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Rail-Road News.

Interesting to Railroad Corporations.

A suit has been pending in the County Court of Baltimore for several days,—the action was brought by Mr. Branden against the Baltimore and Ohio Railroad Company, for damages in said company refusing to transport a certain number of hogs (alive), for the said Branden, to Baltimore. It appears that the plaintiff, in consequence of the delay in transportation, lost considerable, the price of hogs having depreciated before he could get them to market. It was alleged that the Railroad Company had agreed to forward the swine at a given time, and failed to do so. The jury returned a verdict of $1,150 for the plaintiff.

Whitney's Pacific Railroad.

We have received the printed Report of the Committee of the Senate, Mr. Bright chairman, on the subject of a Railroad to the Pacific. They recommend the plan of Asa Whitney, Esq., of this city, as being the most feasible, and one which is held to be necessary at the present time, to chain our Pacific and Atlantic possessions together. Mr. Whitney's plan was published in Vol. 2, Sci. Am.

Utica and Schenectady Railroad.

A meeting was held on the 15th inst. by the Utica and Schenectady Railroad Co., wherein it was resolved to increase the capital from $3,500,000 to $4,500,000.

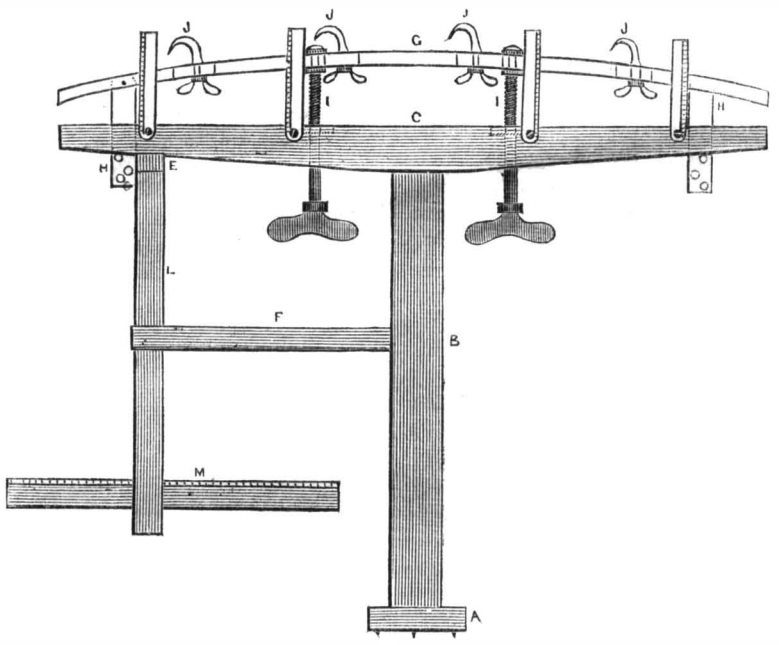
Two engines ran together and were smashed at the Worcester junction, last Friday. This accident delayed the train from Boston to Springfield, and made the express train several hours behind its time.

Telegraph to France from England.

The telegraph wire across the straits of Dover having been broken, we learn by the last news from Europe, that the telegraph owners are now understood to have completed such final arrangements as were pending with the authorities at Paris on the subject, and to be now prepared to promote the establishment of the communication in a permanent manner. A specimen of rope, or rather coil of iron wire, has been constructed, which it is affirmed will be of sufficient strength to resist every cause of accident to which it is liable, whether arising from rocks, anchorage, or otherwise. The cost of this would amount to about £50,000, of which one-half is proposed to be raised in Paris and the remainder in London. A few months, it is said, will suffice for its construction, and it is therefore contemplated that it should be laid down early in the spring of 1851. The concession obtained by the company gives them the exclusive privilege of communication between the two coasts for a period of ten years.

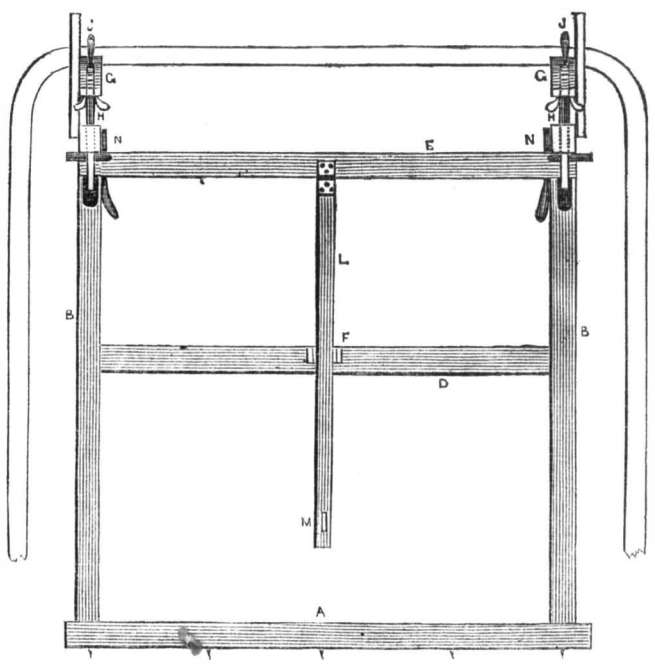
According to Bouguer's experiments, light is weakened after a passage on the ocean of 192 feet, in the proportion of 1 to 1,487·8.

McKINNEY'S IMPROVED MODE OF REGULATING THE SETTING OF BOWS IN WAGON TOPS.---Fig. 1.



This is the invention of Mr. A. McKinney, Montgomery, Orange County, N. Y., and was patented on the 13th day of last August. Figure 1 is a side elevation, and figure 2 is a back view. The same letters refer to like parts. The nature of this invention consists of a frame provided with certain adjustable rules and hold-fast bolts, whereby the frame is secured to the seat of the wagon, the hoops set at the required height and distance from each other, plumbed and squared to the adjustable rules, and held by the hold-fast bolts until they are secured to the body of the wagon. The usual mode of setting up the bows of wagon tops, is to set up the back one, and after having plumbed it and set it at the required height, to set up the others separately by measuring from the first or back one. This is a task which occupies considerable time, and generally employs two persons; but in setting up the bows by Mr. Kinney's apparatus, it is only required to set the adjustable rules in the required position, and to set the bows by the measurement marked on the rules, which may be accomplished in a very short period by one person. The frame is of wood; A is the bed piece; B B are two uprights; C C are longitudinal bars; D and E are crossties, and F is a bar; G G are rules of the same length as the longitudinal bars, C C. These rules are divided and graduated in feet and inches on their upper sides, and are attached by pins to the flat rods, H H, which pass through slots near the ends of the longitudinal bars, C C. The rods, H H, are each provided with a series of holes, through any one of which a pin may be inserted under the bars, C C, for the purpose of adjusting the ends of the rules, G G, at any required height; I I are adjusting screws, fitted into nuts in the bars, C C, and they are secured to the rules, G G, for the purpose of giving any required arch to the said rules; J J are hold-fast bolts, having square shanks passing through slots in the rules, G G, and having their lower ends screwed and fitted with thumb-nuts; these bolts are for securing the upper part of the bows to the rules, G G, and are capable of being moved a convenient distance in the slots according to the distance required between the bows; the rules may be provided with any required number of hold-fast bolts, but as four bows are generally the amount employed, no more are represented. There are four graduated short rules, one for each bow; these are represented as standing vertical, but they are jointed by pins to the bars, C C. These short rules are for setting the rules, G G, at any required height, to give the required arch from the back to the front; L, is a swinging rod jointed by a hinge to the cross-piece, E; it is capable of swinging backwards and fitting in a fork in the end of the arm, F; this swinging rod has a slot, also, in its lower end, to allow the sliding rule, M, to move in it freely.

Figure 2.



OPERATION.—The bed-piece, A, having small pins on its bottom, is secured by a hand screw to the seat of the wagon. The bars, C C, are set in line with the sides of the wagon, and the finger plates for receiving the ends of the bows are secured in their required places on the sides of the wagon. The small vertical rules are then turned up (as represented) and then the rules, G G, are set by these small rules to the required height, and arched to the proper curvature for the cover. The back bow is then placed across the rules, G G, and set at any required distance from the back rail of the seat of the wagon, which is measured by the small back rule, and is plumbed so that its sides are set vertical, and its upper part set to corresponding measurements on the rules, G G, so that it must be square with the sides of the wagon. It is then held tightly down to the long rules by the hook bolts, J J, which, by their nuts, screw down the bow on the longitudinal sides rules. The other bows are then set in their separate places in the same way, at the required distances from the back bow, and their lower ends secured in the finger plates, and thus the bows are rapidly and correctly set, after which the hook bolts may be unscrewed and the frame released, leaving the bows ready and appropriately fitted and fixed. A small slot may be made in the side rules, G G, to allow the bars, B B, and the arm, L, to be moved up and down a short distance. The bars, B B, are fastened by inside nuts, N N, (seen in fig. 2.)

This apparatus can be used for setting up the bows of fixed or folding covers; for folding tops, jointed finger plates are used, and the bows being set perfectly parallel and square, will always fall on each side without breaking the leather or other material of the covering.

This apparatus commends itself to all carriage makers; it has been appreciated as a most excellent invention by every carriage maker who has seen it, and we are sure that this illustrated description of it will convey a perfectly correct idea of its operation to those skilled in the art, and its merits will at once be acknowledged. Carriage-making is a universal trade in our country—no other nation can exhibit within 90 per cent. such a general diffusion of those things considered by the old world luxuries—we mean neat and genteel carriage equipage. Every invention, therefore, which can cheapen and facilitate the construction of carriages is a grand republican benefit.

Information about the sale of rights, &c., may be obtained by letter addressed to the inventor and patentee, and directed to the place mentioned above.

Fire and Water Proof Cement.

Pour a pint of vinegar into a pint of milk; when the latter has fully coagulated, clear it of the lumps, and let it settle, then mix the whole well together; now sift into the liquid quick lime, till upon stirring the whole we obtain a thick paste. This cement will permanently unite marble, earthenware, china, &c.

The annual value of the whole produce of Great Britain is equal to £514,000,000 sterling.

Miscellaneous.

Fair of the American Institute.

This is now the fourth and last week of the Fair; those who have attended it from the first, as exhibitors, must have been at an enormous expense. We have thought that if they expended but one half of the amount in judicious advertising, it would tell more advantageously. Engravings and descriptions of machinery in our columns meet the eye of all those in our country interested in such things. It would be well, also, to have stated prices, and let them be generally known. Many persons make up their minds at once either to have, or not have, machinery, when they know its price.

Barrell Machinery.—Mr. Wm. Trapp, Jr., of Ithaca, N. Y., exhibited his patent machinery for making barrels. This machinery saws out the staves, trims their ends, joints them, cuts the chimes, makes the heads, and after the staves are put together into a barrel, it is turned on a peculiar lathe, finished and smoothed in the most perfect manner. This is excellent machinery for the rapid manufacture of barrels, and it has been greatly admired.

New Locomotive.—Mr. H. W. Bennett, of Rutland, Vt., exhibited a model locomotive, which has its wheels so arranged with one another and combined with the truck, that it recovers its equilibrium after passing over an obstruction about half as quick again as common locomotives. It combines the tender with the engine, and carries its water under the boiler; it therefore carries only its fuel behind the furnace, and thus shortens the length of the machine, beside bringing the water weight very low down. It has oscilating cylinders, which are made with changeable bearings to prevent any uneven wear in the boxes. It is an ingenious invention.

