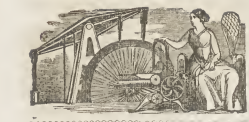


New Inventions.

Improvement in Paddle Wheels.

Mr. William Webster of this city has invented a new improvement in paddle wheels, which is certainly destined to perform wonders in navigation. He employs two or more paddles like vertical oar blades between the rim of the wheel instead of one solid rectangular paddle, and by a very simple and ingenious mechanical arrangement, the paddles are operated, so as their greatest amount of surface, will act upon the water while passing through it, and to present their edges to the face of the wheel when rising out of, passing through the air, and entering the water. They act most effectually where they are wanted to act, and offer little if any resistance to the medium through which they pass, where they cannot act to propel the vessel. Measures have been taken to secure a patent.

Invention to Prevent Collisions on Railroads.

Mr. W. Frelich, engineer in the Navy Yard at Washington, has invented an apparatus which is radically self acting to prevent railroad collisions. He has executed an operative model which demonstrates that even in the event of two trains meeting at full speed it will operate without the help of engineer or fireman and prevent a dangerous collision. As he has taken measures to secure a patent, he is now ready we are informed to enter upon negociations with Railroad Companies on reasonable terms.

Enamelling Iron.

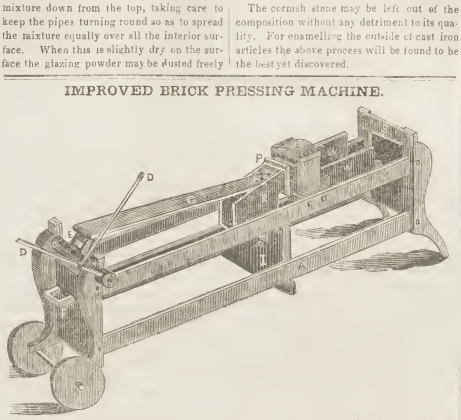
In a great number of cases, articles made of cast Iron require to be glazed. The substances employed for this purpose and the manner in which they are applied, are kept somewhat secret by the craft. We have had many enquiries made of us respecting this art, which we have answered freely, with the knowledge we have had of the subject. 'A short time ago however the following Improved process came into our possession, and we hasten to lay it before our readers. Knowing that it will be of no small value to many of them.

The articles of Cast Iron must be thoroughly cleaned first, and then they are ready to receive the first coat, which is made of the following substances. 100 parts of calcined flints, ground to a fine powder, and mixed with 75 parts of fine grained borax, this mixture is then fused together, and when cooled it is ground with 22 parts of potter's clay in water until it is of such consistency that when an article to be glazed is dipped in it a coating of about one sixth of an inch is retained on it, when the articles so dipped are set apart in a clean place to allow the composition to set, as it is technically termed. When the articles are yet moist, the following composition to produce the glaze, is carefully sifted over the surface. Take 100 parts of what is called cornish stone, or red limestone ground fine, 117 parts of borax ground fine, 35 parts of soda ash, 35 parts of saltpetre, 35 parts of sifted lime, 50 parts of white glass well pounded and 13 parts of white sand. These materials are well mixed and vitrified (burned in a crucible) and when cool they are ground to a fine powder which is washed and dried and laid past in a dry place for use. About 45 parts of these materials are mixed with one part of soda ash in hot water—being well stirred together and then allowed to dry in an oven of a stove, when a fine powder is produced. This is a powder that is sifted over the surface of the moist primary coating spoken of before. After the articles are dusted over with this, by a dust bag, they are placed in the oven of a stove and kept at a temperature of 212 degrees till the composition is dry, when the articles are then placed in a kiln or muffle and submitted to a sufficient degree of heat to fuse the glaze, should the glazing not be found perfect all over, the articles may be moistened with a little salt and water, and the glazing powder sifted over them again and then sujected to the heat of a kiln or muffle again.

This is a good composition for coating the inside of iron pipes, which can be done by holding the pipes on an inclination with their lower ends in a tube, and pouring the first mixture down from the top, taking care to keep the pipes turning round so as to spread the mixture equally over all the interior surface. When this is slightly dry on the surface the glazing powder may be dusted freely in at the top turning round the pipe—and letting the powder spread equally all over the surface down to the bottom, when the pipes may be put into a long kiln made for the purpose and the glazing powder fused. These materials make a splendid glaze and have been considered the best substance as combined for a good iron enamel.

The cornish stone may be left out of the composition without any detriment to its quality. For enamelling the outside of cast iron articles the above process will be found to be the best yet discovered.

IMPROVED BRICK PRESSING MACHINE.

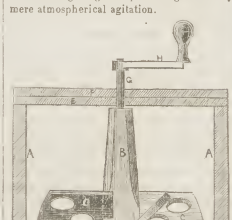


This is a machine for pressing brick to give it that smooth and beautiful form, required for the fronts of buildings. It is very simple and easily managed and does credit to the inventor, Mr. Nathaniel Adams of Canterbury, Orange Co. N. Y., who has distinguished himself already for more than one invention.

A, is the frame. There are wheels at the one end, and the two legs at the other end will answer for handles to wheel it from place to place, it being a very convenient and portable machine B, is the box in which the brick is pressed. This box is formed of stationary sides and top, but the back is moveable, a solid square block secured to a sliding frame This sliding frame runs from end to end of the machine supported on and working in slots on S, and also at F. It is also supported on the bearing plate I, attached to the frame near the middle, sliding on the top of two friction rollers *a*, (one only seen) R, is a shoulder on each side of the follower G.—These shoulders are bolted to the sliding frame below and are elevated to support the piston P, which is a square block, to be pushed by G, and press the brick into the box. H, is a tongue joint by which the follower is connected to the piston. W W, are two square arches, as they may be called. They are two side plates with slits in their underside and to these is secured on the inner side the back of the box B, of the same shape as the square piston P. These are connected to the sliding frame below, so that when the sliding frame is moved the follower G, the piston P, and B and W W, are moved at the same time. The follower G, is connected with C, the fulcrum, by a tongue with a spindle through it or the fulcrum) which is embraced by two pieces on the underside of the follower as seen at E, which thus forms a very flexible joint of the toggle kind. There is an excavation on the roller to receive the butt end of the follower at that point where the tongue E, is moved so as to be on a line with the bottom of the follower. At that point no power is exercised by the tongue to move the follower in pressing the brick, but as the butt is caught into the recess on the fulcrum, the lever D is employed to act upon the whole length of the follower and thus exert the greatest lever power, when it is most wanted—to give the finishing touch to the brick The brick is placed upon a projecting platform on the bottom of the box and the back of the box is the front of it when the pressing commences but recedes before the piston a certain distance, till backed by S, while the piston P, can move or travel farther with the compressment of the brick. W W, therefore do not travel so far as N and P. The slits mentioned guide the arches to move only a certain length, viz. the exact width of the box B. They therefore rest and slide on the bars below of the sliding frame. This is the way in which the pack of the box B, and the piston P, are guided and moved to press the brick and graduate the distance (not uniform) between the two for the compressment of the brick. Measures have been taken to secure a patent.

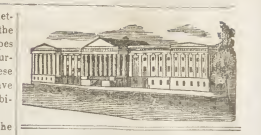
Irvin's Percolated Propeller Churn.

This is an invention of Mr G. A. Irvin, of Paris, Bourbon Co. Kentucky. The improvement is on the dashers of churns, and will at once be appreciated as being very simple and which is not the subject of any objection that has been urged against producing butter by mere atmospherical agitation.



This is an elevated section. A, is the churn. B, a cedar round the revolving vertical shaft G. E, the dd, and H, the handle C, are the dashers; they are secured to B, around the vertical shaft, and are set nearly at a right angle of 45 degrees to one another, as is seen by the edge of one herein exhibited. D, are holes or perforations in the dashers. They are shaped something like the flukes of a propeller. As the dashers are full of perforations, it will be observed from the way in which they are set, that the particles of the milk or cream, are most effectually submerged and thrown upon upon the surface alternately, carrying out the old principle of churning (which so many still like best) but in a different and far superior manner. Measures have been taken to secure a patent.

Mr. Daniel Woodbury of Rochester, N. Y has made a beautiful improvement on his "Grain Separator."



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending January 23, 1849.

To H. Felton, P. D. Cummings and H Hinchly, of Portland, Me., for improvement in cast iron Car Wheels. Patented Jan. 23, 1849

To J. F. B. Flagg, of Philadelphia, Penn., for improvement in Rails and Wheels for turning Curves of Rail Roads. Patented Jan. 23, 1849.

To S. R. Parkhurst, of West Bloomfield, N. J. for improvement in Cylinders for carrying and supporting Cards, &c. Patented Jan. 23, 1849.

To F. A Calvert, of Lowell, Mass. for improvement in the manufacture of Cylinders for Burring Wool, &c. Patented Jan. 23, 1849.

To Elisha Luter, of County of Robertson, Tenn., for improvement in Shingle and Stave Dressing Machines. Patented Jan. 23, 1849.

To William Grant, of Boston, Mass. for improvement in Chucks for Lathes. Patented Jan. 23, 1849.

To James Cortlan. of Washington, D. C. for improvement in Shower Baths. Patented Jan. 23, 1849.

To P. P. Read, of Bowdoin, Me., for improved Roller Ox Shoe Machine with moveable Dies. Patented Jan. 23, 1849.

To E. J. Dickey, county of Chester. Penn. for improvement in Seed Planters. Patented Jan. 23, 1849.

To J. C. Miller, of Marietta, Penn for improvement in Seed Planters. Patented Jan. 23, 1849.

To F. A. Calvert, of Lowell, Mass., for improvement in Wool Cleaning and Lapping Machine. Patented Jan 23, 1849.

To A. B. Taft, of New York City, for combined Double Hinge and Spring. Patented Jan. 23, 1849.

To William Schnebly and Thomas Schnebly, of New York City, for improved self-inflating and folding Life Boat. Patented Jan. 23, 1849.

To M Fisher and William Martin, jr. of Newport, Me. for improved process for welding Cast to Wrought Iron or Steel. Patented Jan. 23, 1849.

To J K Parke and C. S. Watson, of New York City, for improvement in Machines for making Envelopes. Patented Jan. 23, 1849.

To John A. Whipple, of Boston, Mass. for improvement in taking Daguerreotype Pictures. Patented Jan. 23, 1849.

To Alexander Wright, of Lowell, Mass, for improvement in Guards or Strippers for Burring Machines. Patented Jan. 23, 1849.

To H. Angus, of New Haven, Conn. for improvement in Carving Machines. Patented Jan. 23, 1849.

To A. S Pelton, of Clinton, Conn. for improved combined Hinge Fastener and Shutter Opener. Patented Jan. 23, 1849.

To C. F. Tuttle, of Williamsburg, N. Y for improvement in Registers for Hot Air Furnaces. Patented Jan. 23, 1849.

DESIGN.

To N. P. Fehl, of Springfield, Mass., for Design for Stoves. Patented Jan. 23, 1849.

Counterfeit Detector Balance.

Mr. C Rodgers, of Jefferson, Wisconsin, the inventor of the Electric Cholera Protector, has invented a new and beautiful registering balance for weighing coin and detecting the spurious kind. The beam which is used to weigh is fixed upon a fine steel point and the receiver for the coins is made to measure the true size and the beam is marked on one side in grains and on the other with numbers corresponding to a manual giving the weights of gold and silver coins. There is an indicator which points to the registered weight of the coin. This detector is constructed upon the well established fact, that no counterfeit alloy is the same in size and weight as the genuine, and with the most sensitive acumen this invention detects the counterfeit

Silver Seven Cent Pieces.

