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THE
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☞See advertisement on last page.

Poetry.

THE REIGN OF PEACE.

BY R. MACFARLANE.

There's a field ripe for the sickle,
Waving with the golden grain,
But 'tis not the field of battle
Reeking with the gory slain.

There is seen no charging column,
Cheering to the deadly strife,
Nor the bugle sings to waken,
Man to seek his brother's life.

Tis a field of moral grandeur,
Bounded not by earth or sea,
But the world with all its fulness,
Marching onward to be free.

Long the cloud of darkness slumber'd
On old Tiber's sculptur'd shore,
But a brighter day is dawning,
Rome now speaks like Rome of yore.

We would not in iron phalanx,
See her legions march again,
Nor her cohorts red with carnage,
On the bloody battle plain.

But with free bold thoughts of freedom,
Striking shackles from the mind—
Shedding gleams of social glory,
Round the hearth of every hind.

Silent be the warrior's clarion,
Hanging in the martial hall,
And the chained in soul and body,
Free from bonds of tyrant thrall.

Now upon her Alpine summits,
Gleams the glorious torch of truth,
And her eagle on dove's pinions,
Cleaves the sky renewed in youth.

And upon the gale are floating.
Songs of peace from England's strand,
France too blending sweet her accents,
In the moral chorus grand.

We too raise the heartfelt offering,
Lord, let wars and troubles cease,
Turn the sword into the ploughshare,
'Stablish universal peace.

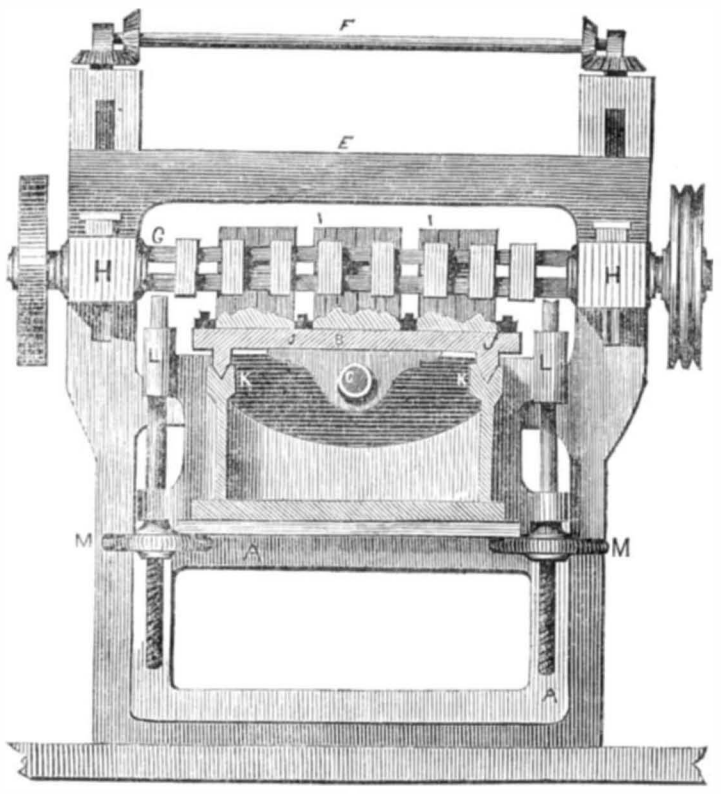
THE POOR MAN.

God grant the poor man constant health,
To toil for daily bread;
He has no earthly wealth,
And must be clothed and fed,
The proud of place will grind his face,
The hard withhold his hire—
Great Parent? heed his piteous case,
And guard his cottage fire.

Thou carest for the little birds
That own no earthly lord—
Thou carest for the flocks and herds
That crop the flowery swards—
Hear'st the young ravens when they cry
Heedst the young lions roar,
And will regard the poor man's sigh,
And meek petition more.

Then grant the poor man constant health
And strength for daily toil.
With sweet content the dearest wealth,
Of weary mortal moil.
And grant him power to rule his mind!
To own affections sway,
And nurse the charities designed
To smooth his pilgrim way.

MACHINE FOR WORKING MOULDINGS.



This invention consists of certain mechanical arrangements for producing architectural, cabinet, or other mouldings. Our engraving represents an end elevation of the machine, which, with the aid of the letters of reference will be readily understood. A, is a cast iron bed piece with V grooves, and constructed in some respects similar to planing machines now in use for planing iron, &c. having a driving-screw placed in the centre of the bed piece, so as to give slow alternating motion to the travelling table, when power is applied thereto. The ordinary reversing gear is employed, the construction of which is well known; B, is the bed or traversing table which is shown in section, for the purpose of more clearly representing the various arrangements in detail, such as the mode of fastening the planks of wood to the table by the means of lateral clamps inserted in their sides; J,J, the position of the driving screws together with the inverted V rail, and standards, K, K; C, is the driving-screw, also shewn in section, and which passes longitudinally through the machine from end to end, in gear with the bed or table, by a nut, or any other suitable means usually applied to such purposes when reversing. There are two vertical standards, supporting in bearings the bridge E, with the cutter bars, or mandrils, attached. Each of these standards contain a screw of the same pitch, gearing into, and attached to the bridge, so that by turning the horizontal bar F, both screws are made to revolve at the same rate, and the bridge is thereby caused to ascend and descend, as may be required; G, is a horizontal bar, which revolves rapidly in its bearings, H,H, and carries a number of cutters or chisels, each having its cutting edge so shaped as to produce the required mouldings or any parts thereof, which can be produced by revolving cutters on a horizontal shaft. Motion is communicated to this axis by bands, from an over-head power-wheel. Its course, after leaving the power-wheel, is first directed down to a tightning pulley, which is clamped on to a part of the standard frame on one side, having a vertical slot therein for the purpose of enabling the operators at any time to obtain the requisite tension; it then passes up and over the upper half of one groove of the cutter-pulley, down again at the back, and over the driving pulley, it is then pressed in at the starting point to make the endless band. I,I, are the chisels or cutters, which are mounted upon the horizontal shaft G, which admit of being arranged and set up in any convenient or necessary form and number suitable to the production of compound mortises; each chisel being of the most simple form and construction, having its cutting-edge shaped to form the numerous mouldings, either simple or compound, by either using them separately or in conjunction with each other, as the case may require; L,L, are bosses cast on the standard on each side, and on each end, on a level with the surface line of the bed or table B. These bosses are bored to receive a vertical rod through each, the lower end of which has a thread run upon it, in gear with a nut and a hand-wheel, M,M, whilst the upper end forms a shackle or forked head, (but which is not shown in the above view,) it being readily understood to constitute merely a single bearing to carry a horizontal shaft from one side of the machine to the other transversely, on which elastic friction rollers are mounted: the object of such bearings being that when a different moulding is to be substituted for the one in the course of formation, the shaft containing the corresponding-shaped friction rollers by the mouldings last completed may easily be exchanged for that of any other, by removing it from the forked head in which it revolves. At the back of the bridge E, a horizontal and vertical slide is fixed, having a slot parallel to the bed of the machine, for the purpose of carrying two traversing cutter heads; affixed to which, through the intervention of revolving mandrils, are the cutters which work at any angle to the bed or table, as well as on the same surface level, as the cutters I.I. The cutters thus referred to receive their direct motion from the power-wheel over head, independantly of other parts of the machine, by an endless rope or chain passing round the wheel mounted in the cutter heads in such a manner that when this part of the apparatus is not required to work in connection with the other, it can be thrown out of gear at any time, even while the running mouldings are in action.

This is the invention of Mr. T. B. Jordan, of Surrey, England, and in connection with the above description the inventor uses the bevelled cone wheels to produce rotary motion to give full effect to the cutting tools I, I, by the motion of the vertical mandril working in a broad beam the cutter head while the work to be cut is held down nicely by vulcanized india rubber rollers The principle feature in the invention is the revolving horizontal bar whereby like borders made of type, the inventor is enabled to make compound and various patterns by simple chisels by their transposition.

RAIL ROAD NEWS.

Railroads in the New England States.

By a careful enumeration of the railroads in the New England States it is ascertained that there are 2,420 miles finished, or in progress of construction, December, 1847. Most of the unfinished roads, it is presumed, will be completed by the end of 1848.

The following is about the number of miles of railroad in each of the above six States, containing altogether an area of 61,784 square miles:—

States.	Miles Railroads.	Area sq. miles.
Maine, -	300	30,000
New Hampshire,	475	9,194
Vermont, - -	370	9,056
Massachusetts, -	900	7,500
Connecticut, -	300	4,674
Rhode Island, -	75	1,360

The capital already invested in railroads in the New England States, is supposed to be not less than $50,000,000.

Railway Items.

The Providence Rail Road is doing a good business. The receipts have averaged five hundred dollars per day for passengers alone. The Vermont and Canada Railroad will form a connection with the Ogdensburg Railroad at Rouses Point. A steam Pile Driver, is erected at Hamilton Canada, for the construction of wharves in connection with the Great Western Railroad. The receipts of the Mad River and Erie Railroad for the past year have been $117,848,71 being an increase over the previous year of $84,471, more than twenty thousand passengers passed over it without any injurious accident to any one. It is calculated that it will take $85,000,000 to finish all the railways that are in progress in the United States.

Western Railroad.

We learn that the receipts on this road, for the year ending Dec. 1st, exceeded those of the last year by $365,000—or $1,000 per diem throughout the whole period. The gross amount of receipts was $1,218,000.

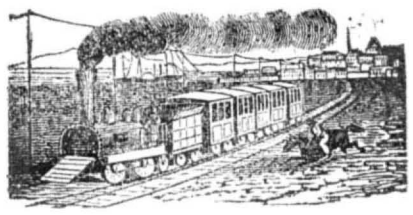
Lines of Telegraph in Contemplation.

From Macon to Florida,—Macon to Tennessee, 1,000; St. Louis to New Orleans, 1,000, total 2,000 miles.

As many of these have two wires, the length of wire may be safely estimated as exceeding 3,900 miles. The completion of the southern route is expected in January; from Buffalo to Milwaukie' next spring.

The old Indian house at Deerfield, Mass., an interesting relic of the Indian War, that survived the conflagration of the village of Deerfield, in 1704, has become so dilapidated that its present owner, Mr. Hoyt, has to remove it for the purpose of erecting a new house on its site. Inspired by a proper spirit, the citizens of the village have appointed a committee to take measures to secure the preservation of the relic, by purchasing it and removing it to a new location, and having it kept in repair.

It is reported that William Chambers of Edinburgh is the author of Vestiges of the History of Creation.



Singular and Terrible Explosion.

