exhaust chamber, the whole arrangement and operation being substantially as herein above set forth.

To John Pawling, of Morgantown, Pa., for improved Tuyere.

I claim placing within a chamber, having numerous apertures at the top, and a discharge valve at the bottom, an upright pipe open at beth ends, in the manner described, whereby a blast of the greatest intensity is delivered at the centre of the fire, and the vertical pipe may be readily freed from ashes, cinders, &c.

To M. F. Potter, of Charlemont, Mass., for improvement in Portable Furnaces.

I claim my portable furnace, constructed with a diving flue, open at the bottom, so as to adapt it readily for use to the boiler holes of cooking stoves, in the manner above specified.

To James Radley & J. W. Hunter, of New York, N. Y., for improvement in Spark Arresters.

We claim, first, the arranging of a series of chambers and channels between two conically shaped plates, the channels being so formed as to cause the products of combustion to impinge against that side of each of the dirt chambers, which has the openings and caps, and thereby force the sparks, dirt, &c. &c., into them, in the manner described herein. We also claim he combination of the double conical cap or cover, for the formation of the second series of dirt chambers, with the pipe, the whole being combined and operating substantially as described.

To Ann F. Stiles, of Southbury, Conn., for improvement in cases for daguerreotype pictures.

I claim the new manufacture of daguerreotype cases, to wit, securing the pictures in a glass tube or case provided with a magnifying lens, said tube being blackened on part of its inner surface, and admitting the light through another part, to the plate in the manner herein described.

To Geo. Welsh, of Washington, D. C., for chain and flange apparatus for opening and closing window shutters.

I claim the combination of links and a centre nut with a stationary curved flange, exterior to the chain, to guide the links in such a manner that they may be operated to turn the centre pulley or nut, either by pushing or pulling as herein set forth.

I also claim, in combination with the sliding bar and links, herein set forth, the arm on the centre nut, and the notch on the bar for locking the shutter and taking the pressure off of the links when the bar is pushed in and the shutter fastened, as described.

To Wm. B. Willis, of near Charlestown, Va., for improvement in Seed Planters.

I do not claim the frame, hopper, stirrer, slide, drills, nor any of the parts heretofore used in seeding machines. I only claim the employment of the flanged, supporting, conveying, cleaning and covering wheels, made as described, in combination with the rest of the machine, when made in the manner as above set forth, for planting cotton and other seeds, and for other purposes.

To E. K. Wisell, of Warren, O., for improvements in chucks for boring and mortising machines.

I claim the self-centering chuck, constructed substantially as herein set forth.

To J. Young, of West Galway, N. Y., for improvement in Atmospheric Churns.

I claim the combination of the inverted vessel, and the disc on the stem of the dashers to prevent the splashing out of the cream at the churn lid.

To A. D. Brown, of Clinton, Ga., for improvement in the Cotton Press.

I claim the pulley, with its axis eccentric to its centre, in combination with the stock or follower of the pressure block, to compress cotton, &c., in the bale box, in the manner substantially as herein described.

RE-ISSUES.

To James Root, of Cincinnati, Ohio, for improvement in Cooking Stoves. First patented July 18th, 1848.

I claim the movable back plate for contracting the fire and protecting the oven plates, as herein set forth; and I wish it to be undertood that I do not claim the employment of double plates at the back of the fire, when such plates are stationary, but only when made movable, so that the front and top plates of the oven are always protected back as far as the flanch on the moveable plate extends.

I also claim, in combination with the elevated fire chamber and projecting oven under a part of said fire chamber, the ash pit, formed by projecting the bottom and sides of the stove under the sunk hearth, which is level with the bottom of said fire chamber.

For the Scientific American.

The Electric, and Artificial Light.