Mr. Edward Hinckley, of Baltimore, publishes a communication demonstrating the great convenience that would result from the issuing of silver coins of the value of seven cents each This project is very ingenious for any one who may make a calculation and find that such coin would entirely supersede the use of coppers, provide the payer and payee had a sufficient quantity of small change. Thus, to pay one cent, give three seven cent pieces and receive two ten cent pieces in exchange; pay two cents, give a seven and a five cent piece and receive one dime in exchange: to pay three cents, give ten and receive seven in exchange, &c. &c.

[Why not rather give us an amalgam one cent piece made of copper and silver, if the objection to the copper one is its weight and size. It would not require exchange for change

Hydraulator.

A novel Preparation for supplying the citizens of Jeffersonville, Va., with water, is in operation. The principle is somewhat like the telegraph, as follows: There are posts placed at a certain distances from each other through which posts are projecting hooks, curved, so as to hold a wire and at such a distance from the posts as to let the bucket pass and repass without any obstruction. The bucket has rollers attached, so that with a light impelling force, it passes to the water, fills itself, and with a wheel at the extremity of the line that a child can turn with ease is brought with rapidity to the required place. The price is $25 for the first one hundred yards, and 8 cents per yard for all over that distance.

The above paragraph from an exchange, shows that the citizens of Jeffersonville have read the Scientific American and seen the illustrated description of Messrs. Cox's Hydraulator..

Improvement of the Organ.

Mr. Amos Forrest, an ingenious organ builder of Hallowell, has invented a new improvement to the organ, whereby the organist may sit with his back to the main organ and facing the congregation, with the key board, &c. before him, separate from the organ to appearance, but connected underneath in such a manner as to secure all the benefits of the old style of make This is a valuable improvement, as it relieves the organist from the awkward position of sitting with his back to the singers and congregation. An organist acting likewise as chorister, will find it much more convenient to be in a position where he may see all the arrangement of the choir, instead of being placed in a position where he is compelled to turn round in order to give directions or see the minister and congregation.

Ice.

The Ice Crop has been chiefly gathered and that which remains uncut is not only abundant in quantity, but equal to the best which has been housed. A larger amount of ice has been cut this season than probably ever has been cut in one year before. Not much less than three thousand tons of ice have been cut in Massachusetts, for home consumption and exportation, the present year. It may be a measure of wisdom, with the dealers to provide a quantity of ice to guard against a failure next year. Our winters we trust, are not all to be as severe as the present.

Patent Medicines.

Dr. Edwards, in Congress tried to abolish the law to grant Patents for Medicines, and several physicians in this State petitioned to have a law prohibiting their sale unless their composition were printed on the labels. The physicians themselves should be compelled to tell the composition of their prescriptions upon the same principle, but no such bill can pass.

Extraordinary Locomotive Speed.

The Liverpool Times of the 8th ult. contains the following remarkable account from the Newcastle Courant, of the speed of a new first class engine on an English Railroad:—

It would appear that the progress hitherto made in the improvement of this class of machinery, does but tend to develope their wonderful capabilities. In our last we noticed a first class express engine placed on the York and Newcastle Railway, from the manufactory of Messrs. Stephenson, and we have to add another of the same class, previously sent from the manufactory of R. & W. Hawthorn, of this town, the performance of which, both in regard to speed and power, surpasses all previous experiments. Since placed on the line, it has taken the express train from York to Darlington in 40 minutes, a distance of 45 miles; and it is further computed (from results already known) that when the new rails are laid down on this portion of the railway, this engine will accomplish the distance with perfect ease in the short space of half an hour being at the surprising rate of 90 miles an hour. The velocity, although the greatest ever yet attained, either on the broad or narrow gauge, is accomplished with an ease free from that apparent oscillating and undulating motion which characterises outside cylinder engines. Its arrangements are entirely new, and upon their patent principle, having the boilers as low as the latter class of engines; the top of the boiler, although four feet diameter, is only 7 feet 9 inches above the rails. The cylinders are 16 inches in diameter; the stroke of the piston 20 inches; the driving wheels are 6½ feet, and the carrying wheels 4 feet diameter, the wheels of which are entirely of wrought iron. The eccentrics and gearing also being outside of the wheels, render the whole engine compact, simple, and easy of access. Its symmetry and finish are much admired, and it is considered one of the finest specimens of locomotive power produced at this well known establishment.

Pulverized Potator.

Sometime ago a patent was taken out in England for preparing and preserving the substance of potatoes. It was done in the following manner: The potatoes were washed very clean, and boiled until the skin began to crack. They were then taken out and pealed, and all the eyes and specks taken off. They were then put into an iron cylinder that was was tinned inside, with small holes perforated through the bottom. A piston is then passed down, which forces the potato through the holes. When thus prepared, the potato is dried on the tin pans, at a heat of one hundred to one hundred and sixty degrees, after which it is packed in tight casks for future use.—*Maine Farmer.*

We noticed the above process in our columns sometime ago—it is not an English but Swedish invention, and has been practised for a long time in that country. We are glad to see our worthy contemporary notice it, as it has prompted us to call the attention of our farmers at a distance to trying the experiment with potatoes for exportation in light cases to this market. At present potatoes not worth the scraping, sell here for one dollar the bushel. Could the dried potatoes not be made a profitable article of export from the Southwest to this and the Boston markets?

A Capital Summer Furnace.

A furnace made with strong wire gauze, in which our common gas is burned affords an intense heat, which can be regulated at will. This idea may lead to the construction of furnaces to employ gas for cooking in summer as a substitute for charcoal. How cleanly, and easily managed it would be. We may yet see the day, when this will be the common mode of cooking in warm weather.

Cold all the World Over.

A tremendous gale of wind visited Constantinople during the first days of the new year, accompanied by a fall of snow. The latter was driven into many of the houses through openings and crevices, in great quantity, and great damage was caused by the wind; one of the towers near the tomb of the Sultan Mahmoud was blown down, &c. There was snow in the streets to the depth of two and in some places three feet.

National Convention of Inventors.

This body met at Union Hall on Monday afternoon, and was organized by appointing Woodward Abrahams, Esq'r, chairman. A committee was appointed to report an order for business for the sessions, and also to select a speaker for the next evening.

On motion the convention then adjourned, to meet at 7 o'clock, evening session, when the following order of business was reported:

1st. The reading of the constitution of the Inventor's National Institute, by sections, and suggestions for modifications, &c.

2d. Reading the hills in addition to, and amendment of the several acts to promote the progress of the useful Arts.

The committee returned as officers of the Convention: Theodore F. Engelbrecht, Esq. of New York, as President; Alex A. Brown, Vice President; R H. Middleton, Secretary.

The committee on public address reported that George Gifford, Esq., of the New York Bar, would deliver an address, which report was approved.

Jordan L. Mott, Esq., of New York, read the hill now before Congress, asking a reformation in the Patent Laws, so as to effectually secure the inventor from infringement and piracy.—*Baltimore Sun.*

Well, we await farther developements of this association.

Robbery of the Government Jewels.

The National Police Gazette of this week contains some remarkable revelations respecting the robbery of the Patent Office in November, 1845. The Gazette has from the first charged that the robbery was committed by two well known thieves, Hand and Webb, under the direction of others, and that the object of these men was not so much plunder, as to be in position successfully to negotiate for the release from prison of a brother of Webb's who had been convicted of forgery. Letters received by President Polk, offering to restore the jewels, have been traced by the editors of the Police Gazette to Hand, and many facts are given countenancing the foregoing supposition.

Sulphuric Acid.

Liebig has said that the consumption of sulphuric acid may well indicate the state of civilization—the more that is consumed, the higher is the state of advancement, as it indicates the amount of soap that is used, and the general cleanly habits of the people, also the extent of its manufactures. This rule will not hold good in all countries, as the sulphuric acid is employed in Europe to make soda, by which their soap is made, whereas in this country, our soap as made out of potash, in the manufacture of which no sulphuric acid is used. The amount of sulphuric acid consumed in Europe however, may well indicate any nation's prosperity there, and no nation is so conspicuous for the vast quantity of sulphuric acid which it consumes, as Great Britain. Sulphuric acid is made from sulphur imported into England principally from the Island of Sicily. There are some chemical works in England that make ten tons of sulphuric acid weekly, and an idea may be formed of the quantity manufactured when we state that all the soda is made from sulphuric acid, and the average quantity of soda manufactured yearly, amounts to no less than 88,000 tons.

Indestructibility of Cork.

In taking down, a few years ago, in France, some portion of the ancient Chateau of the Roque d'Ondses it was found that the extremities of the oak girders, lodged in the walls, were perfectly preserved, although these timbers were supposed to have been in their places for upward of 600 years The whole of these extremities buried in the walls were completely wrapped around with plates of cork. When demolishing an ancient Benedictine church at Bayonne, it was found that the whole of the fir girders were entirely worm-eaten and rotten, with the exception however, of the bearings, which as in the case above mentioned, were also completely wrapped round with plates of cork. The fixings were completed by a layer of greasy-feeling clay, interposed between the cork and the masonry, and the parts of the walls opposite the ends of the timber were of brick.

Panama Cotton.

The Mobile Tribune has received from Panama, a sample of wild cotton procured from a tree on the top of a mountain some four leagues from Panama. The tree was about twenty five feet high and thirty feet across near the top. The body four feet from the ground, measured four inches in diameter. The sample of cotton, although carried for some time in the pocket, and of course materially injured in appearance, is nevertheless, of a fine silky texture.

New Epidemic.

A new Plaque or Epidemic has appeared in the Philadelphia Alms House and the City Hospital. It produces mortification of the mouth, gums and cheeks, ending speedily in death. Large numbers have died of it in both institutions. It has probably arisen from scarlet fever and small pox, or is a combination of these two diseases, which, with purulent opthalmia, have been very prevalent in the Alms House, where patients are kept in very ill ventillated rooms. It has thus far been confined principally to children.

The Potatoe.

Professor Mulder, so well known by his discovery of proteine, (the much controverted substance), has fulminated a solemn condemnation of the potato. "As an article of food," says a learned chemist "this tuber is not nourishing, and is the cause of the moral and physical degradation of the nation who make use of it," &c. The question, however does not exclusively lie in the consideration of the nutritive principles, but, whether the same are or are not of easy assimilation: for we might as well feed on gutta percha, caoutchonc, or urea, if these principles alone were kept in view

The Oldest Pastor in the United States.

The venerable Dr. Nott, of Franklin, Connecticut, received the visits of his flock, on the 23d ult., to congratulate him on his having reached his ninety-sixth birth day. Dr. Nott was born in 1754. He was ordained and installed over his present charge, "the Congregational Church in what is now Franklin, then Norwich, West Farms," on the 13th of March, 1782; and has consequently exercised the pastoral office during a period of nearly sixty-seven years.

Iron Rails in Use and out of Use.

Rails in use do not corrode like those out of use. The cause of this is attributed to magnetism, which by the experiments of Mallett and Ritter seems to be produced in rails after they are sometime in use—both induced and permanent magnetism, each rail being magnetic with polarity.