On the 13th ult., the sloop of war, Constitution, belonging to Hayti, blew up in the harbor of Port au Prince The event occurred at about 2 P M. in the harbor, where the sloop was lying at anchor. The day was calm with no signs of a thunderstorm, and it is impossible to attribute the explosion to a stroke of lightning There had also been no recent firing on board of the sloop, to give occasion for opening the gun-room, which is said to have been most carefully secured against fire; and the keys of the powder magazine were in the keeping of the captain who at the time was on shore. Only seven persons out of four hundred were saved. The vessel had on board besides her officers and crew, a large number of prisoners, some one of whom was supposed to have committed the act of firing the magazine.

No Learning without Preparation.

No man can learn when he has not preparation for learning, however near to his eyes is the object. A chemist may tell his most precious secrets to a carpenter, and he shall never be the wiser; the secrets he would not utter to a chemist for an estate. God screens us evermore from premature ideas. Our eyes are holden that we cannot see things that stare us in the face, until the hour arrives that the mind is ripened; then we behold them, and the time when we saw them not, is like a dream.—*Emerson.*

New and Useful Invention.

The Peterboro, N Y. Messenger says that D. Jewett has planned a good thing for blowing logs. It is a screw with a hole just large enough for the fire to communicate with the powder, through the middle. This being screwed into the hole after the powder is placed, confines it so closely that there is no escape. Every charge splits its log."

This invention is not entirely new. We knew one of the same kind, nearly, to have been in existence five years ago.

A Southern Cotton Factory.

In the De Kalb, S. C. cotton factory there 1680 spindles, 20 30 inch carding engines, 40 looms, and it manufactures about 10,000 yards of osnaburgs and 2000 pounds yarn per week. It employs upwards of ninety hands, and pays between $800 and $900 a month for wages.—About one half the operatives are black, and partly owned by the establishment The cotton consumed in a month amounts to 80 bales

Death from a Rattlesnake Bite.

On the evening of the 9th inst. Dr. Wainright of this city, lost his life by the bite of a rattlesnake, which had been sent him as a present. So rapid was the effect of the poison and so inveterate, that although he had the part of his hand where the bite was inflicted almost instantly cut out, yet he died in seven hours after the occurrence.

Holden's Dollar Magazine.

We would call the attention of our readers to the advertisement of this new monthly, in another column. From the list of contributors which are to be employed on this work, and the enterprising habits of the publisher, we predict for it a wide circulation.

Union Magazine.

This is the most splendid periodical published in America, has made its appearance for January and is a superb number.

It commences a new volume with the new year and we predict for it a wider circulation, than any monthly before has ever attained. Its engravings are entirely original, being designed expressly for the work, and no publication either American or foreign can boast of a more talented list of contributors, than can the publishers of the "Union."

For sale by all the periodical dealers.

The Canadian Parliament has been dissolved by Lord Elgin. A new election will soon take place.

Fire Engine Trial.

A trial of superiority lately took place at St. Louis, Mo., between the St. Louis engine, built in Boston, the Union, built in Philadelphia, and the Phœnix, built in St, Louis. The Union was decided to be the victor. The estimate of superiority, however, was not based on a right method of calculation. The only true way to test the capacity of a fire engine, is by the quantity of water it throws in a given number of strokes, and the height to which it can force a stream of a certain diameter.

Memory.

There is good reason for believing that the spirit when leaving its house of clay, the memory of all its past thoughts and the acts of all the past life, will be revived. How unspeakably important then, that no thought be entained, nor act committed, inconsistent with the requisitions of the High and Holy One.—*Channing.*

Terrific Leap.

A boy attached to the apartment above our office, fell down the trap to the basement five stories, on last Friday evening. He was somewhat stunned by the fall; but he had no sooner recovered than he blasphemed the name of God, as we heard him doing not one minute before he fell.

Accident.

On Friday last at Mr. Hovey's Pyrotechnical establishment, Mass. a small quantity of composition for "stars" accidentally ignited by which three workmen were injured, and one of whom named Tainter has since died. Of the other two, Bailey and Sanderson, the latter is not seriously injured. The accident was probably occasioned by the sparks being driven down the funnel of the stove by high wind. One wooden building was nearly destroyed.

Dreadful Shipwreck.

One of the most disasterous shipwrecks that ever occurred was that of the Stephen Whitney, a splendid New York Packet, bound to Liverpool. She was wrecked on the coast of Ireland on the 10th of October last, and ninety-one perished. The ship went to pieces in ten minutes after she struck.

A Giant Ship.

The largest ship ever built in the United States, has been recently finished at Portsmouth, N. H. at a cost of 100,000 dollars, for Messrs. D. & A. Kingsland, of this city and intended to run as a packet between here and Liverpool She is a 3 decker, 1800 tons capacity, carpenter's measurement—that is about 300 tons more than any merchant vesssl heretofore built in the United States. Her length on deck, is 186 feet, with 41 feet beam, and 34 feet 6 inches hold. The knees, between decks, are of white oak, and mould 32 inches in the throat, and 11 1-2 inches in the side. She is named the Columbus.

Death of Chancellor Kent.

The able and learned Ex-Chancellor Kent, died in this city on Monday, the 13th inst.—His remains were carried to the grave attended by a most imposing procession of all classes.

Coolness.

Frederick the Great, after a very terrible engagement asked his officers—"Who behaved the most intrepidly during the engagement?" The preference was given to himself. "You are all mistaken," replied the King, "the boldest fellow was a fifer, whom I passed twenty times during the contest, and he did not vary a note during the whole time."

Old Sciences.

A four wheeled carriage with brown ornaments and iron wheels, has been recently discovered in a three story house dug out at Pompeii

It is our opinion that when the Roman Empire was overthrown by the Goths, that the Romans were nearly as far advanced in civilization as we are at the present moment.

"Revelling in the halls of the Montezumas," has been discovered by some of the volunteers to be sleeping on the top of a hard table with one blanket under and another over them. They feelingly declare that the fleas and musquitoes have all the "fun" of the thing.

Improved Lock.

Mr. S. L. Chase, of Lockport, N. Y has received letters patent for a new combination lock for safes, &c. There are an infinite number of changes on it and the manner in which they are arranged prevents the possibility of it ever being unlocked by a stranger who keeps no record of its change of combination. There is one thing also which renders it peculiarly valuable, to wit the arrangement of the changing couplings. There is no pressure can be exerted on them and thus it cannot be picked, an important consideration and justly pronounced so, by able lockmakers. This invention of Mr. Chase will no donbt receive that public attention which it deserves. We have seen the lock and can use no other terms than those of praise, regarding its qualities.

Grand Literary Entertainment.

On Thursday evening, the 23d of this month there will be a grand literary feast given by the Washington Literary and Scientific Association, in the Broadway Tabernacle. The proceeds of the entertainment are for the benefit of the Washington Monument Association and the relief of the suffering poor of Ireland.

The Hon. Robert H. Morris will preside on the occasion and deliver an address. Professor Whitney will give delineations of the styles of great American orators. William Wallace, Esq. will deliver an oration. The Governor Island Band will perform some splendid pieces. A number of other exercises also will vary the evening's entertainment, which undoubtedly will be one of the richest treats of the season to those who can appreciate the refined and noble. Major Gen. Gaines and Colonel Burnett and a number of officers just returned from Mexico, are to be present.

The tickets are only 25 cents. Exercises to commence at 7 o'clock P. M. There will no doubt be a perfect rush to enjoy this intellectual, patriotic and generous entertainment.

Fine Indian Painting.

Captain Eastman of Fort Snelling, has lately executed a painting of a group collected round an Indian funeral scaffold, which for life and finish is said to be a perfect gem of the art. A man must be born a painter.

Guessing for Hogs.

At Jamaica, L. I., on Wednesday last, two large hogs were guessed for—50 cents a guess. The fortunate guesser had his choice of the two, the next best guesser taking his leavings. This is a new item in Long Island sports.

Mr. Judd, a clergyman at Augusta, Me., on Thanksgiving day, instead of reading the Governor's Proclamation and preaching a Thanksgiving sermon, read the whole book of Lamentations.

It is said that one great English Railway contractor, has more than £7,000,000 of contracts incomplete at this moment; and though 20,000 workmen have recently been discharged from his employ, he yet pays $50,000 a week in wages alone.

A paper was read before the New York Historical Society on Monday, 6th inst., by Albert Gallatin wherein he stated that E. B. Whitney inventor of the Cotton Gin, had prolonged slavery in the United States. Many have quite the contrary opinion, and that but for this inventor the slave trade itself would never have been declared piracy.

A duel was fought at Newark, N. J. on last Thursday by Mr. Valentine a lawyer and Mr. H. W. Herbert a gentleman of the literati. The best way of settling these disputes is to box it out and then there is nothing lost but claret, and there is nothing left but black eyes and fools noses.

A number of Officers of the New York regiment have returned to this city from Mexico. Some walk on crutches and all bear the marks of "War's rude sport."

We have been shown a copy of No. 2, of Eubank's Hydraulic's and without any inducements to give it a puff, we sincerely recommend it to every mechanic.

One gentleman in Licking county, Ohio. it is stated, makes annually $100,000 worth of cheese.

I never knew a personal braggart, who was not either a coward, knave or fool.—*Johnson.*

Egotists are the most ignorant of men.—*Lesler.*

Every profession in itself and every trade requireth a lifetime to be master of. It is an old and a trite saying, "Jack of all trades and master of none." He that would be eminent in one thing must pursue it with enthusiasm and never tire.—*Bentham.*

By recent West India papers we learn that the Lieut Governor had left for England, and that a Mr. James Lang Bremmer, a colored gentleman, has assumed the reins of government. It is said that he is the first of his race who has had the honor of representing the Sovereign as the Governor of a British Colony.

The Chilicothe Advertiser will find by looking on the last page of No. 41, vol. 2 Scientific American, that the paper to which it gives credit for the article "Curiosities of Art," is not the parent of it. It was taken from our columns, along with most of the other scientific matter which appears in that paper.

Old Rough and Ready was received in New Orleans on the third inst., in the most magnificent manner. On the next day the Legislature of Louisiana presented him with a most splendid sword He is now with his family enjoying for a brief space domestic repose.

The citizens of Ithaca, Seneca County, N. Y. have remonstrated against the Rochester and Auburn Rail Road Company making an embankment across the lake, which would cause the water to overflow the low grounds in the vicinity.

Prof. Agassiz classifies his marine animals by the scales and a number of papers have actually declared that his whole system was built upon this theory leaving out the whole tribe of the unscaled.

When you are addressing blockheads, be as grandiloquent as possible, for the less such people understand the more profound they think you are. In a vacuum, recollect, feathers fall as fast as guineas.

The widow of Napoleon, her for whom he renounced his beloved Josephine, has got married again. Her husband is Count Bombelles one of her ministers.