Good and cheap artificial light is one of our greatest social blessings. Discoveries in science and art enable the masses of the present day to enjoy luxuries of artificial light, that were denied to Princes, no farther back than 1558. At that period the courts of the Kings of France were illuminated with vases containing pitch, tar, and such like substances—a mode of illumination that would now be despised by the humblest retailers of fruit at the corners of our streets. Our city is now lighted with a subtle, invisible fluid, which courses through its secret channels like the life-blood through our veins. By a touch of the hand we can command a light of dazzling brilliancy, or reduce it to a feeble glimmer—languid as a dying smile. We have lights without smoke, and lamps that need no watcher, like the ancient Magi, to feed the sacred flame. Oil lamps are of great antiquity, being used by the children of Israel, and the Romans used, (in cases of festivals,) to illumine their streets with resinous wood ignited in chaffing vases. London and Paris contend for the honor of introducing street lighting, but to an humble engineer, Mr. Murdock, belongs the high honor of first successfully introducing it into public use on a large scale, at Soho, England, in the shape of gas light. When this was first done it created as great astonishment among the masses, as the electric telegraph at a later day. Since Mr. Murdock first introduced coal gas, its use has been gradually extending, and now it may be said to embrace the whole world. It is employed even in the Wild Island of New Zealand, as well as in the Metropolis of this Republic. As artificial light consumes a vast amount of capital every year, various plans have been proposed, and various discoveries asserted to have been made, to supersede it, by providing a cheaper and as good a substitute. Solar gas companies (making gas from oil) were organized in Britain, but were unable to compete with coal gas. Where coal is cheap the gas is cheap, but in some countries oil gas might be made cheaper. When the oxy-hydrogen light was discovered, many prophecied the death of all the gas companies, but instead of any substitute being yet discovered to supersede coal gas, its sway is extending rapidly. Since the discovery was made that water was a compound of two gases, various alledged discoveries have been brought forward from time to time, to use it as an illuminating power. The power of the galvanic current in giving the brilliant Electro Carbon light, has been frequently trumpeted before the world, as a cheap substitute for coal gas; and recently in our own land the water gas light, as a cheap substitute for *all lights*, has been heralded to the world by the pen of the discoverer, and more recently by that of Mr. R. Porter.

Whenever an alledged discovery is brought before the public, it then becomes a sort of public property—a fair subject of criticism.

I have seen an article in the Philadelphia Ledger, copied from the Washington Union, under the signature of R. Porter, lauding the wonderful discovery of Mr. Paine. Mr. Porter says: "I am authorized to announce the discovery and practical test of the most important scientific invention ever yet produced or brought to light, since the world has been inhabited by man." This invention is nothing less than that already heralded by Mr. Paine, *the* discoverer, in the columns of the Scientific American. Mr. Porter says that it will "revolutionize commercial intercourse, break down monopolies, and contribute hundreds of millions to the benefit of mankind." He farther states, that "without the use of acids, batteries, or the application of anything but a mechanical power of less than 1-300 part of a horse power, Mr. Paine's machine will decompose water and produce 200 cubic feet of hydrogen gas, and 100 cubic feet of oxygen gas per hour, at an actual cost of less than one cent, and that this will furnish as much heat as the combustion of 2,000 feet of coal gas, and sufficient to supply light equal to 300 common lamps for ten hours." Now the great beauty of all this extravagant communication to the *Union*, lies in this, that after stating he was authorized to announce this wonderful discovery, Mr. Paine, in an article to one of the Boston papers, says that Mr. Porter makes this statement, so far as it relates to the application of the gases, "on his own authority." There is a wide breach between the statements of these two gentlemen. If it is really a fact that such a great amount of water can be decomposed at so little expense, the discovery is a wonderful and a valuable one. Mr. Paine built a tower in Worcester, and burned his light, it seems, till last September, when an explosion took place. The light is a *Drummond Light*, judging from Mr. Paine's statements. The combustion of the elementary gases of water, must be managed with great care, or they will explode like gunpowder. Mix hydrogen and oxygen in a bladder, in the proportions, bulk 2H+1O., puncture the bladder with a needle, put a match to it, and it goes off like a *shot*, tearing the bladder in fragments. Mr. Porter states, in the Union, that "a steam engine furnace, and a parlor stove have been invented to burn these gases." What a very foolish thing to invent a parlor stove at all, when a few jets is quite sufficient both to heat and illuminate any parlor, according to his story.

The combustion of these gases will not produce a good white light, but of this Mr. Porter seems ignorant. The proper proportions, for the best kind of light yet discovered to be burned in the open air, are carbon and hydrogen, of an equal number of equivalents, H+C. Long practice and many experiments have demonstrated this. That some other combination may prove better, I will not deny, but the public has yet to be enlightened upon the subject, to judge of the same. And why is the public not? In the month of November, 1848, Mr. Paine published a circular, announcing his discovery to the different scientific bodies of America and Europe, in which he stated that he would exhibit his apparatus one year, at the termination of which he "would make public the mechanism of the Generator." Has that promise been kept? Why in New York? Why in Boston? Why in Washington, is the public yet to be informed of this discovery, which is to annihilate all the wealth of the Pennsylania coal fields, and all the camphene trade of North Carolina? All that he cared for at that time was the honor of the discovery.