British Census.

The British Government are going to take a census of the whole empire and a systematic plan has been laid down, like the last adopted in numbering the people of the United Kingdom, to be pursued throughout the empire. This is the first regular census to be taken of the British Empire, but is has been customary to take a census of England every few years, from time immemorial.

Curious Discovery.

In the great Pyramid of Egypt is a small opening at the top, the depth of which has never been sounded. Another aperture of the same size exists at the foot of the Pyramid. It was long conjectured that these two openings communicated with each other, but no means could be devised to establish the fact till the problem was solved recently by the ingenuity of an Arab. He took a cat and her kittens, placed the old cat in one aperture and the kittens in the other, and stopped up both with stones. The next day he opened them and found cat and kittens all together at the foot of the long passage.

Ship Blocks.

The business done in this article of manufacture is larger than is usually supposed. A vessel of a thousand tons burthen requires about five hundred blocks of various sizes in fitting her out, and a single firm in this city are now supplying thirty-three sail of vessels and ships.

A "bloody oyster" fight recently took place on the east shore of Virginia. The number of oysters slain is not known, but there were a few

To our Contemporaries.

To Editors generally, we extend our warmest thanks for their complimentary notices of the Scientific American, we should gladly make room for them all, but the crowded state of our columns will not allow us the pleasure We are highly gratified with the manner in which the "Prize Essay has been received by them, and it speaks well for the journals that have copied the suggestions made by the author (Mr. Maher) inasmuch as it manifests their willingness to benefit that class of individuals whose efforts demand the earnest co-operation of legislators. Our object has been to awaken a more general interest in behalf of inventors, and if possible to create a reform in the existing Patent laws' If we have contributed in any degree to accomplish this required reformation, we shall feel abundantly rewarded.

There is not a paper published in this country that has not more or less subscribers, who feel a deep interest in mechanical improvements, and we take it upon ourselves to say that any suggestions upon this subject will be read by them with satisfaction and profit.

We advise mechanics in every village to hold meetings and be prepared to present petitions as soon as Congress assembles in December and not trust their interests in the hands of a few demagogues whose sole object is to secure some lucrative office under the Government. Any petitions sent to us (post paid) will be promptly forwarded to Washington as soon as Congress assembles. Now is a good time for action and we shall be pleased to hear from as many as may deem these suggestions worthy of notice.

GRIFFIN, Geo. May 1st 1848.

MESSRS. MUNN & Co.

GENTLEMEN.—Enclosed I send you the amount of another year's subscription to your valuable journal. I assure you, I wish the Scientific American to obtain a wide spread circulation, I wish it as well for your advantage and for the benefits it must yield to all classes, and particularly to those for whom it is more expressly designed. I am not a mechanic nor an inventor, yet I feel a lively interest in all the improvements and discoveries of the age, besides I have in several instances derived actual profit from the perusal of your paper, in the various articles of domestic economy. We see in almost every newspaper of the day receipts for various purposes, which when tried are seldom found to succeed, I am happy however to say that those which come approved by the Editors of the Scientific American may be invariably depended upon.

I am, Gentlemen, yours truly

J. C. M——

(The above is from one of our oldest subscribers, and is but a stereotype of letters received by us weekly.—Eds.

Hydraulic Engine.

The Glasgow (Scotland) Citizen, says: "In noticing the hydraulic cranes at the General Terminus Railway Company's Wharf, some months since, we stated our conviction that the time was not distant that the new power or new application of power—the pressure of water in air tight pipes—would be made largely available as a motive force. We have now the satisfaction of stating that there is no longer any doubt as to the applicability of this power to machinery. We have had the pleasure of inspecting a model engine in the office of the Corbals Gravitation Water Company, Portland-Street—and which is the most beautiful and simple contrivance we ever saw.—The model is about one-horse power, with a horizontal cylinder, and having a twelve-inch stroke. The water, which here has a pressure of about 201 feet, is introduced to it from a common house-pipe ; and such is the simplicity of the machine, that a child could work it and regulate its speed at pleasure by the mere turning of a handle. The great advantage of this engine consists in the fact that it can be put up in any flat of a house of any street,—wherever, in fact, there is a water-pipe. It takes up very little room ; it registers the quantity of water it used (which by the way, may be again available for several purposes, as it leaves the engine as pure as when it entered ;) and it may be erected in those localities in cities where steam-power is prohibited on account of danger and nuisance from smoke, and without raising the rate of insurance. It will be much cheaper in every respect than a steam-power engine The model has been constructed by Messrs. James Steel and Sons, Dundee. In all processes requiring engines of from two to six or eight horse-power such as coffee-grinding, baking, turning, letter-press machine printing &c , the gravitating water-power engine must speedily come into general use."

The engraving and description of an hydraulic engine, will be found on page 213. vol. 2 Scientific American, invented by Mr. E. Bishop. We have heard that there are two such engines in operation in Liverpool, England, and in some other places. They are in successful operation, and might be very useful in some parts of our country.

New Electrical Instrument.

M. Chevaler, a French gentleman who has paid some attention to electric phenomena, has brought to perfection an apparatus, which early as the days of Franklin was suggested by some of the experimentalists, by whose means an electric shock can be conveyed at a considerable distance, even through a whole line of individuals. It is of so small a compass that it can be carried in the pocket ; by means of a string thrown from amidst a flock of sheep twelve fell down And the shock may be so violent as to cause instantaneous death without the hand of the perpetrator being visible or recognized. The discovery is rather a mischievous than a useful one.

[The above we copy from an exchange and know not the one from which we took it The fact of prostrating the sheep we consider to be equal to any feat ever accomplished by the famous Munchausen.

A Curiosity.

An English paper states that there has been exhibiting at the Egyptian Hall London, a full length miniature of a female discovered by Mr Eades in a block of marble which he was preparing for an obelisk ; discovered perfect in itself. Mr. Eades thus describes it :

"This unprecedented phenomena of human nature is a most mysterious and truly astonishing full length miniature of a lady, three inches in height, in the costume of the aristocracy of the present time : possessing the most accurate and pleasing features, graceful figure, beautiful ringlets—upon the head of an elegant cottage bonnet, to which is attached a superb veil ; under her arm she carries a a fashionable muff, which has the appearance of one of the most recherche of the Hudson Bay Company. The incomparable miniature has been examined by several eminent antiquaries, scientific gentlemen, first rate artists, and numerous distinguished ladies and gentlemen, who have unanimously pronounced it to be the finest specimen beheld, and may be challenged against the world !—so perfecly uniform in every particular, combining grace and elegance that it appears a production of Mr. Martin's or some other celebrated artist."

Weather, Fruits, &c.

In Ohio, the horticulturists say the Fruit, owing to its backwardness, has escaped the late frosts without injury. Accounts, however from Georgia, South Carolina, Alabama, and a portion of Florida, generally agree that the Wheat crop, and that portion of the Cotton crop which was up, have been almost entirely destroyed. The Corn has suffered great injury also, but this can be remedied by replanting. If the weather has been so severe in Mississippi, Louisiana, Texas and Arkansas, as it was in Georgia, it must have the effect of greatly curtailing the cotton and wheat crops, and consequently of raising prices.—There is not Cotton seed enough in the country to replant the crop, but the injury to the Wheat may, in some degree, be repaired by planting more largely of Corn.

Great Seizure of Counterfeiting Apparatus.

In the vicinity of Blazing Star, New Jersey, Officers Brown and Leonard of this city made a most extensive seizure on the 1st, inst of an immense coining apparatus for coining counterfeit Mexican dollars and American quarter and half dollars. The apparatus was contained in 16 boxes. There is among it a powerful screw press; the lever used in operating with it is eight feet long, and has at each end a 32 pound cannon ball. The rest of the apparatus seized consisted of a bed-plate milling apparatus, crucibles, a large quantity of tools, chemicals, &c. and some boxes of counterfeit coin in a finished and unfinished state. The dies were not found, but the officers have impressions from them which exhibit the highest degree of perfection in their manufacture. The coin cannot be detected either by sound or weight from the genuine The place were the counterfeiters carried on their operations was built by a man named Sweet and his accomplices, and was so constructed that it afforded abundance of light, and at the same time, the operators could not be seen or heard from without. One man started for California a month or two since, it is supposed with a large quantity of the counterfeit coin in his possession, intending, no doubt to speculate with it. The Government have dispatched an agent there to arrest him, but it is feared he will have disposed of a large amount of the coin before the officer arrives.

Pineapples in Florida.

A writer in the Savannah Georgian says that one gentleman set out 46 slips of pine on the 20th of August, 1843, and they ripened to fruit July 10, 1845 ; he has now 3,500 plants, half which will bear next July. The apple does as well at St. Lucia, if not better, than in Cuba ; the fruit is larger and better. About 15,000 pines can be produced to the acre.—This fruit from the pine plants of South Florida need not be plucked till it has quite matured, when it will come into market in a better condition, and of finer flavor than any other. The average value of the pine then will be at least 5 cents, and an acre will yield $800 or $900, while the produce of the orange is about $750 per acre.

Medical Convention at Boston

In the American Medical Convention, in session at Boston, on Wednesday, last week, Dr. Nathan R. Smith, of Maryland, read a long report from the Committee on Surgery, most unequivocally defending the use of chloroform. The report says :

"It has been administered to millions of subjects, and we have but fifteen cases of authenticated deaths supervening from its use. Alarm, therefore, on the subject is needless Much more cause is there for alarm, much more reason to apprehend a fatal termination in taking an ordinary railroad journey, than in inhaling chloroform, at the hands of a judicious and careful practitioner.

"It is admissible to proceed with a surgical operation in dangerous cases, without the use of choloform, because safety and immunity from pain are secured. It should not be used where there is a disease of the heart ; and in inhalation care should be taken that atmospheric air be mixed with the chloroform Inhalation should stop the moment that insensibility is attained. Professor Simpson has published his opinion that one hundred lives have been preserved by the use of chloroform where one has been lost by it. He further says that the mortality, where chloroform is used, is much less than in similar cases where it is dispensed with."

The Committee on Obstetrics also reported decidedly in favor of the use of Chloroform, and the 'wonderful advantages' Obstetric practice has gained through the introduction of Anasthetical agents. Etherization has now been used in thousands of cases, and in no one instance has the slightest injury resulted to the mother. It is added that anasthetics may not only be given in all cases of labor, but that they may not rightfully be withheld.

The funniest article yet, is a patent iron shirt with precusion collars. It never wears out, and by touching a spring, a new collar jumps up, until a half-dozen are exhausted.—A patent sheet-iron neckcloth accompanies it.

A New Poison.

In the last number of the Medical Examiner, there is a description of a new poison which was discovered in 1847, by Sobrero, a Spanish Chemist Dr. W. F. Jackson, of Maine, has made a number of experiments with it, and the article in the Examiner is taken from an address of the Doctor.

The poison is obtained by a process similar to that for procuring gun cotton, with the exception that instead of cotton, the liquid called glycerine, the well known sweet principle of oils, is exposed to the reaction of a mixture of strong sulphuric and nitric acids, refrigerated. It is an oleaginous, honey-like substance, which sinks in water, but is soluble in alcohol; and it was the alcoholic tincture (the strength not mentioned) which Dr. Jackson employed in his experiments.