A Railroad is to be constructed at Capetown, South Africa, for a distance of 7 miles. The expense is estimated to be 24,000 dollars per mile.

Mr. Walker Secretary of the Treasury recommends in his report that laborers for wages in all industrial enterprise and pursuits should get a share in the profits realized therefrom in addition to their own stipulated weekly wages.

Messrs. Rae and Deese two officers of the Hudson Bay Company, have fully settled the question of a North West passage, and also of the improbability of its ever being navigated.

The officers of the New York Regiments, who have just returned from Mexico, held a levee on Wednesday in the Governor's Room, City Hall.

A man's temperature is generally about 98 Fahrenheit. A scientific friend observes, to increase his temperature, all that is necessary is to pull his nose.

It is said that when the road to the City of Mexico is opened, upwards of twenty millions of dollars worth of merchandise will be thrown into the interior of Mexico.

The Cherokee Legislature have voted a pension of $300 per annum to the widow of George Guess, the inventor of the Cherokee alphabet

The statue of Dr. Chalmers for the new college at Edinburgh will cost $1500, of which $1000 is already raised.

An Odd Fellows Lodge has been opened in the city of Mexico.

New Orleans has decreased in population 17,000 since 1846.

Distillation and Culture of Peppermint.

The mint for this purpose differs from spear mint. The peppermint has a larger stock and a larger leaf, and in rich ground it will grow from two to two and a half feet high.

The principal expense in its cultivation is in procuring the roots for the first year's crop, and the chief labor is in the first year's cultivation. The ground should be rich, and should be carefully ploughed in the fall or spring, so as to be entirely free from grass and weeds.

It is cultivated from the roots planted in spring, in drills from eighteen inches to two feet apart, and should be cultivated carefully with the hoe until after midsummer, at which time it sends forth runners like the strawberry, and covers the entire space planted, sending forth innumerable branches and stocks. It is cut in the fall and distilled into oil The roots remaining in the ground during the winter, vegetate in the spring, and, covering the entire space planted, require no cultivation the second year. and so also of the third year.—By the end of the third year the ground becomes so exhausted, and so infested with grass and weeds that it becomes necessary to plough up the roots and plant fresh grounds. The crop is exhausting to the land. If the seasons are favorable, and the lands rich, the crop the first year will yield mint that will produce from ten to thirty pounds to the acre. The second year from twenty five to forty pounds, and the third year from ten to thirty pounds per acre. The process of distilling the mint into oil is simply by placing it in an ordinary still boiler with water, and fire below. The evaporation is condensed in a retort, and the oil being of less specific gravity than water, floats on the surface. The water in the retort is permitted to eseape by a tube beneath the surface of the water in the retort, on which the oil floats. The process of purifying it from all extraneous matter, is to filtrate the oil through clear white paper.

The Late Disaster on Lake Michigan.

There is no longer room for doubt that the loss of the Phoenix together with the lives of more than 350 human beings was caused by the most culpable and flagrant neglect of the Second Engineer.—Tne fireman, after the boat had been out about an hour or two, if we may credit the statements of the Clerk to the Editor of the Milwaukie Sentinel, discovered the pumps did not work, and immediately reported the fact to the second Engineer, who was at the time, in charge oi the engine. He did not seem to pay much attention to it and refused to call up the First Engineer. Soon after the fireman again went to the Second Engineer telling him that the pumps did not work, and the water in the boilers was very low. Before any steps had been taken to remedy the difficulty, and about 4 A.M. it was discocovered that the boilers, having become red hot on top, had commuicated fire to the boat. The firemən in the hold immediately took active steps to stop the fire but the progress of the flames was so rapid that they were soon driven out of the hold. The alarm had now became general—the passengers were all aroused, lines formed on deck, and water passed up in buckets, and poured upon the flames but it soon became apparent that all attempts to check the conflagration were utterly unavailing, and both passengers and crew began to think of only of how they would save their lives.

If the above is true, we hope it will be a warning to all engineers not to be above advice. The best are liable to err, but the wise with a confidence in themselves should never despise the opinions of others.

A Hint.

We are in the possession of the city of Mexico—of the oldest and best established mint in the Republic. We therefore suggest that dies of the United States coin be immediately sent out, and and a coinage of dollars be commenced, similar to those of the United States with the sole difference of the word Mexico, at the base of the figure of Liberty. Let our brave soldiers be paid with this coin, which will find its way into Europe and the United States, and whatever may be the result of the war, it will be preserved in every cabinet of coins as a memorial of the conquest.

Declaration of Principles, of the Reformed Association of Inventors.

The following is the declaration of principles by Clinton Roosevelt of this city, for his Inventor's Association.

We declare this truth as incontrovertable.—That the great distinguishing characteristic of civilized society, consists in the arts and sciences revealed by genius. We hold, therefore that laws made or administered by statesmen or politicians which tend to discourage the efforts of genius, tend to depress in an equal degree, the power, intelligence, virtue and refinement of any couuntry where the counsels of politicians jealous of Inventors' rights prevail.

2. We hold by the common consent of the world, that it is labor mental and manual, and time spent, which give value to all things which mankind appropriate. We conclude, therefore, and hold that the inventor who bestows his time and labor of mind and body or capital (which is accumulated labor) has the same right to the unconditional enjoyment and disposal of the fruits of his labor, as any landlord has to his property.

3. We declare that it the Inventor is to be dispossesssed, by laws made by the majority, not Inventors, for their own benefit, the majority is bound by the equal principles of justice to make free to Inventors the property of landlords who may have had possession thereof for a sufficient time to remunerate themselves by the rents or occupations of the same, for the labor and expense of improving.

4. We admit that the greatest good of the greatest number for the longest time should be the object of legislation, but we repudiate the idea that injustice, or unequal laws, can, in the end, be to the greatest good of the greatest number.

5, We allow that when the public good requires that any invention should be made common property, no inventor should, and no true patriot will, stand in the way of the progress of arts and sciences more than a land-lord may when required to allow a railroad to pass through his premises; but as the constitution forbids that private property should be taken "for public use without just compensation," so should it forbid patent property from being taken for public use without an equivalent.

6. The fact that the constitution has declared that patents should be granted to Inventors for "limited periods," can not destroy any natural right. We hold, therefore that the claim for compensation exists in its full force at the termination of fourteen years for private patent property, though made public by the constitution at the termination of that "limited period," just as much as if it were any other species of property.

7. The idea thnt the public have the right of "eminent domain" in the undiscovered regions of genius, is true only when the public appropriate the wealth necessary to make conquests therein, and prepay the Inventor or discoverer for the time and labor he may devote, as well as for unsuccessful as successfut experiments, since even failures by proving what may not be done, tend to render more certain what may be accomplished, and is the only condition on which inventors can possibly make valuable discoveries, even in their own behalf.

8. Inventors' patent rights being of the same nature as authors' copy right, Inventors have by nature the same right as to secure patents as authors have to secure copy rights without let or hindrance by any, and at no more expense than may be necesssary to record the specification and claim, in a proper public office.

9. As the laws of God are based on principles which extend through all time unchanged by any subterfuges of momentary expediency, therefore we hold those statesmen and Inventors to be most noble, who ask nothing but what is right and submit to nothing wrong, in hope of any present advantages, from injustice, ignorance, or indolence in power.

10. Inventors have the same right to associate for mutual protection, that any other class of citizens enjoy, and as it is a law of Providence that what men do not value sufficiently to labor to gain, or guard when gained, that shall they not possess, it is incumbent on every inventor to unite with his class, to concentrate a point, the power of all to enlighten public sentiment and awaken in the National Legislature, the disposition to enact equal laws by which the fruits of inventors' labors may be secured to the owners on the foregoing principles.

Timber and Wood Lands.

The following observations of the Newburyport Herald, should be carefully studied by all our readers, as there is much truth und force of reasoning contained in them.

Sufficient attention is not paid to the preservation of the forests of the United States, and it is highly probable that the next generation will suddenly find timber very scarce and high. The waste of timber is very great in all the wooded regions, and the demand promises before many years to exceed the supply. In England for centuries past, some of the largest fortunes have been derived from timber plantations, and the surest fortune which a man could leave to his children, has been by preparing an extensive timber plantation, which, though returniug him nothing during his life, has been in many instances a mine of wealth to his children. Many of the distinguished nobility of that country have practised that system for many successive generations. And to great advantage We believe many of our citizens could in no way more surely leave a valuable inheritance to their children, than by purchasing some of the cheap lands in the country, accessible to railways and rivers, and making thereon a plantation of timber trees which would be attended with but trifling expense.

The waste of pine in the forests of Maine, the scarcity and high price of hard wood timber in many parts of the country is well known. In other parts of the country less bountifully supplied, the destruction is also going on. Great Britain is cutting off all the forests in Canada and New Brunswick; most of our Western States are thinly wooded, and even Western New York now depends upon Canada for a supply of building lumber. In the peninsula of Michigan, the best pine region in the whole West, the Buffalo papers inform us that the waste is almost incredible.

A dozen or more saw-mills are there erected in the midst of the government lands, and are there unmolested using up the government timber astonishingly fast. They saw nothing but the best logs, leaving all others which may be felled out to rot on the ground and they work night and day in order to make as much as possible before any demand is made upon them by the government for the stumpage. In addition to all other uses, the demand for fuel for the steamers of the West, is making sad havoc with the forests along the rivers. A careful calculation of a skillful engineer has made this demand equal to 10,220,000 cords per annum.

New Mode of Scouring Blankets, &c.

We heard of a singular mode of scouring blankets, carpets, &c., while in the country a short time ago Some dozen persons, more or less of both sexes, meet at a neighbor's house, and having arranged certain prelimmaries, seat themselves on the floor with their *stockingless* feet opposite each other. The articles to be scoured, after being well saturated with soap suds, are then placed between their feet, and the *fulling* operation then commences by kicking and pulling at a terrible rate, until the parties are satisfied.—*Germantown Gazette.*

We had supposed that modern ingenuity had spread universally over this little of the greatest of countries, and were as surprised to hear of the above custom as was our friend, the editor of the Gazette. This kind of Fulling Mill, however, is an old one. It is the way in which the Celts of Ireland, Wales, Scotland and Spain fulled their cloth in days of yore, and it isstill practised among some of the oriental tribes.

Volcanoes.