Book Backing and Finishing Machinery.—Mr. Charles Starr, of the American Bible Society, exhibits two fine machines—new inventions—the one for backing books and the other for finishing. These machines perform beautifully, and execute good work. Two of them will be exhibited at the World's Fair, next year, in London.

Eastman's Stone Cutting Machine.—Mr. Eastman's Stone Cutting Machine, patented last June, was in full operation; its principle is to have a great number of serrated faced rollers set on a revolving drum, the serrated rollers acting upon the stone as they revolve. We must say that we like Wilson's better, (illustrated in our last Volume); some may differ from us in this opinion.

Dick's Iron Plate Cutting Shears.—This invention of Mr. Dick—anti-friction shears for boiler plate—exhibited by J. E. Holmes, No. 794 Washington street, New York, is certainly the best machine for that purpose in the world. It cuts the thickest boiler plates with as much ease and grace as a tailor cutting cabbage. This machine was illustrated in our last Volume.

New Sugar Boiler.—Mr. Knight Reid, of New Haven, Conn., exhibits a boiler for boiling down sugar juice, by fire heat, which appears to be a very good improvement. The first boiler is set higher than the others, therefore the juice is run off to the others by gravitation. The fire is kept up in the furnace under the first, and the heat passes through metal pipes to the last—the finishing pan having a lower degree of heat than the first, to prevent the *burning* and consequent discoloring of the sugar. The apparatus is simple and not expensive to get up, and these are important considerations.

Fairbanks' Scales.—We never saw such a fine display of weighing scales, of every description, as are exhibited by Messrs. Fairbanks & Co., of St. Johnsbury, Vt., and 89 Water street, this city. From the tiny scale devoted to weighing a scruple with scrupulous accuracy, to the ponderous machine for weighing, to a diamond shaving, the railroad car, all exhibit the marked skill of the most cunning-handed artificers, and the solid thinking heads of good inventors. The accuracy of the scales made by this old established house, may be judged of by a scale for weighing 12,000 lbs., which we saw plainly affected by a few thin leaves of a pamphlet.

Multiplying Magnetic Engine.—Messrs. Avery & Brady, of 39 Green street, N. Y., exhibited what they termed a "multiplying magnetic engine;" it is composed of four revolving poles, set in motion by four electro-magnets, which are fixed at right angles to one another and stationary on a frame, the arms of the revolving bars run inside of them.

Gold Pens —Mr. Bagley, the gold pen manufacturer, Broadway, N. Y., exhibits one of the finest cases of jewelry, in the shape of gold pens, that we ever looked upon. It was perfectly dazzling, and was an object of general admiration. The show of silver ware in the Fair, this year, never was equalled.

Quarterman & Sons' Paints and Driers.—A fine exhibition of chemicals for painters, is displayed by this old and respectable company, No. 114 John street, N. Y. We have tried some of their colors, and have found them every thing they were represented to be.

Gutta Percha Rope Pump.—A very good force and lifting pump, manufactured by Myers & Gardner, No. 274 Fifth street, N. Y., was exhibited and justly esteemed. It is constructed on the chain and disc principle, only it has a gutta percha endless rope and india rubber bell discs. It is a good pump.

Corn Stalk Cutter and Grinder.—Mr. Jesse Urmy, of Wilmington, Delaware, exhibits a good machine for cutting corn stalks, hay or, straw. The cutters are revolving enclosed in a drum, to which a band is attached around the periphery and thus motion is given to the knives. It has also serrated faces inside, which grind the material to be cut, if required, for corn stalks, this is a good combination.

Mr. Bertholf, of Sugar Loaf, Orange Co., N. Y., also exhibits his Angular Cutting Straw Cutter; the main feature of this machine is its cutting action viz., not across the stalk but in a slanting direction. This makes its action easy.

Cracker and Biscuit Cutting Machine.—Mr. Nevins, of 198 Allen street, this city, exhibits one of his small machines, with the improvement which was recently patented and which is decidedly a valuable one.

Mr Bruce exhibits a Rotary Cracker Mrchine. This machine is well known we believe in the trade. Its action is uniform in cutting and feeding.

Carving by Machinery—Some beautiful specimens of carving done by machinery, by Frederick White, 219 Second street, arrested our attention; they are copies from plaster medallions and are well executed. The invention must be good to do this kind of work.

That Old Arm Chair.—An antic armchair graces the Fair, embroidered with the handiwork of Mrs. Fillmore, our worthy President's better-half. Some of our papers are boasting not a little about this, so do we—it shows Mrs. Fillmore to be a very woman—we like the idea, and must commend that couplet of poesy to our young ladies, who would think such an act beneath them,—

"When Adam delved and Eve span,
Where was then the gentleman?"

Proposed Improvement of Costume.

Some of the leading artists of England, as well as many amateurs and admirers of the fine arts, consider that the forthcoming exposition in Hyde Park would be a fitting opportunity of discussing the subject of costume Artists and all persons of true taste, have long complained of the inelegance and incongruity of English and other costumes. Painters and sculptors frequently had recourse to the costume of the ancients, in order to avoid the difficulties which that of the present time throws in their way when delineating the human figure. A declaration has been drawn up, embodying the above, and many other collateral points, which has been numerously signed by some of the leading artists. They express a hope that some general European costume might be indicated by such a course.

We, however, consider these artists who express such a hope, nothing but a lot of dreamers. We wonder if they expect our engineers to wear the *toga*, and our hod carriers to adopt the nude style of the *athlaeti*. A general European costume; fudge! If the painters and sculptors of Europe cannot immortalize a man in our modern costume, then just let them do the other thing. Those men are merely copyists, who cannot strike out a new path for themselves.

Patent Cases---Telegraph Case.

In the U. S. Circuit Court, Boston, Judge Woodbury presiding, the case, Morse Vs. House, for infringement of Morse's patent for a telegraph, was decided on the 17th inst. The judge delivered his decision against the petition of Morse to refrain House from using his telegraph, as being an infringement of Morse's patent. The judge decided that the modes of telegraphing were entirely distinct, and that there was no infringement, therefore he refused to grant an injunction The principal points of his decision, we believe, were, 1st, that Morse's invention was only an improvement in telegraphing by electro magnetism, and the improvement consisting chiefly in tracing at the distant end of the wire, marks, made at the near end; and by tracing these marks on rolling paper, consecutively so as to be able through a meaning affixed to each mark, by a stenographic alphabet of his invention, to record information rapidly.

2d.—That Morse's patent, so limited, was original, useful, and valid.

3d.—That House's machine does not infringe on Morse's thus constructed, but, except in the use for some purposes of electro magnetism, which was not invented by either; it operates on principles, and with machinery, materially different, and uses two different powers.

B. R Curtis, F. O. J. Smith for plaintiff; R. Choate, Geo. Gifford and C. N. Woodbury for defendants.

The counsel of Morse gave notice of an appeal to a full court.

We will publish the charge in this case next week. It is corrected for the Scientific American, and differs somewhat from the common reports. We would have published it this week had not our columns been so full before we had the pleasure of receiving it.

McCormick's Grain Reaper.

In the U. S. Circuit Court, at Albany, N.Y., Judge Nelson presiding, October 18th—Cyrus H. McCormick vs. William H. Seymour and Dayton S. Morgan.—The plaintiff is the inventor and patentee of the Reaping Machine known as "McCormick's Reaper." The defendants reside at Brockport, this State, where they have been engaged in manufacturing reaping machines, alleged by the plaintiff to be infringements upon his letters patent. For this he claimed fifteen thousand dollars damages. it appeared, by an account which the defendants had been ordered to furnish, that they had, during the present year, made and sold about two hundred reaping machines, for more than thirty-two thousand dollars. When the case was called their counsel moved to postpone it, on the ground that they were not ready for trial. This motion was opposed by the plaintiff's counsel, who, after adverting to the importance of the questions and amount involved, urged that under no circumstances ought the cause to be postponed, unless an injunction issued, restraining the defendants from the further manufacture of the machines. A motion for an injunction had been fully argued, before Judge Nelson, in June last, and he declined answering it in July, on condition that the defendants should keep, and render, on oath, a true account of all machines made and sold by them. The defendants objected to the granting of the injunction, but the Court, on postponing the cause until the next term, ordered the defendants to pay the costs of the term; and, also, directed an injunction to issue restraining them from making any more reaping machines, such as they had been making, and known as "Seymour & Morgan's Reaping Machines." Samuel Blatchford, of Auburn, E. W. Stoughton, of New York, and Samuel Stevens, of Albany, counsel for plaintiffs. H. R. Selden, of Rochester counsel for defendants.

Bark Mill.

Another case decided was that of Erastus Wilbur vs. Matthew Beecher for the infringement of a patent for a Bark Mill, which was decided on the 17th inst., one day before the McCormick Reaper. The verdict was in favor of the plaintiff, $7,500 damages being awarded. Let every just patent be sustained; many have grown so skeptical about patents as to deem them of little value; the above verdict brushes away such notions.

Oil of Poppy Seeds.

Dr. Smith, in his editorial correspondence to the Boston Medical Journal, in a recent letter written from Switzerland, speaking of the agricultural products of that and the adjoining country, says: "Immense crops are raised here of articles wholly unknown to American farmers, and perhaps the kinds best fitted to particular localities, where grain and potatoes yield poorly under the best efforts. One of these is poppies. Thousands of acres are at this moment ready for harvest—which the traveller takes for granted, as he hurries by, are to be manufactured into opium. They are not, however, intended for medicinal use at all, but for a widely different purpose. From the poppy seed a beautiful transparent oil is made, which is extensively employed in house painting. It is almost as colorless as water, and possesses so many advantages over flax-seed oil, that it may ultimately supersede that article. Where flax cannot be grown poppies often can be, even in poor sandy soil. Linseed is annually becoming dearer, and the demand for paint oil is increasing. With white lead, poppy oil leaves a beautiful surface, which does not afterwards change by the action of light into a dirty yellow. In short, this oil is destined to bring about a revolution in domestic economy. Another season some one should make a beginning at home in this important branch of industry. The oil may be used for other purposes, and even put up in the cruet for salads.

Mining in New Brunswick.

By information received from the New Brunswick papers, and from private letters, we learn that the mineral resources of the above Province are at last beginning to be developed. During the past six months more than twenty mining leases have been granted by the Government, in the Counties of Albert and Westmoreland. Upwards of two thousand chaldron of Bitumen, or Mineral Pitch, have already been raised at Hillsborough, and will soon be ready for shipment to the United States, to be employed in the manufacture of gas. Beds of excellent coal from two to six feet in thickness, have been pierced at Meranquin, and a party of English miners are engaged to commence the working. A Mr. Steadman has also opened a vein of coal in the neighborhood of Shediac, and is now exploring an asphaltum mine near the Peticodiac River. Surveys we understand are made with great energy, and there is much competition among the purchasers of mining leases. It is stated that 100,000 tons of asphaltum might be shipped next season from one mine. At present the completion of a railway, three miles in length, is required to aid its transport to the river. The Black Lead Mine of St. John, has been well penetrated, and it is thought that the proprietors have made a profitable investment. The iron works of Carlton county, which were unfortunately consumed by fire last season, have been re-built, and have commenced the manufacture of iron from the ore of Woodstock. These facts are encouraging to the inhabitants of New Brunswick, and fully confirm the predictions formerly made by Dr. Gesner in his geological reports published about ten years since. But in an equal degree they disprove the statements of Dr. Robb, and conflict with the opinions put forth by him in Professor Johnston's recent agricultural report. The mineral resources of this fine Province are evidently under-rated. The opening of the above mines has aroused a new energy, and will no doubt contribute largely to the prosperity of that Province, where all the mines and minerals are under the control of the Legislature, and open to the competition of its inhabitants.

