Scientific American.

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

Vol. 4. New York, October 7, 1848. No. 3.

THE
SCIENTIFIC AMERICAN:
CIRCULATION 11,000.
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.

TERMS---$2 a year---$1 in advance, and the remainder in 6 months.
☞See advertisement on last page.

Poetry.

NEW ENGLAND.

The *Hills* of New England,
How proudly they rise,
In the wildness of grandeur,
To blend with the skies.
With their fair azure outline,
And tall ancient trees—
New England, my country,
I love thee for these.

The *Vales* of New England.
That cradle her streams,
That smile in her gladness,
Like land in our dreams.
All sunny with pleasure,
Embosomed in ease—
New England, my country,
I love thee for these.

The *Woods* of New England.
Still verdant and high,
Though rocked by the tempests
Of ages gone by;
Romance dims their arches
And speaks in the breeze—
New England, my country,
I love thee for these.

The *Streams* of New England—
That roar as they go,
Or seem in their stillness
But dreaming to flow,
O bright glides the sunbeam
They march to the seas—
New England, my country,
I love thee for these.

The *Home* of New England,
Free, Fortuned and Fair,
Full many heart's treasure—
A sister's love there,
E'en more than thy mountains
Or streamlets they please—
New England, my country,
I love thee for these.

God shield thee, New England
Dear land of my birth,
And thy children that wander,
Afar o'er the earth,
My country thou art,
Where'er my lot's cast,
Take thou to thy bosom
My ashes at last.

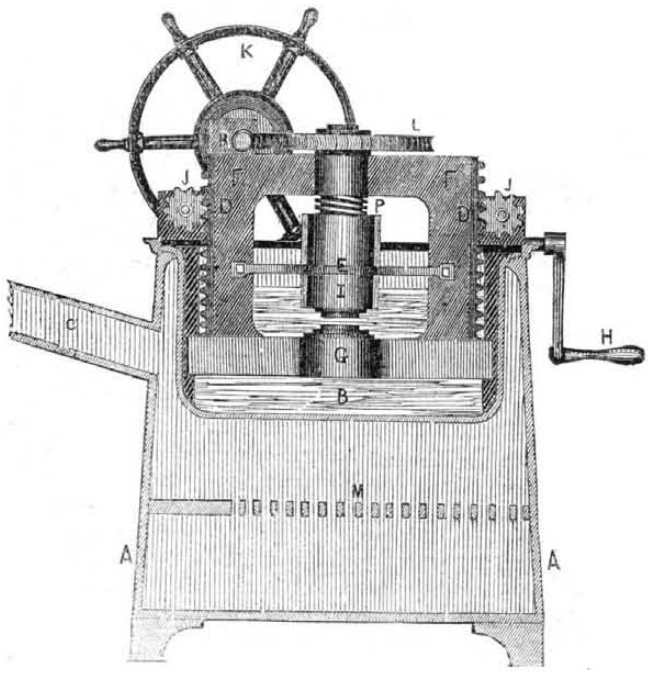
Sympathy.

There is a tear most sweet and soft
Than beauty's smiling lip of love,
By angel's eyes first wept, and oft
On earth like those above.
It flows for virtue in distress—
It sooths, like hope, our sufferings here;
'Twas given, and 'tis shed to bless—
'Tis sympathy's celestial tear.

Freak of Lightning.

A school house was struck by lightning a short time ago at Reading, Pa. A stove funnel was turned wrong side out by the fluid—just as one would turn a stocking. This is one of the most singular freaks of lightning that we ever remember to have heard of.

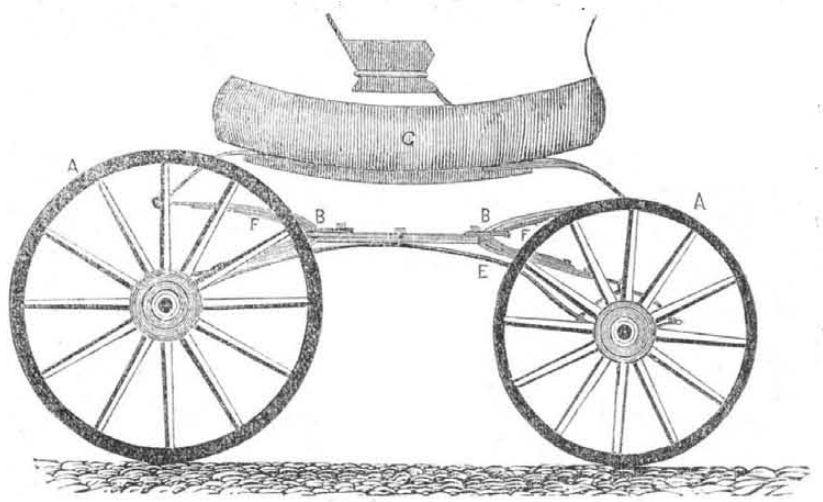
MACHINE FOR PRESSING HORN.



Horn, tortoise shell and many other animal substances and no doubt the leather manufaced by the process patented last year, are capable of being softened by heat and moulded by pressure into any shape and with any design in the sharpest and most delicate relief. A screw press has usually been employed for this purpose, but the one represented by this cut which is a section through its centre, is far superior.

A A, is a box of cast iron. B, is a copper to contain the hot water, and M, is a grate for the fire to heat the same. C, is the smoke pipe. F F G, is the press made of strong cast iron, and capable of being drawn up and let down in the water at pleasure by means of racks D D, at each side, actuated by pinions J J. The axle of these pinions cross the machine and have each a wheel at the end, moved by two arms, or screws cut upon the axis and turned by the handle H. The press is guided in the ascent or descent by grooves in the side of the boiler. When raised up out of the water, the moulds, with the horn or tortoise-shell between them, are put beneath the presser, and a severe pressure is produced by turning the wheel K. This wheel has an endless screw R upon its axis, which works the teeth of a large wheel L, fixed on the top of the screw P. The screw is received into an interior screw formed within the box or presser I, which is guided and prevented turning round by the cross bar E, through which the presser is fitted; by this means, when the screw P is turned round by the wheel L and endless screw, the horn or tortoise shell is pressed between the moulds; the Press is then lowered again into the water of the boiler, in order to be still further softened by the boiling; but when the Press is down in the boiler, the screw can be screwed tighter by turning the wheel K until the desired impression is obtained. By turning the handle H, the Press is then raised up out of the boiler, and by turning back the wheel K the pressure is released and the moulds can be removed.

SPROUT'S IMPROVED CARRIAGE SPRING.



This engraving is a side elevation of a new and useful improvement in Carriage Springs, invented by Erastus T. Sprout of Springville, in the county of Susquehanna, Pa., and secured to him by letters patent on the 18th of last July.

A A, are the wheels. C, is the body of the carriage, but placed rather too high in this drawing. B B, are loops which connect the springs F F, to diagonal bars which cross each other below the body of the carriage and are attached together by a bolt passing through the said bars and the elastic steel spring perch E. The diagonal bars are attached by hinges to the fore and hind axles in form of an X. This will convey the idea, as they cannot be seen in this view. The springs F F, are made of rolled steel in the usual way, and are composed of several leaves bent in the form of parabolic curves and are diagonally connected by hinges to the axle behind and the bolster before, then united by the loops B B, at their vertex to the diagonal bars (reaches) already mentioned. These springs F F, have their interior leaves made shortest and gradually increasing in length to the outermost, for the purpose of giving them the required degree of flexibility. These springs are connected by joints to other serpentine springs which are secured to the underside of the carriage in any suitable manner. It will be observed that these springs are arranged different from those in common use, and are so combined with the perch and diagonal bars, that they possess far greater strength and elasticity (indeed it is said confidently that they possess just double) in a given quantity of steel, than those arranged in the usual way, while at the same time they possess more flexibility, and prevent those uncomfortable shocks produced in carriages driving over uneven ground—the seat of the carriage having rather a gentle undulating motion, so agreeable and desirable in a pleasure carriage, and they will no doubt meet with universal application.

RAIL ROAD NEWS.

Interesting to Railroad Companies.

On Monday week on a case of appeal by the Baltimore and Ohio Railroad Company, from a decision of a magistrate, who had awarded damages for a cow killed upon the road, to the Howard District Court, Md., the question was brought up of the constitutionalty of a late law passed by the State of Maryland, making the agent or employee of a railroad company incapable of giving testimony in a case to which the Company is an interested party. After a full discussion of this subject, Judge Dorsey gave his opinion that the law was alike unconstitutional and opposed to the principles of justice and equity.

Hudson River Railroad.

The work on the section of the Hudson River Railroad running through Poughkeepsie has been suspended for the present, the contractors on that section having found themselves unable to complete the work for the price they took it at. The Directors are preparing to re-let the work. An attempt to obtain an injunction against the Road to prevent it passing in front of the land of Isaac Reynolds, at Peekskill, has failed.

A New Line to Philadelphia.

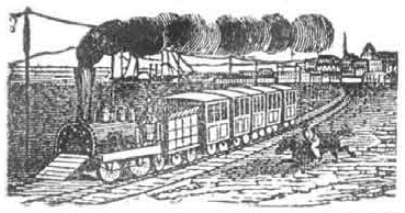
The travel between New York and Philadelphia has become so great that though there are now four lines running each way every day, yet the Camden and Amboy Railroad Company have felt the necessity of placing, in connection with the new Jersey Railroad Company, a new line upon the route from Jersey City. It will leave the foot of Cortland street New York, every morning at six o'clock, and pass through Newark, Elizabethtown, New Brunswick, Trenton and Bristol, to Tacony, where the Company's steamer will be in readiness to proceed to Philadelphia. The hour of leaving both cities is the same.

Throwing Stones at Cars.

The Springfield, Mass., Republican says that three Irishmen were arrested at Ireland Depot, on Saturday afternoon last, for throwing stones at the afternoon train of cars as they were in motion. They were put out of the cars—one for refusing to pay his fare except with a counterfeit bill, and the others for endeavoring to prevent the third from being ejected from the cars; they afterwards commenced throwing stones. One was fined $10 and costs, the two others $5 and costs. All three were committed.

Good Speed.

The cars between Albany and Schenectady made the trip between the two places last week at the rate of 42½ miles per hour. Our railroads must average 40 miles per hour yet or they should be sued for sleeping on the track.



The Fair of the American Institute.

This Great Fair opened last Tuesday in this city, at Castle Garden, and truly the display has never been surpassed. People from all quarters of our great country, have filled our city this week—and hundreds from distant places brought their articles for exhibition. This is right—New York is the place to bring new inventions and manufactures into public notice—it is the great heart—that throws out into a thousand channels the life sustaining fluid of our commerce. Saying this much for the exhibition and the wisdom of people coming to New York to exhibit their articles, we wish we could say as much for the Institute that conducts the Fair. We have never lauded nor declaimed against the American Institute, but we certainly have strong doubts regarding the way in which it has been managed—not for the benefit of those who have paid into its treasury. The Dispatch says: "that by a knavish and impudent system of puffing, large sums of money have been abstracted from the pockets of innocent people —money which has not been, and probably cannot be accounted for, and persons connected with the Institute, one of whom is an old bankrupt, have no ostensible means of a livelihood, other than means derived from the Institute; and that those persons live in an expensive manner, paying five, six and seven hundred dollars a year, each for house rent alone."