A fact of great interest, says Prof. Silliman has been proved by the borings for artesian wells in the suburbs of Paris, namely, that as we go towards the centre of the earth, the temperature increases at the rate of about one degree for every fifty feet. That the whole interior portion of the earth, or at least a great part of it, is an igneous portion of melted rock, agitated by violent winds, though I dare not affirm it, is still rendered highly probable by the phenomenons of volcanoes. The facts connected with their eruptions have been ascertained and placed beyond disqute. How then are they to be accounted for? The theory prevalent some years since, that they are caused by the combustion of immense coal-beds, is perfectly puerile, and is entirely abandoned. All the coal in the world would never afford fuel enough for a single capital exhibition of Vesuvius. We must look higher than this; and I have little doubt that the whole rests on the action of electric and galvanic principles, which are constantly in the earth. We know that when certain metals are brought together, powerful electric action is evolved, and a light is produced, superior even in effulgence to the splendor of the sun. Now if a small arrangement produces such results, what may we not expect from the combinations of these immense beds of metal to be found in the earth? Here we have the key to all the grand phenomena of volcanic action An illustration on a small scale may be seen in an instrument called the thermo-electric battery, made of zink, bismuth, and antimony, packed in a box and varnished.—In this. heat is evolved below, while the top is cold; and here we have the very case of the volcano, while in the interior a fiery ocean is heaving its surges, while its peak is capped with everlasting snows.

Boiling Heat.

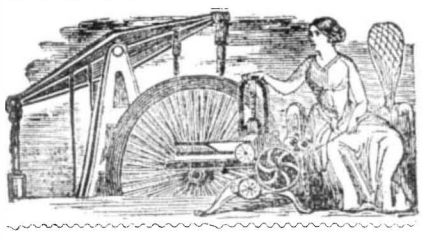
It has been generally supposed that 212° of Fahrenheit was the uniform boiling heat. Recent investigations prove the incorrectness of this supposition. Experiments lately made by Monsieur Douni, a Belgian philosopher, prove that water, when totally deprived of air, does not boil before it has been raised to 260°. It may boil at any point between 212° and 269°, according to the amount of air of which it has been deprived. These experiments, taken in connection with phenomena observed at the Geysers, in Iceland, are attracting the attention of scientific men in Europe.—*Ex.*

Whoever penned the above was surely not aware that water boils in a vacuum far below 212°, and on the top of the Andes Humboldt found that water boiled at such a low degree of temperature, that it could not cook beef.—So the great traveller had to roast it On sugar plantations all the cane juice is now boiled in vacuo at a great saving in comparison with boiling in the open atmosphere. 212 Fahrenheit is only the degree of boiling heat for water at the level of the sea, and thus water boils just according to the pressure of the atmosphere, either at 212, 200 or 180°.—Ed.

A Female Farmer.

The second premium for the best cultivated farm, in Litchfield Co. Ct., was awarded the past season to Mrs. Vesta Hawkins, of Watertown. This farm contains 150 acres. It has been under Mrs H's. management for the last ten years. The committee of examination say:—"It is divided the present season into twenty-two acres of meadow, three and a half of corn, six of oats, one and a half of rye, two of buckwheat, a half acre of potatoes seven acres of wood land and the residue of pasture land. The produce of the farm for the farm for the present season is estimated as follows: fifty tons, of hay, two hundred bushels of corn, one hundred and thirty-three shocks of oats, and one hundred and fifty bushels of potatoes. The stock kept on it this season consists of 26 head, including six calves raised this season, two horses and 56 sheep. This farm is conveniently laid out in small fields, and fences mostly of rails, all in good repair, and together with the building present a neat and tidy appearance—*Cultivator.*

At Augusta, Me. a block of eighteen brick stores three and four stories high, are to be erected next spring besides more or less wooden ones. Fifty dwelling houses have been built the present season, and there will probably be more than this erected during next year.



New Inventions.

Eureka Cotton Gin.

Henry Clark, Esq. of Eufaula, Alabama, has invented a new Cotton Gin, which is destined to work a great revolution in the cleaning of cotton in a superior manner. There are no saws like those in common use. It picks all kinds of cotton from the seed with as little injury to the fibre, as if it was picked by the fingers and it does the work expeditiously. We forbear to give a minute description of it at present, as we shall probably be able to present an engraving of it in some future number, but this much we can say regarding the manner in which it does its work, that we have now a sample of common cotton picked by it, and we venture to assert that no person has seen the same kind of cotton, as well picked by any other machine. Measures have been taken to secure a patent, and we have no doubt but this machine will be another tribute to the inventive genius of the South, which seems to be roused up this year into wonderful activity, as the many patents granted for the Southern States abundantly testify.

Street Sweeping Machine.

Mr. C. S. Bishop, of Easton, Pa., has invented a machine for sweeping streets. It is so constructed as to sweep along the street carrying up all the dirt into a wagon. In fact it is simply a wagon street cleaning machine, which by the simple motion of itself through the street will sweep up and carry off all the dirt far speedier and better than can be done by hand. Such a machine is certainly much wanted in this city. On a rainy day all our public streets look more like Sloughs of Despond than thoroughfares of the mistress city of a great republic. We shall probably be able to present an engraving and description of this machine at some future period.

Improved Cider Mill.

Mr. Daniel Williams, of Buckram, L. I. has invented a new and useful improvement in Cider Mills, for which he has taken measures to secure a patent. The improvement we are informed consists in the manner in which the apples are squeezed, or pressed, which is altogether different from those in common use. It can be applied to a horse power, is portable, can be carried into any orchard, set up, make all the apples into cider, and be carried easily about from place to place. Their cost of construction is said to be much less than that of the common mills.

New Mop Handle.

We have received a model of one of the most convenient and neat mop handles that was ever sent to bless the good housewife.—It is the invention of Ubridge Webber, of Gardiner, Maine, whose name is prolific with invention. By the most simple contrivance of a spiral spring the lips of the handle can open like the click of the telegraph and the mop can be taken out and wrung and put in again, without the use of a screw or a string or any thing of the kind to fasten it. It is a most useful and simple invention, and for which the inventor has taken measures to secure a patent, which will no doubt bring a handsome return, as it really deserves.

An Improved Railroad Brake.

Mr. John Layhae, an ingenious mechanic of Baltimore, Md, has invented and patented an improvement in the railroad brake. Mr. Layhae's brake is so arranged, that as soon as the engine is checked, the buffer spring of each car causes it to clamp the wheels tightly, while by a backward motion in the engine the brakes are all relieved and the train can be immediately impelled backward, out of the way of danger. No matter how great its length it is said that it can be reversed as easily and almost as soon as the simple engine.

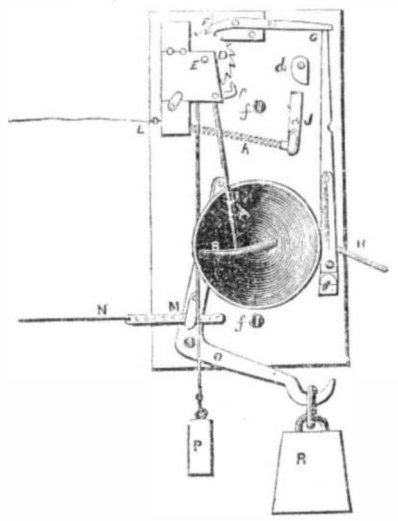
Carriage Bow Spring.

C. S. Woolson of Cleveland Ohio, is the inventor of a most beautiful spring for carriages and other light vehicles. By the manner in which it is constructed the weight of the carriage body is brought to bear entirely upon the axle near the wheel, thereby avoiding the strain upon the centre of the axle, By this invention a light strong and cheap carriage is obtained. The motion of the vehicle with this spring is said to be perfect. These springs are now manufactured by the inventor at the above place

Suspender Buckles.

Mr. Wm. Scarlett, of Newark, N. J., has invented a machine for making suspender buckles. The machine is driven by steam-power. The end of a coil of wire, wound upon the reel, being placed in its jaws, it continues to feed itself, and drops into a receiving box about 30 bows for buckles in a minute, each completely bent, pierced and ornamented. The bars of the buckles are cut and pierced ready to receive the tongues by a still more simple and rapid process, the tongues are then fitted sharpened and fastened, and the complete buckles are thrown into a revolving barrel of sawdust, which absorbs the grease and cleans them—when they are more perfectly washed in muriatic acid, and finished by dipping them into a pot of melted tin, and which gives them a thin silvery looking coating. They are then counted and packed for the market. The labor which is very light is almost wholly performed by children. The ingenious inventor is about to apply his principle to making all varieties of buckles.

Burglar and Fire Alarm.



The above is an engraving of this invention, spoken of in our last number. The apparatus is fastened on a square block of wood and attached to any part of the house most convenient. Its purpose is to arouse the inmates of a dwelling by the alarm of a bell, which is operated upon by a hammer by the dropping of the weight P, in the following manner. D, is a rack wheel, on which is connected an escapement C, fixed on a pendulum hammer B, and connected with a small axle between D and E, which is not seen.—Round this axle is wound the cord which suspends P. Now if P was descending, it will easily be perceived that the hammer would be playing on the concave bell or rather gong, A, just in the same manner as the escapement of a clock and as if the weight of the pendulum struck a bell at every vibration. To make this a fire alarm all that is necessary is simply a clamp to hold fast the rack wheel D, and which clamp can be ungeared by the expansion of some connecting metal. F, then is this clamp, represented now as geared into the ratchet wheel by G, a perpendicular rod, both of which are kept connected ready for operation by a small bar *d*, which by a mistake of the engraver is turned upside down. N, is a metallic wire of a very expansive metal which when expanded by a very little heat pushes G out of gear with F, and the ratchet wheel being relieved from the clamp F, the weight P descends and the hammer plays on the alarm bell. It will be observed that the weight R, is suspended upon a crooked lever, and connected with N, (for holding it tight,) in the manner represented at M.—This weighted lever is geared unto G, passing through it at H. The whole of this arrangement then will be perceived to be nicely balanced for operation, but by the least expansion (pressure,) at M, the weight R acts as an assistant to ungear G with F, and set the escapement in motion, thus performing two offices.

Burglar Alarm.—The whole is geared for operation as for the fire alarm, and the clamp ungeared with the ratchet wheel by striking G, which is done by a spring attached to J door which, when the door is opened, pulls L, attached to I by the spiral spring K. There is an arrangement connected with the Burglar Alarm not represented in this engraving.—The connection is coupled or uncoupled with the opening of a door, in a very simple manner, so that no inconvenience is experienced by opening and shutting the door in business hours. The invention is simple and good and ought to receive the attention, especially of business men. See last number of the Scientific American for business information

Cottrell's Progressive Bridge.