For the Scientific American.

The Voltaic Battery.---Chemical Equivalents.

NUMBER IV.

We will now take a cursory view of the doctrine of chemical equivalents, after which we may form a true estimate of the cost of keeping any battery in action for doing a given amount of work. We have already stated that oxygen combines with zinc to form oxide of zinc, and that this oxide combines with sulphuric acid to form a sulphate of zinc; and likewise with copper—first, we have oxide of copper, and this, combining with sulphuric acid, forms sulphate of copper; and we have also spoken of water being oxygen in combination with hydrogen. Any person might suggest that there is just so much oxygen to so much zinc; and so also of the sulphate of copper, and likewise of the water—just so much oxygen to so much hydrogen. What is very wonderful, and which no person ever could have suggested, is, that the quota of any one element is the same in every compound in which it enters, or else it is two, three, or more times that quota. This has led chemists to conclude that the elements consist of minute particles, each of which has the same definite weight, and that when a chemical combination takes place between any two or more elements, the union is that of one particle of one element to a particle of another element, or else to two, three or more particles. It can now be perceived why chemical compounds are so precise in the proportions, for it is impossible for one particle to be in union with one and a quarter, or any other fraction of a particle, but the union must be always that of whole numbers. This also explains how it is that so many chemicals can be formed out of two or three elements.

These particles are called atoms, and chemists, by observing the relative weight of the components of chemicals, have constructed tables of the relative atomic weight of the elements, and from these tables we may calculate the proportions required to make any compound. By analyzing water we obtain 8 parts of oxygen, and 1 part of hydrogen this hydrogen is the least quota that chemists have yet observed, and they therefore conclude that its atom is the lightest of all the atoms, and take it as the unit of the scale of equivalents. It is moreover supposed that two or more elementary atoms, when in union, may behave precisely as though they were but one atom, and so unite with other atoms, and the compound atom will have the combined weight of its component atoms. This we will illustrate: —One atom of hydrogen, =1, combines with an atom of oxygen, =8, and forms an atom of water =9; and again, one atom of copper =32, atom of oxygen =8, atom sulphuric acid =40, and 5 atoms of water =45, all combine, and form an atom of sulphate of copper =125. It can now be comprehended what is meant by saying that 1 pound of hydrogen is equal to 33 pounds of zinc, or 40 pounds of acid, or 125 pounds of sulphate of copper. Let us apply this to calculate what quantity of material will be required, and also the cost for making 1 pound of gas from zinc and sulphuric acid. In the first place we have water composed of 1 part of hydrogen to 8 parts oxygen, and consequently 1 pound of hydrogen to 8 pounds of oxygen. We want to liberate the hydrogen, which we must do by absorbing the oxygen; the 8 pounds of oxygen will combine with 33 pounds of zinc, and this with 40 pounds of real acid: we now have the quantity of material, and have only to multiply by the cost per pound, and we see that 1 pound of gas made in this way costs $3,78.

It can be seen of what great importance tables of chemical equivalents are; and the person who would use the battery to profit should have them in command like the fingers of the right hand.

Below is a table of equivalents of some elements and compounds used in electrotyping:

Ammonia	17
Chlorine	36
Copper	32
Gold,	199
Oxygen,	8
Nitrogen	14
Platinum	98
Chloride, platinum,	170
Chloride, gold,	307
Sulphuric acid (real)	40
Sulphuric acid (commercial)	67
Cyanide, silver	134
Zinc	33
Iron	28
Silver	108
Hydrogen	1
Sulphur	16
Carbon	6
Muriatic acid (real)	37
Muriatic acid (commercial)	127
Nitric acid (real)	54
Nitric acid (commercial)	99
Sulphate, copper, (cryst.)	125
Cyanide, gold,	278

When we come to treat of the application of the battery we shall have frequent use for this table. For want of a knowledge of these tables the most woful experiments are sometimes made. By merely glancing at the table, the reader may perceive the value of schemes for making gas by the battery, using Drummond lights for illumination, and also of water gas, produced by red hot chains, jets of steam on ignited coals, &c., &c.

In a previous number we stated that *quantity* was the voltaic action considered simply as more or less, and that *intensity* was the capacity of the battery to induce its effect on other bodies. We will now take another view and consider quantity as the number of atoms of any one element affected by the battery action. We will now consider intensity simply as the intensity with which the two bodies of the battery decompose the compound fluid. We stated before, that by connecting a number of batteries together the intensity was increased, while the quantity was the same; the cause of this will be apparent when we consider that one battery communicates its chemical energy to the next—and in this the energy of both are united on the same atoms which would have been effected by only one instrument—and so of any number of batteries in a series. In Smee's instrument, of the two bodies which eliminate the elements of the compound fluid, there is only one—the zinc—which can exert any chemical action on the fluid, and consequently the silver plate must get its power to eliminate the hydrogen from the chemical action of the zinc and oxygen; but in Daniell's instrument there is a chemical action between the sulphate of copper and the hydrogen: here are two chemical actions going on, just as if we had two Smee's apparatus joined together—thus we see that a Daniell's battery is two batteries in disguise. In Grove's battery there is a vigorous action between the nitric action and hydrogen—and we are let into the secret of a Daniell's battery having twice the intensity of a Smee's, and a Grove's three times the intensity. We may now form a true estimate of the cost of the voltaic power, as obtained from the three instruments. In the first place the same quantity will be obtained from each one by the solution of a like quantity of zinc; let this be 33 ounces, then we must have the equivalent of sulphuric acid, 67 ounces; but it is obvious that every particle of the acid cannot be used up in practice. After using up a good many thousand pounds, I find that 33 ounces of zinc require 90 ounces of good commercial acid for profitable work. The zinc must be amalgamated, and this will cost in the end 2 cents per pound. Taking the cost of amalgamated zinc castings at 10 cents, and acid at 3½ cents, we have $(33\times10)+(90\times3\frac{1}{2})=645\div16=40$cts, which electricians say will be the cost of an equivalent of quantity in Smee's battery. In the apparatus of Daniell, in addition to the 40 cents, there will be the cost of an equivalent of sulphate of copper, this, at 9 cents, will be $125+9\div16=70$ cents, making in all 110 cents; but here we obtain 32 ounces of copper from the salt—this, at 1 cent per ounce, will give 32 cents to be taken from the 112; but if we take in view the extra cost for porous diaphrams, remains of solution of sulphate of copper, ultimate loss of the copper cup and the increased local action, the 32 cents will be taken up, and we shall have 110 cents for the cost of an equivalent of quantity in Daniell's battery. In Grove's battery the hydrogen converts the nitric acid into hypo-nitric and nitric acid, which serve as well as the nitric acid for eliminating the hydrogen—consequently only one-third of an equivalent of nitric acid will be required; taking the cost at 12 cents, we have $99\times12\div3=396\div16=25$ cents. But here, again, all the acid cannot be used up; the local action is also very great compared with Smee's: practically I am not able to say what is the amount of these losses, but I am sure that 20 cents will not be far out of the way, which will give 85 cents for the cost of an equivalent of quantity in Grove's battery.

We will sum this up in a tabular form—thus, for an equivalent of quantity in

Smee's	40 cents.
Daniell's,	110 "
Grove's,	85 "

But we said that the power of a battery was its intensity multiplied by the quantity, and that the intensity of Daniell's was twice that of Smee's, and of Grove's three times that of Smee's, therefore an equivalent of power will cost, in Smee's | 40 cents.
Daniell's, | 55 "
Grove's, | 28 "

As the superior intensity of Grove's battery will send its influence through a wire three times as long as what a Smee's can penetrate, it is perceived that for telegraphing, and the working of magnetic engines, a Grove's battery is the cheapest; but for electrotyping, where quantity is what is wanted, Smee's battery is always to be preferred. VOLTA.

New Rotary Engine.

MESSRS. EDITORS—As I have been for several years a constant reader of your valuable journal, I have of course received from a perusal of its columns much valuable information, and, I must also say, that I have formed strong prejudices in favor of or against machines of various kinds, prominent among those for and against which I had formed a very poor opinion, was the Rotary Engine, and from a careful examination of the various kinds which you laid before your readers, I had become a perfect skeptic, in all things relating to a rotary steam engine, which would ever be of real value, (by real value I mean an engine which with the same chance and with the same cost would earn as much or more money) and had placed rotary engines in the same class with perpetual motions and what I looked upon as grand humbugs.

Since December, 1849, I have had good reason to change my views and opinions in regard to the invention of rotary engines entirely. At that time, my attention was called in the course of my mechanical duty, to an engine, the invention of Mr. James A. Stewart, of Tennessee. So little faith had I in the good qualities of this engine, as set forth to me by persons who had seen the engines in operation, that to fully satisfy myself in regard to the matter, I made a trip from this city to Nashville, expressly to see and examine into the merits of said engine. In order to give it a thorough investigation I went to Tyrees Spring, Robertson County, Tennessee, where I found the first engine which was put into practical use, and which had then been in operation three years.

The engine consists simply in having two cog wheels running into each other and so brought into contact with the caps and end plates as to render them, without any packing whatever, steam and air tight. The machine is made entirely of cast iron, no other metal of any kind or description being used except for the pillow blocks, which are lined with Babbitt metal in the usual manner. The Tyrees Spring engine has steam wheels 10 inches diameter, from pitch circle, and 10 inches face, and has 10 cogs to each wheel, and the position which they occupy to the caps is such that they have 20 square inches effective surface. The boiler is a cylinder 20 feet long 32 in. dia., carries steam at a pressure of 65 lbs. per inch, and with what fuel the mill makes, (dust and slabs) cuts an average of 3,000 feet of oak lumber per day of 12 hours. This much for the Tyrees Springs mill, and I may say the same of the other mills which I visited while in Tennessee.

I will now give you my own experience with the Stewart Engine, one of which I put into the Carondelet mill to drive a single sash saw: the engine is the same size as the Tyree, the boiler is 22 feet long, 36 inches diameter, two 11 inch flues, pressure of steam 60 lbs. per inch, and with the saw dust and a half cord of green slabs, we saw 5,000 feet of inch square edge lumber per day of 12 hours. This engine has been in operation for three months, and had it not been necessary to have cleaned out our boiler or to have given due regard to the Sabbath, we might have run our engine every minute of the time. Not the least wear can be discovered except upon the Babbitt metal, and the arrangement for moving and adjusting the pillow blocks is such, that it is done while the engine is in operation. Since the Carondelet engine went into operation I should say that at least 5,000 persons have witnessed its performance, and I have heard but one person find fault with it, and at least one half of the visitors were practical millers, machinists, and engineers.

The great secret of this engine was to invent a pair of cog wheels which would work together steam tight. Mr. Stewart commenced his experiments at Hoe & Co.'s shops in New York, but did not succeed in getting the proper form of cog wheels. Mr. Hoe was so well pleased with the principle of the machine that he gave Mr. Stewart a certificate to the effect that if he succeeded in getting his wheels to work steam tight it would prove the most valuable engine in use.