We have thus expressed ourselves respecting the Institute lest we might be considered inimical to all its actions, when noticing, (as we shall do next week) many of the articles exhibited at the Fair. We have found the Clerk always to be very civil and gentlemanly, but the Institution needs to be thoroughly reformed.

The Double-headed and Pointed Finishing Brad.

Mr. Editor.—In a notice of this Brad in your last number, it was stated that the machine for making it had been invented a number of years ago, but had only "recently been put in operation." There is a slight error in this statement which I wish to correct. In 1842 the machine was in successful operation at No. 60 Gold street, where the Brads were put up in a merchantable form and introduced into the market, bringing the highest prices. Machines have also been exhibited in full operation. It is true that the invention passed from the hands of the inventor, Mr. Walter Hunt, of this city, and that he never realized any compensation for the labor and ingenuity bestowed upon it; but he is likely to reap some benefit from his invaluable invaluable invention through a renewal of his patent, for which he has peculiar claims, and for obtaining which measures are now being taken. M.

New York, Oct. 2, 1848.

Those Knox Hats.

It gives us pleasure at all times to recommend American productions and give the credit to those who merit it. In the article of Hats we know of no manufacturer on the continent that sells a better material, a more unique style or at a cheaper price than neighbor Knox, of 128 Fulton st. We recommend our friends who attend the Fair this week to give him a call. See advertisement in another column.

Substitute for Stays.

A patent was taken out a short time ago in England, for an *apparatus* named a Ceinture which is designed to supersede tight lacing, that ugly and dangerous folly, whereby beauty and the female form are destroyed.

To Cure the Hiccup.

Hold up, high above your head, two fingers of your hand; lean back in your seat, opening your mouth and throat, so as to give a free passage to your lungs; breathe very long and softly, and look very steadily at your finger."

Earthquakes.

It is supposed by some, and those very eminent men too, that the centre of the earth is a liquid mass, completely filling the globe, whose crust varies in thickness at the Poles and at the equator, being much thinner at the latter. "It is obvious," they say "that any exciting cause, the sudden manufacture of an immense quantity of gas, the fall of unmelted masses into the fiery liquid or similar circumstances, may rise a wave in this internal lava-ocean, or possibly two or three waves, which proceed as waves in our upper seas. A wave *moves*, but the water composing the wave only *rises and falls*. It is a common error to suppose that the water itself flows along The progress of a wave consists in the rise and fall of successive bodies of water, one mass falling, displacing and forcing up the next, and soon across a sea. Supposing this same process to take place in the lava which already fills, almost to bursting, the globe, it can readily be immagined that the crust will be lifted and strained as the wave pases along. Hence the frequent fissures in the earth's surface, which gape and close again. The fact that a crust of the earth is thinner at the Equator, explains the more disastrous effects of such waves in torrid regions. The same which there stretches the thin crust of the earth, lifts it in hills, overturns cities, and empties seas, finds here a granite shell which hardly yields to the heaviest waves."

This theory appears beautiful and simple, but there is more poetry than truth about it for it involves the following objection, "the heavy crust of the earth must be resting on a mass lighter than itself, and which *fluid* mass must be governed by a law different from that which governs fluids. The igneous theory is, that the centre of the earth is a sea of fire. The old scriptural theory is, that, the foundations of the earth rest upon the waters; and Kepler's notion was perhaps as correct as others viz., that, "the earth was a huge animal." The theory which attributes the commotions in the bowels of the earth to the agency of galvanism is the most plausible. Those who would desire to know its propositions and conditions will find them fully set forth in No. 32–33 vol. 3 Scientific American.

The Senate and the Heads of the Senate.

The editor of the Cincinnati Commercial on a visit to the U. S. Senate Chamber at the late session made the following notes:

Number of Senators gray headed, 12; with bald heads, 15; reading newspapers, (at a time,) 17; who spoke on the bill, in all, 20; who scratched their heads when they rose to speak, 10; who wore gold spectacles, 17; who wore silver spectacles, 3; who had on black coats, 39; who wore light vests, 6; who wore light neckerchiefs, 12; with curly hair, 8; of light complexion, 20; are corpulent, (including Lewis,) 6; paying attention at a time, generally, 12; who chewed tobacco, 20; with hair roughed back, 23.

An Ingenious Defendant.

It is mentioned that in Boston Police Court last week, much time was spent in trying a "member of the press" for smoking a cigar in the street. The defendant, who was evidently 'one of 'em,' brought into court an imitation cigar, with a burnished end, looking like a lighted cigar, and the officer could not swear that it was not the article which he saw in the defendant's face: but he was quite positive that he saw clouds of smoke issuing from his mouth. Finally, however, it turned on an unexpected point, and the court discharged the defendant. Taking it for granted that he would be convicted, the defendant brought five dollars, all in cents, to court, to pay the fine and costs with, but had to carry that *heavy* joke home again.

Degrees of Books.

The sizes of books are expressed by terms that indicate the number of pages printed on one side of a sheet of paper. When two pages are printed on one side, the book is termed a folio; four pages, a quarto; eight pages, an octavo; twelve pages, a duodecimo; eighteen pages, an octadecimo. These terms, except the first, are abridged by prefixing a figure or figures to the last syllable, thus: 4 for quarto, 8 vo. for octavo, 12 mo. for duodecimo, &c.

Yankee Improvements in the British Colonies.

The Belleville (N. B.) Intelligencer, says: "We have been informed that a great improvement has been made in the Water Wheel of a Flouring Mill. The experiment has been tried in Rawdon, in this District, in a mill belonging to Edward Fidlar, Esq., and at present leased by Mr. W. Baker, through whose enterprise this new wheel was introduced into the District. The mill has been built about two years, during which time it has been running with what is called Smith's Wheel, and which would grind at most ten bushels of wheat per hour, with about ten feet head of water. This appeared to be too slow work for the sprited lessee, and accordingly he went to the States, and engaged the services of a Mr. Boyce, of Fulton, Oswego Co. New York, who has constructed and put in operation two new Centre Discharge Wheels which have performed wonders such as were never, we are informed by those whose judgment in such matters is worthy of credit, before known in this country.—Our informant says, that he saw twenty bushels of wheat weighed out into the hopper, ground and bolted in thirty-five minutes with one run of stones, and that there is not the slightest doubt but that the mill will grind from thirty-five to forty bushels per hour, on an average, with each run of stone. By the means of this new centre discharge wheel the mill will be able to grind and bolt four hundred and eighty bushels of wheat in twelvehours, making 96 barrels of flour with each run of stone; while with the old wheel it could not have ground more than one hundred and twenty bushels, making twenty four barrels of flour; or in other words doing with the new wheel, in one day, that which it would require four to do with the old one. If this is correct, and we have it from unimpeachable authority, Rawdon can now boast of possessing the fastest mill in the province."

Natural Musical Telegraph.

The natives on some parts of the African Coast hold dialogues at great distances by means of little reed flutes. They are said to be able to communicate to the distance of several miles where the locality is favorable to the resonance of sound. The Ashantees and the Cameroons convey intelligence to a great distance by beating certain understood taps upon the drum. The war drum is used in all the villages to give warning of danger to distant places. The savage ear is more instinctive to sound than that of the civilized European, yet civilized in this respect far outshines barbaric instinct, for while certain understood sounds may be communicated to a great distance on the Banks of the Niger—the whole movements of an army may be regulaed by a bugle on the banks of the Thames.

Copper in Massachusetts.

The Copper Mine recently discovery in the Bay State is within the limits of Carlisle. The ore is said to be rich and abundant, though of course little is yet known of it, as the discovery was made only three months since. Three companies are now sinking, upon the vein or veins.

Remedy for Toothache.

A mixture of two parts of the liquid amonia of commerce with one of some simple tincture is recommended as a remedy for toothache, so often uncontrollable. A piece of lint is dipped into this mixture, and then introduced into the carious tooth, when the nerve is immediately cauterized, and the pain stopped. It is stated to be eminently successful, and in some cases is supposed to act by neutralizing an acid product in the decayed tooth.

Action.

I have often had occasion to observe that a warm blundering man does more for the world than a frigid wise man. A man who gets into the habit of inquiring about expediencies and occasions, spends his life without doing anything to the purpose. The state of the world is such, and so much depends on action, that everything seems to say loudly to every man, "Do something"—"Do it"—"Do it."—*Cecil.*

A Geologist Robbed.

Dr. Randall, who was detached last June from Dr. Owen's Geological corps for the purpose of exploring the Des Moines river to its source, was lately robbed by the Sioux Indians of his purse, blankets, provisions, clothes, &c., and he had to travel a hundred miles or more on foot, from the source of the Des Moines to Prairie du Chien, in a very wretched condition. Dr. R. was also robbed of valuable geological specimens. He says of the country bordering upon the Des Moines: "Its agricultural beauty and capacity are unsurpassed, after leaving the settlements, and its geological resources are unequalled in the power to support a dense population."

An Iron Mountain.

The Pilot Knob, an iron mountain near St. Louis, is about to be brought into profitable use. A company has erected iron works at the base of the Knob, and on the 2d instant they commenced the smelting of the ore.—The knob itself is one of the greatest of known wonders, and contains iron ore yielding from 60 to 70 per cent., sufficient to supply the world.

Silliman's Journal says the Royal Geographical Society of London, has awarded the gold medal to Capt. Charles Wilkes, U. S. N., Commander of the late Exploring Expedition. The President of the Society in putting the medal in charge for our Minister, Mr. Bancroft, for Mr. W., took occasion to make an address, highly complimentary to the latter gentleman.

Deaf mutes are now taught in France not only to speak correctly, but understand the words of others by watching the motions of the lips. We believe that this plan has been adopted in some instances in this country, and that it has met with good success.

Sulphuretted hydrogen is extensively generated in the drains and ditches about Chicago, according to the Journal of that city. It can be procured in any quantity without any expense of manufacture, save the trifling one of health and life.

Plank Roads, by a late decision of the Supreme Court, are considered in law the same as turnpike roads, and private individuals cannot recover damages for injury done property by the proper and reasonable repairs of such highways.

A spirit lamp, in which alcohol was burned, exploded and caused the destruction by fire of nearly eight thousand dollars worth of medicines, in the store of Appleton & Co. Philadelphia. Laws have been enacted in Montreal against the use of such lamps.

The diamond may very easily be recognised by putting it in water, where it retains all its brilliancy, having the appearance of a bubble of air, while all other precious stones loose this singular appearance. This will answer for diamonds of the first water only.

The Moniteur of Paris publishes a decree, by the chief of the executive government, regulating the height of all new houses in the streets, and the forms of the roofs, in order to preserve an entire uniformity.

Professor Bond, of Cambridge, Mass., has discovered a new moon of Saturn. Its orbit is exterior to that of Titan. It is less bright than either of the two inner Satellites discovered by Sir William Herschel.