There is one application of this discovery which is really a good one, as Mr. Porter states in his Washington letter. It is no less than "the removal of the only obstacles which have hitherto existed to ærial navigation—the difficulty of procuring hydrogen gas and carrying a cheap supply of fuel;" and he says, "it may be considered a matter of certainty that men will be seen swiftly and safely soaring in various directions before the first of May next." This gentleman found no such obstacle to his navigating the air during the California fever last winter. He was to make a passage from New York to California in three days. Passengers were invited by handbills to take their tickets for seats in his balloon. He asserted that "200 passage tickets, at $50 each, had been engaged prior to February 15th." His balloon was to start for California about the first of April, "cruising along by the steep and rugged sides of the rocky mountains, astonishing the grisly bear, frightening the antelope and terrifying hordes of buffaloes." After the failure of that æriform enterprise, it will require more than mere assertion to warrant the reposing of any confidence in any project got up by such a savan. If this Electric Light is so cheap, why not bring it to New York at once. The inhabitants here are aroused against the present gas companies, and would at once patronize any other cheaper mode of illumination.

I have not said any thing reflecting personally; my object was to deal with public things, and I have so confined myself.

CARBURETTED HYDROGEN.

New York.

TO CORRESPONDENTS.

"S. M. J, of Iowa."—You must furnish a drawing before we can give an opinion upon the novelty of your invention. Patent Laws sent.

"J. F. R., of Pa."—You will please inform Mr. P. that we are not prepared to furnish the Alcott lathes framed. He had better address the inventor for such particulars. We are of the opinion that machines for making horse shoe nails are used at the Troy Nail Works, but we may be mistaken. Such machines are in use.

"J. R. T., of N. Y."—The model of Mr. Clark was forwarded to the Patent Office on the very day it was received here.

"S. V.," of Charleston."—The work which Mr. Peake ordered will be sent by the "Northerner," on Saturday, Feb. 2d. Money received and names entered according to instructions.

"D. O. T., of N. H."—From perusing a description of your improvement for arranging window blinds, there seems to be some new features about it, although similar results have been often produced by different mechanical movements. By sending us a model we can better judge the merits of your invention than by the drawing which we have before us.

"G. E., of N. Y."—No patent could be secured on the signals you speak of. The colored signals, at switches, are used on the English railroads, and these are illuminated. An evil disposed person could remove the lamp—this is the danger. A complete remedy has been adopted on the Newark and Jersey City Railroad.

"J. H., of N. Y."—We know of no patent on such a quilting frame as you speak of—nor, to our knowledge has any like it been used before. Frames for tambouring roll the web upon one roll from the other, by a lever and ratchet wheel, but these frames do not fold up like yours. We believe you can get a patent.

"W. L. H., of Ohio."—There are various plans patented to graduate the quantity of water, so this would not be patentable. We know of no flange constructed as you have described, for admitting the water as stated by you; but are you positive that it would be advantageous? We knew of nothing that would stand in the way of a patent. Caoutchouine is not sold in any depot in this city, its price not known.

"A. M., of Ohio."—We believe that your instrument for measuring distances without a chain would answer on a level, but we cannot see how it would answer on hilly ground. It can be very easily tried This is the best way to do with every instrument.

"W. K., of Pa."—We are giving yours attention.

"C. S., of Ky."—The idea of admitting steam through a journal, is not new, but you may have a different plan from any other in use. It would be well to prepare a rough drawing and forward it for examination, if you should conclude to do so, bear in mind to describe it well by letters of reference.

"P. L. C., of La.',—Will endeavor to write you in a few days, in answer to your queries.

"A. G., of La."—Your letter containing $10 came safe, and the amount has been credited to the subscribers.

"J. D. W., of R. I."—Your *Rest* is good, but we are afraid that the Patent Office would object to a patent, on the grounds that a similar contrivance has been presented there before. We have seen one nearly like it ourselves, and could not advise you to be at any outlay. The expence would not be less than $50. The first thing to be done would be to make a model.