The general properties of this substance, which as yet has no name, are those of a most powerful excitant or stimulant, the effects being exhibited by the violent action of the arteries and brain. One-third of a drop was always found sufficient to quicken the pulse, within sixty seconds, from sixty-five to ninety-five and even one hundred and twelve beats a minute, causing intense headache, protruding eyes, and scintillating vision, with disturbed heart, &c., symptoms which subsided in about half an hour. A larger dose produced similar effects, only of a more violent character; the pulse being raised to one hundred and twenty-four beats and becoming hard and almost incompressible.

Three drops of this poison killed a cat in two minutes.

The Benefit of a Strong Beaver.

Parson Brownlow, of the Jonesborough whig was attacked at night, while returning from church, and struck down by a club in the hands of John Ryland, whom he had published as a deserter in Mexico. The Rev. Editor after 15 days' confinement from his injuries, comes down on his assailant in a column of invective and characteristically says, in conclusion, "I owe my existence, under God, to a strong beaver hat I had on at the time.

The parson's hat is equal to the famous one of George Buchanan. Perhaps he carries a sheet iron crown in it.

Heavy Damages for Breach of Privilege in Partnership.

By the proceedings of the Superior Court lately held in this city, Judge Sandford Presiding, we see that Mr A. G. Bagley, the Gold Pen Manufacturer, was awarded a verdict as plaintiff of $7,500, for damages for a breach of the articles of co-partnership by G. and E. Smith, his former partners.

The Canal Locks at Lockport.

The combined ten Locks at Lockport, in this State, were completed last week, and they are justly considered as monuments of engineering and architectural skill. The Locks are in two tiers, 5 in each tier. Each lock has a lift of nearly 8 feet. There are 31,020 yards of masonry in the work and the cost of the whole has been about $600.000.

Propeller Sarah Sands.

The propeller Sarah Sands on her last voyage from Liverpool broke the piston rod of her engine when she was five days out. The accident was occasioned by the screw getting foul of something in the water, and she had therefore to make the rest of the voyage by her sails, the screw at the same time acting as a drag to impede her progress.

Gas Works Explosion.

The Gas Works at Rochester, N. Y., were completely destroyed by explosion on the 23d. The explosion was occasioned by one of the workmen going into the building and lighting a match. The gas exploded on the instant the match was lighted. Two of the workmen belonging to the works, were seriously injured by the explosion, one very badly burned and the other had his leg broken.

Some oil cakes, from Holland, were examined recently at the London Custom House, which proved to be *snuff*. As there were sixty tons, and, as the duty on snuff is now six shillings sterling per pound, the government would have been defrauded to the large amount of £40,000.

Great Riot and Loss of Life.

On Thursday evening of last week our City was the scene of a most terrible and afflicting event—an event without a parallel in the history of our republic. No less than 17 persons were shot down in the street and 31 wounded some fatally, for five have died of their wounds since. There may be more wounded, as is generally the case in crowds, than the public is aware of. The news of this event has no doubt pierced the remotest parts of our country by the time we write, but still we believe that many of our readers will be pleased with our account of the catastrophe. Two men known among the play-going people of the world as great tragedians, were the remote cause of it. The name of the one is Edwin Forrest, the name of the other W. C. Macready. The former is an American, the latter a native born Irishman, some say, and some say an Englishman. When Mr. Forrest played in London a few years ago, he was hissed and severely criticised by the papers. To pay back this compliment some evil disposed persons among us determined that Mr. Macready should be driven from the American stage, and on Tuesday evening of last week, when he appeared at the Opera House, he was pelted from the stage by rotten eggs and chairs. Mr. Macready refused to play any more, but some of what are called our most respectable citizens (Washington Irving one of them) published a card requesting him to play out his engagement. At their request he consented. On Thursday he appeared on the stage and the house was beset inside and out by individuals who were determined it seems to drive him away by hooting within and throwing stones without. The military were called upon, and they were assailed, when the infantry, (after the "sour milk cavalry" fled,) fired two volleys and killed and wounded about the number mentioned. We have carefully read the evidence adduced before the Coroner, and we agree with the Jury, that bloodshed might have been avoided, it the business had been well managed. We only wish that the real rowdy characters who were at the root of the disturbance had suffered instead of the unoffending and innocent. There has always been a prejudice against the Opera House, because it is aristocratic. It is too exclusive for the feelings of our working people. It is a civil right no doubt though not a moral one. But what shall we say of

"The Theatre, it was from the very first
The favorite haunt of Sin, though honest men
Maintained it might be turned to good account
And so perhaps it might, but never was.
From first to last it was an evil place,
And now such things were acted there, as made
The very devils blush, angels and holy men
trembling retire."

The most sad and affecting part of this narrative is, that some papers and parties are endeavoring to make political capital out of the blood of their fellow creatures No party had any thing to do with the matter and five of Macready's countrymen are among the dead.

In reviewing the evidence before us, we believe that the men who are primarily guilty of the whole evil, are the profligate gambling rowdies, sons of some wealthy families, who pay bullies and braggadocios to fight their quarrels. The working people although appealed to in flaming placards, had nothing to do with the disturbance—they are perhaps the quietest portion of our citizens. The hyenas of the mob are men celebrated for brawling patriotism, drinking and knocking down, opponeuns on election days. These characters generally escape (through venality) the State Prison. We wish to see a return to the good old times, when men's prtriotism will be measured by their noble and quiet demeanor to the law, instead of the now di-graceful process of rewarding with office and approbation, many whose conduct is a disgrace to the Republic.

Commissioner of Patents.

Thomas Ewbank Esq , of this city, known by his great work on ' Hydraulics,' and by others, evincing research, has been appointed Commissioner of Patents by the President.

We presume Gen. J. W. Harvey, was the choice of nine-tenths of the inventors of this city, and of the whole country, as far as he is known. At an adjourned meeting of the Inventors of this city, after full discussion, General H. received the unanimous vote of the whole meeting as their first choice.

The undue influence of one individual besieging the capitol has deprived the great majority of those interested in patents of having one of their own choice as Commissioner of Patents.—*Artisan.*

☞We do not like to be invidu ous, because it is not the right way to answer a fair and honorable opponent. We believe that the Artisan is wrong and misinformed on the subject. The meetings of certain inventors held in this city who nominated Gen. Harvey, were composed of but a tithe of the inventors in this city, and those interested in patents out of the city know Mr. Ewbanks better by reputation than Gen. Harvey. We do not say a word against Gen Harvey—it is well known that he is an able man and an inventor of the very first order. We venture to make this assertion respecting the meeting of inventors in this city that nominated Gen. Harvey, viz. that it did him more harm than good. Why? Because the most officious members of that meeting were not practical mechanics. Now it is not generally known to many, how much influence our practical mechanics are beginning to exercise and not in any undue way, but just because our right thinking and leading men are now conscientiously, as a matter of justice, beginning to recognise their claims and extend to them the right hand of encouragement.

Pennsylvania Iron Ore.

The Reading Gazette says, the iron beds in the vicinity of our city, and indeed those within our limits have, within its last year or two received a large share of attention from those engaged in the business, and their labors seem to have met with great encouragement from the value of the ore which their excavations have discovered. On Penn's Mount, a mountain known to contain vast quantities of the ore, the most extensive and valuable veins of various kinds of iron have been discovered. For many years these rich deposits were abandoned and the openings had been entirely neglected, either for the want of capital or the absence of a proper spirit of enterprise, until they attracted the attention of our enterprising fellow-townsman, George W. Oakley, Esq., who appreciated their value, and in the face of most discouraging barriers, sufficient to retard the progress of one less determined, he went to work with his men, and by personal efforts and skill, succeeded in drawing from the bowels of the mountain, ore as rich and as valuable as ever was found in the placers of the Sacramento.

Improvement in Plank Roads.

M. D. Codding, of Rochester, has made an improvement in the construction of plank roads which appears to be worthy of consideration. It is arranged so that the wheels run lengthwise of the timber, which renders it much easier for the team, while the horse track is crosswise. The horse track will be worn sooner than the wheel track, and can be renewed without disturbing the latter

Combined Boat and Waggon.

E. H. Howard, late Postmaster at Sheboygen, Wisconsin, has started for California in a boat wagon of his own construction. The box of the wagon is a boat, set on steel springs the whole of which is covered with oil cloth, making a very comfortable house. The establishment is so arranged that, upon reaching a river, the running gears of the wagon can be unshipped in a few minutes, and taken aboard the boat while crossing the stream. This is the true American spirit of enterprise and ingenuity.

Major Whistler died in St. Petersburg, Russia, on the 7th April. He was the well known American Civil Engineer employed by the Emperor to construct the grand Railroad to Moscow.

Manufacture of Gold.

The Liverpool Albion says :—"We have read that Boyle once very nearly succeeded in making gold ; that he showed the experiment to Sir Isaac Newton, when both became frightened and threw away the ingredients.—A gentleman communicates to the editor of the Mining Journal, that having experimented some ten years ago on the stratification of the earth and the formation of mineral deposites he believes with truthful results, he turned up one of his old experiments a few days ago, when he found running in a kind of spiral stiring through one part a small quantity of gold No gold was used in the experiment, and the conclusion arrived at is that it has been formed from some of the other substances. This, however, is nothing to what is asserted by an iron founder of this town. This gentleman must have discovered the true philosopher's stone, which so many sages of the olden time spent their lives in trying to obtain. He declares that he has found out a proccss by which he can change any quantity of iron into gold. Before three months are over he says we shall hear more of this marvel. He promises to produce gold in tons in short in any quantity."

[None of our readers we presume will doubt the above. Our mechanics turn out tons of gold every week from their iron castings, and our farmers from their wheat and corn fields. The only gold used in the process, is skill and industry.

Ancient Musical Instrument.

The Egyptian flute was only a cow's horn, with only three or four holes in it ; and their harp or lyre, had only three strings. The Jewish triumpets that made the walls of Jericho fall down, were only ram's horns ; the psaltery was a small triangular harp or lyre, with wire strings, and was struck with an iron needle stick ; their sachut resembled the zagg used at Malta in the present day, a species of bagpipe ; the timbrel was a tamborine, and the dulcimer a horizontal harp with wire strings, and struck with a stick like the psaltery—such as are seen about the streets of London in the present day. Imagine the discord produced by 200,000 of such instruments while playing at dedication of Solomon's temple.

American Consuls' Fees.

The largest amount of fees received by Consuls abroad, according to a table recently published, is that of the consul at Liverpool, who in 1845, received $9,963. The consulates at Rio Janeiro and London are worth $9000.—Havana and Glasgow $6000. St. Thomas and the Sandwich Islands each yield $4000. The consul at Alexandria, in Egypt, receives a salary of $3000. The consuls on the coast of Barbary each receive a salary of $2000, and five in China receive a salary of $1000 a year each ; six other posts yield $2000 per annum ; eighteen are worth $1000, and the remaining ninety consulates range from $900 to $4 per annum, much the largest proportion of them being worth less than $500 The expectants of office will be able, from this exposition, to see which are the fattest places and to choose accordingly.

The Chemical Telegraph.

The Baltimore Clipper says we had the pleasure of witnessing the action of Bain's Chemical telegraph, last Saturday, and were much pleased with the facility, rapidity and accuracy with which communications were transmitted to and from Washington. The characters are impressed with great distinctness on the chemically prepared paper ; and although a new alphabet has been introduced, it is already so familiar to the operators, that they read it with the same facility that they would plain printing. The line will soon be in operation as far as New York, from whence it will be extended by capitalists in that city to Boston and Halifax.