To protect bees place the hives eight or ten inches apart, and fill the spaces between and about them with straw, leaving the mouths of the hives unobstructed. Leave the straw about the hives late in the spring, till the old bees and the young brood will be secure from injury from late frosts.

The officers of the American Scientific association are W. G. Redfield N. Y. President; Prof. W. R. Johnson of Washington Secretary, and Prof. Silliman Treasurer.

A new flour mill is about to be commenced at Niagara Falls to run two run of stones.

Sweet potatoes are grown out South West as white as pink eyes—very different from the yellow kind known here.

Incrustations on Steam Boilers.

Mr. EDITOR.—I perceive by last number of the Scientific American that I have been personally attacked for an article which appeared in No. 50 of your last volume, endorsed with my signature. I have made it a rule of my lite to bear with silent indifference any unjust act done to me if it does not appear public, but this is a different case and I shall treat it according to its deserts. Mr. Barnum says that "the labor of my *former* article seems to be directed against mahogony saw dust which was patented sometime since to prevent deposits and incrustations on steam boilers by Samuel D. Anthony and Daniel Barnum." This is not true, mahogany saw dust was only mentioned once in the article referred to, and that almost carelessly and I had no knowledge of it being secured by *patent* until I saw Mr. Barnum's ill-tempered letter —so that is a new fact to me and I will dispose of it in a summary manner. Mr. Barnum again says of me: "But on reading the article with its *italics* and *cants* at *mahogony dust* and *exhausted dye stuffs* as a *patent*— the idea is presented to the mind, that he imagines himself to be witty in attempting to ridicule the "profession" that mahogany dust was useful as a preventive of incrustations— and also that he belongs to that class of men (which are far too numorous) who are incapable of appreciating an honest effort at improvement—even where it is successful, and who delight in the want of success—acting upon the principle that it is easier to pull down than to build up." Again he says "I would fain believe that a penchant for notoriety tinctured with a little vanity prompted Mr. Bartholomew to make the exhibition of himself."

Now all that I will say to this is, that the penchant of Mr Barnum for writing, was strong indeed when he subscribed his name to such nonsense He confers upon Bartholomew a wonderful fancy in "imagining himself to be witty *and* also *imagining* himself to belong to that numerous class of men who are incapable of appreciating a honest effort." After all, it seems I just imagine myself to belong to this class of men. I might here retort with vengeance but I feel not "the joy the warrior feels to meet a foeman worthy of his steel."

I honestly confess that I cannot appreciate the *honest* effort to secure a monopoly of all the mahogany saw dust that may be used in steam boilers in these United States for 14 years. I know that a patent was secured in France more than 10 years ago, claiming all vegetable substances to prevent incrustations and especially woods having coloring matter in them—the patentee preferred these. Is mahogany saw dust not embraced in that claim? No judge or jury would contravene it, and it is public property in our country, for mahogany saw dust gives out a brownish color, and with tannin and iron, it will dye a black. There is not a scientific idea advanced in Mr. Barnum's letter except the following.

"That mahogany dust is inferior to potatoes and meal for stopping leaks is readily conceded, for its tendencies are to prevent the deposits of carbonates and salts, keeping them in suspension until they are blown off by blowing water from the boiler, which is of course necessary to be done occasionally, although much less frequently with than without the dust."

This is a new fact for chemists. It will dispense no doubt with all the brine pumps of Field &c., but what new combination has resulted from the saw dust and carbonates, and how some of the salts are evaporated, (this is the inference of not blowing off so often) we are not informed—perhaps *Kakodyle*.

In some future articles I will treat incrustations and the remedies proposed—as I perceive that much information is needed on this subject and it is one that has long practically and as I shall show, scientifically engaged my attention. I shall refer no more to Mr. Barnum's letter, and I trust that Mr. Anthony will not be displeased at the comparison that was made with myself—although the compliment has a certain back-handed appearance.

R. BARTHOLOMEW.

New York.

American Scientific Association.

No. 2.

This respectable Association adjourned on the 25th, and in connexion with the extract in our last number we present the following, which will be found of equal, if not more interest.

THE MISSISSIPPI RIVER.

Professor M. E. Dickeson presented the following report prepared by himself and A. Browne, A. M. on the Sediment of the Mississippi River. These two gentlemen were appointed a Committee, at the last meeting of the Association, to examine and report upon the appearances and character of the Mississippi deposit. They now reported the result of their investigations in detail. The facts embodied have, however, in fact, been collected by daily observations for the last eighteen years, and continued without intermission, with a view of this Report, for the last two years of that time, beginning the 1st of July 1846, and ending the first of July 1848, comprising a series of notations and calculations at the several stages of elevation and depression of the River, while oscillating between high and low water tide. The abstract given below embraces the more important features of this very complete and valuable paper. The whole of it is too long for insertion: the room that is occupied by it, however, will be found to be usefully filled.

The aggregate quantity of water discharged by the Mississippi is 14,883,360,636,880 cubic feet—equal to 551,235,759,143 cubic yards; or, 101.1 cubic miles.

The velocity assumed for the water at the the several stages of elevation, which constitutes an essential in the calculations, is not that of the central current, but the mean of the lateral quantity, obtained by many and repeated experiments and computations, which give a mean amount very sensibly less than the central, and which is variable under varying conditions. But it must be observed, that while these sensible variations of current exist in the lateral expansion of the waters in the River, it has proved impossible to detect any appreciable difference of velocity, in their vertical quantity. It is no usual thing for very tall trees to float down the deepest part of the River in a perfectly perpendicular attitude—caused by their butt-ends being of greater specific gravity than the water, while their tops or upper ends are so buoyant as often to project as much as fifteen or twenty feet above the surface of the water.

They are found to be at all times transported with the same velocity as the surface current, and while they are thus floating in a vertical position, their lower ends approximate the bottom so closely that they often strike the protuberances projecting therefrom by which they are thrown down at such angles as often to make their tops disappear below the surface until they have surmounted the obstruction; and when such is the case, they at once erect themselves as before.

The observations made by these gentlemen lead them to the conclusion that in a descending aqueous fluid there is no appreciable difference of velocity in the vertical quantity, but that it is equally the same at top or bottom—for the reason that the superincumbent pressure urges forward the under-stratum to the point of least resistance, with the same acceleration of speed which the incumbent water itself may have acquired.

The Mississippi Valley is found to contain a superficial area of very little short of fourteen hundred thousand square miles. The inquiry, therefore, here suggests itself: What may be the relative difference between the annual quantity of water falling into this Valley, and the annual quantity discharged out of it by the River Mississippi? It is found, by an examination of the Meterological Register of the late Dr. H. Tooly of Natchez—that the mean annual quantity of water which falls at Natchez, is between fifty-five and fifty-six inches—but as such has been taken at the Southern extremity of the Valley it may be regarded as an over estimate for the whole area The main quantity is, therefore, assumed to be fifty-two inches, and then by calculation we will have 169,128,960,000,000 cubic feet, as the quantity which falls annually in the whole valley, which is within a fraction of being twelve times the quantity of that which is discharged by the River.

There are but two ways by which all this immense quantity of water can make its escape from the valley; one of which is by the course of the river into the Gulf of Mexico, and the other by evaporation. Hence, we perceive that there is but one relative part of this quantity passing off by the River, for every eleven parts which are exhaled by the atmosphere— or in other words, 1-12 by the river and 11-12 by evaporation.

Thus we arrive at the developement of a fact of the most momentous importance to the Planting Interests of Louisiana and Mississippi, for it will be readily perceived that the more exhalations are promoted the less liable will the lands of these two States be to the periodical inundations of the River. It may be asked by what process can we expect to promote evaporation so as to cause such an increase of quantity as to sensibly benefit the Planting Interests, and that, too, over such a vast extent of surface as is contained in the expansive area that comprehends the Mississippi Valley? The answer is, that the process has been, and is now, in a rapid state of prosecution, and of that kind which is the best calculated to produce such an effect—namely, the clearing of the lands of their primitive forests, and their consequent exposure to sun and atmosphere, the very best promoters of the evaporating process on so extensive a scale. It will not be difficult to perceive the vast difference there must necessarily be in the quantity of evaporation from a surface of country exposed to the action of the sun and winds, and one covered with a dense forest, where neither can penetrate but with difficulty.

(*To be continued.*)

Death not a Painful Process.

BY C. KNOWLTON, M. D.

We think that most persons have been led to regard dying as a much more painful change than it generally is; first, because they have found, by what they experienced in themselves and observed in others, that sentient beings often struggle when in distress; hence struggling to them is a sign, an invariable sign, of distress. Muscular action and consciousness are two distinct things, often existing separately; and we have abundant reason to believe that in a great portion of cases those struggles of a dying man which are so distressing to behold, are as entirely independent of consciousness as the struggles of a recently decapitated fowl. A second reason why men are led to regard dying as a very painful change, is because men often endure great pain without dying, and forgetting that like cause prove like effects only under similar circumstances, they infer that life cannot be destroyed without still greater pain.—But the pains of death are less than we have been led to believe, and we doubt not that many persons who live to the age of puberty undergo tenfold more misery than they would, did they understand correct views concerning the change. In all cases of dying the individual suffers no pain after the sensibility of his nervous system is destroyed, which is often without any previous pain. Those who are struck dead by a stroke of lightning, those who are decapitated by one blow of the axe, and those who are instantly destroyed by a crush of the brain, experience no pain at all in passing from a state of life to a dead state. One moment's expectation of being thus destroyed far exceeds in misery the pain during the act. Those who faint in having a little blood taken from the arm, or, on any other occasion, have already endured all the misery they ever would, did they not again revive.—Those who die of fevers and most other diseases suffer their greatest pain, generally, hours or even days, before they expire.

The sensibility of the nervous system becomes gradually diminished; their pain becomes less and less acute under the same existing cause; at the moment when their friends think them in the greatest distress, they are more at ease than they have been for many days previous; their disease, as far as respects their feelings, begins, to act upon them like an opiate. Indeed many are already dead as it respects themselves, when ignorant bystanders are much the most to be pitied, not for the loss of their friends, but for their sympathising anguish. Those diseases which destroy life without immediately affecting the nervous system, give rise to more pain than those that do affect the system so as to impair its sensibility. The most painful deaths which human beings inflict upon each other are those produced by the rack and the faggot. The halter is not so cruel as either of those, but more savage than the axe. Horror and pain considered, it seems to us that we should choose a narcotic to either.

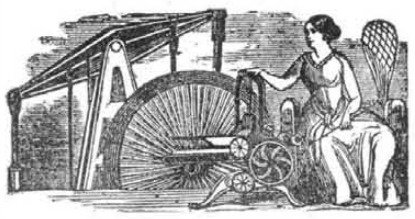
Feet of the Chinese Women.