"C. D. R., of Mass."—As soon as your model arrives we will give it an examination and advise you in regard to its novelty. $2 received and credited.

"W. P. B. of Geo."—We are unable to find a copy of Mifflin's Engineering, and presume it is out of print.

The amount $3, has been placed to your credit.

"J. H., of Pa."—We will soon answer you.

"J. O., of Pa."—Your letter of the 18th, and contents, came duly to hand. The names have all been entered, and the back numbers sent as desired. Your invention is evidently a vast improvement over the usual mode of securing the spout, etc., but as the nature of the apparatus is not materially changed in your invention; we do not think you could obtain a patent upon it.

"N. & E., Phil."—We are yet unable to recommend to you a good dyer, but will insert an advertisement for one next week. "Morrin's Dynomiter" is the instrument you require, but is expensive. Perhaps some of your engineers could construct one after his plan; Morrin is a Frenchman, and we think his apparatus is not patented in this country.

"W. A. P., of N. Y."—The plan which you advance for Mr. E., for raising water and retaining it in a reservoir, and also the mode of distributing it, is no doubt a very economical way; but it would not possess any patentable novelty: all you could make claim to, would be of combining several well-known devices for accomplishing a certain purpose, which would stand more than an even chance to be rejected. Your mode of raising water is not new—the manner of retaining it is not new, and the mode of distribution is not new—although the combination arranged precisely as you suggest may not have been used.

"J. R. J., of Md."—We know of no one at present who would like to exchange a steam engine, lathes, &c., for castings, but presume, if you would have a brief advertisement put into our advertising columns, it would bring you a customer.

"D. T. G., of Ind."—We fear, if you should apply for a patent on your Sausage Machine it would meet the same fate as your application did on Rat Traps. It is a fine way to hash meat, as your knives are arranged, but machines constructed essentially like yours are in common use in this vicinity. No patent could be obtained for your device. $1 received and credited as desired.

"J. P., of N.Y."—Your model has been received, and we will write you in a few days concerning the matter.

"K. & P., of N. Y."—There are many works that contain the information you desire. We can send you a copy of a work that contains such information for 50 cents.

"J. A. H. E., of N. Y."—Your improvement on the Grain Reaper appears to be a good one, and entirely new to us. But whether it would be profitable to you or not, we could not tell. It is no doubt patentable. It would cost about $50 for fees, &c. A Caveat should be entered.

"M.L.S., of Pa."—We have examined your drawings and description. We know of no "Bush," exactly the same, but there are a number of patents for the same thing in substance. Three patents were granted in 1840, for modifications of the same thing. We do not think a patent could be secured for it.

"S. P. J., of Boston."—We do not know where Mr. Cochran is. He is either at Chatham or Woolwich Dock Yards. It is patented here. You can procure a copy from the Patent Office, but it will cost considerable, for the specification is very long: we have seen it.

W. B., of N. J., W C. W., of N. J.—Caveats of your inventions have been filed at the Patent Office.

J. S. A., of N. Y.; T. S., of N. J.; H. J., of Ind.; W. N. S., of C. W.; S. T. P., of Me., and F. G. M., of N. H.—

The specifications and drawings of your several inventions have been forwarded to the Patent Office since our last issue.

Money received on account of Patent Office business, since Jan. 25, 1850:—

E. F. W., of Conn., $30. H. T., of Ind., $23. T. S., of N. J., $10. F. D. B.., of N. H., $25. R. S. T., of Vt., $20; and W. C D., of N. Y., $28.

Notice.

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

Dyer Wanted.

STAR MILL, KENSINGTON, Phila., Jan, 18.

MESSRS. MUNN & Co.—We are in want of a first rate woollen dyer—a man of intelligence, and particularly one of sobriety—who can dye all colors, both on wool and in the hank, and who would have some ambition to keep his colors always at the same shade. We dye only the wool and yarn, which we weave ourselves, on 76 looms. The dye-house is new and convenient; and as all Kensington knows, there is not a pleasanter place for a man to work at than at our mill. We should be willing to give good wages, and the man could, if he preferred, bring his own assistants, of which there would be two needed. Respectfully yours,

NEEDLES & EVANS.

[A person who thoroughly understands the business of dyeing will find that Messrs. N. & E. can offer such inducements as will be worth their attention. The applicant must be a man of sobriety and intelligence. M. & Co.

Back Volumes.

