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Poetry.

SCIENCES.

When Adam first in Eden stood,
With blushing Eve beside him,
How glad she made his solitude,
Nor kisses sweet denied him.

Few cares had they, and troubles none,
They plucked their fruit and eat it,
And went with joy at set of sun,
Their moss-grown couch to greet it.

Their apples ripe, where'er they hung,
They gathered when they viewed them,
Nor stayed they till their kettle sung,
Nor waited till they stewed them.

But soon a change came o'er their dream;
I can't tell what the date is—
But 'tis the origin of Steam—
They boil their first potatoes!

Ere long Miss Eve began to find
If dressed she looked more winning,
And then forthwith she gave her mind
To learn the art of Spinning!

Poor Adam too, struck out a plan,
With thread and needle thrumming,
By which to make the outward man
Appear the more becoming.

The plan was this, and 'tis a fact
Which Ancient History teaches,
He made, and that with skill and tact,
A pair ot doe-skin breeches!

And thus I clearly make it out
Beyond a chance of failure,
That Adam was, without a doubt,
The first and earliest tailor!

Old Tubal Cain—we all do know,
That noblest of fine fellows,
The first good Smith that gave a blow
To anvil or to bellows!

Old Noah built the spacious, ark,
His family to keep tight,
And when he launched his gallant bark
Was surely the first Shipwright!

'Twere vain, though easy, thus to trace
The rise of Art and Science,
And shew how first the human race
With both made close alliance.

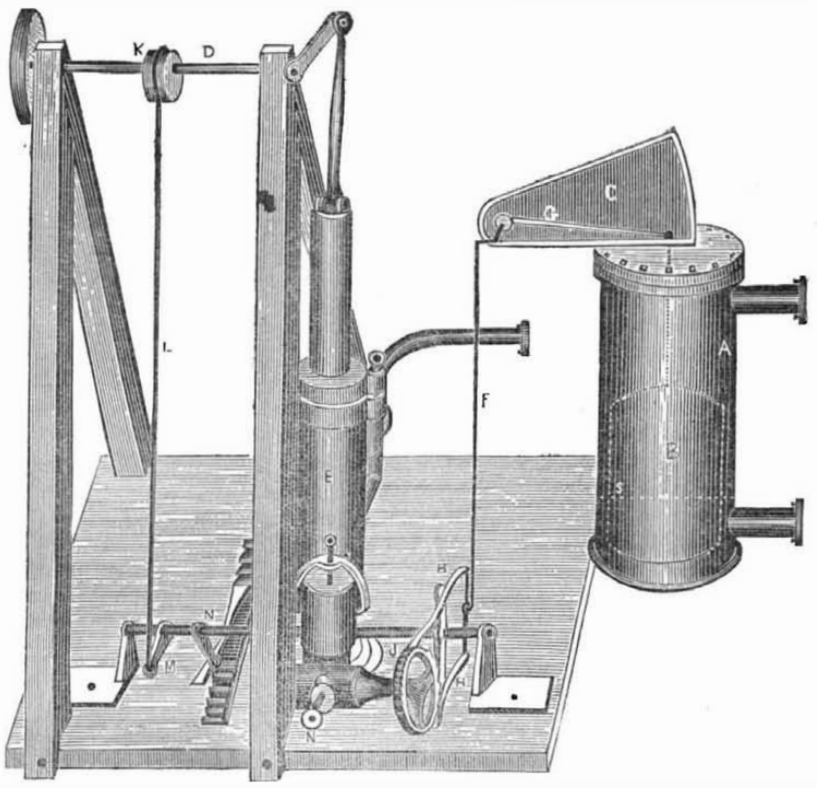
We come to modern times and shew
How human skill now ranges,
And prove how great in things below,
How strange, how vast the change is.

In ancient times its flowery heights
We climbed astride on asses,
And now we take more daring flights,
And steam o'er steep Pranassus!

All ready there!—away we go,
With boilers hot and fizzing—
Small wonder if your verses flow
In strains so shrill and whizzing!