From whatever tradition, or vile act, the Chinese adopted the custom of choking the female foot, it is certainly one of the most refined pieces of barbaric nonsense and exhibits a people (in this respect) devoid of all natural idea of female beauty. The appearance of a Chinese lady's foot is repulsive in the extreme and no wonder. Every attempt to distort nature, is repulsive to the mind that can appreciate the beautiful. To render the Chinese foot small, they are bandaged firmly from childhood. The bandages employed are made of silk, which are rarely moved, and these are covered with fresh ones from time to time, and over all the dwarf-shoe is secured, the pointed toe of which is stuffed with cotton. Owing to their maimed feet, the women cannot walk any distance even with the assistance of sticks or crutches, which they always use in the house. The hobbling motion of one who attempts to do so is considered most graceful by the Chinese and ladies who essay the exploit are poetically called "Tottering willows." Women of the higher orders, when they go abroad, are carried in sedan chairs or boats but those who cannot afford to command such equipages are carried on the backs of men, or of women who are blessed with undeformed feet. In the families of the wealthy inhabitants, all the daughters are thus maimed for life; but among the poorer classes, if there are two or more daughters, one is always deprived of pedestrian power, and she is hence invariably considered superior to her sisters, and may become a wife. The others can never become more than handmaids except they intermarry with the very lowest. This horrid and barbarous taste is most unaccountable in a nation where the undistorted natural foot of women is the very model of beauty; the high instep is equal to the Andalusian, and the arch of the sole rivals that of the Arab; the ancle (which in the distorted foot becomes revoltingly thick) is symmetry itself. Such a foot, of course, can only be seen among the lower classes. The whole female character seems to be completely changed by the barbarous practice in question; for the countenance of a Chinese beauty is always void of animation and somewhat expressive of the suffering which her ligatured feet may produce, while the countenances of uncrippled females are full of vivacity.

The Clock Makers.

Many years ago Mr. Williard paid a visit to Thomas Jefferson, with whom he was intimately acquainted. Mr. J. talked freely with him about the effect of Jay's treaty; Williard could give no opinion on any of its provisions, and Mr Jefferson insinuated that he knew but little of public affairs. In the course of the conversation he begged Mr. W. to examine a beautiful French clock, and see what was the matter with it. Mr. Willard, took out his plyers and took it to pieces, laying the wheels, main springs, and all the works on the table; after some further conversation he rose to depart; "Don't go, Willard, said Mr. J., "until you put the works of the clock together." "You can do it." "I! not I," said Mr. Jefferson. "Why, you expected that I should be familiar with treaties," said Mr. Willard, "when you can't put the wheels of a clock together."

This very well illustrates the difference between what is called a learned man and an unlearned man. Every man should be estimated for the qualifications he possesses, whatever be his profession. We believe that it is just as difficult to be a good mechanic as a good statesman.



New Inventions.

Improved Taper Chuck.

Mr. Arunah S. Macomber of Bennington, Vermont, has invented a useful improvement on a lathe for turning out the interior of carriage boxes and cylinders, of any required taper, or turn them out straight equally well. The improvement is simple and consists in setting the box to be rimmed or turned out in the chuck in the usual way, but the chuck can be set at any angle to the cutter which is fixed on the stationary spindle which passes through the box. Therefore when the box is revolved along with the chuck in the usual way any required taper may be cut according to the angle at which the box is set with the cutter, and this is done by the stock heads and saddle being moveable traversely on the slide plate, either by swivels or set screws in proper grooves. Application has been made for a patent.

Cotton Sail Cloth.

To America belongs the credit of having first made and used cotton sail cloth. James Maule, Esq. of Philadelphia, the inventor of the horizontal sail, was the first who made the cotton sail cloth. This honor has been attributed to a Paterson Company, and so far as weaving it by the power loom is concerned, they deserve it, but the cloth was wove on the hand loom and used in sails before it was wove in Paterson, N. J. We make this statement to correct an impression derived from a respectable contemporary and circulated somewhat widely. Inventors are jealous of their honor as well as their rights. Mr. Maule has also taken out a patent recently by which sail cloth can be woven to obviate much of the usual seam sewing, while at the same time greater strength is given to the cloth, and all danger of ripping and tearing is prevented It is done by having at respectable distances a thicker warp than the rest of the web. This will bring into use a larger plane surface of sail and add to the speed of the vessel materially, while it will be cheaper and last longer—important considerations.

Improved Piano.

A pianoforte has been exhibited in London by M. Scherr, of Philadelphia; in which the attempt to conciliate the form of the square with the power of the grand pianoforte has been once again made with tolerable success. The Athenæum says the instrument is easy in its touch, and "its tone is brilliant, though thinner in quality than we English altogether like. The register, too, is fairly even—a desideratum not attained in many of the new inventions. M. Scherr, who belongs to Denmark, must hardly look to putting our own "trusty and well-beloved" makers out of court; but his work seems to be conscientiously and solidly executed—and creditably to illustrate the musical requisitions of the country of his adoption. No pianofortes sent out from Europe abide the climate of the New World.

A New Barometer.

A new barometer has lately been exhibited in London without the use of alcohol or mercury and which is said to be simple, beautiful, and accurate indicator of atmospheric changes on an entirely novel principle. It is termed by the inventor, a French gentleman, the Aneriod Barometer.

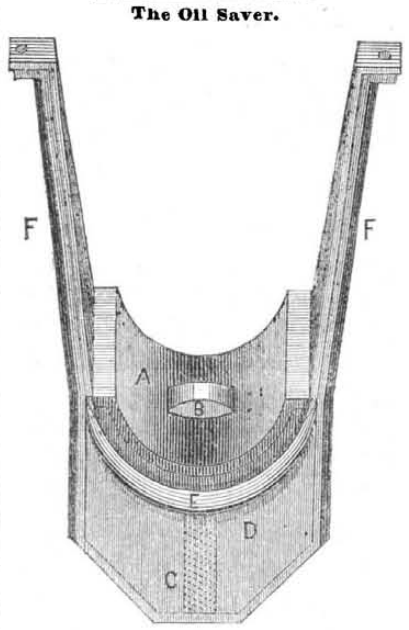
A new Compound for Explosions.

The long mooted question, "will saltpetre explode?" would appear to be settled in the affirmative by experiments of Dr. Hare, related in the September number of Silliman's Journal. By bringing melted saltpetre and sugar in contact, as they probably were at the great New York fire, an explosion equal to that of a cannon was produced.

The Atmospheric Churn.

The Albany Cultivator says:—"We have witnessed the operation of a churn by this name, said to have been invented and patented by Johnson & Lewis, of Sangamon county, Illinois. Its chief peculiarity consists in forcing atmospheric air through the cream or milk, by means of a hollow upright shaft, having holes in the upper end, to the bottom of which is attached a transverse tube, open at each end—the latter being made to revolve horizontally through the cream by means of gearing attached to the shaft. The turning of the shaft causes the descent of the surrounding air, which passes through the cream, and escapes from its surface in the form of bubbles. It is claimed that butter can be produced by this churn, from cream, in less than five minutes, and from new milk in fifteen. In the trial which we witnessed, butter was produced from cream in *seven* minutes, and from milk in nine. Mr. Emery was present with one of Kendall's churns, and produced butter from cream in ten minutes. An equal quantity of cream was used by both churns—the atmospheric produced one pound of butter, and Kendall's one pound seven and a half ounces. Such was the result on this trial—how it would be on other trials we cannot say; neither can we say positively, what was the occasion of so great a difference in the amount of butter produced by the two churns. The atmospheric churn appears to operate on a correct principle—that of mingling the air with the cream; but we are not in favor of such rapid churning. Having formerly had some experience in making butter, we should prefer that the churning, for a quantity of ten to twenty pounds of butter or more, should be prolonged to thirty minutes, at least."

The Oil Saver.



This is an angular side semi vertical view of the apparatus invented by Mr. Devlan, of Reading, Pa., to use water as a substitute for oil, and noticed by us some time ago. F F, are the arms for suspending the box and bearings by bolts or screws. A, is the bearing for the journal to play in, it is a moveable plate and covers or hides the interior of the box, only it has a small opening in the middle through which the periphery of a small wheel B comes, and the journal rests on it, as on an under anti-friction wheel.—This small wheel has a groove in its periphery lined with felt and the axle of the said wheel B, rests on two spiral springs, one on each side of the box D, and one now seen in section C. The top of these springs is a plain iron surface. The box D, is filled with water below the bearing plate A, so that the wheel B, will always revolve in the same. Now suppose the journal of the shaft laid in this box—the outer end resting on E, and bearing on the top of B, whenever the shaft is made to revolve, the wheel B, is revolved with it, and by it continually passing through the water in the box, the cold water is carried up both to lubricate, cool the journal and carry off any electricity generated by the journal while moving in its bearings.

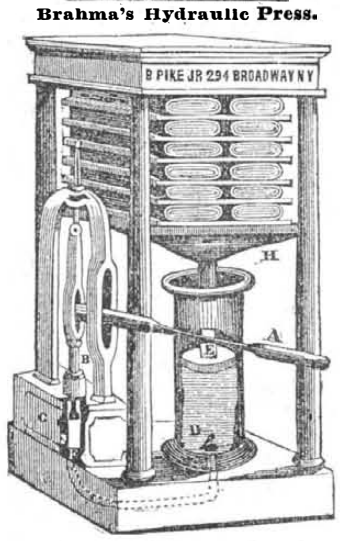
One of these boxes may be seen at Mr. Hill's, who is agent for this city, and whose advertisement is on the proper page.

Cooking and Eating in Water.

One of our foreign exchanges gives the following account of a new invention, as curious as it is useful.

A young man named Coombs, having provided himself with some patent apparatus, undertook to light a fire and cook and a dinner in the water, the possibility of which seemed a matter of doubt to many spectators. Having moored a kind of floating tea-tray out in deep water near the China-pier, Chelsea, England, he plunged into the stream, proceeded to light his fire and cook his dinner, which he not only accomplished with great ease, but also eat with great gusto, to the astonishment of upwards of 3000 persons. More than an hour had elapsed ere he had prepared and taken his coffee, after which he floated away amidst the plaudits of those assembled.

Brahma's Hydraulic Press.



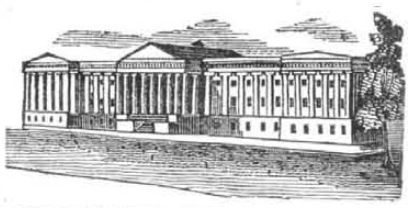
This is a valuable instrument, and one by which a prodigious power is obtained with the greatest ease, and in a very small compass. The size of the model represented is usually about twelve to fourteen inches square with a cylinder about four inches diameter.

Its action depends upon the principle that fluids transmit pressure equally in all directions. A solid piston, E, is constructed so as to move water tight in a cylinder. The space beneath the piston is filled with water, and communicates by a small pipe with a forcing pump, worked by the piston B, by means of the lever A, and by which the water, which is contained in the cistern G, is forced through the valve D, into the large cylinder. The large piston being thereby driven up, carries with it the bed H, and presses closely together whatever may be above it. Whatever pressure is exerted upon B, is transferred to E, and is increased according to the relative size of the two pistons. Suppose, for example, the piston at B to have a superficial area of one inch, and the large cylinder of ten inches, and then every ten pounds pressure put upon B, will be increased by E tenfold, and become one hundred pounds; and as a person may exert a force of fifty pounds on the lever, this weight alone will give a pressure of 100X50 pounds or more than 2 tons, and that with a pump, the large cylinder of which is not more than 4 inches diameter; and by decreasing the smaller tube from one inch diameter to half an inch the power will be increased fourfold, or to nearly 9 tons.