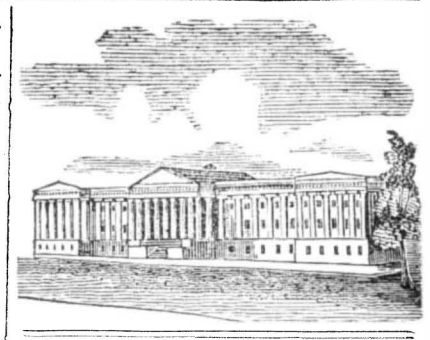
Ar. Albert Cottrell, of Newport, R. I., has taken out a patent for an improved system of Bridge building, and he offers to build bridges over any river on this continent, independent of the water, upon philosophic principles — He says : " My rule for the proportion is to extract the square root of one half the distance of the width of the river, in feet, for the vertical height of the solid lever at the line of transposition ; and then progress those propositions into open space. I need not say that I can proportion a bridge to span with ease and efficiency, with the solid progressive levers, any river in this country, for prices much, very much below any other plan of building. For example :—Let it be required to build a bridge over the Bristol Ferry, a distance of 5000 feet, or nearly one mile. What would be the vertical height of the two opposite levers at the line of transposition, to meet in the middle of the bay ? Answer—50 feet. I therefore want one hundred courses of timber of 6 by 12, each course projecting 25 feet in front of each other to reach the middle of the river. The cost of the bridge depends on the proportions. A bridge, however, can be built over Bristol Ferry, for carriage travel, of 6 by 12 timber, for $125,000.—But for a railroad bridge I would raise my proportions to a fourth power, which would require a lever 100 feet high, with 12 by 12 timber for the stretching course, and 25 feet for the projection. This would cost $250,000. In this plan of bridge building, during the progression over the stream, the last stick which is projected on the extreme end of the lever, is the first to break if power sufficient be applied, and the first which comes off from the abutment is the last to break. This is the unalterable rule and law of geometrical progression, as is applied to an independent progressive system of practical bridge building, adapted to the increasing wants of the people to span with ease, majesty and splendor the various deep and mighty rivers of the globe."

Important Discovery.

A communication of engineers, who were required by the Secretary of the Treasury to examine into the operation of, and report upon the utility of an apparatus for supplying fresh water to boilers in marine steam navigation. After giving the result of the experiment. says :—

" With the ordinary method, the level of water in a boiler, is constantly varying from one or both of the following causes, viz., the quantity of the water blown off. or the particular extent of opening the feed pump and neglect of the blow off valve, involves the burning or explosion of the boiler. With the new method, these operations are set aside ; thus, blowing off, is unnecessary, and the supply to the boiler being first obtained from it, the transit being immediate and the communication incapable of restriction, for if the condensed water were not taken off by the feed pump, the condenser would choak and become inoperative, there can be no decrease in the level of the water, other than that arising from leaks of water and steam. Further the use of fresh water in a boiler will extend the terms of its duration from three to five years, to seven and nine,"

The Bangor Whig says that Mr. E. Sargent, of that place has invented a new brake for railroad cars, which is so powerful that a brakeman can bring all the wheels to a dead stop almost in an instant.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Dec 4, 1847.

To Curtis Wooster, of Philadelphia, Penn., for improvement in gauges used in finishing spiral Hand Rails. Patented Dec. 4, 1847.

To Elias Hall, of Persia, New York, for improvement in self-acting Cheese Presses.—Patented Dec. 4, 1847.

To George Pollock, of New York City, for improvement in Registers for Furnaces. Patented Dec. 4, 1847.

To Richard Albert Tilghman of Philadelphia, Penn., for improvement in decomposing alkaline and other salts. Patented Dec. 4, 1847. Ante-dated Feb 1, 1847.

To Richard Albert Tilghman, of Philadelphia, Penn., for improvement in decomposing Potash-Felspar, for obtaining certain salts.—Patented Dec. 4, 1847. Antedated Feb. 1, 1847.

To Reuben Cormitt, of Georgetown, Missouri, for improvement in connecting rods, pitmans, &c. Patented Dec. 4, 1847.

To Nathan Sawyer, of Baltimore, for improvement in Brick Presses. Patented Dec. 4, 1847.

To Harvey B. Nash, of Kingsbury, New York, for improvement in Bedstead Fastenings. Patented Dec. 4, 1847.

To Joseph Tuers, of Jersey City, N J., for improvement in Boats for sailing. Patented Dec. 4, 1847.

DESIGN.

To D. F. Goodhue, and Charles Guild, of Cincinnati, Ohio. for Design for Stove Plates. Patented Dec. 4, 1847.

INVENTOR'S CLAIMS.

Fish Hooks.

By Job Johnson, of Brooklyn, N. Y. improvment in the Fish Hook. Patented August 21 1847. Claim.—I do not claim to have invented the common fish Hook, as that is well known and in general use, but what I do claim as new and of my own invention and desire to secure by Letters Patent of the United States, is the original application of the stock or frame piece, the original application of the helicle contractable spring, together with the original constructive arrangement of these parts, for these purposes conjointly with a crooked and barbed dart, acting through the cock pin, trigger lever, and contractile helicle spring, to strike the fish, or animal by disengaging the dart from the trigger, through the combined action of the changeable hook with and upon the foregoing parts, the whole constructively arranged and combined to strike the fish or animal with the dart at the instant of the fish or animal biting at, or touching the bate on the hook, the whole effected without any action of the line, substantially as described and shewn. I also claim the application of the guard ring to prevent the user from injury by the dart accidentally disengaging while setting the bate for use.

Fish Hooks.

By Stanton Pendleton, of New Haven, Connecticut. Improvement in Fish Hooks. Patented 21st August 1847. Claim.—What I claim as my invention and desire to secure by Letters Patent of the United States, is the attaching of the common Fish Hook to the spring fish hook, claimed to have been invented by the said Griswold, or the Sockdologer hook, patented by the said Engelbrecht and Skiff, before described by means of a screw spring or catch, or by any other convenient method, so as to be readily attached, detached and changed at pleasure, in manner and form substantially as herein described. And I do hereby disclaim all and every part of the apparatus claimed to have been invented by the Said Griswold and as patented by the said Engelbrecht and Skiff.

NEW YORK, DECEMBER 18, 1847.

Modern Invention.

The inventions of the present day occupy altogether a different place from those of ancient times. Articles of domestic economy, were expunged from the ancient philosopher's text book. Mechanics and Artisans were mere appendages to the State, not component parts of it This is the reason why the ancients excelled so much in the execution of great national works, and were so barbarously ignorant of domestic comfort and domestic economy, and this is the reason why the miserable hovel in old times afforded so sad a contrast with the awe inspiring temple or the gorgeous ampitheatre The great difference in the condition of the working classes of our Republic from those of the ancient Roman Republic, is in the estimate of their relative value and their domestic condition. The working classes are now something, they are no more *pro nullis, pro animabis*—they are now men. The Mechanic at the present day, lives as comfortably as the great patricians of old, although there is much suffering still, and we are often struck with the Scriptural injunction, withold not thy hand "for the poor shall never cease out of the land." But in reference to estimating the comfort of the working classes now with those of the olden time, the mechanic who has, a carpet on his floor, has more than Thomas Becket, the great Archbishop of Canterbury could boast of, as he had to use straw for want of better capeting, and as for knives and forks, there were no such instruments used in the days of the Eighth Henry. Much as some have stigmatised machinery and modern inventions as evils, for having destroyed many occupations, still no wise man, no reflecting man, no intelligent man can look upon modern invention in any other light, than as part of the grand design of Providence, "a wheel within a wheel," for a higher destiny and the elevation of the whole human family.

We are indebted for our modern advantages over the ancients, not so much to the greatness of our undertakings as to the usefulness of them. We now look more to comfort and less to fame, and we estimate men now and their labors by a different standard than was used to measure the men of old. The man who invents a washing machine, or a churning machine, or any other kind of a machine, which destroys severe physical labor, is considered in a degree a benefactor to the whole human family, and justly is he considered as such. When there is an abundance produced, the greater ease by which it is produced, the greater benefits accrue to all. There are no doubt inequalities in the distribution —in this then is the only evil. Could this be remedied—were this remedied, the voice of happiness would be heard in every domicil.

The great advantages which we enjoy over the ancients, is in the progress of physical science and its devotion to useful purposes — We have not yet arrived at perfection—there is much yet to be done, and to those plodding, studying, reflecting men, whose minds are always bent on seeking something new and useful, we say, work on, toil on, ye sons of invention, ye are the reformers of social society- Many of you may never have your reward here, but like Fulton and Fitch and Evans, when slumbering in the tomb, your works shall exert an influence on generations yet unborn.

Cotton Manufactory.

By a notice in the Canada Gazette, we perceive that application will be made at the next Meeting of Parliament to incorporate at St. Catharines, a Manufacturing Company of the above description—to be known as the Saint Catharines Cotton Manufacturing Company.

The Canadians are bound to be manufacturers also. Capitalists from England find less competition there than at home.

Steam Chronology.

The following information relating to steam engines, will probably be new to most of our readers :—

1649—First steam engine invented by Edward Somerset, Marquis of Worcester. Steam power was known (imperfectly) to the ancients; Hero of Alexandria, a philosopher who lived 130 years before Christ, describes two instruments, moved by steam of heated air.

1769—Cast iron first used in mill work, by Mr. Smeaton, at Carron in Scotland.

1769—James Watt, of Glasgow, Scotland, obtained his first patent for a steam engine.

1783—First steam cotton mill built in Manchester, by Arkwright & Simpson.

1785—Steam mills first constructed in England, by Bolton and Watt, at the Albion Mills in London, for grinding wheat; two engines worked twenty pair of stones.

1792—First steam woollen factory built at Leeds, England, by Gott.

1793—Spinning flax at Leeds, by steam.

1811—First steamboat, at New York, by Fulton.

1829—First locomotive at Liverpool.

Mechanic Arts In Baltimore.

A large meeting was held on the 1st inst., in Baltimore for the purpose of forming an institute for the encouragement of the mechanic arts. The following resolutions which were passed explain their objects and designs.

Resolved, That this meeting cordially approve the plan of forming an association in the city of Baltimore for the promotion of the Mechanic Arts, the members of which shall consist of manufacturers, mechanics, and persons who are friendly to the objects of the Assosiation.

Resolved, that in the opinion of this meeting, the leading features of the Association should be, the establishment of popular lectures, the formation of a school of design, the collection of a library, with cabinet of models and a philosophical apparatus, and the opening of a reading room, all having relation to the improvement of manufactures and the mechanic arts, and those who are engaged in them.

Resolved, that in the opinion of this meeting one of the objects of the Association will be the holding of an Annual Exhibition and Fair, such as take place at the cities of New York, Boston and Philadelphia, at which premiums should be offered for excellence in the various branches of manufactures and the mechanic arts.

Free Public Library.

A movement is in progress in Boston to establish a Free Public Library for the citizens and the Common Council have agreed to provide accommodations as soon as $30,000 is raised. Cannot New York go and do likewise. It would be a great benefit to our working men, especially mechanics. The best works on Mechanics, are positively out of the reach of the most of our working people to purchase. Yet all would subscribe a little we believe to a Free Public Library.