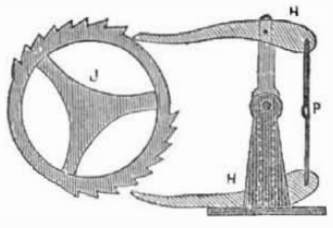
Ere long we'll see things stranger far
Projected and soon got up,
A tramway to some distant star,
Or railway to the moon up!

IMPROVEMENT IN APPARATUS FOR FEEDING STEAM BOILERS.---Figure 1.



This apparatus is the invention of Mr. Warren S. Bartle, of Newark, Wayne Co. N. Y., and for which a patent was issued a few months ago. Fig. 1 is a perspective view, and fig 2 a transverse view showing how the supply of water is regulated to the force pump. The same letters on both figures refer to like parts, and the drawings are the same as those on the specification with the exception of the form of the float chamber. A small cylinder to the right is erected and attached to a convenient part of the boiler, communicating with it by the upper and lower horizontal pipes—the upper one the steam, the lower one the water pipe. S, is the section water line. B, is a float placed in the cylinder and thus unaffected by the foam to operate correctly. The float by rising and falling is made to turn a cock to shut off and open the suction pipe of the force pump E, to regulate the supply according to the depth of water in the boiler and also by another combination to start and stop the working of the force pump entirely. The float therefore, is attached by a rod seen in section, to the arm G, which passes through the steam tight bearing box C. The wire F, connected with the float is finely balanced both at the shoulder near G, on a right angled arm, and is attached below to two adverse ratchets H H, as seen fig. 2, which are also accurately balanced on pivots in the small upright standard, and they are connected by the link P. As the float B rises and falls in the cylinder these ratchets turn the ratchet wheel J, which shuts or opens the suction passage of the force pump. The passage is opened to its greatest extent when the float is at its lowest line, and it can be shut up entirely when the float is at a certain height. This manner of opening and closing the supply passage of the force pump requires but a very small amount of power, in fact i is in respect to other float feeders, like operating with balance lever, wheel and axle, in comparison with a short rigid lever which surpasses the power of most floats to operate and is very easily deranged. N, is the connection of the suction pipe with the fountain of supply. The float is described to shut off the operation of the pump entirely, as follows. There is attached to the rocking shaft which passes freely through the standard, a single arm, on which are balanced two clicks as seen at N, in communion with the arm of the float to move with its rise and fall the two ratchets which are also adverse like H H, and moves a rack bar to operate by M F, the band, by fingers from the fast to the free pulley at K, on the shaft D, to stop or set in motion the pump according as the float rises or falls. A better arrangement than that represented in the drawing is employed by the patentee where he has it in operation. Various modifications might be presented, such as a clutch, as well as a free pulley to gear and ungear the pumps. When the current of the water through the pump is required to be continuous, and is to be admitted to, or diverted from the boiler by a three way cock, the cock should be placed above the valves, and when it is required to start and stop the current through the pump by the admission of air into the pump, the cock should be placed between the valves.

FIG. 2.



More information respecting rights, &c. may be obtained by letter, post paid, to the inventor.

A Good Safe.

The St. Louis Reveille says,—We saw, yesterday, in the ruins of the store formerly occupied by Messrs Woods & Violet, a safe that has effectually resisted the test of fire.—Although unprotected by a vault, and exposed to the heat of a burning pile for two days after the conflagration, the papers, &c., which it contained have since been taken out perfectly free of injury. The paint and varnish on the wooden shelving had not even been melted. We were told by a by-stander that it is called a "Salamander Safe."

[We should like to know the name of its maker.

The entire consumption of wheat in the British Empire is about 30,000,000 of quarters in a year. A quarter is eight bushels.

RAILROAD NEWS.

New Railroad Cars.

Some new and handsome Railroad Cars from the factory of Eaton, Gilbert & Co. Troy, New York, have just been introduced on the Harlem Railroad. These cars have the Patented Window Blinds, of which D. Hart & Co. are the inventors, we believe, and Eaton, Gilbert & Co. the assignees. They are constructed as to cover the whole of the window inside, and to fold up and slide into a casing over the window, entirely out of sight and out of the way. They can be lowered at pleasure to cover the whole or any part of the glass, which is in two large lights.