This improved hydraulic press is manufactured and sold by Mr. Pike and at a very moderate price.

Gold Mine Machinery.

An Engine for the Gold Mines in Virginia, has been constructed at Philadelphia. Two engines of about 45 horse power each, are placed on either side of a frame, to work an inclined plane and act upon shafting supported by another frame work. This shafting puts in motion forty-eight pieces of timber, armed with heavy iron shoes at the lower end, the weight of which falling upon the ore, gradually pulverizes it. A stream of water is to flow along beneath the frame work, and this carrying along the powdered ore, it will carry it to a table covered with skins, with the hairy side up and the particles of gold being heavier han the other portions of the ore, it will settle among the hair, while the refuse is carried away by the action of the water. The gold can, of course, be easily removed from the skins by another process.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Sept. 26, 1848.

To Josiah M. Colburn, of Derby, Conn. for improvement in Pickers for Looms. Patented Sept. 26, 1848.

To Benjamin Peck, of Rehoboth, Mass. for improvement in Jaw Temples for Looms.—Patented Sept. 26, 1848.

To Peter Kephart, Baltimore, Md., for improvement in upper floors of Ice Houses. Patented Sept. 26, 1848.

To Hosea Benson, of Jackson Township, Pa., for improvement in machinery for Dressing Staves. Patented Sept. 26, 1848.

To George Gross, of Germantown, Ohio, for improvement in Cultivators. Patented Sept. 26, 1848.

To Lewis Colver, of Glasgow, Mo., for improvement in machinery for breaking and dressing Hemp. Patented Sept. 26, 1848.

To Charles Learned, of Indianopolis, Ia., for improvement in Washing Machines. Patented Sept. 26, 1848.

To H L. Pierson, assignee of John Crum, of Ramapo, N. Y. for improved machine for turning the heads of Wood Screws. Patented Sept. 26, 1848.

To Henry Seitz, of Marietta, Pa., for improvement in Bridles. Patented Sept. 26, 1848.

To Elijah H. Holt of Fowlers Mills, Ohio, for improved method of raising water. Patented Sept. 26, 1848.

To Henry Evans, Jr. of Newark, N. J. for improvement in Lanterns. Patented Sept. 26, 1848.

To John Ellenwood, of Hillsborough, N. H., for improvement in Brakes for Cars. Patented Sept. 26, 1848.

To Eleazar Orcutt, of Bennington, Vt, for improvement in Lime Kilns. Patented Sept. 26, 1848.

To Joseph Jones, of Camden, N. J., for improvement in Boring machines. Patented Sept. 26, 1848.

To Abel Stillman, of Poland, N. Y., for improvement in Saw Setts. Patented Sept. 26, 1848.

To Henry Guild, of Cincinnati, Ohio, for improvement in Hemp Brakes. Patented Sept. 26, 1848.

To Spencer Lewis, of Tiffin, Ohio, for improvement in cutting screws on rails of Bedsteads. Patented Sept. 26, 1848.

To Stephen F. Stephens, joint inventor with, and assignee of J. Underwood, of Montpelier, Vt. for improvement in Platform Scales. Patented Sept. 26, 1848.

To Milo M. Cass, of Utica, N. Y., for improved self loading and self capping Fire Arm. Patented Sept. 26, 1848.

To John F. Rodgers, of Troy, N. Y.. for improvement in Railroad Cars. Patented Sept. 26, 1848.

To Hiram H. Scoville, of Chicago, Ill., for improvement in Grain Driers. Patented Sept. 26, 1848.

INVENTOR'S CLAIMS.

Straightening Railroad Iron.

To John Anderson, of Phœnixville, Pa., for improvement in machinery for straightening railroad iron. Patented August 29, 1848.—Claim.—What he claims is, 1st, the manner of directing the weight in its descent so as to strike the bar of iron in the point desired by the employment of hanging arms in combination with the rock shaft into which they are inserted and the lever for acting the same.—He also claims the combination of conducting and guide rollers in combination with the lever and concave anvil.

In one of the rooms of the Smithsonian Institution is to be erected the philosphical machinery presented the Institute by Dr. Hare, of Philadelphia, and worth $25,000.

NEW YORK, OCTOBER 7, 1848.

Steam Navigation of the Atlantic.

For a number of years the old world has been linked to the new by a regular line of steam packets. This company has been signally successful—in fact, well might Mr Cunard say of fortune "thy breath hath filled our sails." It is seldom, however, that fortune attends either the reckless, idle or unwise, and in the case of the Cunard line every quality to render success doubly sure, has been infused into the company. The principal partner is a Halifax merchant—a self made man—of humble but respectable parents and of American (Pennsylvanian,) descent. By great industry, energy and sagacity he has arisen to be one of the first shipping merchants in the world, and his line of steamers has as yet distanced all competition.

It is now about a twelvemonth since a new American line of steamships commenced plying between this city, Southampton and Bremen. This was an enterprise worthy of our New York merchants and we deeply regret that they have not been more successful.

The great cause of unsuccess in our Atlantic steamers, is owing to our short acquaintance with the building of marine ships.—Hitherto our steamboats have been built for short and comparatively unstormy voyages.—The navigation of the Atlantic is quite a different affair from that of the Hudson or the Erie. When the engines are set in motion at New York they must not cease to work until the old world rises to view. Now, in England they have had the practical experience of thirty six years in building sea going steamers—yea, they have had the practical experience of building steamboats in the very yard and by the same man who built the Europa, which has performed the quickest trip ever made across the Atlantic. The very first steamboat that was built in Britain was the Comet, a vessel of 25 tons burden, built for Henry Bell by John Wood, of Port Glasgow, in 1812. This is the gentleman who built the Europa—the first and last of European steamers, and then he was taken away in a good old age. This is a fact well worthy of attention. Look then at the great practical experience called here into requisition by Cunard & Co. Mr. Napier too, the engineer, has had the practical experience of more than thirty years, and those who think that steam engine and steam boat building, is all theory and no practice, have never experienced the many trials and mortifications of a joint too stiff here and a bolt too weak there in destroying the workings of a beautiful machine, the perfection of which is attained only by stern, iron experience. The Cunard steamers have their important parts built of the very best Welsh malleable iron—although built in Scotland, where very good iron is now made, yet Mr. Napier does not trust the iron of his own country. Now there is much in having good material in our vessels and the late unfortunate accident to the United States, is abundant evidence—and not *dear bought* experience, for it will be a benefit to us at last. It is best for us to look our difficulties direct in the face—look to what we have done and what we have yet to do, and our plain and candid opinions, we hope, will be appreciated, for they are sincerely designed for good.

No first rate voyage has yet been made across the Atlantic to this port. The Europa, which has made the quickest passage, which we will call 11 days, allowing for her detour to Halifax, performed only at the rate of eleven and one third miles per hour, certainly no speed at all in comparison with our river boats, and no speed at all in comparison with what the same vessel can do Judging from the form of her hull, the way in which her paddle wheels are set, like the limbs of an Arab, and the construction of her engines, we have no doubt but she could make the passage to this port from Liverpool in eight and a half days. And this would be doing no great things, for the competition lines between Glasgow and Liverpool have regularly been making for six years past, storm or shine, the passage in 15 hours, or at the rate of 15 miles per hour. Now this our American steamships must, can and shall yet perform. To perform the passage between this port and Liverpool in 10 days, allowing the distance to be 3000 miles would only be at the rate of 12½ miles per hour. We have heard that E. K. Collins, Esq. has expressed himself as being *determined* to have a vessel that will yet make the passage to England in eight days,—those who know his spirit have no doubt of his hopes being realized before many years pass away; but great results cannot be obtained without great efforts made and means used to accomplish the same. There is science and genius enough among our engineers and nautical architects to build the very finest steamships, but they must be paid for their labor, and they want some experience. To rival the British line, they have got a giant work before them, but for the honor of the Great Republic will they not accomplish it. It is our opinion that those engineers and builders who have built the ships we now have, are best qualified to build other and better ships. Let no vascillating spirit despise this advice, for they have learned much with their present experience and those who have had no experience, have always to *unlearn* much.

Culture of Tea in the United States.

An interesting article in Skinner's new periodical, entitled "The Loom and the Anvil," upon the culture of the Tea Plant, corrects the opinion long entertained, that it cannot be cultivated with success out of the Celestial Empire, and shows that it is cultivated there in the northern and mountain region, where snow lies on the ground three or four months of the year; it is found wild in Assam, and is cultivated in quantities at the foot of the Himmelah mountains. From those facts, with other information derived from traders, &c. returned residents of tea countries, the writer is fully convinced that this country, from Texas to New York, will grow tea equal in quality to two-thirds of that imported, and that some of the States will grow it equal to or better than the best that comes from China.

The article also states that a gentleman recently returned from Calcutta, who for five or six rears managed one of the Company's tea plantations in Assam, has written a book on the subject, not yet published, and has expressed an opimon that this country "can grow as good tea as any portion of the world." The writer thinks "the child is now born that will live to see the United States export, instead of import, tea."

The way we talk to them at the West.

Mr. Editor.—If the following rough scrap is worth anything, you can make use of it.

In Western phrase we talk it to non-subscribers to the Scientific American after this fashion. After showing them our paper and offering to lend it to them (provided they will carefully return it) we tell them we have the satisfaction of knowing the progress made in the mechanic arts, not only in our own country but throughout the civilized world,—the certainty of obtaining some valuable and to us new and useful ideas every week,—and as we some of us happen to be inventors, it prevents us stumbling on an old invention for new; and last, though not least for us Western chaps, we are very well aware that when the Eastern mechanics come among us, they are mighty wise and strong in scientific knowledge of the mechanic arts, and look down with contempt upon us Hoosier and Sucker mechanics. Now if we are armed with the *Scientific American* it is Greek meeting Greek; we can not only compete with them in mechanical knowledge but much to their surprise when we are informed from what parts they hailed, we can tell them even the expense they incurred in getting here.

A Western Subscriber.

A Report on the winds and currents of the northern Atlantic, hy Lieut. Maury of the U. States Navy, accompanied by charts, has been read before the British Association in London and highly complimented for its merit.

For the Scientific American.

Sleep.

Man is so constituted, that after engaging either in physical or mental labor for a certain number of hours every day, a feeling of fatigue is induced and he sinks into a state of unconsciousness for a number of hours, and then awakes with "nature refreshed," and ready to toil on again for profit or pleasure. It is a necessary part of our existence to enjoy sleep, and the more uninterrupted the sleep, the more refreshing it is. It is during the hours of sleep that the electric battery of the nervous system is replenished with invigorated powers. It is therefore a matter of no little consequence to examine into means which will tend to refreshing repose. The state of the body before going to bed, the kind of bed, clothes and ventillation must all be taken into account. A full meal before going to bed generally gives rise to unpleasing night visions and broken sleep; therefore such things shonld be avoided. It is not so refreshing for a person to lie on the back as on the side and the right side is the best, although many from habit feel no uneasiness from lying on their the back, or on the left side.