Revenue of Mexico.

The maritime custom houses in 1832 yielded to the government the sum of 12,000,000. It is calculated that $30,000,000 of revenue could now be raised. Our government is going to try it. The expense of collecting will be about as much as the sum collected.

Colony of Twenty Thousand Blacks In Canada.

This colony settled in the fertile country between Lake Huron and Erie, appear to be flourishing. They have a manual labor school —the British American Institute—at Dawn Mills, the head of navigation on Sydenham river, 60 miles from Detroit, with a tract of 300 acres attached and 7 building. Some 80 pupils are engaged for the winter. Among the new secular enterprises now in operation is a steam mill.

Shoemaker's Strike.

The shoemakers of London, Canada West, had a strike recently for the purpose of raising wages. The operatives were brought before the presiding magistrate of that place, L. Lawrason, who dismissed them with leniency, as they had exercised no violence, and had promised not to violate the laws.

Electro-Gilding.

PART III.

In our last article we closed with an allusion to the Voltaic Condenser, an invention of Professor de la Rive, by which a secondary current was conveyed through the solution to be decomposed. To illustrate its use, by selecting a gold solution, metallic connections are applied between both ends of the coil and the two terminations of a Daniel's battery.—These connections are continued to the vessel with the gold solution something like the figure ∞. The generating cell to the right, the coil in the centre and the decomposition cell on the left. The current on leaving the battery, always selects the coil to travel by, which when passing through, it converts the soft iron into a magnet, the which is so arranged as to attract a piece of iron which breaks off the communication between the coil and the generating cell, except by means of the cell containing the solution, passing through it, and by this arrangement it is found that the actual power of the battery is much increased and what is very singular, there is a continual losing and gaining of power in the magnet and a continual breaking and making of contact with the piece of iron spoken off, as it is made to rise and fall with the strength of the magnet.

The deposition of metals in electrotype manipulations is often assisted by means of the application of heat. Experiments in electrotyping and gilding are quicker accomplished by a sand bath, or by steam from a glass retort.

The time required for plating or gilding depends always on the nature and uses of the article, as the thickness of the deposite depends on the duration of the action. For medals and such things as are not to be exposed to wear, a few minutes immersion may be enough, but for spoons and plated goods, subject to wear, ten hours is not too long a period, with careful watching to prevent oxidisation. Large objects should be occasionally withdrawn and their positions altered, so that there may be a uniform deposite, and to move the articles during the process, in the liquor, is also requisite. In silver electrotyping, the surface obtained is what is called "dead." It is very beautiful, but if a bright surface is wanted, it is polished with a leather and powder. A steel, or agate burnisher is used, and in jewelry some parts are burnished and some left dead. There is one thing, however, to be observed particularly, viz. a preparation, a right preparation of surface before applying the metals, a point which if not correctly attended to, renders all the operations vain, as the deposit, beside being liable to oxidise, and rising up in blisters so that the least rub brings it off. There are two methods of preparing metals for the reception of other metals, to wit, the wet and the dry. The dry way is the most approved. The main object of preparation is cleanliness in the first place, so that the contact between the two metals may be perfect. To do this all grease and oxides must be absent from the mould. To cleanse by the dry method metal figures, &c. for gilding, they should be scoured with emery paper, or fine pumice stone, always keeping a piece of paper in the left hand to avoid the moisture of the hand.

To cleanse by the wet method, the articles to be subjected to the electrotyping process, should be washed in a strong alkali, to remove grease, and then washed well in water, then submitted to a weak solution of acid and then washed quickly and well in cold water, and then dipped in boiling rain water and dried.—There are several other compositions for cleansing, such as a pickle of 4 parts of water to 4 of sulphuric acid, 2 of nitric acid and a few drops of muriatic acid. This pickle is used by a wire or other instrument tied round the article and immersing it for a few seconds. A bath of nitric acid is often used, and nitric acid and salt is often rubbed on the article, or hydrochloric acid and a little chalk are often used to rub on the article for cleansing. Boiling in potash, is also good to remove grease, as alkalies remove oily substances by making soap in the combination with them; in every case, at any rate, the articles to be plated must be well finished in boiling rain water and then dried. It is also necessary to let the articles intended to be gilded or plated, or for a real metal deposit—after they are perfectly clean and soldered or attached to the wire, for the operation of electric manipulation, to let them hang in a dry situation one day exposed to the air, before entering into the process of electrotyping. This caution operates to prevent too close an adhesion between the plates and the deposition. This is only of course for copying moulds, and would act otherwise for gilding.

For the Scientific American.

Calculas.

The following concise rule may be advantageously used by farmers corndealers, &c.

If solid feet be multiplied by 45, and the product divided by 56, the quotient will be bushels of 2150 2-5 inches each, (one solid foot is 45-56 of a bushel in Indiana.)

EXAMPLE :—How many bushels in a box 10 feet long, 4 feet wide and 6 feet deep?

10, 4 and 6 multiplied together make 240 solid feet in the box. Then 240 feet multiplied by 45 make 10800, which divided by 56 gives 192 6-7 bushels in the box. If the box contain ears of corn, you can subtract what you wish from 192 6-7 for the space occupied by the cobs.

The above rule may be applied to the number of solid feet in a wagon bed, crib, granary, or to that of any of the solid bodies.

Bentonville, Ia., Nov. 1847.

Curious Case.

A child about four years old son of Mr. J. Sweet of South Reading Mass., swallowed a copper cent some two months since. Several physicians were called, and he was made to vomit at intervals, after the accident. Subsequently he was pretty well with the exception of a difficulty of swallowing. Mr. Sweet, suspecting that the cent was still lodged in the throat, took the child to Dr. Wyman of Cambridge, who passed a probing instrument down the little sufferer,s throat, and distinctly felt the cent. The doctor then made a double hook of common covered bonnet wire, which he passed into the throat, and on the first trial sueceeded in hooking up the cent, which was lodged in the aesophagus, standing edgeways. The child is now very well.

Daguerreotype Scene.

Three views of the ceremony of laying the corner stone of the great Reservoir of Boston were taken by the Daguerreotype apparatus, as a preliminary to a great painting that is to be made of the scene. One of the views was taken when the procession halted at prayer; another when the corner stone was being laid, and the third in the midst of the Mayor's address. The views are said to be well done. The likenesses of the most conspicuous persons are easily recognised.

An edifice is now in the course of erection in Cincinnati. The marble for the front has all been shipped from Italy at the cost of $200,000.

Scientific American---Bound Volumes.

The second volume of the Scientific American, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $2,75. The volume may also be had in sheets, in suitable form for mailing—at $2.

The back Nos. of the present volume may also be had upon application at the office.

Improvement in Railway Engines and Carriages.

The following is the substance of a specification of a patent granted lately in England to Thomas Waterhouse, cotton manufacturer, county of Chester.

The first part of this invention is intended to facilitate the passage of railway engines, tenders and carriages around curves, by allowing each wheel to move independent of its fellow. This is effected by forming each pair of wheels with a long nave, or boss (the patentee recommends that its length should be equal to one half the diameter of the wheels to which it is applied,) which is bored to fit the axle, and works against a shoulder on the same—it being kept in contact with the shoulder by a moveable collar, or washer, secured to the axle, outside the nave of the wheel, by a key; the other wheel is fixed to the opposite end of the axle Another mode of carrying out this part of the invention, consists in dividing the axle at the centre into two parts, and fixing additional bearings to the lower framing of the carriage, for the purpose of supporting the inner ends of the two parts of the axle, by which means the wheels are permitted to rotate perfectly independent of each other.

The second part of this invention consists in the application to railway engines, carriages and tenders, of an apparatus for sounding signals, by means of compressed air. The apparatus consists of a force pump, for compressing air into a receiver, or receivers, beneath the carriage, from which it can be admitted by the guard, or railway attendant into a railway whistle, or other suitable instrument for sounding signals The pump is worked by a lever, or levers, acted upon by hand or by the motion of an excentric fixed on one of the axles of the carriage, or by any suitable mechanical contrivance for communicating motion from the axle; and the apparatus is so constructed, that when the air is compressed to the required degree, the pump will cease working until the pressure upon it is reduced.

The patentee claims, firstly, giving a revolving action to one wheel on each axle of a railway engine or tender, or of railway carriages of various kinds, wholly independent of the action of the opposite wheel on the same axle, in one case without interfering with the rotation of the axle itself; and in the other case by dividing the axle into two parts—so that, in either case, the first mentioned wheel may travel at any speed, faster or slower, than the opposite wheel, suited to the curved line of rails which it may have to pass over or along, or to other circumstances, rendering such variation of speed between two opposite wheels desirable. Secondly, an improved apparatus for sounding a signal-whistle, to be applied to railway engines and tenders, and to railway carriages of various kinds, in order to cause the whistle, to be acted upon by condensed air, obtained by the motion of the carriages travelling along the line, or otherwise, instead of by steam; and which whistle being, therefore, wholly independent of the steam of the engine for its action, may be applied to any convenient part of any engine, or tender, or railway carriage, or any number of carriages, and thus furnish a signal by which the guards may communicate with each other or with the engine driver, from any carriage of a train, however distant it may be from any other carriage, or from the engine.

Improved Method of Making Rail Road Iron.

By the Hartford Courier we learn Mr. Horatio Ames, of Falls Village, Conn., has recently perfected a highly important improvement, destined to produce highly important results in the manufacture of iron for railroads. Mr. Ames, in the progress of his business. which is mainly devoted to the manufacture of iron for the axles and tires of railroad wheels, observed that the tires often split or separate in lines parallel with the plane of the wheel; that is, in a direction of the length of the bar of which they are formed. He also observed that the rails of railroads often split lengthwise, and that the upper surface and the inner edge, under the action of the wheels and their flanches, exfoliate: that is, split off in lamina or scales.

As an experienced iron master, he knew that bar iron consists of fibres that lie parallel to one another, and running in the direction of the length of the bar; that those fibres and their parallelisms are due to the gradual elongation of the crystals of cast iron, when changed into wrought iron in the process of hammering and rolling, by which the crystals are gradually elongated, and that in the same direction, and that the attraction of cohesion between the particles constituting each fibre is greater than between the different fibres, as it is well known that bar iron has much more tenacity in the direction of the fibres than across them.