Death by Chloroform.

The Cincinnati Atlas says that a young man by the name of George, who was suffering from deafness or some other affection of the head, came to this city a few days ago, to submit to an operation for his relief. Chloroform was admistered by the surgeon, that he might undergo the operation without suffering, in consequence of which the patient died.

Shoe Pegs.

At Vienna Village, in the county of Kennebec Maine there is a factory that makes 1,000 bushels of shoe pegs per annum. A great number of wooden pegs, are now sent to England where they are used in Cabinet work.

The logs are sawed into blocks of suitable length for the pegs, and the ends are planed smooth. Grooves are then cut on the ends of these blocks, crossing each other at right angles, and these form the points of the pegs. They are then separated by splitting the blocks, a knife being introduced between each row of points, corresponding with the grooving.

The machinery was invented by Thomas Morris of that place.

A Blazing World.

Lieutenant Maury, the Superintendent of the National Observatory, gives the following piece of pleasant information in a recent address :

It may be that there is now, at this very time, in the firmament above, a world on fire Argus, the well-known star in the southern hemisphere, has suddenly blazed forth, and, from a star of the second or third magnitude, now glares with the brilliancy of the first.

A Mean Rich Man Fallen.

George Hudson, the English rail way King, has fallen. He was detected in a mean speculation by which he had pocketed $70,000 as profit of shares of the Great North of England Line, the shares being sold above the market price.

This is as it should be, but there are many among us who would think that he was only a very cute man and would honor him more for that than if he were honest.

A Georgia Locomotive.

A new locomotive named the Native has been constructed at Augusta, Geo., under the superintendance of the chief machinist of the Georgia Railroad Company, Mr. W. Henderson. It has six driving wheels and weighs twelve tons, and is in every way said to be a beautiful piece of workmanship. The Southern mechanics are exhibiting the right spirit.

Statistics of Forks and Spoons.

A work on the "History of the Precious Metals," recently published in Hartford, Conn. says the value of the silver Tea-spoons in the United States is estimated at $36,000,000 ; of Silver Table spoons $27,000,000 ; of silver forks $4,500,000, and of plate and dining service $5,500,000.

The Gold Dollar.

This beautiful coin has at last been issued. It is somewhat smaller than a five cent piece, and is very beautiful. It is our opinion that it is the most beautiful coin in the world.

Steamboat Competition.

There is great competition this season on almost all our rivers between rival steamboat companies. On the Hudson, the general fare is 50 cents, too little by half a dollar On Lake Ontario steamboats have been running for 12½ cents from Toronto, passage that used to be 5 dollars. Well if companies carry passengers for nothing, it is all very well, but nobody thanks them. A fair uniform price is the best policy in the long run.

Calico Printing Machines.

There are cylinder printing machines in Messrs Hoyles print works, Manchester, England, which print a mile of 5 colors of calico in one hour. If fifteen of these machines work unioterruptedly for only ten hours each day, and for six days in the week, they would be able to print cotton dresses in one week for 160,000 ladies! The actual number of miles of calico printed by this eminent firm in a single year exceeds ten thousand more than sufficient to measure the diameter of our planet with.

A beautiful steamer is now on the stocks at Geneva, N. Y., destined for the Lake. Her length is 260 feet keel, beam 30 feet, including guards 58 feet, ho'd 18 feet. Her engine is to be of 500 horse power.

By excavations under the Inquisition rooms at Rome, a most horrific scene has been developed, of skeletons innumerable buried in the walls, and a reservoir where many were consumed by quicklime.

New Inventions.

Apparatus to Prevent Conductors on Railroad Cars being struck down by Bridges.

Mr. J. Milton Benham, of Wilmot, Racine Co., Wisconsin, has invented an apparatus to be attached to the front of Railroad bridges for the purpose of preventing careless conductors from losing their lives, as has sometimes happened, when standing or walking on the car, forgetful of the bridge. The apparatus consists of graduated springs projecting like arms on bars from the bridge, which if a person he standing on the car will grasp him in a moment and lay him flat upon the car to pass under the bridge. The invention is a humane one, and is worthy of a patent, to secure which the inventor has taken the usual measures.

Improvements in Ship Apparatus.

Mr. E. C. P. Andrews of East Boston, Mass., an old inventor, has lately made a splendid improvement in the construction of windlasses, and another on his improved steering apparatus. His late steering apparatus so well and favorably known, will at once be superseded by his improved one. The improvement consists in having a worm screw on the wheel shaft meshing into a cog wheel fixed upon a shaft at right angles to the wheel shaft, and to the extremities of which are attached universal joints, connected to cranks and shaklebars (one on each side,) extending to and secured to universal joints on, and near to the tiller head. The wheel therefore, the screw, wheel and the side levers exert a tremendous power in a compact space, to operate the tiller. It is an arrangement of parts, which by putting the helm *hard down*, it does not require at any time to be lashed, and on vessels, when short of hands, the helmsman can in an exigency, thus leave the wheel to give a strong pull, without any fear or trouble from the helm.

The other ship apparatus, is a compound windlass and horizontal capstan, and a new way of operating the windlass by a capstan placed on the deck above it. The windlass is divided into sections, one part can be coupled or uncoupled with the other at pleasure, and the horizontal capstans can be used in connection with, or without the windlass, just by coupling them together. The windlass (or it may be called two, for they are in sections and can be operated by the capstan above, singly or together) is worked by reciprocating rods and palls, which are moved up and down by inclined planes fixed around on the base of the capstan. Some of our best Sea Captains have expressed themselves highly pleased with these inventions, and they are about to be introduced into some of the newest and finest vessels in Boston and this City. Measures have been taken to secure a patent.

New Engine Governor.

Mr. James W. Chapman, an old inventor in Washington, Davis County, Ia. has made a new improvement in the Governor for engines, which may be denominated the "pendulum governor" and which has been highly recommended as a valuable invention. Its construction is very novel and it is represented to operate very beautiful and it is well worthy of attention. See advertisement in our advertising page.

New Cotton Press.

The Alabama Planter says that Mr. D. Mc Comb is the inventor of a Cotton Press which requires less than a horse power to reduce five hundred pounds of cotton to shipping size, and less than one hour's work of the horse in making fifty bales, or less than one minute to the bale.

[It is not in our power to explain the principle of this press or we would.

Machine for Letter Envelopes.

A patented machine has been put in operation in Birmingham, England, for the manufacture of Envelopes, the number produced by which, in complete form, is said to be astonishing. Supposing it to be turned by manual labor, one man, with the aid of three or four young girls or boys to gather the envelopes, would, it is calculated, by its means, be able to manufacture 30,000 to 35,000 in an ordinary working day, the paper being cut beforehand ; while an expert hand, in the ordinary way, exclusive of the cutting, cannot upon the average, make more than 2000 in the same manner as those in question, which have a device stamped upon them at the point where the seal is usually placed.

Artificial Leech.

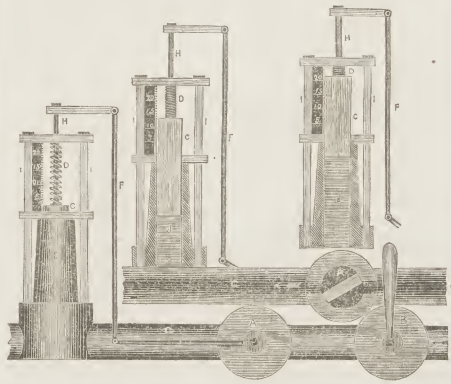
The Courier des Etats Unis, quoting from the Journal des Debats of Paris, describes an important discovery, which it says " is likely to be of the greatest service to humanity, and occupies at this moment the attention of the French scientific world. It is a mechanical leech (*sangsue mechanique*) which M. Alexander, civil engineer, already celebrated for his useful discoveries, has submitted to all the scientific bodies, which, after satisfactory trials, have caused this *sangsue* to be adopted in all the hospitals, after having proved not only the immense economy of its use, but, what is better, the decided advantage which it has over the natural leech, always repugnant to the patient, and sometimes dangerous.

The President of the French Republic has given orders for the supply of the apparatus in every community where it may be found serviceable by indigent patients."

[This artificial leech is described and illustrated in No. 41 this vol. Scientific American, and we must say that we think the scientific bodies of Paris are sometimes behind the lighthouse ; in this case they certainly are.

BAKER'S STEAM GOVERNOR.

Fig. 1. Fig. 2. Fig. 3.



This is a new Steam Governor, invented by T. Baker. Esq. of Stillwater, N. Y., who has taken measures to secure a patent for the same. The main feature of the improvement is its perfect controlling power, and being much cheaper than any other kind now in use. It is very simple in construction, and not likely to get out of repair. It is attached to the steam pipe leading from the shut off valve to the engine, being a small piston balanced by a spring, which rises and falls by the pressure of steam on the engine, opening and closing a valve, which regulates the quantity of steam, and therefore the velocity of the engine. The less power required the less steam given ; the more power, the more steam will be given, regulating the velocity to perfection.

Description.—Figures 1, 2 and 3 are sectional views, showing the operation of the Governor by the pressure of steam required to act upon the piston of the engine. A, Governor valve. B, shut off valve. C, small piston by which the steam operates the Governor valve, through the piston rod H, and connecting rod F. D, is a spiral spring to balance the pressure of the steam E, is the cylinder. G, the steam pipe ; and the graduated scale shows the pressure of steam on the piston. I, are rods to hold the parts together. J, density of steam in the cylinder of the Governor, being the same as that acting upon the piston of the engine.

Operation.—Suppose the piston of the Governor to be one inch, and the safety valve be placed at 25 pounds to the inch, (or whatever is the pressure graduated on the Governor,) the valve B, being open, and the piston of the Governor being at its greatest height, opening the Governor valve entirely, all the steam is then acting upon the engine, driving whatever machinery it is intended, at a certain velocity, fig. 2. Then if some of the machinery is detached, it is evident that the tendency of the engine is to run faster, the aperture being the same will lessen the pressure or density of the steam, by which the Governor will fall to the pressure required, as at fig. 3, closing the valve to suit the velocity. On attaching the machinery again the density will be increased, opening the valve accordingly.

New Rice Pounding Machine.

The Camden, S. C. Journal says that Colonel Bossard has made valuable improvements in machinery for pounding rice, which it describes as follows :—" This machine operates with a shaft of eight squares which is eighteen inches in diameter, in every alternate square there are fixed two lifters parallel to each other, placed far enough apart to pass up the interior sides of the pestle. The lifters are just thirteen inches long, when measured from the surface of the shaft outward, and in each of the other squares of the shaft, there is a single lifter of equal dimensions, placed in a central position to the former ones. Pinions are placed on the outer sides of the pestle, in horizontal position to the centre of the shaft, at which point the parallel lifters are in the revolving of the shaft to receive the pestle and bear it up while the single lifter entering a mortice in the centre of the pestle while ascending, receives its weight at the instant the parallel lifters are at the elevation required.

The instant the pestle falls into the mortar, say in a second of time, the pinions are again taken by a parallel lifter, and thus the process is continued producing four blows of the pestle to each entire revolution of the shaft.