After five years of hard work, hard thinking, and hard dollars, spent in making and throwing away wheels, the last finishing touch was given it, and everything went like a top, and now the thing is so simple it is the wonder of all who see it, that some Yankee didn't think of it years ago.

Columbus made the egg stand upon its end. Stewart makes a pair of cog wheels which will run steam tight without any packing or valves, and as a machinist and engineer, I challenge the whole mechanical and inventive talent of the world to bring forth an engine which will do the same amount of labor and earn the same amount of *almighty dollars* with, and at the same cost, every thing taken into consideration.

I have not, Messrs. Editors, the least idea of making you or any other person a convert to rotary engines merely upon my say-so, but if you could visit our mills and see with your own eyes the rotary in operation, with its single boiler, and then take a look at a piston engine along side, with its cylinder of four feet stroke and 13 inches diameter, together with its heavy shafts, ponderous ballance wheels, &c., two boilers to supply the steam, and doing less work, I rather think you would let us have your hat. Arrangements have been made for their manufacture at this place, and as soon as the proprietors get their engraving up explanatory of the machine, I will forward you a copy, from which you can get an idea of its merits. Our engine is held in its place by four wood screws three inches long, by ⅝ diameter, the largest shaft about it is three inches diameter, and of cast iron, and although we have driven our saw into oak logs with sufficient force to twist off a heavy saw pitman crank, yet the engine has not moved from its position one iota, although it is screwed into pine timber.

I shall do all that I can to have an engine sent to your place so as to give you unbelieving Gothamites a chance to become converted before you are called away to kingdom come.

Until you hear from me again I remain your's,

F. R. DELANO,
Sup't Carondelet Mills.

St. Louis, Mo., Oct., 1850.

[We have seen so many rotary engines which, for a while, promised success, but at last faded away before the cylinder one, that we confess to a great amount of skepticism on the subject, that is, respecting their economic value—the amount of labor performed to the steam used. It is now about three years since the Rev Enoch Burt, of Manchester, Ct., a well known inventor and improver of the Gingham Power Loom, suggested to us an engine like that described by Mr. Delano. Our views were not favorable, but contrary to those of Mr. Burt.

New Inventions.

Gelston's Double Force Horse Power.

Mr. Maltby Gelston, of East Haddam, Ct., has invented an improvement in horse-power machines, for which he has taken measures to secure a patent. The invention has been exhibited in this city, and has attracted considerable attention. The nature of the improvement consists in enabling the horse, or animal employed, not only to employ his drawing or muscular power, but his gravity or weight as he moves round, is also applied at every point of his progress. The lever which the horse is attached to, is connected by a crank to a vertical shaft, which communicates the power by gearing to other machinery. The circular platform on which the animal treads, does not move round, but it has a downward swaying motion, like that of a top, by the weight of the animal, which acts on the end of a lever secured to an eccentric pin attached to the driving crank of the lever, to which the animal is attached and which it draws: this is the principle of the action. Two animals may draw abreast, but it is intended for a simple and cheap single horse or dog power. This machine is now on exhibition at the Baltimore Mechanics Institute Fair.

Regulator for Hydraulic Rams.

Mr. Joseph Osborn, of Hamden, New Haven Co., Conn., has invented some improvements on hydraulic rams, which are worthy of attention, and for which he has taken measures to secure a patent. At the fountain-head he employs a reservoir, in which there is a float connected to an angle iron, which is again connected to a wire extending to a lever of the ram. This wire, by the float rising and falling, operates the valve of the machine, so that it does not require to be weighted, yet it governs the discharging orifice with the utmost exactness, as required; it also works a hammer, which is thrown out of gear when the valve is working, but when the valve is shut for some time, and for some cause may have become fastened in its socket, the hammer, by the float being at a certain height, actuates the lever, and brings down the hammer on the stem of the valve, thus setting it free and putting it into action.

Revolving Cylinder Steam Engine.

Mr. A. A. Wilder, of Detroit, Michigan, has invented an engine, the nature of which is designated by the caption above, and for which he has taken measures to secure a patent. It has no valves, strictly speaking, the steam being cut off and let on in a pipe which forms a side gudgeon or trunnion at the middle of the cylinder. The piston rod is connected by a crank pin to a long crank, the shaft of which is set at such a distance on the other side of the cylinder as enables the piston rod and throw of the crank to obviate the dead points. An engine constructed on this principle is now in operation, and it has created no small sensation among engineers and others who have seen it. We have seen a number of certificates from distinguished men, all of whom speak in no stinted terms of Mr. Wilder's invention.

Apparatus to Measure a Ship's Leeway.

Mr. Wilder is also the inventor of an instrument for indicating the leeway which a ship makes at sea. It is a simple instrument having a vane attached to its lower end, connected by a spring and rod passing up through a tube to a pointer and index above, so as to indicate by the pointer the leeway of the ship. The vane is set on a line parallel with the keel. This instrument has been tested on Lake Erie and has been highly spoken of by the Detroit papers. Measures have been taken to secure a patent.

Dr. W. H. Stenson, practical dentist, Baltimore, has constructed a clock which keeps the time of day, day of the week, day of the month, and also the name of the month. But the most peculiar feature is, it keeps the odd days of the month, and also leap year, and the odd minutes of every moon, so that it never requires setting. The hours are struck by an armed warrior.

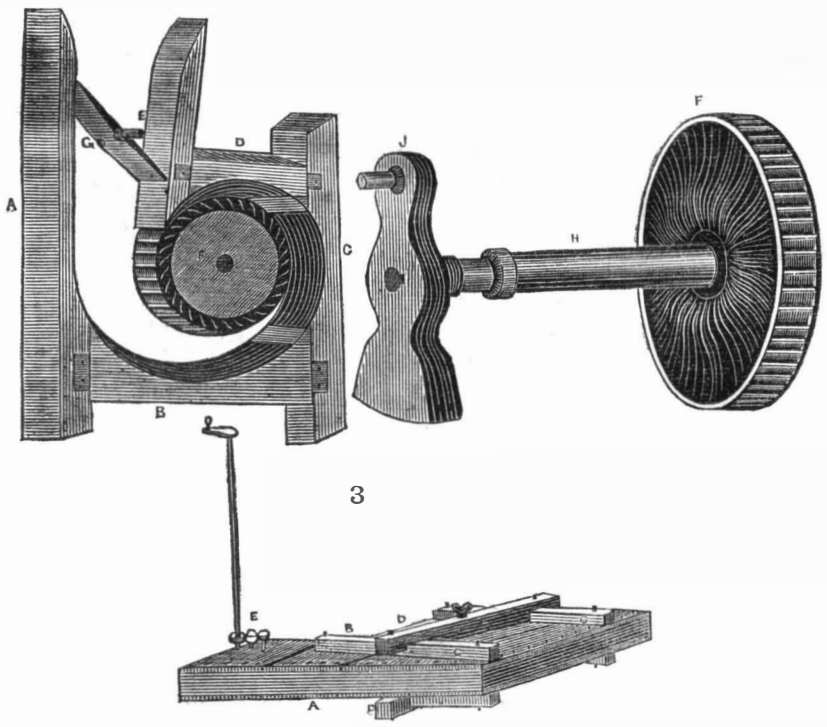
A Discovery.

According to the New York Evening Post, the Rev. Isaac Harrington, of Poughkeepsie, N. Y., says that he has discovered a process of detecting and curing disease by mere manipulation. His theory is, that every organ of the human body is magnetically connected with the spinal marrow, where each has its hole. A properly sensitive person, by passing the hand over the vertebræ, can in this way tell whether there is any irregular action in any organ, and by other passes of the hands, rectify the disturbance. The Post says it has seen Mr. Harrington's skill tested in one case with remarkable success on his part. He is about to visit this city to explain the nature of his new process.

[This we suppose is to be a revival of the old magnetic cure system, which flourished so luxuriantly for a brief space, about 40 years ago.]

REUBEN RICH'S CENTRE VENT WATER WHEEL AND SCROLL.

Figure 1. Figure 2.



Having received a number of communications about Mr. Rich's Water Wheel, some asking what kind of a wheel it really was, and others, where Mr. Rich lived, &c., we, after some searching, discovered that he lived at Salmon River, Oswego Co., N. Y., and communicated with him on the subject; the result of the said communication being a pamphlet description, by Mr. Rich, which, he states, contains the entire method of constructing his wheel. From the views sent us by Mr. Rich, and the description accompanying the same, we have prepared the accompanying engravings,—figure 1 being a plan view, figure 2 a view of the wheel shaft and balance crank, and figure 3 a perspective view of the bridge-trees and nether framing. The same letters refer to like parts.

This wheel is what is termed a "centre vent" Water Wheel—the water entering at the periphery and discharging inside below—this will account for the peculiar motion of it in relation to the form of the buckets, as set forth in figure 1.

The following is the bill of timber for a wheel No. 3, 2 feet in diameter with a 3 inch bucket. (Be it understood that the wheels are cast metal, and one or two may be used on one shaft, either horizontally or vertically):—Bill of timber for scroll 2 feet diameter, three inch bucket—1 stick timber 4 by 8 inches, 8 feet long; 1 stick timber 5 by 8 inches, 8 feet long, 5 feet of it sawed 4 by 5 inches: wheel vents 27 inches water.

Timber for finishing Scroll for upright shafts for two feet Wheels:—4 gripes 4 by 7 inches, 5 feet long, hard wood; 2 bridgetrees 6 by 8 inches, 5 feet long, hard wood; 1 plank 6 feet long, 3½ inches thick, 10 or 12 inches wide, hard wood; 60 feet 3 inch plank, pine or spruce; 1 box for step for shaft to run on, 8 by 8 inches, 3 inches thick, black oak.

A B D are the bottom and side timbers; C C are the top and bottom gripes; D D are the top and bottom bridge-trees; F is the wheel; G is the gate of the scroll or draught; E is the rod, or, as in figure 3, the rack and pinion to raise the gate. H (fig. 2) is the shaft, and J is a balance crank for saw mills. In all cases the buckets are made with the inner or discharge apertures one-third smaller than the apertures. The velocity of the circumference of the wheel should be about one-sixth slower than the velocity of the water under head, to do the best business.

To Draw the Scroll.—Draw the scroll on the floor, make your calculation to be the right distance from the wheel where you begin to scroll, and make the centre board. Scroll round the bigness to fetch the scroll within about three inches of the wheel when it comes round, and then cut your last piece of timber so as to come one inch nigher the wheel, as you will see by the draft. And on all wheels, have the sheet of water strike about one-half way off the rim where the buckets are placed between, and make your scroll pattern fitted together on the floor, and then strike the scroll on them.

Make the corners, as you will see by the draft where to place your tenons, and then number your patterns, and make the scroll according to the bill of timber as laid down in this article, for the size wheel you want. The scrolls are as many square inches in the mouth where it discharges on to the wheel, as one and a half times as much as the apertures measure—under high heads and a small quantity of water, the mouth of the scroll is as small as the apertures measure; and under low heads and plenty of water, twice as large that is right to use the water to the best advantage on all sized wheels, from high to low heads of water.

The scroll should be diamonding, to suit the corner-pieces. The height of the scroll, for wheel No. 3, is the length of timber mentioned above.