From any consideration of these well known facts he concluded that the splitting and exfoliation were due to the want of sufficient adhesion between the various fibres constituting the bar, and that the only remedy would be to change the direction of the fibres by twisting the bar in the process of rolling; so that the fibres should be twisted like the fibres of hempen rope, thus substituting the tenacity of the fibres for the force which binds them together. In this way, it will be observed that to split or exfoliate a bar of iron, it would be necessary to cut the fibres, as the bar acquires in its cross section the strength or tenacity which, on the old plan, it possessed in a longitudinal direction. This twisting of the fibres is effected in the operation of rolling, by making the rolling-mill of two sets of rollers, the first set to turn on their axis in opposite directions, to draw the bar of iron between them in the usual manner, and to pass it to the second set which, in addition to their rotation on their axis for drawing the bar, rotate together about the axis of the bar, and thus twist the fibres as the bar is drawn through and elongated: thus causing the fibres to assume a spiral or hellicle direction around the central line or axis of the bar. In this way it can be seen that the bar will not split in straight lines without breaking the fibres, and that therefore the only wear of railroad bars and tires thus made will be due to inattention alone.

Energy and Mind.

Energy is everything. How mean a thing is man with little motive power! All the abilities nature has given him lie useless, like a great and mighty machine, ready at every point for useful action, but not a wheel turns for want of a starting power? A great man, is like a great machine.—He has a great power to set in motion the various and immense projects which he has in his hand; little motives can neither start nor stop him, they may set in motion the powers of an ordinary man, and render him a respectable, nay, even a beautiful piece of mechanism, but never a magnificent one.

Yet there is one thing which renders man supremely above the machine. By the working of his own mind he can improve and exalt himself; by directing his eye to what is great and good, he may become so. If, then, we can become what we wish to be, what high objects should we aim at, and what resolute and energetic efforts should we be ever making to attain them?

Memory.

The great point in cultivating the memory is to gain command of the attention. A habit of continued, unrelaxed attention, especially if acquired in early years, is the foundation of a good memory. A habit of very attentive thought is better than all the artificial memories ever contrived. To the formation of such a habit sufficient efforts have not often been directed. Therefore it is that we hear many persons complaining of the want of a good memory. They cannot remember the lectures, sermons, and addresses which they hear, nor the books which they read. All of it seems to run through their mind like water through a seive. They were entertained and even edified, they would say, but ask them to state what it was that entertained and instructed them, they cannot tell. Close attention, or rather persevering effort to give close attention, will help even such a memory. The too common practice is to attempt to fill the store-house of the memory before the foundation is laid, or a habit of attention or thought is formed.

For the Scientific American,

Time and Longitude.

Mr. Editor :—

In your paper of the 11th inst, M. Kelly has propounded four questions; desiring some of your readers to answer them. I shall, at present, endeavor to comply with his request in relation to No. 4, viz. "If the A. D. 1847 commenced 15 degrees east of New York one hour *before* it did in New York, where it commenced one hour before it did 15 degrees west of that city—I wish to know where it FIRST commenced?

If the writer of the above be an astronomer he must be aware of the various modes that have been adopted, for the computation of time, by the ancient and modern nations. He must also be aware that meridians are imaginary circles, not tangible, and also that all circles are divided into 360 degrees.

The equator contains 360°. This number divided by 15 gives 24, being one day. Now, at right angles with the equator draw other circles that shall concentrate to the poles; these will constitute longitude. Circles collateral with the equator will give latitude.—Let those be 15 degrees apart, if you please.

To have a beginning in the circumference of a circle, we must suppose a given point—Well, on the equator set up firmly, a right angle triangle, the base of which must run due north. When the shadow of the perpendicular falls, in a straight line upon the base, the sun is at his greatest altitude for the day—called mid-day. The places west of this point would have west longitude and those east would have east longitude. We have a mechanical invention of the measure of time.

Again: Suppose there are 24 persons equally distributed 15° apart upon the equator, with the same kind of machinery. They each of them will vary one hour in the calculation of noon day and the same difference would exist in relation to the commencement and ending of the year; therefore there are 24 beginnings and 24 endings, and as many more as you please, according to the division of the equator.

Again: Rig a wheel of 24 spokes horizontally—let 24 persons stand in a circle, each one opposite to one of the spokes—give the wheel one revolution and the same spoke will come opposite the same person—call this one day: give it 365 revolutions—calls this one year: for leap year give it an extra turn.

Now ask each person how many times the wheels revolved—what was its starting, and they will say 1 for the day, and 365 for the year, and 366 for leap year, and although they calculate from 24 different points, still they are all correct, and the number of revolutions will be the same to the 24 persons. Thus began A. D. 1837, and thus it will end.

Will Mr. Kelly be kind enough to answer the following questions, viz.

1. What relation is there between the sense of feeling and the sense of light?
2. Does matter really exist in the same proportion of bulk and density as seen by man?
3. If the eye of man were so constructed, that surrounding objects would be magnified 500 times, what would be the result, in relation to the bulk and density of matter, and how would the judgment of man be effected?
4. Where is the beginning and end of space?
5. Where is the beginning and end of a circle?
6. What relation has thought to matter and immateriality; and do the thoughts and souls of men fill any portion of space?

LIBRA.

New York, Dec. 11, 1847,

Literature and Learning in China.

The Chinese are a reading people, and the number of their published works are very considerable. In the departments of morals, history, biography, the drama, poetry, and romance, there are no lack of writings such as they are. The Chinese Materia Medica comprises forty octavo volumes of statistical works the number is very large. Their novels are said to be excellent pictures of the national manners. China is full of books:—new authors are continually springing up: the press is active, and the traffic in books is lucrative and most honorable branch of trade. When examinations take place in the capital or the palace, the most clever students are chosen to fill the office of bookmaker. There are, however but few really new works, and all that appear are compilations and quotations; the author never venturing an idea of his own; and in this consists true learning, according to Chinese notions. There is one work in the Royal Library. on the topography of China, which is said to consist of 5,000 volumes:—some of the best translators that have had access to some extracts from this giant, were sadly disappointed, as it appears to be a mass of confusion, without any attempt at order or arrangement. There are numerous small treatises, similar to our tracts, gratuitously distributed by private individuals, incalculating morality and virtue. Printing is evidently cheaper in China than in Europe, when ten volumes, each containing 100 pages, can be purchased for less than a dollar. Every peasant and the poorest fisherman can read and write. Private and public schools are numerous in every province, and entirely independant of government. Occasionally an examiner visits all the schools to ascertain the qualifications of teachers.

Butter Consumed In London.

Butter was unknown to the ancient Greek and Romans in Cooking. The ancient medical writers do not mention it as an article of food though they as well as writers on agriculture have given us particular notices of milk, oil and cheese. It is very little used in Spain, Portugal, and the south of France, but in England its consumption is very great, both for food and culinary purposes. It is believed that in London, the yearly consumption, for each individual, is no less than 26 pounds; and supposing the metropolis to contain 1,450,000 inhabitants the total consumption would be 16,730 tons. Add to this 4,000 tons for victualling ships, and we arrive a total of 21,000 tons, which at ten pence per pound would be worth $8,002,4000.

It is estimated that a good cow will produce in a year 168 pounds of butter, on which calculation, 280,000 cows would be requisite for the supply of the London market, alone, in this one article of food and luxury.

Camels In Australia.

A correspondent of the (Sydney) Australian Journal recommends strongly the extensive introduction of the camel from India: which having been successfully imported into the Mauritius might doubtless be brought safe to Port Essington (or to Swan River,) and thence be generally introduced. The best camel, he says, is of the Marwarre breed, purchased in India at 60 to 100 rupees, 6 to 10 pounds, and being a browsing rather than a grazing animal is easily sustained by the leaves or young branches gathered by itself en route, or brought to it by a careful driver, who can easily manage three of them. They travel in single file, the nose of one being attached by a rope through the cartilage to the crupper of another, carrying 500 lbs if very moderately laden up to 600 or 800 lbs. upon emergency and averaging three miles and a half an hour So that, for the purpose of an expedition or long journey in Australia, a band of 6 camels would carry 1,900 lbs. of provision and kit, and 1100 lbs. of water in mussack or skin bottles. Like a horse, the camel breeds annually, produces one at a birth, and seems just adopted to perform good service in journeying through the most sandy and scrubby wastes of Australia.

Liebig says, when one pound of lean beef, free of fat, and separated from the bones, in the finely chopped state in which is used for beef sausages, or mince meat, is uniformly mixed with its own weight of cold water, slowly heated to boiling, and the liquid, after boiling briskly for a minute or two is strained through a towel, from the coagulated albumen, and the fibrine, now becoming hard and horny, we obtain an equal weight of the aromatic soup, of such strength as cannot be obtained, even by boiling for hours, from a piece of fresh meat. When mixed with salt, and the often usual additions by means of roasted onions, or burnt sugar, it forms the very best soup which can in any way be prepared from one pound of flesh.

A French author has discovered that Women never pardon a man for losing an opportunity of loving them.

TO CORRESPONDENTS.

"T. A. D. of Ky."—Your plan of making Morse's telegraph, a printing as well as an electro-telegraph, is just the same in principle as House's, only on House's telegraph, the common characters of type are used, which print the communication letter by letter by a revolving cylinder, as described in one of the previous numbers of the Scientific American.

"R. R of Farmers Mills."—We certainly do not see why there should be the least difference of opinion among mechanics regarding the loss or gain of power in the gearing you have sent us. Where is the gain? where is the loss? From whence is the one derived? where does the other go to? The power is in the prime mover and all the rest of the gearing is just to distribute that power. In your first gearing you have less speed, in your second more, but they will both perform the same labor in the same given time. If you study the first principles of Mechanics you will perceive the truth of what we say. The calculations are made according to the radius of the different wheels. See any good work on Millwrighting.

"C. J. of Ohio."—No good account of the Great Fair has been published in any periodical. In fact it was not possible.

"B. of Carlisle Pa."—Your article upon steam navigation, is altogether erroneous, and therefore could bring no credit to those who would publish it. Your other article as an amusement not an object of utility, may yet appear.

"T. S. W. of Maine."—Your machine for wind mills is not new, but it is much better than some that are. We have seen an engraving of a similar one fifteen years ago. It would be well to employ the atmosphere to mechanical purposes, in some situations, at least more than is now done. Erect one right off is our advice.

"J. S. A. of N.Y."—Your funds are received—all right now.—We send the papers as ordered.

"S. D. E. of Va."—Yes? We believe the "Scientific Mechanic" is published yet *occasionally*. The publisher issues a number once in two or three weeks *sometimes*.

We have quite a large list of correspondents to answer, who will have the generosity to excuse answers to their communications until next week. We have answered either by the mail or as above, all which desired a prompt and immediate action.

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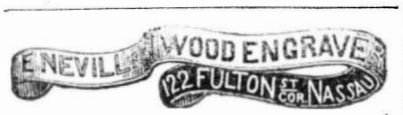

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Prepared for the Scientific American.

On the Manufacture of Gas.