We are no longer able to supply Vols. 1, 2 and 3 of the Scientific American. We have on hand about 50 copies of the 4th, Volume bound, price $2,75, if any of our subscribers are intending to order a copy, they had better do so without delay.

ADVERTISEMENTS.

Scientific Museum.

For the Scientific American.

On Tanning Leather.--Preparation of Hides.

(Continued from page 122.)

TAWING, CURRYING, AND LEATHER DRESSING.

The skin of lambs, (as noticed last week), is then again softened by being thrown into a vat of bran and water, and kept there for some weeks in a state of gentle fermentation, being occasionally returned to the beam. All the thickening produced by the lime is thus removed, and the skin is now as highly purified as possible, and becomes a thin extensible white membrane, called in this state the pelt, and is now fit for any subsequent operation of tawing, dyeing, oil-dressing, or shammoying.

KID AND GOAT SKINS.—The method of bringing kid and goat skins in the state of pelt is nearly the same as for lambs, except that the liming is used before the hair is taken off, the hair being of no great importance, and sold only to plasterers, but the lamb's wool, which is more valuable, would be injured by the lime.

If the pelts are to be tawed, they are then put into a solution of alum and salt in warm water, in the proportion of about 3 pounds of alum and 4 pounds of salt to every 120 middle-sized skins, and worked about in it till they have absorbed a sufficient quantity. This again gives the skin a remarkable degree of thickness and toughness. The skins are then taken out and washed in water, and then again put into a vat of bran and water, and allowed to ferment for a time, till much of the alum and salt is got out, and the unusual thickness produced by it is for the most part reduced. They are then taken to a lofty room, with a stove in the middle, and stretched on hooks, and kept there till fully dry, when they become tough and flexible, and quite white leather; but to give them a glossy finish, and to take off the harshness of feel still remaining, they are again soaked in water to extract more of the salt, and put into a large pail containing the yolks of eggs beat up with water. Here the skins are sodden for a long time, by which they so completely imbibe the substance of the egg that the liquor above them is rendered almost limpid; after which they are hung up in a loft to dry, and finished by glossing with a warm iron, which completes the operation.

The essential difference, therefore, between tanning and tawing is, that in the former case the pelt is combined with tan and other vegetable matter, and in the latter with something that it imbibes from the alum and salt, (probably alumine,) and which certainly is never again extracted by the subsequent washing and branning.

ENGLISH MOROCCO LEATHER.—The leather called morocco leather, which is chiefly prepared from sheep-skins, and used so largely for coach-lining, pocket-books, and the best kind of book-binding, is thus made:—The skin, cleansed and worked in the way already described, is taken from the lime-water, and the thickening thereby occasioned is brought down, not by bran liquor, as in tawing, but by a bath of dog's or pigeon's dung, diffused in water, where it remains till sufficiently supplied, and till the lime is quite got out, and it becomes a perfectly clean white pelt. If intended to be dyed red, it is sewed up very tight in the form of a sack with the grain side outwards, (the dye being required only on this side,) and is immersed in a cochineal bath of a warmth just equal to that which the hand will bear, and is worked about until it is uniformly dyed, a process that demands much skill and experience. The sack is then put into a large vat, containing sumac infused in warm water, and kept for some hours until sufficiently tanned. The skins intended to be blacked are merely sumaced, without any previous dyeing.

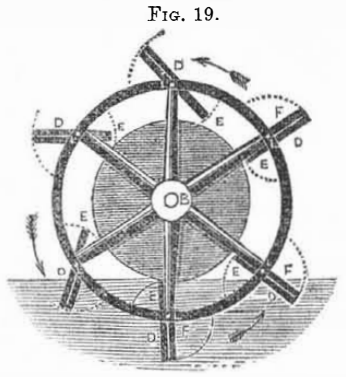
After some further preparation, the color of the fine red skins being finished with a weak bath of saffron, the skins, when dried, are grained and polished in the following manner:—They are stretched very tight upon a smooth inclined board, and rubbed over with a little oil to render them supple. Those intended for black leather are previously rubbed over with an iron liquor, by means of a stiff brush, which, uniting with the gallic acid of the sumac, instantly strikes a deep and uniform black.