The right of this wheel is owned south of the Potomac, by Gindrat & Co., Winter & Co., Montgomery Ala., and G. W. Winter, Columbus Georgia. To those who purchase a right, they send a model and pamphlet of directions for the proper construction of the wheel. A wheel of 2 feet diameter (as set forth by the bill of timber for scroll above) under a ten foot fall, makes 22 revolutions per minute, and a three inch bucket vents 27 cubic inches per minute. Any person wishing to obtain all the necessary information about these wheels can obtain the same by addressing Mr. Rich.—Persons seeking information, should state the heighth of fall, probable number of cubic inches of water, in the running stream, and the kinds of work to which they desire to apply the wheel.

We would suggest to Mr. Rich the propriety of a complete and thorough revision of his pamphlet. There are many errors, and a want of perspicuity in it.

Commissioner of Patents.

Our readers will remember a petition that appeared in our columns some months ago, in connection with proposed changes in the Patent Office Department. As the allegations therein set forth were of a serious character, and are now used in other quarters to the prejudice of the Hon. T. Ewbank, we deem it a duty to state, that, though all that is stated in the petition is true, still no portion of the fault is attributable to Mr. Ewbank. Abuses have existed for some time in this department; and, at the time of Mr. Ewbank's nomination, the highest expectations were entertained that a reform would follow. The delay upon the confirmation of Mr. Ewbank's nomination rendered it impossible for him to act with efficiency, he not being a constitutional officer. A herd of worthless fellows had worked into the office. There are gentlemen of high attainments under Mr. Ewbank; men creditable to any station; Messrs. Page, Gale, Lawrence, (Renwick, with a little improvement, will be equal to any of them,) and others, need only be mentioned, to verify our opinion. With such gentlemen, (now that the Senate have confirmed Mr. Ewbank's nomination,) as a foundation for an efficient corps, we shall confidently look for the long expected reform. Nothing short of a radical change, can satisfy the manufacturers and inventors of the country. Clerks, who do not work a day in the week, must be sent adrift. *Examiner*, or Assistant, where they are grown hoary in the office, and forgetful of the relation they sustain to the inventor, should not, against the universal wish of the inventor, be retained in the office. We know the desire of inventors fully, and are satisfied that when changes are made, such men only can be acceptable to them as are known to be practical men, and furthermore, men having common sympathies with inventors. Such are the men wanted, and such, we feel sure, Mr. Ewbank will give. He is an inventor himself, and has fitted himself for the station, in the same school with those who appreciate his sterling worth. Let such terms cease in the office, as "cutting heads off," when a rejection of an inventor's application takes place! Shame should mantle the cheek of any man who could indulge in such ferocious remarks, when perhaps the unfortunate persons thus dealt with, has suffered a wanton robbing of his rights. Such is the course that blasts many a just hope, and blights the prospect for honorable livelihood, of many a family in our midst. Gentlemen should recollect, that their province is *only humbly to offer their opinions* on matters committed to them—not to arrogate to themselves the right to dictate, or usurp. The country will sustain the Commissioner in a thorough and manly course. Unless a change takes place, what little confidence there still remains, will be withdrawn, and the office without the countenance of inventors, would soon cease to exist.

For ourselves, we are pleased with the head of the department, and feel confident, that, although vilification and abuse has been his lot since his accession to the office, the inventors of the country are fast becoming aware of his excellence.—St. Louis Reveille.

New Old Invention.

By the last news from Europe, by the America, we see it stated that M. La Grange, an apothecary of Paris, had invented a new bullet, which, on striking an object, explodes with a most destructive effect. This new Paris invention is an old American one: W.W. Hubbell, Esq., Attorney, Philadelphia, the inventor of the "Solar Magnetic Engine," and improvements on fire-arms, all of which have been illustrated in our columns—made experiments with the same kind of detonating bullets, five years ago.

Jenny Lind has again arrived in New York after her Boston and Philadelphia tours.

Scientific American

NEW YORK, OCTOBER 26, 1850.

The First Steam Engine.--James Watt.

The Albany Knickerbocker states that Ex-Mayor John Taylor, of that city, while on a recent visit to England, saw the original steam engine made by Watt, in the great Brewery of Perkins & Co., of London. The Ex-Mayor has been wrongly informed, if he was told that *it* was the first engine made by Watt: it was no doubt made by him, but it was not the first one. The first experimental engine made by Watt, was constructed and fitted up before he went to England, at Kinneal House, Scotand, where Dr. Roebuck, his first partner, had extensive coal works rented from the Duchess of Hamilton. Watt's first engine more than fulfilled his anticipations—the only practical defect in the way of its operation being the difficulty of packing the piston steam-tight. His first engines were of tremendous size, according to their power—huge wooden walking-beams being employed; but all the essential principles embraced in a steam engine of the present day, were invented by Watt. It is only twelve years since the third engine built by him was replaced by another, after having faithfully served its day and generation. It was twelve horse power, and filled a whole three story narrow building.

The Knickerbocker says—"To the success of his engine we are indebted for the triumphs of Fulton, for the invention of the steamboat, the steamship, the locomotive,—for those revolutions in commerce, navigation, and business, which have given a new energy to the world, and dotted the wilderness with market towns. To America the triumph of Watt has proved a blessing, whose immensity even figures cannot reach."

This is a just and deserving compliment to the memory of that great and modest man. We cannot enumerate the vast changes produced in society, within the past century, by the invention of the steam engine. When James Watt rendered his engine applicable to every purpose of art, he made a present to the world of a power more economical, disposable and stupendous than all the other powers previously applied to manufactures, science and art. It was a true saying of Dr. Ure, in one of his lectures, that "the meteor flag of England would, but for his vestal fire, now have ceased to burn, and the three hundred millions expended in the Peninsular war, was the produce of the alchemy of Watt."

No country has gained more by Watt's genius than our own. He built the engine for the Clermont, the first successful steamboat of Fulton—the first which stemmed the waters of the Hudson, and linked by steam the capital of New York State with its commercial emporium. Since that time what a change has come over the face of our land; what revolutions have been produced by steam as a motive power! We employ the steam engine to dig and raise ore from the mine, to propel the ship and the rolling car, to guide the spindle and direct the loom, and apply it to a thousand other purposes. The sinews of the steam engine are coal and water; no country in the world is so blessed with such an abundance of those sinews as the United States; we may therefore conclude, that this is the land where the steam engine, in all its stupendous grandeur as a prime motor, is yet to be exhibited.

At the present moment, Great Britain, owing to her coal mines, and to her early and present efforts of mechanical genius, stands first in the rank of nations in the amount of her steam power—a power the vast extent of which no one can hardly dare to conjecture, without visiting her workshops and manufactories. America is but young in the race of manufacturing in all its branches—yet, although young, she now exhibits powers second only to her mighty parent, while at the same time she has out barely emerged from the rockings of her cradle. In the common course of events, this country will be peopled by two hundred millions of inhabitants in one hundred years hence—in 1950. With our boundless coal fields, many now sleeping untouched, and with numerous railroads then lacing the Atlantic and Pacific Oceans, we may form some conception of what our nation's steam power will then be in extent—but after all, only a conception; and then when we do so, let us not forget that the man selected by Divinity to develope this mighty power. was once an humble mechanic, but one who, like Washington among statesmen and generals, lived a life of virtue, and left behind him, as an example to all workingmen, an unstained escutcheon.

The Manufacture of Fine Glass in England.

It is not many years ago, since no fine glass was made in England—all that was used there was imported from Germany. A few capitalists determined to manufacture for themselves, and their first step was to employ German artisans, to whom they paid exceedingly high wages. The result of this has been a gradual advancement in the manufacture of English glass, and the attainment of a superiority in its manufacture, which far surpasses the German. The Frankfort *Zeitung* (a paper published in Germany,) acknowledges the fact and says, that at the coming exhibition the English will excel the far-famed Bohemian ornamental colored glass. In one department, viz. silvering glass, the English have attained a superiority over every other nation. This glass is applicable to purposes of ornament and utility, and is of great importance as reflectors for astronomical instruments, railway carriages, lighthouses, and the like, for which it is peculiarly suited, from its capacity to throw back rays, and because no cleaning or polishing is ever required, more than a window pane or common tumbler. The silvering is indestructible in composition, and is coated over with glass, the vividness of whose colors, be they what they may, or however varied, are thus infinitely heightened, and the most delicate carvings upon them are so brought out as to recall the old Byzantine mosaics in their multiplicity of tints and lustrous harmony of combination.

This kind of glass is made in Berners street, London, by a process lately invented and patented by a Mr. Hale Thompson; he discards all the old methods of using essential oils, and coats all his surfaces, flat or curved, the smallest toilet bottle or largest vase, with pure silver, far more brilliantly than the amalgum applied to ordinary looking glasses, and can never be tarnished or impaired except by destroying it. The metallic radiance of this deposit imparts a combined sparkle and warmth, quite beyond the Bohemian, which is comparatively merely pretty and tinselly; and there is the important fact that British glass is far superior to anything elsewhere produced. Hence, taking quality of material, the English is on a par with Bohemian in price, and the beautiful and unique silvering is so much additional gain. The richness and purity of British crystal admit splendor and voluptuousness of dyes that satisfy the most exigent fastidiousness; hence the purple, sapphires, pinks, vermilions, pearls, bronzes, &c., in short, every chromatic hue thrown up by this new argentine reflection, have the gorgeous glow of the antique Venetian glass, the secret of which is now a lost art; but whereas the Venetian absorbed the light, and had to be held up to it before its softened beauties were revealed, the English silvered glass flashes back the light, and is seen best at night, or when surrounding objects are in camparative gloom. Another characteristic, never attempted since the discovery of glass itself by Hermes, the Syrian, is embossing—that is, to the eye, for it is an optical delusion, there being no raised surface to the touch, though the appearance is that of pure solid silver, either dead or frosted, burnished or in high relief, or sunken. It is impossible to exaggerate the results of this, applied to finger-plates for doors, enrichments of cabinets, panels, cornice mouldings, or combinations with ivory, gilding, or rare woods, to all which, and innumerable other purposes, this invention is adapted.

At these glass silvering works vases are made which are as high as $3,000 per pair, nine-tenths of the cost is incurred in designing and engraving alone. In design, English glass has made immense progress: and the goblets, epergnes, candelabra, wine coolers, &c., now referred to, are equal objects of *vertu* in classic beauty of form and of commercial importance, or suitability to the taste of the age. But, as if to exemplify the adage, that the closer to simplicity the greater the art, perhaps the *chef d'œuvres* in this manufacture are mirror globes, of plain silvered surface, all sizes, from two to thirty inches in diameter, from half a pint to forty gallons. These, placed on bronze figures, as an Atlas or eagle, attached to chandeliers, or on a sideboard or mantel piece, are a most striking appendage to drawing room or banquet hall.

We have, as Americans, done but little in the manufacture of fine and ornamental glass, but the time is approaching when we will not be behind any nation in this branch of art. At present, we import a great deal, but this will not be the case long: we have a strong evidence for making this assertion, in viewing the fine display of crystal ornamental glass vessels, displayed at the Fair of the Institute, by the Brooklyn Glass Company. Some of the articles displayed are splendid—the colors and designs are highly creditable to the company and the artisans engaged in the manufacture. We consider glass as a great civilizer, both as it respects its application to the arts, and its use for ornamental purposes. We do not know but like good roads, the amount of glass used in any country, may be taken as a proper evidence of its civilization.

Photography.

"The Poetry of Science, by Robert Hunt, published by Gould, Kendall & Lincoln, Boston."