In regard to the kind of beds most suitable for refreshing slumber, there are differences of opinion—some are advocates for soft, and others for hard beds. The difference between the two is this, "the weight of the body on a soft bed presses on a larger surface than on a hard bed, and consequently more comfort is enjoyed." Children should never be allowed to sleep on hard beds, and parents err who suppose that such beds contribute to health, hardening and developing the constitution of their children. We have read accounts of a few quilts being good beds for children in summer, others "a corn husk mattress," or "a pine board with a piece of woolen laid upon it." The latter kind of bed is a gross violation of the laws for the preservation of health. Eminent physicians, Dr. Darwin among the number, state that "hard beds have frequently proven injurious to the shape of infants." Birds cover their nests for their tender offspring, with the softest down or the most velvetty moss. The softness of a bed, is no evidence of it being unhealthy, and they have but a poor understanding of the laws of nature who think otherwise. To render sleep refreshing in warm weather, the body should be bathed every night and the bed room should be of large dimensions, not the life destroying box named "bed rooms," for which our cities are famous, owing to the value of city property. From correct statistics, it has been observed that the deaths of children of the poorer classes under ten years of age are in proportion to the children of the higher classes as ten to five. Poor beds is one cause of this mortality. Above all things, however, it should never be overlooked, that cleanliness tends more to healthful sleep than any thing else. In warm weather night clothes should be light, and a thin blanket is perhaps the best covering that can be used, but many assert that a cotton sheet is preferable, and if the clothing products of warm climates are any data whereby we may form a sound opinion, the latter covering must be the best. It is all nonsense to suppose that the barbarian has a sounder constitution, a stronger frame, and can bear more fatigue than the civilized man, owing to his squalid bed and what is called "the hardy manner in which he is reared." The civilized man has a better constitution, if he is a man of temperate habits, and he has also a stronger frame and can endure more fatigue. The officers of Napoleon's army at the retreat from Moscow, endured the fatigues far better than the common soldiers, and there are abundant evidences to prove, that a generous rearing tends to produce a nobler physical and mental constitution, than to be reared amid poverty and stunted with hardship. Those who point to the advantages of barbaric life can use no good argument for bettering the condition of the poorer classes. It is an old exploded doctrine, that the children of the poor are healthier and stronger than the children of the rich. If this were true, poverty surely were a blessing. We conclude by saying "that good, soft and cleanly beds for children and adults, will tend greatly to promote health by producing refreshing slumber, especially to the weary workman. G. R.

Sturgeon and Isinglass.

In volume 2, of the Scientific American we called attention to the manufacture of isinglass and stated how much might be made in the United States from the sturgeon in our rivers. We perceive that Professor Jarger has in a recent lecture called attention to this subject and we hope that the following extracts will not fail in doing something to arouse yankee enterprise to the manufacture of this valuable article.

A very profitable part of the Sturgeon is the swimming bladder of which Isinglass is made. For this purpose it is cut open, washed and the silver glutinous skin exposed to the air for some hours, by which process it can easily be separated from the external skin, which is of no use. This glutinous skin is placed between wet cloths, and shortly after each piece is rolled up and fastened in a serpentine form on a board; after they are partly dry they are hung up on strings in a shady place.

This valuable and extensive article of commerce is the Isinglass of our shops, and it is sold for about $50 a hundred weight

There is made Isinglass also from the swimming bladder of the catfish, and some others, but as this is very interior to that from the sturgeon, it brings scarcely $10 a hundred weight.

The sturgeon is found in immense quantities in the United States and North America, from Virginia up to the highest habitable northern latitudes, where they ascend the rivers from 300 to 500 miles up. The Potomac, Delaware, Hudson and principally the Kennebec, as well as many other rivers, contain such a quantity of sturgeons, that from those rivers alone, without counting those farther north of Maine, according to my calculation, the annual export of pickled sturgeon, caviar and isinglass alone, would be worth nearly half a million of dollars. Pickled Sturgeon and Caviar is a favorite food of the descendants of Spain and Portugal in South America, as well as of the inhabitants of the West India Islands, principally during Lent; and isinglass would be an article of home consumption, as well as for the European market.

But the Sturgeon is not, a very favorite dish in our country; it brings scarcely 5 cents a pound in the market, and the roe and swimming bladder are always thrown away. Our fishermen are therefore not much encouraged in catching those fishes, though, according to careful observation, from 30,000 to 40,000 Sturgeons could be annually caught in the waters of the United States.

There are found two species of Sturgeon in our rivers, viz: 1st. The round-nosed sturgeon, which is generally 8 feet or more long, and weighs over 200 lbs., and 2d. The sharp-nosed Sturgeon, which is seldom more than 5 feet long, and weighs about 150 lbs. or more. The Sturgeon was highly appreciated by the ancient Romans and Greeks. It was the principal dish at all great dinner parties, and Cicero reproached the epicures on account of their spending so much money, for this fish was served at the most sumptuous tables, and always carried by servants crowned with garlands of flowers, and accompanied by a band of musicians. And, even at this time, one pound of fresh Sturgeon costs $4 in Rome, where this fish is very rare.

We leave this subject to the judgment of our intelligent merchants, to profit by an opportunity to increase their own wealth and that of the community, by introducing this new article of commerce.

THE
SCIENTIFIC AMERICAN.

Persons wishing to subscribe for this paper have only to enclose the amount in a letter directed (post paid) to

MUNN & COMPANY,

Publishers of the Scientific American, New York City

Terms.—$2 a year; ONE DOLLAR IN ADVANCE—the remainder in 6 months

Postmasters are respectfully requested to receive subscriptions for this Paper, to whom a discount of 25 per cent will be allowed.

Any person sending us 4 subscribers for 6 months, shall receive a copy of the paper for the same length of time

Patent Laws.—Selling before the Issue of a Patent.

Taking the advice of an able correspondent, W. M. O'B. of Maine, whose letter was published in our last number, we are determined to throw as much light as possible on the existing Patent Laws—to expose their defects and agitate a revision—full and complete—so that the true inventor may be secured in the whole of his invention, without exposing him to be plundered of his rights, as he is most effectually at present, if he is poor, or without being deprived of them from inability to appeal in cases of wrong decisions, for want of means to prosecute his claims. During last session of Congress no amendments were made to the existing Patent Laws, except the passing of a bill to increase the Examining force of the Patent Office, and the payment of $3 now for all recorded assignments (an old law revived.)

A bill was introduced into last Congress torevise the Patent Laws. Some of its provisions were good—others decidedly bad. It slept, perhaps all for the best, but we are determined to let no proposed good law sleep for want of agitation, and this we have commenced we think in the right time to stir up our people to this important subject, in order that we may have a law so plain that Judges *themselves* may not mistake its true meaning. —Eds.

Inventors frequently sell their contrivances to others before applying for patents, in order to test their usefulness, to ascertain by experiment if they can be easily introduced, or to obtain sufficient means to procure the patents. Enquiries are daily made as to the legality of this practice, and whether, after filing a caveat or taking measures to secure a patent, or even without these preliminary steps, an inventor can sell his machines without invalidating his right to a patent, or disposing of territorial rights. I will endeavor to satisfy these enquiries and clearly exhibit all the provisions of the statute upon the subject.

By §7 of the Act of March 3, 1839, it is enacted that—"Every person or corporation "who shall have purchased or constructed "any newly invented machine, manufacture "or composition of matter, prior to the ap- "plication by the inventor or discoverer for "a patent, shall be held to possess the right "to use, and vend to others to be used, the "specific machine, manufacture, or composi- "tion of matter so made or purchased, with- "out liability therefor to the inventor or any "other person interested in such machine; "and no patent shall be held to be invalid "by reason of such purchase, sale or use, "prior to the application for a patent as "aforesaid, except on proof of abandonment "of such invention to the public, or that such "purchase, sale or prior use, has been for "more than two years prior to such applica- tion for a patent."

The words "specific machine" above used, mean the identical or individual article or specimen sold, whatever it be, and not the whole invention itself or any part of the patent, or any right under it. Accordingly if A. for example, has invented anything for which a patent may issue, and sells to B. a model or specimen of his invention; or permits B. to construct one or more articles or models, either for his own (B.'s) use, or to sell to others; or gives a drawing or description of it to B, who thereupon constructs or manufactures one or more specimens, machines or articles, whether for his own use, or to sell or give away for others; or even if B. obtain a knowledge of the invention surreptitiously and constructs or manufactures others after the same manner; although A. afterwards obtain a patent, still B. and all others to whom he has sold, and every other person who has constructed or purchased an article, from whatever source obtained, if done prior to the application for a patent, can sell the identical specimen, article, or "specific machine, manufacture or composition of matter," as freely as though the invention had not been patented. This will be more plainly understood when it is recollected that no patented article can be constructed or sold by any person, even a purchaser, without the consent of the patentee, which is usually given in the territorial assignment. The section gives B. "*the right*" to "use and vend to others to be used," without liability to any person whatever; and requires the Courts "to hold" or decide, if he is sued for an infringement, that he possesses and may exercise such a right in regard to the identical articles he has purchased or constructed. All persons to whom B. has sold before the application for a patent, possess the same right and may exercise the same privileges, for they are embraced also in the general expression "*every person* or corporation who has, or shall have, purchased or constructed." This "right" too is *personal*, that is B. and all others who have made or purchased the invented article before the patent was applied for, can use and sell the identical articles so made or purchased *wherever they themselves are*; though undoubtedly they could not sell "rights," for that would be a monopoly excluding the public, which can only be exercised under a patent, and A. only has a patent; neither could they manufacture, use or sell any more articles than were in their possession *at the time* of the application for a patent, for, unless the statute gives them permission to use and sell after the patent issues, they will be exercising privileges and rights of which a monopoly is secured solely to A, and besides the statute expressly limits their right to use and vend *only* the "specific" articles constructed or purchased "*prior* to the application for a patent."

Rochester, N. Y. W. F. Lideell.

(*To be continued.*)

A Southern Manufacturing Village.

Graniteville is the name of a pretty village in South Carolina which has sprung into existence as if by magic. It is near the line of the Charleston and Hamburgh Railroad, about five miles from Aiken. In October 1846, the foundation stone of the factory was laid and the first work of improvements commenced. It is located in a lovely valley and is laid out on the side of a gently sloping hill in parallel streets, with a bold, clear stream running through the centre. A correspondent of the Tuscaloosa Monitor lately visited it, and the following extract of his communication will be found interesting to many of our readers.