They are then rubbed by hand with a ball of glass cut into a polygonal figure, which polishes them, and makes them very firm and compact. Lastly, the graining or ribbed surface, by which this kind of leather is distinguished, is given by rubbing the leather very strongly with a ball of box-wood, round the centre of which a number of small equi-distant parallel grooves are cut, forming an equal number of narrow ridges, the friction of which gives the leather the desired inequality of surface.

History of Propellers and Steam Navigation.

[Continued from page 155.]

FIG. 19.



This invention is that of Lieut. Skene, R. N., invented in 1828. The form and full size of the paddles are a parallelogram, 1 foot deep, by 2 feet wide, terminated by a semicircle of 1 foot radius. These paddles are not immoveably fixed, but vibrate on axes passing through the two opposite annular plates that form the periphery of the wheel, in order to allow of their dipping into the water edgeways, and thereby reducing the resistance of the water to the revolution of the wheel. For this purpose, the lower or semi-circular portion of each paddle is loaded with metal, the superior gravity of which, to that of the upper portion, causes each paddle successively, as it enters the water, to assume the vertical position; and to prevent their turning over, a simple stop is provided (which will presently be explained,) so that the full effect of the impelling power of the engine may be given to each paddle, at the proper time. To prevent the water from escaping sideways between the arms of the wheel a large disc or circular plate is fixed against the internal sides of the wheel, and of such diameter as not to come within the range of the paddles as they vibrate on their axes.

The number of paddles to each wheel is to be regulated by the diameter of the wheel; which is, for every foot in diameter, one paddle; therefore, for six-foot wheel there are to be six paddles.

This figure represents a side elevation of the the wheel, with the paddles, viewed edgeways. A A A are the arms of the wheel, revolving upon the shaft B. D D D are paddles, of which F F F are the loaded sides; L L are the axes of the paddles, the dotted arcs of circles, at the extremities of the paddles, shew the range of their motion, which is arrested by the stops, E, that consist merely of a prolongation of the upper sides of the paddles striking against the arms, or the inside of the rims of the wheel.

Experiments were made with this paddle wheel, the paddles measuring 16 by 16 inches, and their extremities, describing a circle of nine feet nine inches in diameter. The boat run on the River Thames, the engine making 45 strokes per minute. It was an entire failure, for it went much slower when the paddles operated as designed, than by an experiment of lashing them to make them immoveable. The back water was excessive, thrown right astern. In turning, the paddles seemed to strike the arms and the rim of the wheel with great violence, causing a great noise. The vibration of the vessel was very great, and the paddle box shook with great violence. In revolving rapidly, it is very evident that the centrifugal force, has a tendency to throw the paddles outward to prevent them from entering the water in a vertical position, consequently no advantage, but a disadvantage would be the result. It is a great evil also to have the lower part of the paddles heavier than the upper, if turning, as these paddles do, on an axis. The reason of this is obvious, not in entering, but in rising out of the water, causing an unequal wear on the axis, thereby creating a great deal of friction. The thicker the blades of the paddles are so, much of their useful effect must be subtracted from the circumference of the wheel, when we measure the distance the vessel travels, by the number of revolutions of the wheel.

Hunting Rats for Gloves.

In Paris the public sewers are huge subterranean passages, about 150 leagues in extent. A plan has been got up to distroy the rats that infest them by hunting them into *battues* (driving them into corners.) By the last accounts 250,000, have been slain, and it is supposed that 600,000 will be destroyed by the end of this month.

Several plans of destruction were made use of by the different brigades of sewermen, but that which was found to be most successful was the placing a large leather sack in which a large piece of mutton tallow was placed—a dainty of which these animals are very fond—at the corner of each sewer, and toward which the animals were driven. The Union, in giving an account of the affair says: "The 250,000 rats were all of the grey Norwegian breed, except from 500 to 600 black or English rats, Two of these animals were put aside by the men as a curiosity, to be presented to the collection of animals at the Jardin des Plantes. From the extremity of the tail to the tip of the nose these two rats measured 51 centimetres (nearly 20 inches English.) Their eyes are red like those of white mice, and their coats are as black and glossy as the silk on a hat. The ferocity of these animals is such that one of the Norway rats was literally devoured in ten minutes by the two English rats.

Mr. John Warton, a rich leather dresser in London, will buy the whole lot of them, even if they number 1,000,000.

Origin of Literary Degrees.