We are right heartily glad to see this interesting work, re-published in America—it is a book that *is* a book: and here let us present some extracts, from one part of it, and throw in a few passing thoughts. Speaking of chemical changes by the solar rays, he says:—

"In the Dark Ages it was observed, for the first time, that the sun's rays turned a white compound black. Truth comes slowly upon man, the world clings to error and avoids truth, lest its light should betray their miserable follies. At length a man of genius announced that 'no substance can be exposed to the sun's rays without undergoing a chemical change,' but his words fell idly upon the ear; his friends looked upon his light-produced pictures as curious matters, and preserved them in their cabinets as curiosities, but his words were soon forgotten." This man was Niepce, of Chalons, in France—the undoubted original discoverer of photography.

"When Daguerre first published his great discovery, the European public regarded his metal tablets with feelings of wonder; we have grown accustomed to the beautiful phenomena of this art, which, if studied aright, will convince the most superficial observer that a world of wonder lies within the reach of industrious and patient research."

Mr. Hunt regards this name of "Photography" as unfortunate, and wishes that "Heliography," the name given by Niepce to the art, had been retained.

"The phenomena of the Daguerreotype involve many strange conditions. A plate of silver on which a chemical action has been established by the use of iodine, is exposed to the lenticular image in the camera obscura. If allowed to remain under the influence of the radiations for a sufficient length of time, a faithful picture of the illuminated objects is delineated on the plate, as shown by the visible decomposition and darkening of the iodized surface." In practice, however, the plate is not allowed to assume this condition, for when the common eye cannot detect any change on the plate, the artist takes it out and submits it to the vapor of mercury, and the picture appears. A polished plate of metal, glass, marble or wood, being partially exposed when presented to the action of mercurial vapor, show that a disturbance has been produced upon the portions which were illuminated, whereas no change can be detected upon those parts which were kept in the dark. "Until lately it was thought that a free chemical compound, such as iodide of silver, a free salt of gold, and one or two of lead and iron, were the only materials upon which those remarkable changes were produced, but it is not possible to expose any body to the sun's rays, without being influenced by this chemical power. The granite rock, and the brazen monument, are all acted upon destructively during the hours of sunshine, and were it not for a wonderful provision of nature, they would all soon perish. Niepce was the first to show that those bodies which underwent a change during daylight, possessed the wonderful power of restoring themselves to their original conditions during the night." It is the same with the daguerreotype plate, some means must be taken to secure its permanency—thus showing that hours of darkness are necessary to the inorganic creation, as the hours of sleep are to the organic world. Light which impresses the eye, is not necessary to the production of daguerreotype pictures, nor, as set forth by Mr. Paine, in a letter to the Scientic American, were the pictures produced by his light evidence of its brilliancy and illuminating power. Daguerreotype pictures can be produced in what would be termed "a dark room." In tropical climes the bright sunlight acts more slowly upon photographic preparations than in the less intense light of an English climate. A daguerreotype artist always failed to secure a good picture of the buildings of the city of Mexico, under the bright and cloudless skies of that clime. It is a common opinion among those not acquainted with the art, that an intense light is necessary for the production of pictures, but the skilful daguerreotypist selects a room facing the north, where it is exempt from the direct solar rays, and when a window on the sunny side is of necessity used, the light has always to be mellowed by a screen.

Maryland Mechanics Institute Fair.

DEAR SCI. AM.—The Third Annual Fair of the Maryland Mechanics Institute opened on last Monday, 14th inst., in this city, in Washington Hall. Extensive and excellent arrangements have been made for the accommodation of machinery and other articles, and the convenience of visitors.

On Tuesday evening, Campbell Morfitt, Esq., of Philadelphia, author of "Applied Chemistry," and a number of other chemical works, delivered the opening address, which was, in every respect, a very appropriate one. He pointed out the objects of such associations, and the influence exercised by such exhibitions, in a very forcible manner; the audience was large, and the hearers of it were not only delighted but instructed.

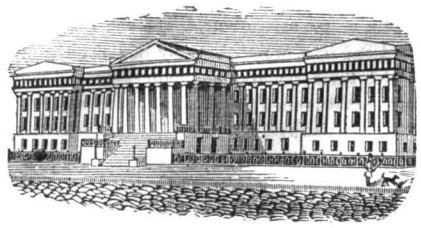
The show of articles this year is very large—more so, I think, than that of any of the two previous years. It is impossible to enumerate a tithe of them in a brief letter, much less to describe the character of any of them. Some, I have been told by exhibitors, have come from New York; and, as a general thing, the Scientific American is not a stranger to them—they speak of it in terms of the highest praise,—a number of the machines here have been illustrated in its columns, and visitors have now an opportunity of seeing with their eyes the effectual and operative value of them, not one of which, I believe, has ever been puffed or over-rated by you.

The engine which drives the machinery is from one of our manufactories, C. W. Bently & Co.'s; it works well. There are some of Messrs. Hoe & Co.'s printing presses, of your city, and a Le Row & Blodgett's "Sewing Machine," well known to your readers.

My principal object in writing to the Scientific American is to set before the public—our whole country—the success of this Institute Fair—as I am a believer in the benefits arising from such institutions, when well conducted; also to say to stranger depositors, that their machines and articles will not be overlooked. A MEMBER.

Baltimore, Oct. 18, 1850.

[We regret that all our Philadelphia correspondents have been silent this year about the Fair of that old and respectable Institution, the Franklin Institute.—[Ed.



☞ Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING OCTOBER 15, 1850.

To John L. Allen, of New Haven, Conn., for improvement in Braces for Carriage Tops.

I claim the construction and arrangement of braces for carriage tops, so that one limb or part of the brace is turned upon a prop, fulcrum, or pivot, all the joints of such brace are simultaneously moved or operated, substantially as shown in the drawings.

I also claim the adaptation of a graduating strap, or similar device, so as to secure the top at any desired elevation, as herein set forth.

To Daniel Bartlett, Jr., of Boston, Mass., for improvement in Filtering Cocks.

I claim the combination of parts arranged, constructed, and made to operate together, substantially in the manner hereinbefore set forth, the said combination consisting of the box or case, the tubular passage way, having three discharging orifices; the turning or hollow plug, made with a discharging orifice; the central and two lateral chambers, the self-operating valves, and their stem, seats and valve-openings; the passages leading out of the bottom of the two lateral chambers, the central discharge pipe leading out of the chamber, the partitions, and the filtering medium, having wire gauze chambers, as above specified, or being used without them, as occasion may require.

To Amos H. Boyd, of Saco, Me., for improvement in Looms.

I claim the combination of the vibrating posts and springs applied to them, as arranged and adapted to the loom frame, and the operative parts with which they are connected, substantially in the manner and for the purpose of easing the web, without varying its horizontal position, as hereinbefore specified.

To Oliver R. Chase, of Boston, Mass., for improvement in machines for pulverizing sugar, (he having assigned his whole right, title and interest in said invention to Silas E. Chase, of Charlestown, Mass., & Oliver R. Chase, of Boston, aforesaid.)

I claim the combination of a rotative series of cells, a rotative series of stampers, suitable machinery for actuating the stampers, and a cylindrical mortar, when arranged and made to operate together, and to receive, pulverize and expel sugar, or other material, substantially in the manner as hereinbefore specified.

To W. B. Coates, of Big Lick, Va., for improvement in Hemp Harvesters.

I claim, first, the box which is a constant oil retainer.

Second, The combined sides and spring bottom for catching and laying the hemp, &c.

Third, I claim casting (or securing in any firm manner) choppers on a rock-shaft, with the edges chisel-shaped, and set so as to strike obliquely against the top and right edges of the teeth, where the part, N, moves by a lateral and semi-rotary motion. I employ a male and female screw-thread, as already fully described in the preceding part of these papers. I do not desire to be understood as confining myself to the screw in getting this motion, but will employ any other method most suitable to produce the desired result, and which shall be substantially the same.

To Isaac T. Grant & D. H. Viall, of Schaghticoke, N. Y., for improvement in Grain Cradles.

We claim the particular construction and arrangement of the brace rods, so as to fold down upon the fingers, each being bent in the proportionate angle, fitting their respective localities. the ends being thus bent pass through the fingers perpendicularly, and are secured by rivetting the same upon the upper side of the fingers, which shape and form given to the wire braces, forms and constructs a hinge joint and each may be turned or swayed in the direction desired, and when separated from the sheath, each wire brace is placed in the position as represented, permitting large numbers to be packed in a condensed form, in packages or braces, convenient and proper for removal, storage or transportation, substantially the same as herein set forth and described.

To Jacob Jenkins, of Andover, Mass., for improvement in Pegging Jacks.

I claim the combination of the two jaw blocks and the double spring connecting rod, as constructed and made to operate together and in connection with the other parts of the apparatus, substantially as herein above specified.

To G. K. Snow, of Boston, Mass., for improvement in machines for Folding Paper.

My combination consists of the following elements:—First, a slotted plate, table, or contrivance for receiving and supporting the sheet.

Second, Two parallel planes or plates extending at right angles from such support, and so arranged that there shall be one of the said plates on each side of the slot of the first element or support of the sheet.

Third, A striking and folding frame or plate so arranged and operated as to press the paper against the middle or other proper part of it, force it down through the slot, and between the two parallel plates; the said parallel plates operating to complete the fold, and to hold the sheet of paper during the return or retrograde movement of the striking frame or plate. And in combination therewith I claim a second striking and folding plate, arranged at right angles to the said two parallel plates, and made so to pass or operate through them or their slots, and directly after the said retrograde movement of the first one, as to press against the sheet of paper, and force it through one of the said slots, and thereby once more, or a second time, fold it.

And I claim in combination with such second combination of mechanism, a third striking and folding plate and slotted parallel folding plate, and friction rollers (two) or equivalent contrivances, the same being for supporting the twice folded sheet of paper, folding it a third time, and subsequently discharging it, which discharge taking place in consequence of the return or retrograde movement of the striking or doubling plate, as above described.

I also claim the combination of mechanism which is applied to the striking plate and its rollers or folding contrivances and used for packing the sheets; the said mechanism consisting of the stationary plan, and the spring plate or plate and its springs, or other proper equivalents, which permit the recession of the plate in proportion as the pack of sheets increases in size; the whole being arranged and made to operate together, substantially in the manner as hereinbefore specified.

To Erastus Stebbins, of Chicopee, Mass., for improvement in Molasses Gates.

I claim the arrangement of the springs, the turning shaft and their bearings at one end of the gate, and on the side of the screw or seat tube, substantially in the manner above specified, the same giving to my improved molasses faucet, several important advantages over that described in the said patent numbered 3,002.

To Wm. Watson, of Chicago, Ill., for Maize Harvesters.

I wish it to be understood that I do not limit myself merely to the various parts herein described, when combined together in a single machine, as some of these parts may be used without the others; neither do I limit myself to the precise combination of parts described in this specification, as portions of one machine may be used in connection with portions of the others, thus constituting new machines operating upon a common principle; but I claim the method substantially as herein described, of separating the ears of Indian corn from the standing stalk on which they grow.

I also claim, in combination with the gathering forks, apparatus for husking and shelling the corn, substantially as herein set forth, whereby the gathering, husking and shelling of corn are performed at a single operation.

[Will the Commissioner of Patents see to it that we get a correct list of claims every week? Was there not a patent for a re-issue and design granted, which should have accompanied *our* list?