"This company was formed some three or four years ago by a gentleman of South Carolina, desirous of demonstrating the perfect practicability of the South manufacturing her own cottons, and diverting a portion of her labor from agricultural to manufacturing pursuits; and in order to make this labor (which is comparatively new to South Carolina) as attractive as possible, and to guarantee a respectable manufacturing population, it was determined that no pains or labor or capital, should be spared to make this queen valley to "blossom like the rose," and to construct the dwellings of the operatives so that they should have all the comforts, conveniences and enjoyments of life at their command. Under the auspices of Mr. Gregg, this beautiful and philanthropic design is being carried out with extraordinary skill. When Graniteville burst upon our view from the summit of the hill, its main building of white granite, 350 feet long, with two massive towers ornamented at the top, looking like some magnificent palace just rising out of the green vale below, with an extensive lawn in front, and clean trimmed gravel walks around, and fountains spouting their crystal waters in the air in fantastic shapes; the neat boarding houses and cottages for single families, and the handsome little church, all constructed and ornamented in the ancient Gothic style, and each house having its own garden for vegetables and flowers; and the ever green woods sloping from their garden doors gradually to the summit of the hill where we stood—the whole scene is as though the wand of the enchantress had called it into existence to challenge our admiration. The extent of the valley below us looked as though it might be 12 or 15 miles in length though it may be more. On the right at the head of the vale we caught a glimpse of the large pond or small lake from which a canal is cut and conducts the water on the hill slope to the establishment, a mile or so below. Turning to the left we descended the hill, crossed a nice bridge over the canal and entered the enclosure of the principal works. We crossed over on the opposite side, leaving the noble granite building on our right and the lovely green sward on our left, a fountain was throwing up a jet of clear water 15 feet into the air, which was quite refreshing to look upon. We entered the office and presented to Mr. Gregg our letter of introduction. Mr. Gregg was exceedingly polite in showing us every thing about the establishment, every part of which was quite interesting to me.—The shafting of the whole building was just completed, and Mr. Gregg had it put in motion for our benefit. It ran truly and steadily as possible, not a wabble was to be seen in the whole length. 300 looms were just being put into their places, and the spinning frames, carding machines, &c. &c. were being arranged to cover the whole building. I remarked to Mr Gregg that I was glad they had not committed the error of only filling a portion of the mill at the commencement. He replied that that was an error he had been determined from the beginning not to commit, as he knew that to fill the mill at the start was the only way to insure success, and that the only condition on which he would have undertaken its control was that capital sufficient for that purpose, should be first subscribed. This had been done. The capital of the company is three hundred thousand dollars, and when all is completed and the full mill set in motion about next October, he says he will have money sufficient left to purchase cotton for a beginning. The mill will contain 300 looms and 9000 spindles, making No. 14 yarns, and sheetings, shirtings and drillings from these yarns; goods similar in quality to the Appleton goods; a market for which is expected to be found principally in New York. The machinery cost, exclusive of shafting &c. about $90,000. The mill and its contents will cost about $150,000, and the making of the canal, the erection of boarding houses, cottages, warehouses, shops, &c &c. including $10,000 paid for the valley itself, will swallow up most of the other investments. The factory will be propelled by a turbine wheel of one hundred and sixteen horse power, of four feet diameter, with a tube of three feet, and apparently about 20 feet fall. The machinery is all of the most perfect and beautiful kind, and is principally from Taunton, Massachussetts. The whole valley at this point was altogether in the woods four years ago; and to look at it now with all its improvements tending towards completion, shows with what energy and correct design every part has been prosecuted by the worthy manager. All along the bank of the canal and facing the factory building, are very handsome houses built with strict uniformity, each having its garden and all other conveniences around it, intended for boarding houses and can accommodate besides the family, some 90 boarders with comfortable rooms, &c., and further on, and on the hill slope nestling among the trees, are numerous cottages with their peaked roofs, gothic windows and ornamented eaves, each part finished in the old gothic style. These houses are intended for families where the members are sufficiently numerous to fill one house and live alone. Mr. Gregg told us that these cottages, thus ornamented, only cost the company $200 each, and that the ornamented work was only a small portion of that cost; while it was intended to give to the inhabitants a taste for the beautiful, and to encourage among the operatives a pleasant rivalry in making their homes agreeable. For this design the company are certainly deserving of all praise. It is not expected that this establishment will pay a dividend for the first two or three years, so large a portion of the capital is laid out in these improvements for the benefit of the people to be employed, and in constructing the canal, &c.

I could not but think how different, and with what different, motives such establishments had been started in England, where no care, no thought of the employed (in most instances) had ever crossed the mind of the employer except to get their labour at the lowest prices, and let them live and engender moral and physical disease in such wretched and filthy hovels as their scanty wages would command. How happy for the manufacturing class in the United States that when Lowell began her career she took a more enlarged and comprehensive course and proved that even the capitalist himself is benefited by securing to his operatives a healthy, clean, tidy and comfortable home. Mr. Gregg has taken Lowell as his model in this respect and improved on it where he could, and the manner in which he has performed his trust, reflects equal credit to his heart and head.

There are but few who are aware of the enerprise and energy that is now manifested in the South in advancing and developing the manufacturing capacities of her wonderful and rich regions. The Alabama Planter, an excellent exchange has done much by able articles to direct the attention of southern capitalists to the great amount of water power and manufacturing abilities that are now dormant but which might profitably be applied to good purpose.

Canadian Method of Hunting Wild Bees.

The Canadians adopt an ingenious plan for discovering the trees that are stored with honey. They collect a number of bees off the flowers in the forest and confine them in a small box, at the bottom of which is a piece of honeycomb, and on the lid a square of glass large enough to admit the light into every part. When the bees seem satiated with honey, two or three are allowed to escape, and the direction in which they fly is attentively observed until they become lost in the distance. The bee hunter then proceeds towards the spot where they disappeared, and liberates one or two more of the little captives, he also marks their course. This process is repeated, until the other bees, instead of following the same direction as their predecessors, take the direct opposite course, by which the hunter is convinced that he has overshot the object of his pursuit; for it is a well-known fact, that if you take a bee from a flower situated at any given distance south of the tree to which the bee belongs, and carry it in the closest confinement to an equal distance on the north side of the tree, he will, when liberated, fly in a circle for a moment, and then make his course direct to his sweet home, without deviating in the least to the right hand or to the left. The hunter is now very soon able to detect the tree which contains the honey, by placing on a heated brick a piece of honeycomb, the odor of which, when melting, it so strong and alluring, as to entice the whole colony to come down from their citadel. When the tree is cut down, the quantity of honey found in its excavated trunk seldom fails to compensate the hunter very amply for his perseverance.

TO CORRESPONDENTS.

To our many Friends.

In sending us descriptions of your inventions please make your drafts or drawings on slips of paper separate from the letter sheet.

"M. J. of Ohio"—A long thin piece of steel is hardened, without warping or springing, by placing it between two pieces of iron and heating the three together. The probable reason your communication was not answered before, was because we published a series of articles on Steel some time ago, in which the above information was included. $2, O. K.

"J. McA. of Ct."—$150 is the price of the machine you speak of. There is no particular principle involved in its operation.

"W. B."—Four parts of copper and one of zinc form an excellent Brass. Melt in crucibles. The proportions vary according to the color required. The price of a Lathe of the size you mention will be $250, complete in every respect.

"A. D. of Alabama."—We do not know where such a machine as you describe can be had. Do not think there is any.

"R. A. A. of Tenn."—There is no such book published. There is a work on Decorative Painting, price $6.

"R. H. C of Ky."—We have delayed answering until we could obtain reliable information. Such a mill as you speak of would cost about $13,000, besides the buildings. It would require a steady stream of 2½ inches, and an engine of 25 horses power.

"A & D. of Ky."—Among the many hundred Rotary engines which have been invented, none as yet are equal to the common Cylinder engine. We would not advise you to use a Rotary of any description whatever. $2,

O. K. The Scientific American never was doing so well, thanks to our many friends, yourselves among the number.

"H. T. M. of Missouri."—Please send a drawing of your invention and we will have the engraving done.

"R. A. L. Mc. of Alabama."—The engine is sold. We shall have others soon, notice of which will be given in our paper. A single upright saw requires 4 horses power. $5, O. K.

"J. J. B. of Va."—There is no paper published in the U. S. devoted exclusively to Flour manufacturing interests, &c. The liquid gas, or burning fluid, is composed of alcohol and turpentine. Its effects upon the human system used in the manner you describe, are not injurious. $3, O. K.

"L. B. F. of Illinois."—Please have the model left at Messrs. Adams & Co.'s Express Office, Pennsylvania Avenue, Washington.—Direct it plainly to us and it will come safe We are very much obliged for your exertions to obtain subscribers. The "scrap" you sent is very good and will be published. $3, O. K.

"J. Y. C. of N. Y."—We cannot tell the cost of the iron work of a planing machine for boards. The cost of a complete machine is about $1200.

"B. & B. of Illinois."—J. C. Nixon & Son of this city, make the best Shears. They make eight sizes, from 4 up to 12. The price of No. 4 is $4, and $1 additional for each size larger. You may enclose the amount for the size you desire to us, and we will have them forwarded.

"R. M. of Vt."—The engine you speak of is sold. We shall have others however soon, which you will see noticed in our paper.—For the purpose you name 3 horses is sufficient.

"H. L. B. of Mo."—We have forwarded your letter to Mr. Wilson, of Philadelphia, who owns Woodworth's patent.

"W. S of R. I."—We have endeavored to get the exact information for you, but the number of yards per day we cannot tell.

"G. C. of Ohio."—We can send you a good work on Civil Engineering for $5, but it does not contain instructions for drafting. It has however numerous illustrations from which you may copy and thus instruct yourself.

"R. J. Mc. C."—We should advise you to rig a small smelting furnace and run your bits of steel into bars. You can then get more for them, and they will be more portable. Cast into small bars you can probably get from 5 to 8 cts per lb. in this part of the country. Mr. John Simpson *did* obtain a patent in 1847 for reducing friction on band machinery by covering the pulley with a preparation of prepared gum elastic.

"F. G."—We have long noticed that French illustrations on wood were generally finer and better executed than any other. We have not, however heard of the composition to which you refer. We can hardly believe it practicable, in the first place, and in the next if such was the case a full description would have been published long ago in the Scientific American. It may, however, have escaped us. We shall make due enquiry and if true you will soon see an account of the process.

"J. B. L. of Phil."—Your communication will appear next week.

"C. L. Y. of Ohio."—We will call attention to your case.

"R. L. of N. Y."—If you can make your loom perform 200 revolutions per minute, you have made a great improvement. All improvements on one machine can be secured in one patent. It is not possible to give you correct advice without seeing a model—no machine has a greater variety of forms than the loom.

"N. C. of Ohio."—Your 1st, the motion to communicate with the cut off, is by an eccentric connected with the shaft. 2nd. The slide valve. The 3rd, 4th and 5th, we shall endeavour to answer *correctly* at another time—many of the same kind of engines are used in the and South West, but we are not yet sure, if there is the least particle of difference in them from some others, well known.

"B. T. of Mass."—Metals have five degrees of lustres, viz :—splendent, shining, glistening, glimmering and dull.

"W. B. L. of Tenn."—We have endeavour- to find out the mill in Brooklyn that performed so well, but have not been able, nor do we think it possible that there can be an increase of productive work, without an increase of power commensurate. It is true that 4 feet runners are used here driven at great speed, but then they require more power, this is well known.

"T. C. of Ga."—We consider your improvement a very important one, and from which by proper management, you will realize a large sum. Send on the model and we will secure the patent without delay.

Ranlett's Architect.