Three lifters are therefore employed to each entire lift of the pestle ; producing in all, twelve lifters in the whole circumference of the shaft to each pestle."

[We do not know but this machine differs from all others, in all likelihood it does, or it would not be described as a new improvement, but the description given above conveys to our mind the exact idea of the old stamping mills.

Copper Type.

Foreign papers state that a Mr. Pettit, of Holborn, London, has discovered the power of making type, of infinite durability, from copper, at a less expense than that now produced from lead, and that a font of this type will last for years, and is far more beautiful than any in present use.

[The best types at present in use, are those which have a small amalgum of copper in them, and we believe that in the long run they will be found better than those of copper, just as it has been with the sheathing metal of ships—the pure copper does not answer so well as an alloy.

Preservation of Life from Wrecks.

Lieut. John Mc. Gowan has been appointed by the Secretary of the Treasury to superintend the establishment of the several stations on the sea coast between Little Egg Harbor and Cape May, authorized by the act of March 3d, 1849, for the prevention of wrecks, and for the saving of the crews and passengers of vessels when blown ashore Six stations are to be established within the sixty miles alluded to, each of which is to be furnished with surf boats and life cars, and lines, rockets and carronades.

The method to be adopted (says the Philadelphia Ledger,) in saving lives from wrecks is similar to that which has been successfully used on the coast of England, viz:—To throw lines on board the wreck either by means of rockets or by attaching them to balls fired from carronades. When this is accomplished the persons in danger can be brought on shore by means of the life cars, which are furnished with rings so that they can be hauled along the line to and from the wreck. They are made sufficiently large to contain two or three persons, with openings in the decks for the purpose of ventilation. The surf boats and life boats are both to be constructed of galvanized iron, and will be furnished with floats of India rubber, so that they cannot be capsized, no matter how heavy the surf may be. The rockets used in this service have heretofore been imported from England, but Mr. Samuel Jackson, the pyrotechnist of Philadelphia is about to manufacture some for the purpose of experimenting, which, it is expected, will be better than the foreign article.—Lieut. Mc. Gowan is acting in this matter in connection with the Board of Underwriters of this city.

Assaying Metals.

The assaying is the most curious and scientific of all the business in the mint. The melters take the gold dust, melt it, and cast it into a bar, when it is weighed accurately, and a piece is cut off for the assayer. He takes it, melts it with twice its weight of silver, and several times its weight of lead. It is melted in small cups made of bone ashes which absorb all the lead ; a large part of the silver is extracted by another process, and the sample is then rolled out to a thin shaving, coiled up, and put in a sort of glass vial called a mattrass, with some nitric acid. The matrasses are put in a furnace, and the acid is boiled some time, poured off, a new supply put in and boiled again. This is done several times, till the acid has extracted all the silver and other mineral substances leaving the sample pure gold. The sample is then weighed, and by the difference between the weight before assaying and after, the true value is found. All the silver over and above five pennyweights for each lot, is paid for by the mint as its true value. The gold, after it has been assayed, is melted, refined, and being mixed with its due proportion of alloy, is drawn into long strips (not unlike an iron hoop for a cask) the round pieces cut out with a sort of punch, each piece weighed and brought to right size and put into a stamping press, whence it comes forth a perfect coin.

Although gold will not dissolve in nitric acid, yet it soon dissolves in *aqua regia*, a mixture of nitric and muriatic acids. In this case gold becomes a transparent liquid.

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Contents:

(Illustrations are indicated by an Asterisk.)

TAPS AND THEIR CONSTRUCTION.

A good set of taps and dies is one of the most valuable properties in a machine shop, but the various forms adopted for them show that, sometimes, very little attention is given to the nature of the work required. The strain brought upon a screw thread is tremendous; in some places the lives of thousands of persons depend upon the fidelity with which the machinist has done his work; in any event, economy and good workmanship alike call for thoroughness. A discussion of the pitches proper for certain sizes of bolts is not necessary, as that question is pretty well settled now to the satisfaction of intelligent men; and if some unanimous action was held by those persons most interested on the question of adopting a standard, there would doubtless be very little further complaint made about uneven threads and fractional pitches. The office of a tap is to cut out certain parts of the iron and leave the others in relief; in plain terms, to form a thread by actually *cutting;* this is impossible with some taps, for, by the angles of the edges cutting is impossible; bruising would be a more correct term. Some roughly-made taps are cut with a chaser, and to complete the clumsy job are planed square on the sides. Such a tap is good for nothing but to raise a thread in soft metal, such as Babbitt-metal, lead and copper. It is not fit to use on steel or iron, because it does not cut its way, but squeezes the iron up into ridges. A thread of this kind has no strength, because the iron is crushed by the tap, and the fibers comprising it are twisted and torn by the passage of the tool. Taps are also made by cutting many grooves all around the circumference, which lead one way, like the teeth of a circular saw, only a little more rounded on the back. This is a good form for a tap that cuts in one direction only, or for a finishing or "plug" tap to run down, after a stouter one has formed the thread. The chief trouble with it is, that if the grooves are many in number, the edges of the thread or teeth break off and ruin the tool; this is certain to occur if the tap is turned backward; the threads will be shelled off like corn from a cob. Another form for a tap is to cut four grooves at equal distances up and down the body; these grooves are to be made with a round-nosed tool, and as the cut would be straight as the tool was fed down, the sides of the grooves must be run under, slightly, so that the teeth will be hooked, or hawk-billed to some extent; this form permits the tap to be used either way, backward or forward, without danger of breaking off the teeth or threads. Working a tap back and forth is an indispensable feature in tapping large holes, where the strength of the workman and the quality of the work render it improper to force the tap straight through. Of course, when the tap is large, the number of grooves must be increased, and for very small ones even less than four may answer.

All things considered, we prefer this form of construction over any other. The object in making a tap is to obtain a tool that will do the work well and be durable; these ends are attained in the plan mentioned. We have seen a number of "fancy" taps at various times, which would have answered for surgical operations, so keenly did they cut. Of this variety, one made like a half-round rimmer, or cut clear down to the center, performed very well, except that it had this defect—it made the thread larger at the top than below, for it was impossible to steady it when first entered.

We have also remarked the mischievous practice of using chasers on taps; such a tool is not needed and is obviously a damage instead of a benefit to the work in hand. Every tap should be finished in the lathe by the same tool that cut it, as it can be, by good workmen. No man can carry a chaser over a tap as steadily as a slide rest can move, and a little divergence of the chaser to one side or the other makes the thread uneven and irregular, or, as machinists call it, a "drunken thread." Tempering taps and dies has a very great effect upon the durability and execution of them; no matter how well the machinist performs his part, if the hardening is defective the time has been wasted. This subject will be discussed at some future period.

THE NATURE OF SCIENCE.

Many persons entertain the most erroneous notions respecting the character of science. They think and speak of it as if it were some mysterious intellectual subtlety, revealed to the few and denied to the many. Such ideas may have come down from the olden times when all men believed sincerely in mysterious powers communicated through incantations and charms by deities and spirits who had power over "the earth, the water, the air and fire." The ancient alchemists and astrologers kept what they called "science" secret, as something too sacred to be communicated to the mass of men; hence they taught favorite disciples only. Many of these old plodders in the paths of science were sincere in their peculiar views, but it must be admitted that too many of them employed secret discoveries in chemistry for the purpose of astounding their unlearned fellow-men by their curious experiments, in order to obtain power over them. Astronomy also, such as a superior knowledge of eclipses and the movements of the heavenly bodies, was employed in a sort of quack manner to obtain power by foretelling events. Many of these impostors were very like the learned Irish prophet set forth in Hibernian verse, who knew every event before it happened after it took place. Science simply means knowledge of any subject—its nature and operation; and whoever knows most of any branch of knowledge, and can apply it in the best manner, is the most scientific in that branch. Knowledge means truth, as there can be no knowledge based upon fiction. A man, however, may perform a mechanical or chemical operation in a very superior manner and yet not be scientific. A parrot can speak, but a parrot is not a linguist, nor has it any knowledge of the science of language. A man, to be scientific, should know "the why and the wherefore of the operations he performs." Mathematics is a science, but great powers of calculation afford no evidence of scientific acquisition. Some individuals, not much above the reach of idiocy, have been great calculators. Yet mathematics as a science requires a high grade of intellect and great persistency of mental effort to master. Science may be said to be a collection of facts and experience accurately arranged and properly understood. Chemistry, for example, is an art and a science, because it is a collection of the results of careful experiments. Geology is simply a collection of facts carefully arranged. A theory is not a science; it is simply the explanation of phenomena. Every science has, according to Max Muller, first an empirical stage, in which facts are gathered and analyzed. After this they are classified or arranged, and according to the inductive method, theory explains the purpose or plan of the whole.

THE POWER OF STEAM.

If water were heated in a confined space to 1,212° Fah., it would flash instaneously into steam when exposed to the atmosphere. In the use of steam as a substitute for powder for discharging projectiles in the famous steam gun of Perkins, the water was heated to 1,212° Fah., then conveyed so as to act upon the shot with all its concentrated expansive energy. Below a temperature of 1212° Fah., the evaporation of heated water is not instantaneous, and it gradually decreases until it reaches the freezing point. Specific heat is the measure of the intensity of its force, just as the intensity of mechanical force is measured by the pressure of water forced into a vessel by the hydrostatic press. It is not the quantity of water or size of the pump that forms a measure for the intensity of mechanical force, but the pressure. A strong vessel may be burst by a pump forcing water through a tube no larger than the stem of a tobacco pipe, just as surely as with one ten inches in diameter. The force which is indicated by the pressure of a vapor or gas, is the true measure of the energy capable of producing motion or work in an engine, or in discharging projectiles from guns. Heat is undoubtedly held to be the force, but it is only available in producing motion as a motive power when applied to an expansive agent.

A remarkable instance of the destructive energy of pure steam as an expansive agent is related in the report for September last, of Mr. Fletcher, the chief engineer of the Manchester (England) Association, for the prevention of steam boiler explosions. A large hay-stack boiler, intended for a chemical establishment, was being tested with steam, at 50 lbs. pressure on the inch, not produced from water in the boiler and heated by a furnace underneath, but supplied by a pipe from another boiler. The boiler to be tested was laid upon its side, and six men were engaged upon it caulking its seams, when it exploded, the bottom being blown out entire and thrown upon the roof of an adjacent building at a distance of thirteen yards; and four of the men engaged upon it were thrown to a distance of forty yards, upon the roof of another building, one of them being instantly killed. We have never heard of another such explosion. In this case the pressure of steam was but fifty pounds on the square inch, and no extra heat or pressure could be supplied; yet a great boiler, the plates of which were from seven-sixteenths to half an inch in thickness throughout, was torn in pieces, and some of the parts weighing several hundred pounds, thrown to a considerable distance. The boiler was 11 feet in hight, 8 feet 9 inches in breadth at the base, and 7 feet 9 inches at the waist. When it is taken into consideration that at 50 lbs. pressure on the inch, this amounts to 7,200 lbs. on the square foot, some idea may be formed of the great amount of force that was confined in that boiler.

CURRENCY—MONEY.