For the Scientific American.

Ocean Steam Ships.

As the character of the steamships Atlantic and Pacific for speed may now be considered established, and classed as first rate, and as the opinion seems to prevail (originating for the most part with newspaper editors, and others not particularly well versed in the subject) that something has now been accomplished which it is impossible for the English ever to equal, much less to surpass—it might be worth while for us to look closely into the facts and ascertain whether this superiority that we claim is real or assumed. We are interested in doing this in an unprejudiced manner, because if it be real, so much the better for us, but if it be assumed we are resting on a false security, to the consciousness of which we may some day be unexpectedly awakened. Enough, however, has been done to show that these ships are superior in speed to the America, Niagara and Canada, of the Cunard line; with the Europa and Asia it is a close run, and until some voyages have been made between Liverpool and New York, direct, it will hardly be possible to say, precisely, which has the advantage. It is well known that large steamships have a considerable advantage over small ones, in consequence of their requiring less power in proportion to their tonnage for equal speed, and as the amount of this advantage is easily reduced to calculation, it would seem that before we can truly estimate the respective merits of two ships, an allowance should be made for this difference. Let us see what this would amount to in the case of the Atlantic and the Asia, the former of which is represented to be 3,000 tons burthen, and the latter 2000. Now with vessels of precisely the same model (which for the sake of comparison we must suppose to be the case) the tonnage of course will be as the cube of the dimensions, and the power required to propel them for equal speed as the square, and since the cube root of 3000 is 14·5, and of 2000 is 12·6, nearly, and the squares of 14·5 and 12·6=210·25 and 158·76, respectively, it follows that the power required for equal speed will be in the proportion of those numbers,—viz., as 1,323 to 1,000; and since the amount of power, all other things being equal, depends upon the quantity of coal that each vessel can carry, and if we describe the amount of coal or power which can be employed by the ship of 2,000 tons by the number 1,000, it follows that 1,500 will equally describe the amount of power which may be employed by the ship of 3,000 tons. But the power required for the ship of 3,000 tons, to equal the ship of 2,000 tons in speed, is only 1,323, consequently it has an excess of power in the proportion of 1,323 to 1,500, and since the speed is as the cube root of the power—the speed of the two vessels would be as the cube root of 1,323 is to the cube root of 1,500, or as 11 is to 11½, nearly,—consequently in the time which the ship of 2,000 tons makes 11 miles, the ship of 3,000 tons ought to make 11½, or, which is the same thing, ought to make a passage from port to port in 11 days, to equal the performance of 11½ days on the part of the other. Now if the Asia makes a passage in only the same time as the Atlantic, it is evident that her performance is superior, and this superiority must consist either in the model or machinery—most likely in the model, for in some respects our engineering practice is superior to theirs, working as they do at so low a pressure and with little or no expansion, and if they only adhere to that system, we shall find but little trouble in going ahead of them.

Since the commencement of steam navigation very great improvements have been made in the model of the English ships, although the engines remain pretty much the same as they were, and there is room for very great improvement in that department, if the prejudice in favor of low steam could be removed. Almost every body knows that there is a great difference in the performance of steam engines as regards the consumption of fuel, some producing four times the amount of power from the same quantity of fuel that others do, and that this difference is principally owing to the more or less effectual working of the expansive principle. But to carry out this principle to a very considerable extent requires a higher pressure of steam in the boiler than would be considered admissible in a steamship, and would also require the dimensions of the cylinders to be increased to a size inconveniently large, it is evident it must be confined within limits somewhat narrow compared with what may be accomplished in stationary engines; but still, admitting of a much more extended application than it has hitherto undergone, and the attention of engineers should be earnestly directed towards such improvements in the engines and boilers as are necessary to carry out this principle. But even with our present boilers and the pressure of steam which is now carried in American ships, a considerable amount of expansion might be obtained, and instead of cutting off, as we now do, mostly at half stroke, we might just as well use double cylinder engines and expand the steam 4 or 5 times, or by increasing the pressure in the boilers to 40 or 50 lbs., 6 or 8 times.

By increasing the expansion from 2 to 4 times, nearly 40 per. cent more power may be obtained from the same quantity of fuel, and by carrying it still further, to 6 or 8 times, 80 and 100 per cent., thus doubling the amount of power which could be employed without increasing the consumption of fuel. Assuming it possible that, all practical difficulties being removed, such an amount of expansion could be employed, let us see what increase of speed could be calculated upon to result from it. The power being doubled—that is, increased from 1 to 2—the speed will be increased in the proportion of the cube root of those numbers, which will be as 1 to 1·26, and consequently a passage which occupies 10 days would be reduced to 8; and a passage of 12 days to about 9⅔, and if it were practicable to increase the size of the vessels, a still further advantage could be obtained from that source also. If the Asia, for instance, which now, under favorable circumstances, makes a passage in 10 days, could have her power increased so as to make it in 8, why, then, a vessel of exactly the same model, but of 4,000 tons burthen, ought to make the passage in 7⅓ days, so that we see a considerable increase of speed might be obtained without the discovery of any new principle by only making a proper use of the knowledge we are already in possession of. Still, it does not follow that what can be done will be done immediately, for after all, these questions resolve themselves into matters of dollars and cents, and ships as large as those which are now employed, could hardly have yielded a profit to the owners at the commencement of ocean navigation, before the public confidence in this mode of transit had become established.

As this confidence increases, we shall see the system of steam navigation extend with it, both in extent and efficiency, and the present large, magnificent and fast-sailing vessels will then be superseded by others superior to them. We shall find, too, that in process of time, by further improvements in the engineering practice, and approximating the models of merchant vessels more and more to those of the best steamers, it will be found to be cheaper to employ steam, if not altogether, at all events as an auxiliary for the transportation of merchandize in preference to sailing vessels, especially in such seas as the Pacific, where calms and light winds prevail.

ENGINEER.

Brooklyn, Oct., 1850.

[In respect to the newspaper paragraphs alluded to by our correspondent, he is perfectly correct; there are but few editors who know anything at all about that term of great latitude, the "horse power" of an engine. To scientific men the speed of one vessel over another is but of little importance—the causes of the superior speed is the main object. If regular tables were kept of the speed of the piston, the fuel consumed, the pressure, together with the form of the vessels and all connected with their management, the science of steam engineering would soon be greatly advanced.

TO CORRESPONDENTS.

"G. W., of Ky."—If it would not cost you too much, get up a small model and send it to us, and then we will be able to give you correct advice. There are so many such machines that we connot, at present, see any point in yours to patent.

"C. M. M., of N. Y."—See Vol. 2, No. 42, and Vol. 3. page 36 for tidal wheels. We do not see any thing new in yours. Your improvement for steadying the same appears to be simple, good and patentable.

"H. R., of Mass."—We have seen a seed planter having it slide operated as you described, with cams fixed around on the wheel; it is patented; see Pratt's No. 28, Vol. 3, Sci. Am. We have seen various seed planters, we do not believe a patent could be secured for yours, as we understand it. Your bench hook is good and simple. Your plan for drying saw dust is good, but could not be patented, grain has been dryed in the same way, and a different application is not patentable, as the Patent Office sometimes decide, and sometimes eccentrically it don't.

"B. M., of N. H."—If it could be proven that you were the first inventor your patent would be sustained. It does not follow that one or two scales made before you got your patent, invalidates your rights. This is a question that can only be settled by law, if you are the first inventor, you will get damages, but you should have seen to this long ago, it is worth looking after yet. With respect to the wind-mill and your mode of conveying power, we by all means prefer a simple steam engine. One of 4 horse power, boiler and all, would cost about $350.

"E. B. L., of N. Y."—Yours next week.

"D. E. S., of Mass."—Your coupling for bedsteads was exhibited in our office about three months ago, and a patent applied for.

"W. H. B., of Mass."—We are preparing engravings of your bath, which will appear in the Scientific American in one or two weeks. Your papers have been filed in the Patent Office.

"Jos. E. Andrews, of Boston, and Thos. T. Wilcox, of Taunton, Mass."—We sent each of you a document for signature several weeks since. Why don't you return them as instructed?

"Geo. S., of Ala."—We will try and give you as good advice as we are able, next week.

"W. P., of Mo."—Communicate with the gentlemen in Ala. or Geo., about Mr. Rich's wheel, as seen in our first page: it is a good one.

"L. E. R., of Ill."—We like the horizontal the best, an oscilating engine is good—one of the latter class, of three horse power, you can get complete for $150; boiler and all would cost $350; it would work to 4 horse power. The other information you will get in due season.

"M. A. L., of Ala."—You must have resided in this country one year next preceding the application for a patent, and made oath of your intention to become a citizen thereof; this will entitle you to receive a patent upon the same terms and conditions as though you were a citizen.

"E. B. F., of Pa."—The prices of the Cameras vary according to size and quality. You can ascertain all the particulars by addressing B. Pike & Sons, this city; we believe they make them.

"J. P. M., of La."—We do not think your device would pay very well; they would not be in much demand; apparatns designed for the same purpose is now in use. You are credited $4.

"J. F. Reigart, Esq., Pa."—Your favor of the 19th came safe to hand, for which we are very much obliged. We have addressed Mr. Potts in regard to the Bark Mill.

"W. M. P., of Va."—We will attend to your request next week.

"J. C., of Ohio."—We will answer you next week.

"R. H., of Cin."—About the saw you are right, as we have since learned, and might have thought so, before. We do not see how your propeller could be applied advantageously at the bow, but the very reverse.

"P. F. L., of Ind."—There have been wheels invented with buckets working on hinges. They are called tidal wheels. The number of arms is not patentable. We do not see in your description any new point on which to base a claim for a patent. See No. 42 Vol. 2, page 36, Vol. 3, Sci. Am.

"S. M., of Pa."—Your substitute for the crank has been examined, and we regret to state is one of the oldest principles known for that purpose. No patent could be obtained for it. The principle is not good.

"H. G., of N. Y."—There is nothing new in your pump. The principle is well known and could not be patented.

"J. B. F., of Geo."—You will find a correct answer to your enquiry in the last paper.

"H. L. M., of Pa." Your favor of the 12th enclosing $4 is received. We are not in a position to hear anything favorable in the way of business for you. We seldom if ever hear of vacancies, as our position is one almost immured from the world.

Money received on account of Patent Office business, since Oct. 15, 1850:—

V. H. & N. H., of N. Y., $20; H. A., of Ill., $40; E. G., of Mass., $10; W. H. B., of Mass., $20; E. E., of N. Y., $30; L. F. W., of N. C., $65; A. I. C., of N. Y., $32. and J. O., of Conn., $25.

Bound Vol. 5, Now Ready.

Those desiring Volume 5 of the Scientific American are informed that we are able to furnish a few complete volumes, bound, at $2,75 each. Also, we can send by mail sets complete, minus No. 1 for $2. Volume 4, incomplete sets, comprising about 35 Nos., will be forwarded by mail on receipt of $1.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fees for copying.

Important Notice to us!

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

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" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

Scientific Museum.

Scientific Memoranda.

MAGNETIC ENGINE.

The Baltimore American states that a Mr. J. H. Tatum, of that city, has invented a new and wonderful Electro-Magnetic Engine constructed as follows:—It consists simply of a wheel, four feet in diameter and weighing about 500 pounds. It differs in its construction from an ordinary fly-wheel in each of its arms being provided at the outer end with a heavy wedge-like block of iron; sixteen of which, placed at the regular distances, occupy the periphery of the wheel. It is to these armatures, as they are styled, that Mr. Tatum applies the electro-magnetic current, and by attraction and repulsion obtains a power which propels the wheel.