No. 4 Vol. 2, of this splendid work is just laid upon our table, and we take this opportunity of informing a number of our friends in the country, who have written to us about it, that they can now get their numbers regular from all the different agents throughout the U. S. This number is a beautiful one, with designs of an Italian Villa, and full specifications of the section plans. The price of this work is 50 cents per number, and it is well worth the money.

For the Scientific American.

New Chemical Law.

No. 3.

In the appllcation of this law, it is necessary to find examples ot aggregated substances, and to ascertain if their specific gravities, boiling points, &c. agree with the conditions required. The boiling points and specific gravities of many substances, have never been experimentally ascertained, and therefore in many cases, we shall have to be content, without the proof required. In some instances however we can obtain a general idea of the specific gravity, boiling point &c., by the remarks made, as for instance whether a body is heavier than water, or whether the boiling point of a substance, is greater or less than the boiling point of water. It must be plainly understood, in the cases of aggregated series about to be given, that when the specific gravities, boiling points, &c., of substances are not mentioned, it is because they have not been announced in the present works upon Chemistry. The following are a few of the examples.

	Sp. Gr.	B. Point	
Aldehyde C4 H4 O2,	,790	70°	fluid.
Elaldehyde C12 H12 O6			fluid
Metaldehyde (not known,)		248°	solid.

In the above case it may be seen that Aldehyde is the radical of the series. By the union of three atoms of Aldehyde, forming a compound atom, Eleldyhide is formed. Metaldehyde is a still higher aggregated compound, and its composition should therefore be greater than either of the two former substances. The specific grrvity of Aldehyde is alone calculated, but by this law and its conditions the specific gravities of the other two, should be greater and in a regular increase. The boiling point of Elaldehyde has not been calculated, but should be intermediate to Aldehyde and Metaldehyde. Another condition required, namely, that its density should increase with the series, is also fulfilled. Aldehyde changes into Elaldehyde and Metaldehyde by allowing it to stand for some time.

Cyanogen C2 N., a gas.
Paracyanogen (unknown,) solid

The composition of Paracyanogen, should be greater than that of Cyanogen. No specific gravities nor boiling points are given; but it is evident that the boiling point of cyanogen is less than that of paracyanogen as it is a gas at common temperature. Cyanogen changes into Paracyanogen, and shows an instance of a gas becoming a solid, according to the requirements ot the law.

Chloride of Cyanogen Cy+Cl. a gas.
Chloride of Cyanogen Cy3+Cl3. solid.

This is nearly a similar case to the one last mentioned, and for the same reason as given in that example, the boiling point of the first chloride is less, than that of the second. The first chloride when compressed into a liquid, and kept for some time in sealed glass tubes, gradually passes into the solid chloride, without any increase or loss of elements. Their specific gravities are not given.

Cyanic Acid CyO+HO, a highly volatile fluid.
Cyanuric Acid Cy3 O3+3HO, solid in crystal.
Cyamelyde Cy2 O2+2HO, solid like porcelain.

Perhaps we might include in this example, Fulminic Acid, but as it never has been isolated, I have concluded to leave it out. These substances like the examples previously given, change into each other, under peculiar circumstances. By inspection it may be seen, that as the aggregation proceeds, the substances increase in density, thus Cyanic Acid, the first of the series is a highly volatile fluid, the next is a solid and the third is a denser solid resembling porcelain in appearance. The composition of Cyamelide is here laid down as Cy2 O2+2HO; there is no doubt but that this is an error, and that its real composition should certainly be as much as double its present composition, Cyamelyde does not form many combinations with other substances, and it is probably for this reason, that the above was given for its composition, for it is well known, that when a substance does not unite with other substances of known composition, the analysis cannot be controlled.

Ferrocyanogen Cy3 Fe.
Ferridcyanogen Cy6 Fe2.

This example would be more conclusive if carried to its similar compounds.

Mesitylene C6 H4, liquid.
Retinyl C18 H2, liquid.

The specific gravities of these two substances, have not been ascertained. It however shows the difference of their composition, and that an atom of Retinyl is composed of three atoms of Mesityline. S. N.

Bridgeport, Conn.

To ascertain the Weight of Copper.

Find by calculation the number of cubic inches in the piece, multiply them by .32118 and the product will be the weight in pounds.

EXAMPLE :—What is the weight of a copper plate ¼ an inch thick by 16 inches square? The number of cubic inches is 128 which multiplied by .32118 leaves 41.111 lbs. the answer.

To ascertain the Weight of Lead.

Find the number of cubic inches, multiply the sum by .41015 and the product is the weight in pounds.

To ascertain the Weight of ordinary Brass Castings.

Find the number of cubic inches in the piece, multiply by .3112 and the product will be the weight in pounds.

Measuring Distance by Sound.

A bell rung under the water returns a tone as distinct as if rung in the air.

Stop one ear with the finger, and press the other to the end of a long stick or piece of deal wood, and if a watch be held at the other end of the wood, ticking will be heard be the wood or stick ever so long.

Tie a poker on the middle of a strip of flannel two or three feet long, and press your thumbs or fingers into your ears, while your swing the poker against an iron fender, and you will hear a sound like that of a heavy church bell.

These experiments prove that water, wood and flannel are good conductors of sound, for the sound of the bell, the watch and the fender, pass through the water, and along the deal and flannel to the ear.

It must be observed, that a body in the act of sounding is in a state of vibration, which it communicates to the surrounding air—the undulations of the sound affect the ear, and excite in us the sense of sound. Sound of all kinds, it is ascertained, travels at the rate of 15 miles in a minute; the softest whisper travels as fast as the most tremendous thunder The knowledge of this fact has been applied to the measurement of distances.

Suppose a ship in distress fires a gun, the light of which is seen on shore, or by another vessel, 20 seconds before a report is heard, it is known to be at a distance of twenty times 1142 feet, or little more than four and a half miles.

Again, if we see a vivid flash of lightning and in two seconds hear a tremendous clap of thunder, we know that the thunder cloud is not more than 760 yards from the place where we are, and we should instantly retire from an exposed situation.

For the Scientific American.

Cure for the Dysentery and Summer Complaint.

Take fresh raw garden carrots, grate them fine, put them in a linen or cotton cloth, immerse them in water just enough to wet them through, and then press them within the cloth until all the liquor is squeezed out.—Sweeten with loaf sugar and take about one gill of the liquor at a time, for a dose; if this should fail take another, it can do no harm.—Where it has been tried it has been seldom or never known to fail, its effects in performing a cure is almost instantaneous. It is an innocent and simple remedy and can be productive of no bad consequences, but may save much suffering and many valuable lives.

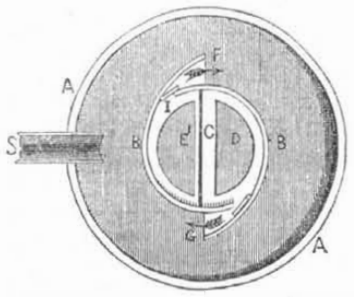
New York. E. S.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

WATT'S LAST ROTARY ENGINE.

FIG 5.



These three engravings conclude the number of rotaries invented by Watt and included in his patent of 1784. After this it seems he never troubled himself with the subject, but it is very evident that the idea of a rotary was a great favorite with him for a long time, and when we consider that such a great man was thus favorably impressed with the rotary principle, we need not wonder at the number of his followers, and the question will be apt to force itself upon the mind,—is not a true and unsurpassable rotary yet to be invented?

FIG 6.

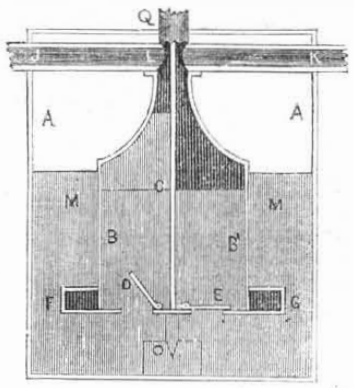
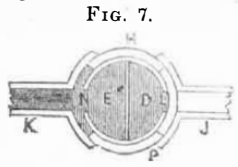


Fig 5 is a ground plan, and fig 6 a section. A A, is an external cylinder or reservoir, filled with heated water, quicksilver, or an amalgam (which would become fluid at the boiling point.) B B, is an interior cylinder in the middle of A A, and turning upon a pivot O. A partition C reaches from the top to the bottom, dividing the vessel in two equal parts. D E are two valves, allowing the liquid to ascend and fill the interior of B B, but preventing its egress in that direction. F G, are two tubes, or apertures, for guiding the escape of the liquid in the direction of the arrow. J is the pipe for the admission, and K for the exit of the steam. The steam being introduced from the boiler through J enters the cavity L, and passes on the surface of the water, driving open the valve I, (fig. 5) and issuing through G, in the direction of the arrow, thus passing upon the body of of the liquid in the reservoir, and producing a re-action, which drives the internal vessel round. When it has performed nearly half a a revolution the cavity N comes under the steam passage. This will be understood bet-

FIG. 7.



ter by fig. 7: P, is a hoop encircling the upper part, or neck, of the vessel B B; L is a hole in the side of the vessel communicating with one side of the vessel, and N a similar hole communicating with the other. It will be seen, that at present, the hole L communicates with J, and the hole N with K, but, by turning the vessel half way round, their situations will be reversed; L communicating with K, and J with N, so that each side is successively exposed to the action of the steam, and to the condenser. By this means, therefore, the hole N is next in communication with the steam pipe J, and the valve D being thus by the steam pressing on the surface of the liquid; the valve I is opened by the same means, so that the liquid is forced with violence through F, in the same manner as it was previously forced through G. Whilst this operation is going on, a vacuum is formed in the first vessel (by L communicating with the condenser) so that it becomes changed and ready in its turn to receive the action of the steam. When it does, the first operation is repeated, and a rotatory motion is kept up by the alternate action of the liquid driving through the cavities F G, in nearly the same manner as the motion is produced in the well-known machine Barker's Mill, differing only thus:—that the water from the latter acts against the air, whilst this acts upon the fluid in which this is immersed. The motion is carried through the top of the reservoir A to a stuffing box Q (not shown), and attached to the machinery.

It appears this machine was tried, and found to have little or no power; which, of course was the reason of its abandonment. The acting upon a medium, which affords no solid ressistance, and is, therefore incapable of producing any powerful re-action in the machine.

Having now completed our account of Watt's rotary engines, we will say that his fame does not rest upon any one of them—they were some of his most worthless inventions, but we reckon them to be as good and valuable as others of the same nature invented by men, Brahma among the number, who pointed only to the weak points, not the strong points of this great mechanic. James Watt was a wonderful man—his ideas were great, and his discoveries have done more to advance civilization and the useful arts than those of any other man. We make the assertion without any reserve and we do it, because we believe his own countrymen in England have never done him full justice. Whether we consider the improved steam engines by Watt as first applied successfully in our city by Fulton to navigation or to propelling with lightning speed, the iron horse, we cannot but candidly, and with the generous Frenchman who first wrote his true biography, say of James Watt, the plebeian Scotch mechanic, that "his inventions have been to commerce and the manufacturing arts, what the art of printing and the printing press were to literature."