The currency of the world includes many kinds of money. Gold, silver, copper, iron, in coins or by weight—stamped leather, stamped paper, wooden tallies—shells of various kinds—pieces of silk or strips of cotton-cloth, of a fixed size and quality—are, or have been, all in use among mankind as forms of currency, as convenient or negotiable forms or representatives of property. Many of these kinds of money are simultaneously in use in the same country. Gold, silver, copper and stamped paper co-exist as different forms of money in the currency of Europe and America; gold, silver, copper and shells in India; silver, copper and pieces of silk in China; copper, cotton-strips, shells and the silver dollar in various parts of Africa. Sparta had a currency of iron. There is ample variety in the substances out of which money is made—metal, shells, cloth, leather, paper; and moreover, every country shapes the substances, or such of them as it uses, in a different form from the others. The generic quality which constitutes money is manifestly something extrinsic to these substances—some quality superimposed upon or attributed to them, or at least to the shape they assume as currency. Gold coin is not money in China, it is silver. In England silver is not a legal tender, save to the extent of forty shillings in payment of debt. Above that amount it is simply bullion: it is no more money than brass or tin or platinum is. Half a dozen kinds of silver coin are current at Shanghai—five kinds of the dollar and the Indian rupee; but a few years ago only one of these coins, the old Spanish Carolus dollar, was a legal tender. This state of matters was remedied in the autumn of 1855.

The States of Europe have in some respects almost become a commonwealth, but the currency of one State will not circulate in another. The English sovereign, indeed, is readily taken in payment in some

parts of the Continent; but even it does not circulate —no more than Napoleons will circulate in England. Although the coins of one country will not circulate in another, gold and silver are recognized as the raw material of money all over Europe and America, and are valued accordingly; but paper money out of its own country, may be said to carry no value at all. Bank of England notes, indeed, which have the same prestige over all other kinds of paper money which the sovereign has over other coins, may be used without difficulty in Paris, and at no greater charge than is made for converting sovereigns and half-crowns into French money. But even in the same country there is often a limitation to the circulation of some kinds of money. The sovereign, though a legal tender and readily accepted when offered in payment, hardly circulates in Scotland—the Scotch preferring paper money, as the most safe and convenient form of currency, and also as the cheapest. Scotch bank-notes, again, are not a legal tender in other parts of the kingdom. In England, too, there are many provincial banks, the notes of each of which circulate readily in the districts where the issuing banks are situated, but are looked upon with suspicion elsewhere; they will not circulate widely, simply because they are a kind of money with which the public at large are not familiar, and in which, accordingly, they have no confidence.

The English provincial banks are very much like the State banks in America. Of all forms of money silver is the most widely recognized, and, therefore, holds the first place in the currency of the world. It is the standard money of China, with a population of 400,000,000, and of India, with a population of 160,000,000. It is also recognized as money all over Europe and America. Gold, at present, holds the second place in the currency of the world. But unless new silver mines are found, the recent discovery of the gold deposits in California and Australia will make gold more abundant and more cheap, and tend to wrest all supremacy from silver and give it to gold—by inducing the European and American States to make all the necessary additions to the metallic portion of their currency in the latter metal. Next in amount of circulation to gold and silver money, comes paper, issued under legal restrictions. In England, France, Austria and Russia, the amount of paper money in circulation is very large, but not so large in proportion, at present, as in the United States. Paper money has the widest range in value of all kinds of money. It is also the cheapest and most portable. In the form of bills of exchange—which, however, are not a legal tender—paper money plays the most important part of all, in carrying on the commerce of the world. It may also be used as a substitute for all kind of money—if under proper restrictions, with perfect safety and great economy. And in modern times it has always been had recourse to, with more or less prudence and advantage, by nations who in exceptional times find themselves in a temporary deficiency of metallic money. It should never be forgotten that money is a mere medium for the exchange of useful and necessary products.

REBEL SUBMARINE BATTERY.

The rebels have built a new submarine vessel at Mobile, with the intention of sinking and destroying any of our ships that may be lying there. The battery contains nothing new in its construction or principle, but is the same thing that has been used here several times for more peaceful purposes. Many years ago a submarine vessel, similar in all respects except the shape, to the rebel affair, was built at one of the iron-works on the East river, this city. The rebel battery sinks by letting water into certain compartments, and rises again by pumping it out; she has a horizontal projecting flange at the bow; which can be turned up or down so as to deflect the course of the vessel to the surface or the bottom of the channel; and she has also pumps for compressing air, so that the crew can remain below the surface for some time. The battery is also to carry torpedoes united by a chain, which are to be carried under the ship to be destroyed and there set free, when it is supposed they will be light enough to rise to the surface and hug the ship to be blown up—a most transparent absurdity. The rebel vessel has also a screw, which is driven by an engine as usual. This ship may accomplish the destruction of some of our vessels, and is in any case a disagreeable customer which should be got rid of as soon as possible.

OF PRECIOUS STONES.

From time immemorial jewels have been in request for all purposes, but principally for personal adornment. For some, diamonds have superior attractions; to others the gems of lesser note, such as sapphire, ruby, emerald, beryl, topaz, &c., have charms which cannot be excelled. In this, as in most other matters of similar importance, individual taste is probably the guide in selection; and while a love of display may incite some to become the possessors of costly stones, there are more who are attracted solely by the intrinsic beauty and fire of the particular jewels they affect.

It is well known that diamonds of extraordinary size and water are highly valued, chiefly in proportion to their colorlessness and freedom from specks or flaws; some of these stones—the first of all jewels—are in the possession of royal families, and are handed down in regular succession to the occupants of the thrones. Diamonds are the hardest of all known substances; they are the adamant spoken of in Scripture, and possess a brilliancy and luster unapproachable by other jewels. So much has already been made public concerning diamonds that we do not propose to pursue the subject further, but will say a few words upon some other less valuable but yet beautiful gems.

The bright red stone so much worn of late years, "carbuncle," is in fact a garnet, or a variety of that stone. To the ancients this stone was well known, and from them it received the name of "carbunculus;" it has been found in rivers abroad and is cut in various styles. The color is blood, cherry, or brownish-red, but has often a bluish or violet tinge; the red garnet can be attacked by a file. It becomes electric with friction and grows darker when heated, but resumes its color when cool. Under the blow-pipe it fusesinto a black pebble. Its chemical constituents are silica, alumina and the protoxides of iron and manganese. Different names are given to the various shades of color seen in this stone, such as the Syrian garuet, when the gem is of a blood-red hue; Ceylonese garnet, when of a wine-red or orange-yellow; and Vermeille, when of a deep shade of orange-yellow. The precious garnet is of a brownish-red color, and transparent; it is found in Brazil, India, Greenland, Sweden, Norway and Spain; and nearer home, in North Carolina, Massachusetts, Georgia and New Hampshire; also in the Tahgonic range, Berkshire county, Mass.; it has likewise been found in Marlborough and Chesterfield, Mass. The garnet is cut on a leaden disk, like the face-plate of a lathe, either by the aid of emery or its own powder, and is polished with rotten stone and the oil of vitriol, on a block-tin plate. The technical name of the oval form in which the garnet is cut, is called "cabochon." The stone is also cut like a brilliant—that is, with angles or facets on its face and bottom. Very often garnets are excavated or hollowed out on the bottom: in this way they are rendered much more brilliant; they are also backed with gold or violet foil, in order to highten their beauty. Small garnets are worked up on a large scale in factories; they are sometimes drilled with a diamond at the rate of one hundred and fifty per day. One man can cut about thirty garnets "brilliant" in a day; the polishing is done by women and children. The garnet is usually set in rings, necklaces, pins, &c., and even snuff-boxes are made from large and fine specimens, obtained in Greenland, Syria, &c. The value of the stone is determined by the size and color, as also the degree of perfection belonging to it. On account of its deep color it must be cut thin, and any stone of this variety which retains its high color without being cut too thin is valued highly and ranks with the sapphire. They are generally sold at wholesale by the pound, at from $8 to $10, containing from sixty to four hundred stones; a set of one thousand of the best selected garnets being worth about $60.

THE FORTHCOMING SANITARY FAIR.

The good work which the loyal people of the country have taken in hand—recruiting the finances of the Sanitary Commission by a series of magnificent fairs—is progressing rapidly in this city and Brooklyn; it having been determined to get up one in each city, which shall surpass all previous efforts of the kind made elsewhere. The principal objects of attraction are contributed free of cost, and are to be sold at the highest cash price possible to obtain. A patriotic inventor, who has one of the neatest clothes-dryers we have seen in a long time, and which is shortly to be illustrated in the Scientific American, has suggested that he intends to give half a dozen of his dryers to the fair; and he thinks that we should call the attention of inventors generally to the subject, so that all who feel disposed might send in their contributions in time. We do so, cheerfully; and we suggest that those of our readers who have articles to donate for the benefit of this most laudable object should forward them to this office (*charges prepaid,* and marked "For the Sanitary Fair"), whence they will be delivered to the proper authorities at the right time. Machines and utensils of whatever nature will be received; but those intended for domestic use or household purposes are highly desirable. We hope to see a hearty response to this appeal.

NATURE OF SUBSTANCES FOR GIVING LIGHT.

All the most common substances which are employed for producing artificial light are called hydrocarbons, being chiefly composed of hydrogen and carbon. In wax, tallow, olive and sperm oils these two substances exist in such harmonious proportions that they may be burned as tapers, or in common lamps and yield a very beautiful light. These are usually called natural agents of illumination, because they are not manufactured products. Spirit fluids, coal oil, and gas are manufactured products, because they are the result of chemical processes. In making gas from coal or oil, the hydrogen in these substances is very volatile, and is driven off by heat, but at its moment of liberation it lifts some carbon with it, and the gas thus yielded is carburetted hydrogen, its chief illuminating principle being called olefiant gas. When bituminous coal is roasted in a retort, its volatile products, after being purified from sulphur and ammonia, form the gas which is conveyed through pipes in our streets and houses. Coal is employed exclusively in all our large cities for making gas, but upon a small scale, for villages, and single buildings, such as factories, petroleum may be more convenient, and equally as cheap, but this can only be determined by experience, and we have very little of this to guide us in coming to a just conclusion respecting its employment for such purposes. There is one peculiarity connected with artificial light which is not very generally known. The white light of gas is produced by the combustion of solid particles of carbon. This is noticeable in burning common gas, which is composed of hydrogen and carbon. The former produces intense heat with a blue flame and feeble light. It simply raises the temperature of the minute particles of carbon in the gas to a glowing white heat, and these produce the light. In burning wax, tallow, common oil and petroleum, the very same phenomena take place—the highly heated particles of carbon in there substances produce the white light. The electric light, which is the most brilliant known, next to the sun, is produced by the power of an electric current raising carbon points to a most intense white heat. The Drummond light is produced by burning hydrogen and oxygen gases upon some substance, such as a piece of fine chalk, which being raised to a glowing white heat, reflects it in light.