[The principle of this engine is old.

HOUSE BUILDING IN PARIS.

This branch of industry is under the supervision of a special bureau at the prefecture. Before a proprietor can build, he must hand in a detailed plan of the structure, setting forth not only the relative position of the apartments, but the thickness of the walls, the nature of the material to be used, the number of stories, the slope of the roof and, in short all the particulars about it.

When the plan is approved, he is permitted to commence. As the work progresses, it is frequently visited by the officers attached to the bureau, who see that the plan is strictly adhered to, that the proprietor does not encroach on the street or his neighbor, and that the materials are good. The two great objects of the police requirements seem to be to secure the putting up of houses solidly built and not liable to take fire. For instance, every foundation wall must be of stone, and at least sixty centimeres, (one foot and eleven inches) thick. The thickness is preserved in all the outer walls, but, in some partition ones, may be diminished for stories above the second. Frame houses are unknown.

A common material for walls is cement, mixed with stones and pebbles; the cement, if well made, becomes hard as rock and is very durable. But to make assurance doubly sure, a solid frame work of seasoned timber, the joints well secured by broad iron bands, is first put up, and the cement is built upon this skeleton. One result of these judicious precautions is, that the Paris houses are remarkable for solidity. One hears of no workmen crushed by the falling in of a nine inch wall; one sees no houses with sides bulging out like those of an over stuffed band-box, or cracked from top to bottom and the halves ready to fall in opposite directions.

Great pains are also taken to guard against fire. The joists near the fire-places must be well sheeted with iron, and the houses roofed with some fire-proof material, such as metal, earthenware tiles, or a composition of asphaltum.

NEW SPECIES OF COTTON.

The Savannah Republican says, "Colonel Greene whose highly-cultivated plantation is on the island opposite this city, has left on our round table, where they can be seen by the public, three branches taken from the cotton stalks now growing on his ground. The seed from which the cotton was grown were sent about two years since to the late Captain Swiney, of this city, by whom they were given to Colonel Greene, with a view to ascertain, by planting them, the qualities of the species; but Colonel G. did not learn the name of the cotton, nor from whence the seed came. This was the second growth from the seed, the first planting having given him only a few stalks, from which he saved the seed which he planted this year. The stalks now standing measure about five feet in height. The limbs are from twelve to fourteen inches in length, and are covered with bolls, some of which have opened, yielding a short staple cotton of remarkable fineness. The greatest peculiarity of the plant is the large number of bolls which it bears, as many as 130 having been counted on a single stalk, and ten bolls on a limb only that number of inches in length. The boll opens freely, and the cotton adheres well to the boll, which renders it less liable to be beaten out by the weather than ordinary cotton. The limbs from which the stem of the boll shoots, not at the joints or forks as in other cotton, being short, the plant can be more closely cultivated than any other."

PYROLIGNEOUS ACID.

Mr. John H. Turnbull, late of Scotland, has purchased a large tract of land in Broome Co., N. Y., with a good water-power on it, for the purpose of making pyroligneous acid. This acid is much used in dyeing and in calico printing, and we believe there are only one or two such establishments in America—one we think, near Pittsfield, Mass.

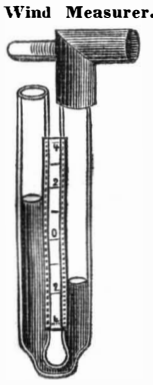
AUSTRALIA—A NEW DYE.

At a great fair held in Hobart Town, a number of new and valuable wool dyes were exhibited, especially the fixed black dye from the bark of the Eno, which was procurable in abundance at $17 per ton, well adapted for tweed manufactures. Arrangements were in contemplation to introduce the Alpaca goat in the colony, which animal it was thought would thrive in districts where sheep cannot exist.

THE LARGEST STEAMBOAT YET.

A monster steamer, four hundred feet in length has been contracted for at Cincinnati to run as a regular ten-day packet between Louisville and New Orleans. She will cost four hundred and twenty thousand dollars, and will be the most splendid craft afloat at the West.

Wind Measurer.



This simple instrument, a siphon tube carrying a little water, was first applied by Dr. Lind to measure the force of the wind—one end of the siphon being bent horizontally so as to face the gale. The two limbs of the tube were each about 9 in. long and 4-10 in dia., and they were connected at their lower extremities by a smaller tube 1-10th of an inch in diameter, for the purpose of retarding the quick oscillations of the fluid by irregular blasts of wind. A scale of inches is placed between the two limbs, the zero corresponding to the level of the fluid in both tubes when subjected to equal pressures. In the figure, the two levels being each 1½ inch from zero, their difference is equal to 3 inches. It was found by this instrument, that the difference of pressures on the windward and leeward sides of any object, even in the greatest gales, bears but a very small porportion to the whole pressure: for, while the latter is capable of supporting from 29 to 30 inches of mercury, or from 32 to 34 feet of water, the column of water supported in the wind-gauge never exceeds a few inches. While the average pressure of the air in *all* directions, therefore, amounts to 14½ or 15 lbs. on a square inch, or above 2,000 lbs. on a square foot, the *difference* of this pressure in different directions, produced by wind, never exceeds 15 or 20 lbs. on the square foot, even in the greatest storms of our climate.

As this difference of pressures bears a simple relation to the velocity of the wind, the latter is easily calculated from it; and in this manner the following table has been constructed, to show the velocity and the pressure on a square foot of surface corresponding to different heights of water supported in the gauge, and to different familiar designations of the intensity of wind:

Gentle breeze . . .	3·25	0·01	0·83oz.
Pleasant breeze . .	6·5	0·04	3·33 "
High wind	16·25	0·25	1 lb. 5 "
Storm or gale . . .	32·5	1	5 lbs. 3 "
Great storm . . .	56·29	3	15 lbs. 9 "
Hurricane	79·61	6	31 lbs. 3 "
Tremendous hurricane	97·5	9	46lbs. 12 "

Hence it appears that the pressure increases as the *square* of the wind's velocity, as will be seen by comparing either of the two latter columns of the table with the second.

To Our Young Men.

The following are some extracts taken from the speech recently made by Mr. MacGregor, M. P., at the annual opening of the Glasgow Atheneum for the winter lectures. We are indebted to the Glasgow Daily Mail for it, and we sincerely desire the attention of our young men to the sentiments contained therein.

Mr. MacGregor said, he would desire to impress upon them the cultivation of such as had a bearing on the business of life as not of less value than the positive sciences. They might thus come to progress like the Royal Institution in London, or at some time perhaps they might obtain the same degree of fame as had attended the Institute of France, which had quite as humble an origin. The advantage that might accrue from the study of the experimental sciences had been largely illustrated by the wonder which had recently been developed in connection with chemistry, electricity and magnetism. With regard to what he had said of the education which they should pursue, he hoped he would not be understood as depreciating the study of the classics. He himself took very great delight in his moments of recreation, in going over the classic writers either of Greece or Rome; but at the same time he found that many of the most distinguished men had been those who had educated themselves in the practical business of the world. Instances that might attest the truth of this were numerous. Take that of Franklin. He was destitute of those advantages in early life which would have enabled him to become acquainted with ancient literature—he knew but that of his own country and France; for by dint of perseverance he acquired a knowledge of that language when he was sent as ambassador to that country, yet by the activity of a determined mind he, the poor printer's boy, became one of the most distinguished men of his time, the ambassador to the first court in Europe, and in a principal degree the liberator of his own country and the friend of freedom throughout the world. His great discovery was made with the commonest materials. With a brown paper kite, a bolt of iron, and a common key, he had, in the woods of Boulogne, drawn down electricity from the heavens. Such, he repeated, was an illustration of the effects of applying a great mind firmly to a set purpose. He wished them to cultivate such a spirit. Let them not despair of attaining any part which was accessible to ability and determination, in whatever situation they might be placed, or of securing the esteem of their fellow-citizens, and those distinctions which they can confer. Let them live a virtuous life, and do the best they can, and they would not fail of success.

One of the Comparative Advantages of Coke as Fuel.

Two similar stoves were heated, by M. Debate, one by wood the other by coke, and the temperature of the exterior taken at some distance from the fire. The temperature of the flues was at first 9° c., and the mean temperature, at the end of six hours, was, by the wood, 13° c., by the coke 16° c.; so that the increase by the wood was 4°, by the coke 6°. These effects were produced by seventy-three kilogrammes (163 pounds) of wood, worth three francs and a half, and twenty-four kilogrammes (53 pounds) of coke, worth one franc eighty cents.

During the progress of this experiment another stove had been heated for several hours with wood, and the temperature had not risen above 13°. The use of coke very quickly raised it to 15° or 16°. Hence it is concluded, and with reason, that coke is much preferable for these purposes to wood, but where the stove is small, the mixture of a little wood with the coke is recommended to facilitate the combustion.

The Gulf Stream takes two years and ten months to perform its circuit of 13,118 miles,

LITERARY NOTICES.

"The New Yorker" is the title of a new daily paper, just commenced in this city by our old and highly esteemed friends, Messrs. Carlos D. Stuart & R. C. Webster: it is the design of the publishers to render it emphatically a reliable newspaper for the people—admitting nothing into its columns, either by way of advertisement or editorials, that can be offensive to the most refined taste. The editorial department is under the charge of Mr. Stuart, whose name as a poet and finished writer is well known to the country, and we trust that the publishers will meet with encouragement commensurate with their merits and industry. The paper is issued daily from the Office, No. 100 Nassau street, and sold for one cent.

Johnston's Lectures on Agriculture—Our readers will remember that Prof. Johnston, of Edinburgh, was invited by the New York State Agricultural Society to deliver the Annual Address last year; this he performed at Syracuse, after which he delivered lectures, in various parts of our country, on this all-important subject. These lectures, with accompanying notes, have been published by C. M. Saxton, No. 123 Fulton street, this city. These lectures are thoroughly practical—they go over the whole field and are clear and plain; the price in paper cover is 50 cents.

Graham's American Magazine, November number, contains a beautiful mezzotint of "The Highland Chase," and "The Angel's Whisper." It has an elegant colored fashion plate and a fine combination of original articles. This magazine is deservedly popular.

Peterson's Ladies' National, for November, contains five full page engravings—one of which, "Early at Kissing." is most touching: The contributions are excellent. Messrs. Dewitt & Davenport are agents for the above magazines.

Messrs. Geo. Dexter & Bro., 43 Ann street, have for sale "Arthur's Home Gazette," the "Waverly Magazine," "Boston Museum," "American Courier," and, in fact, we can scarcely mention a newspaper, calculated for general circulation, which cannot be had of these enterprising Agents—always ready, prompt and faithful, they have won the confidence of the entire publishing community.

The Power of Beauty.—John S. Taylor, 143 Nassau street, has just issued another little work, by J. T. Headley, which contains some beautiful plates, of beautiful ladies, to say the least. We have not investigated the Power of Beauty, but from a familiarity with the author's writings, we have no hesitancy in pronouncing the book worth all that is asked for it—50 cents.

The above work is in mailable form, and orders are solicited for it, and also for "Letters from the Backwoods,"—being a series of letters from the backwoods of this State, by the same author; pamphlet form, price 25 cents.