The practice of conferring honors of literary institutions on individuals of distinguished erudition, commenced in the twelfth century, when the Emperor Lothaire, having found in Italy a copy of the Roman law, ordained that it should be publicly expounded in the school; and that he might give encouragement to the study, he farther ordered that the public professors of this law should be dignified by the title of doctors. The first person created a doctor after this ordinance of the Emperor, was Bulgarius Hugolinus, who was greatly distinguished for his learning and literary labors. Not long afterwards the practice of creating doctors was borrowed from the lawyers by divines also, whom, in their schools, publicly taught divinity, and conferred degrees on those who had made great proficiency in that science. The plan of conferring degrees in divinity was first adopted in the Universities of Bologna, Oxford and Paris. (See Mather's Magnalia Christi Americana, B. IV. p. 134.) It is remarkable that the celebrated Dr. Samuel Johnson, when he had become eminent in literature, could not obtain the degree of Master of Arts, from Trinity College, Dublin, though powerful interest in his behalf for this purpose by Mr. Pope, Lord Gower, and others. Instances of the failure of similar applications, made in favor of characters still more distinguished than Johnson then was, are also on record.

Remarkable Escape.

Mr. Hathaway, while at work lately at the Nail Factory, on Deer Creek, near Cincinnati, Ohio, was caught by a nail machine, and all his clothes literally torn off his body, and yet, strange to say, he received no personal injury but suffered some inconvenience and delay in getting dressed again.

Steamboat Disasters during 1849.

The St. Louis papers publish lists of steamers blown up, sunk or otherwise destroyed in the west during the past year. The total number is 112, of which 83 were totally lost. The estimated pecuniary loss is set down at $2,000,000, and the loss of life upwards ot 200 persons, and perhaps as many were wounded and maimed. This is a formidable list truly, and should arouse the attention of Congress to the improvement of western navigation.

LITERARY NOTICES.

THE SCALPEL.—No. 6 of this sterling journal has made its appearance. It contains a searching inquiry into the causes of early decay in American Women. Sketches of New York Physicians, Causes, Anatomy and Cure of falling of the womb, Introduction to the Gout, Tartar Emetic, by a medical heretic—Satirical, &c. This journal is edited by Dr. Dixon, one of the most accomplished and original physicians in this country, who has the nerve to battle the abuses which have crept into the profession of which he is a "burning light," success to his efforts. We would say to such of our friends as may wish the numbers of this work, that we have made arrangements with the Dr. to supply them. It is published quarterly at $1 per annum, single copies 25 cents.

THE LITERARY WORKS—Of the late Edgar A. Poe, with notices of his life and genius, by N. P. Willis, J. R. Lowell, and R. W. Griswold. Published by J. S. Redfield, in two Vols. These volumes contain nearly 1000 pages of clearly printed matter, characteristic of the prolific genius of the author, but they lack a good biography of his eratic life, which ought to have been given by his friends whose names appear in the work; he was a higly finished writer, powerful in his imagination, and his writings are characterized by a peculiar charm which render them a pleasant companion. Mr. Redfield has performed his part of the work in a creditable manner, and we commend them to the consideration of the public. Mrs. Clemm, the mother of Mrs. Poe, (for whose benefit they are published) prefaces the work with some kind remarks to the reader.

THE PHYSIOLOGY OF DIGESTION.—Considered with relation to the principles of Dietetics, by Dr. Combe, Fowlers and Wells, publishers. This volume of 300 pages contains "home truths for home consumption," and should be carefully read by all who desire plain, common sense reasoning. Our people are sadly in want of the whip and spur upon this subject, and although we are not bound down to a very strict order in diet, yet it is the part of reason to accommodate ourselves to the varying circumstances of climate &c., and observe such rules as are conducive to health and longevity. This work is sold for the trifling sum of 25 cents, and should meet with a large demand.

GRAMMAR OF ARITHMETIC.—This is a small volume by Proff. Davies, L. L. D., the most eminent Mathematical author in the United States. It presents the subject of Arithmetic in a new light, making it the language of figures, and we can positively say, that it is eminently adapted to impress the first principles clearly upon the minds of the pupils. It is published by A. S. Barnes & Co., No. 51 John Street, New York.

NEW YORK BY GAS LIGHT.—By C. C. Foster, author of "New York in Slices." Published by Dewitt and Davenport, Tribune Buildings. This is a work of deep interest to all who desire a *peek* into Gotham. Price 25 cents.