Extraordinary Ocean Steaming.—The late extraordinary passage of the *City of New York,* Captain Kennedy, has created quite a sensation in nautical circles, and the abstract of her log, which was posted in the Exchange Newsroom yesterday, was a continual source of interest. The distances traversed each day were so great, and withal so regular, that we consider them worthy to be placed before our readers. From the day she left Sandy Hook (the 12th) until noon the following day, she steamed 254 miles; on the 14th, 330 miles; 15th, 320 miles; 16th, 306 miles; 17th, 311 miles; 18th, 321 miles; 19th, 321 miles; 20th, 318 miles; 21st, to Fastnel Rock. 254 miles, arriving at Queenstown at 11:30 in the morning of that day. The mean time of the run from New York to Queenstown is eight days nineteen hours, being the fastest ever made by any screw steamer. Great interest exists as to what time the *Scotia* will be reported off Queenstown; and many confident opinions were expressed that she would arrive there in the course of Thursday (to-morrow).—*Liverpool Mercury, Dec. 22.*

draw largely for their supplies of coffee on the resources of the Brazils; and as it is an article of necessity for them when in a normal state of peace and prosperity, it is easy to foresee that they will become, as formerly, extensive purchasers, and pay any price for what they require. But as there is for the present a limit to the supply, the natural result will be, in all probability, that the prices of coffee in the European markets will run up to a far higher figure than even the high quotations of the present day.—*London Grocer.*

THE UNITED STATES MINT AND COINAGE.

The "Annual Report of the United States Mint and its Branches," for the year ending June 1863, has just been published. From it we learn that the amount of bullion received during the year was gold, $23,149,495 41; silver, $1,674,605 90; total, $24,824,-101 31. Deducting the bars made at one branch of the Mint, and deposited at another for coinage, the amount is $23,701,837 31. The coinage for the same period has been gold coin, $20,695,852; fine gold bars, $1,949,877 90; silver coins, $390,204 42; cents coined, $478,450; number of pieces of all denominations of coin, $51,980,575; total coinage, $24,688,-477 12.

The amount of bullion received and coined at the Mint and its branches is shown to have been: At Philadelphia, gold deposits, $3,401,374 55; gold coined, $3,184,892; fine gold bars, $156,039 74; silver deposits and purchases, $386,189 73; silver coined, $358,217 80; silver bars, $6,897 83; cents coined, $478 450. The total deposits of gold and silver have been $3,787,564 28. Total coinage, $4,184,-497 37. Numbers of pieces, 49,108,402.

At the Branch Mint, San Francisco, the gold deposits were $17,936,014 26; gold coined, $17,510,-960; silver deposits and purchases, $962,879 95; silver coined, $815,875; silver bars, $224,763 68. Total coinage of gold and silver, $18,551,598 68; number of pieces, 2,872,173.

The Assay Office in New York received during the year $1,812,106 60 in gold bullion; and in silver, $325,536 22. Fine gold bars stamped at that office, 1,488; value, $1,793,838 16; silver bars, 1,916; value, $158,542 91; total value of gold and silver bullion $264,137 82.

The branch mint established at Denver, Colorado, Territory, was not opened until the close of last September. Its operations are, for the present, confined to melting, refining, assaying and stamping bullion, which is returned to the depositor bearing the Government stamp of weight and fineness. Idaho is now yielding large quantities of very fine gold; and the gold workings in Oregon and Washington Territory are on the increase. Arizona is yielding both gold and silver and the natural supplies are unlimited.

Up to the close of the present fiscal year there have been 164,011,000 nickle cents coined; and the profits arising from these have paid all the expenses of coinage and distribution. It is recommended (in the Report) that the use of such a valuable metal as nickel may be dispensed with, and its place supplied by tin and zinc. The Report states that all of the silver which has gone into the three, five, and perhaps ten cent pieces, might have been reserved for larger coin, and the circulating value of these pieces have not been lessened thereby. Aluminum can be advantageously substituted for silver in small change, and thereby supplant the present postal currency. The Report urges that the mottoes upon our coinage should be "expressive of a national reliance upon divine protection, and a distinct and unequivocal national recognition of the divine sovereignty."

COMPOSITION OF THE ATMOSPHERE---VALLEY OF DEATH.

The atmosphere that we breathe in its ordinary healthy condition is composed of the following constituents:—Oxygen, 20·61 per cent.; nitrogen, 77·95 per cent.; carbonic acid, ·04 per cent.; watery vapor, 1·40 per cent. Now, the oxygen is the important ingredient which supports life, the nitrogen being only a diluter of the oxygen; the carbonic acid gas is in scarcely appreciable quantity, and that is produced by the process of respiration and combustion on the surface of the earth, by which immense quantities are continually being formed; nevertheless, the proportionate quantity scarcely varies, for this very gas, which is exceedingly destructive to animal life, is, as all know, the principal food upon which the vegetable world lives, absorbing this carbonic acid from the air, and decomposing it, retaining its carbon and giving off the oxygen, which is just what animals require. The destructive agency of this gas—viz: carbonic acid—on animal life is well exemplified in certain places where large quantities are evolved from the earth, the most striking instance being the celebrated valley of Java, which, if any animal enters, he never leaves. The following is an interesting account of this valley, given by an eye-witness:—

We took with us two dogs and some fowls to try experiments in this poisonous hollow. On arriving at the foot of the mountain we dismounted and scrambled up the side, about a quarter of a mile, holding on by the branches of trees. When within a few yards of the valley we experienced a strong, nauseous, suffocating smell, but on coming close to its edge this disagreeable odor left us. The valley appeared to be about half a mile in circumference, oval, and the depth from thirty to thirty-five feet; the bottom quite flat; no vegetation; strewed with some very large (apparently) river stones, and the whole covered with skeletons of human beings, tigers, pigs, deer, peacocks, and all sorts of birds. We could not perceive any vapor or any opening in the ground, which last appeared to us to be of a hard sandy substance. It was now proposed by one of the party to enter the valley, but at the spot where we were this was difficult, at least for me, as one false step would have brought us to eternity, seeing no assistance could be given. We lighted our cigars, and, with the assistance of a bamboo, we went down within eighteen feet of the bottom. Here we did not experience any difficulty in breathing, but an offensive nauseous smell annoyed us. We now fastened a dog to the end of a bamboo and gave him electrical a fowl, which died in a few and a half. We threw in another, which died before touching the ground. During these experiments we experienced a heavy shower of rain; but we were so interested by the awful sight before us that we did not care for getting wet. On the opposite side, near a large stone, was the skeleton of a human being, who must have perished on his back, with his right hand under his head. From being exposed to the weather, the bones were bleached as white as ivory. I was anxious to procure this skeleton, but an attempt to get it would have been madness.

BOILING FOOD FOR HOGS.

At a recent meeting of the Farmers' Club, Prof. Mapes made the following remarks in regard to boiling food for hogs:—"The proof of the saving of food by boiling has been given here, and, as it can be stated in very few words, we may as well have it. Mr. Mason was a watchmaker in Camden, N, J., and among other fancies he liked to keep hogs. He has his hog pen just back of his shop, so that he could sit at his window and watch his hogs. Every spring he bought some pigs and fed them through the season. Just opposite to Mr. Mason was the store of Mr. Van Arsdale, and every pound of food that Mr. Mason gave to his pigs he bought at this store. At the end of six months he got his bill from Mr. Van Arsdale, and he always slaughtered his hogs at that time, so that he knew exactly how much his pork cost. For several years it figured up about 13 cents per pound. At length some one advised him to boil his corn. He accordingly got a large kettle and cooked all the food which he fed to his pigs. Then his pork cost him 4¼ cents per pound! We also had the experience of Mr. Campbell, which was about the same as Mr. Mason's. Henry Elsworth made some extensive experiments in the same thing, and his statement is that 30 pounds of raw corn make as much pork as 13 pounds of boiled corn."

FOOD FOR CATTLE.

The high price of fresh butcher meat in our cities, should induce many farmers living near such large markets to devote more attention to the raising of sheep and cattle. It is not the province of every farm to produce this fatted meat. Some farms are, to all intents and purposes, breeding farms; others are fatting farms; but both are engaged in their respective ways to provide for the public wants—the public larder. To keep up a successional supply of nutritions food on every farm is no easy task. Throughout the summer, autumn, and winter, the difficulty is not great. The grass pastures and grazing seeds make ample provision for the stock during the summer and autumn, and the root crops for the winter. It is only in the early spring months and autumn that any difficulty arises, *i. e.* the interim between roots and grass and grass and roots. Now to provide against this uncertainty there are several common matters of business to be adopted and attended to. The culture of cabbage, carrots and turnips should be adopted for feed, and given as such till near midsummer. In average seasons a supply of cabbage of one variety or other may, with care and judgment, be maintained throughout the whole year. The large Drumhead cabbage and early varieties would form the great feature in cabbage culture, and if the cabbage was carefully cut and carried to the animals, the stalks on putting out new shoots would yield a fresh supply in early spring.

FOREIGN SCIENTIFIC MISCELLANY.

It is easy enough to condense steam, and to burn the visible particles of carbon which we term smoke—the latter operation can indeed always be carried out by a skillful fireman; but the gaseous products of combustion have never been completely consumed in any instance that we know of. It is therefore thought that, in the underground railroad in London, air may yet be used for propelling the trains, similar to that used by the Pneumatic Dispatch Company. The use of air for such purposes is a subject worthy of patient investigation.

There is a project on foot to establish a street railway in Dublin. The line is designed to be carried on an ornamental viaduct, the arches of which are to be made available as warehouses. In a wide street like Sackville street, Dublin, such a plan is practicable; but in Broadway it could not be carried out without doing immense damage to property. This scheme exploded here some years ago.

In the year 1863 there were 1404 fires in the city of London, only 39 of which resulted in the total destruction of the buildings. For the whole number of fires there are 112 alleged different causes: 227 originated from candles, 117 from flues, 26 from matches, 107 from sparks, 100 from gas, 24 from hot ashes, 31 from smoking tobacco, 41 from airing linen, 39 from children playing with fire and matches. During the same year there were 361 fires in New York and 300 in Paris.

The great Mont Cenis tunnel through the Alpine Pass is making slow but steady progress. Boring machines were set to work in 1861. During the past year cutting was done at the rate of 4 feet 5 inches per day, so that at the present rate of working it will require nearly 15 years to complete the job! The rock in which the excavation is at present being made is exceedingly difficult to work, having what the engineers have termed an "infelicitous stratification."

The *Great Eastern* is advertised for sale by order of the mortgagees. She is 680 feet long, 82 feet in breadth, and 57 feet deep. She can accommodate 1,086 passengers, and stows 10,000 tuns of coal. Her engines have an effective horse-power of 8,000 horses. She has also fresh-water condensers capable of supplying 4,000 gallons per day. She is a splendid specimen of naval architecture, though an unfortunate speculation to her projectors. This vessel was recently put up at auction in England, but only £50,000 being offered, she was bid in by her present owners.

When all the bridges across the Thames at London are complete they will form a sight unrivalled in the world for magnificence. Two splendid new bridges are now in course of construction, one of which is designed to accommodate four lines of rails, with side ways for passenger traffic. Within the limits of London we believe there are now seven fine bridges and one tunnel. The shipping of the Thames is all "below" the old London Bridge.

The incline of the Bohore Ghaut range, recently completed, is one of the most remarkable achievements of railway engineering in East India. The incline is nearly 16 miles long, with a total rise of 1831 feet, the two steepest gradients being 1 in 37 feet, and 1 in 40. It includes 25 tunnels and 8 viaducts, with 1,250,000 cubic yards of embankment, and has occupied seven years in construction.

Glass bushes or steps are being used for bearings for shafts, to some extent, in England; the glass being protected at the ends by metal flanges attached to the pedestals with papier maché or india-rubber interposed.

Nuts that do not set squarely on their bottoms soon strip the threads off the bolts.