(*Continued from our last.*)

The duration of the process of distillation depends on the quantity of coals in the retorts. Gas managers entertain various opinions on this head, although it is agreed that thin strata and quick distillation produces the greatest quantity of rich gas. When the charge is fully carbonized, the doors are taken off, and the red hot coke drawn out by rakes. As soon as possible after drawing, the retorts are charged again, to prevent any loss of heat by their being left unnecessarily open.

The next portion ot the apparatus for consideration, is that of condensation. In all well arranged works there is what is called a refringerator, or condenser, which consists of a considerable length of pipe, through which the gas has to pass, surrounded on the outside with cold water, for the purpose of extracting as much as possible of the heat from the gas. The last process to complete the manufacture of gas for the consumer is that of purification, by which the remaining gaseous impurities which have escaped the condensers, not being condensible, have to be removed by chemical action. For this purpose two methods are in use, one being that of passing the gas through lime-water—being a mixture of one part slaked lime to 20 or 30 parts of water, being of a consistency very similar to plasterers' lime-wash. The other is that called the dry process, in which the lime is slaked, allowed to cool, and as much water added as to cause it to feel damp, and to retain its shape on being squeezed in the hand, similar to garden mould, or brown sugar. In each of these plans the gas is passed through successive vessels, until it is thoroughly purified from the sulphur and ammonia with which it is contaminated. The weight of the gas-holder is generally such as to produce a density, or pressure, on the gas of about 2 oz. per square inch, producing an upward pressure on the cover of the purifier, of 17 lbs. per square foot, and which is, consequently, held down by suitable fastening to the body of the box.

As obstructions occasionally occur in the condenser or other pipes, between the purifiers and the retorts, by the deposition of napthaline tar &c., all well arranged works should be furnished with a self-acting escape for the gas, which is being continually generated by the retorts, placed in some conspicuous situation, so that it may be instantly seen when such a contingency takes place. All that is required for this purpose, is an upward opening in the pipe at the end of the hydraulic main, with a water-joint to receive a cylindrical cover, like an inverted cup, dipping into the water-joint, and fastened down. Of course, the depth of this cup, or the altitude of the water, must be more than equal to the resistance arising from all sources, such as the friction of the gas through the condensers, the altitude of water resistance in the wash vessel, the purifiers, and gas holders.

The gas-holder, being merely a vessel of large capacity for containing the gas as purified, is of a most simple kind, not susceptible of much variety, the form first used being still continued, consisting of two parts. The first consists of a circular vessel or tank, in the ground, with upright sides of brick or stone, and rendered water tight by being plastered all around with plastic clay; the pipe conveying the gas from the purifiers is carried down a dry well, rather below the level of the bottom of the tank; at the lowest extremity of the pipe in the well, there is a small close vessel for receiving the liquid ammonia which becomes condensed, and in which is inserted a hand-pump, to draw it off. The inlet pipe is continued under the wall of the tank, and carried upwards to a few inches above the water level. The gas holder is a sheet-iron cylinder, open at the bottom and closed at the top, about a foot less in diameter than the tank; it is made of iron, about 1-16th of an inch in thickness, the top being rather stouter, and supported by rafters, suspension truss-rods, &c., and is kept upright in rising by rollers and guide wheels The great increase in the demand for gas has correspondingly increased the size of the gas-holder; for whereas 50 ft. diameter was 20 years since considered excessive, they are now made upwards of 100 feet, and of corresponding hight. To save the covering so large a superficial quantity of ground, the telescopic gas-holder was invented. This will contain two, three, or four times the cubic contents of the tank, according to the number of slides, and each of them is rendered gas-proof at the edges by having a trough, all round which fills with water when down in the tank, and into which a flange on the top of the next dips, thus making a water seal. It has been observed, that the weight of the gas-holder compresses the gas to a density equal to three or four inches of water, but this must be varied to suit the conditions of the district, the distance between the stations of manufacture and consumption, &c. In addition to this, the immense quantity necessary to be sent out in the beginning of a dark winter evenings when almost every light is in full blaze, requires very nice management so to proportion the pressure that every one may have fair and ample quantity. This was at first done by a common valve, regulated by hand, but it soon became apparent that a better contrivance was necessary. The gas governor, was, therefore invented. This apparatus is fixed at the gas station, between the gas holder and the mains; though not self-acting, it is perhaps as nearly so as possible, to meet the various circumstances of demand. It consists of a small gas-holder, balanced by a number of shifting weights, by which its specific gravity, when more or less immersed in the water, regulates the supply to the demand, under whatever pressure it may be adjusted. The gas enters through a centre pipe in which there is an iron cone suspended; the top has a plate, with a hole perfectly circular, to fit the base of the cone. It is, therefore, clear that if this cone is drawn up close, no gas can escape—but if, on the contrary, it is quite down, a full flow will take place. The superintendant, therefore, in the beginning of the evening takes off as many weights as will adjust the annular orifice between the cone and the cap-plate, to produce the pressure required, which pressure is indicated by a guage in the top of the vessel. The gas in this governer is of course under the constant pressure of the main gas-holder.

(*To be continued.*)

For the Scientific American.

Japanning and Varnishing.

Japanning is the art of covering bodies by grounds of opaque colors in varnish, which may be afterwards decorated by printing or gilding, or left in a plain state. It is also to be looked upon in another sense, as that of ornamenting coaches, snuff boxes, screens, &c. and it is, therefore, a very important art and of great advantage to our country. I shall, therefore, endeavor to give a number of good receipts for the practising of this art, and interline the same with directions regarding the different branches.

All surfaces to be japanned must be perfectly clean and leather should be stretched on frames. Paper should be stiff for japanning, such as *papier mache* of France.

The French prime all their japanned articles, the English do not. This priming is generally of common size. Those articles that are primed thus, never endure as well as those that receive the japan coating on the first operation, and thus it is that those articles of japan work that are primed with size when they are used for some time, crack, and the coats of japan fly off in flakes. A solution of stroug isinglass size and honey, or sugar candy, makes a good japan varnish to cover water colors on gold grounds

A pure white priming for japanning, for the cheap method, is made with parchment size and one third of isinglass, laid on very thin and smooth. It is the better of three coats, and when the last coat is dry, it is prepared to receive the painting or figures. Previous to the last coat, however, the work should be smoothly polished

When wood or leather is to be japanned, and no priming used, the best plan is to lay on two or three coats of varnish made of seed lac and rosin, two ounces each, dissolved in alcohol and strained through a cloth. This varnish should be put on in a warm place and the work to be varnished should if possible, be warm also, and all dampness should be avoided, to prevent the varnish from being chilled. When the work is prepared with the above composition and dry, it is fit for the proper japan to be laid on. If the ground is not to be white the best varnish now to be used is made of shellac, as it is the best vehicle for all kind of colors. This is made in the proportions of the best shellac five ounces, made into powder, steeped in a quart of alcohol and kept at a gentle heat for two or three days and shaken frequently, after which the solution must be filtered through a flannel bag, and kept in a well corked bottle for use. This varnish for hard japanning on copper or tin, will stand for ever, unless fire and a hammer be used to burn or beetle it off.

The color to be used with shellac varnish may be of any pigments whatever to give the desired shade, as this varnish will mix with any color.

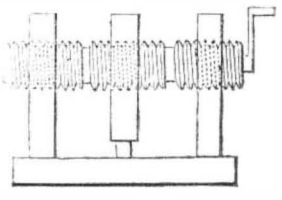
WHITE JAPAN GROUNDS.

To form a hard perfect white ground is no easy matter, as the substances which are generally used to make the japan hard, have a tendency by a number of coats, to look, or become dull in brightness. One white ground is made by the following composition. White flake or lead washed over and ground up with a sixth of its weight of starch, then dried and mixed with the finest gum ground up in parts of one ounce gum to half an ounce of rectified turpentine mixed and ground thoroughly together. This is to be finely laid on the article to be japanned, dried and then varnished with five or six coats of the following: two ounces of the whitest seed lac to three ounces of gum anima reduced to a fine powder and dissolved in a quart of alcohol. This lac must be carefully picked. For a softer varnish than this, a little turpentine should be added and less of the gum. A very good varnish and not brittle, may be made by dissolving gum anima in nut oil, boiling it gently as the gum is added and giving the oil as much gum as it will take up. The ground of white varnish may of itself be made of this varnish, by giving two or three coats of it, but when used, it should be diluted with pure turpentine. Although this varnish is not brittle, it is liable to be indented with strokes and it will not bear to be polished, but if well laid on it will not need polishing afterwards. It also takes some time to dry. Heat applied to all oils, however, darkens their color, and oil varnishes for white grow very yellow if not exposed to a full clear light. Gum copal is a fine varnish, and a description of which I shall give in my next. G. R.

New York, Dec. 13, 1847.

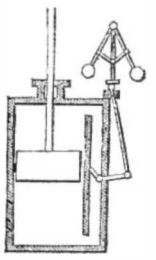
MECHANICAL MOVEMENTS.

Screw Arrangement.



The above cut represents an arrangement of screws, in which the two extremes are supposed to be of the same degree of fineness, or number of threads in the inch, but the central part which carries a moveable nut is of a different fineness, in which case the central nut will not be traversed the distance of the threads which pass through it, but the difference between the fineness of the central screw and those at the two extremities. A similar arrangement it will be observed, will thus enable us to divide minutely by means of screws, without such very minute, or fine threads as would otherwise be required. For minute measurement screws are the best mechanical means yet adopted, aod were it not for extending this article to an undue length we might describe its beautiful application to astronomical purposes.

The Governor.



The above is a representation of a useful governor for pumping engines in which the work may be suddenly varied. The solid piston here represented does not fit tight to the cylinder, which being filled with water is compelled to escape through the space when the passage on the right hand is shut and thus work is thrown on the engine; but supposing the governor to resume its proper position, the valve in this side passage is opened and the piston traverses without resistance.

For the Scientific American.

Chrome Black on Wool.

For a long period it had been considered impossible to dye a black, either on cotton or wool, without iron or copper for a basis, or mordaunt. Recent discoveries, however, have brought to light a better method of dyeing black than by any of the old plans, by using the bichromate of potash as a mordaunt, in place of the sulphates of iron or copper.

For a hundred pounds of clean white woollen yarn, use 3 lbs. of tartar, 3 of alum and 4 of the bichromate of potash. Boil the yarn in this one hour, handling well, (cloth as well as yarn,) then take it out, wash and boil it one hour more in the liquor of 20 lbs. of logwood, when it will come out a most beautiful black. The bluer the shade that is wanted, the less chrome is used. The goods must be white, or some light color to make a good black by this process. This color is not known to a great many practical dyers. It avoids that oxidising corrosiveness which weakens and impairs the strength of fibre in those goods dyed with solutions of iron.