Survey of a Rail Route to California.

The Government has ordered a reconnoisance to be made from Fort Smith to the Bay of San Francisco. Lieut. Simpson, of the Topographical Engineers, assisted by Lieut. Hagen, have been ordered upon this service. This reconnoisance in connection with those heretofore made by Fremont, will enable Congress to decide upon a route for a Pacific Railway.

Columbus and Cleveland Railroad.

There are a great number of hands to work on the Columbus and Cincinnati Railroad which is intended to be in full operation this fall.

The Committee of the Connecticut Legislature have reported favorable on an application for a charter for a railroad from Danbury to the Harlem Railroad, a distance of nine miles.

The receipts of the New York and Erie Railroad, for the last month were $66,066,67, showing an increase of 163 per cent over May, 1848. This is going to be a great road yet.

Gas Explosion.

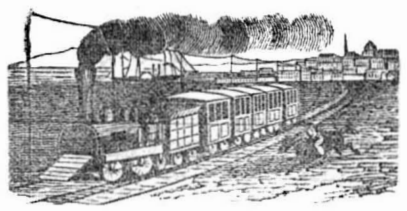
On the 6th inst. at Williamsburg, an explosion of gas took place at the salæratus manufactory owned by Francis, in Tenth-st. A young man named George Sylvester, 17 years of age, incautiously applied a lucifer match to the ventilator of the carbonizing rooms, when a violent explosion took place, which hurled him to the top of the building, whence falling to the floor, he broke the left knee-pan and was much bruised. The walls of the rooms were spread and prostrated.

The London Electric Telegraph Company has communication with one hundred and fifty towns. It has a central office, and five branch offices in London, employing 60 persons. The wires are 9,800 miles in length, are passed through iron pipes under the city, and are suspended upon 61,800 posts. A message from Liverpool to London, costs about 8s 7d., to Glasgow 14s.

Culture of Tomatoes.

Tomatoes may be sown in January and by the 1st of March may be transplanted in troughs four feet in length and six inches square, which may be placed tier above tier on racks, in a room of moderate warmth; and by the first of May they will be in height at least eighteen inches, and so forward that the first will be produced a month or six weeks earlier than usual. Three thousand plants will fill 375 boxes. They are transplanted four feet apart, requiring one and one-eighth acres of land.

Tomato culture is but a part of what may be accomplished in this way. It is indispensable to have many boxes twelve feet in length by four wide and two deep—making as perfect a Mushroom bed as possible. If by the first of January the said beds are properly filled with manure, you can raise on this all the Tomatoes wanted; by which time the Mushrooms will begin to appear, and if properly filled and managed, will bear plentifully for one year.



Cholera.—Review of the Opinions on the Subject.

What is the Cholera? This is a question on which no two persons seem to agree. One esteems it to be infectious, and another considers it to be epidemic. Last year the papers both at home and abroad gave noted instances of it being caused by an absence of electricity in the atmosphere, and if I am not much mistaken, galvanic belts, and small portable batteries were allowed to be the only antidote for the evil. But how stupid and ignorant those electric Choleretic theorizers must have been, for lo and behold it has just been proven to a demonstration (of a nonentity) that the disease is caused by something that is called *ozone*, in the atmosphere. What this ozone is the writer of this article cannot tell although he tries to keep up with the changes in chemical nomenclature. But surely there must be such a thing, when so much learning has been displayed upon the subject, describing its nature, and the way to neutralize its deadly effects. Ah, well what is ozone? Somehow or other we have not been able to discover. All the *learned* seem to agree that it must be a greater quantity of azote in the atmosphere here than there should be, viz. 79 parts by measure. The proper name for *azote* is nitrogen, and whether the wise ones meant to say ozena, from the Greek to smell, fistula of a putrid nature in the nose, or not, is somewhat difficult to tell, but it is very certain that some of them smelt a rat at any rate, for no sooner was it announced "with plaudits loud," in our city, that Dr. Bird, of Chicago, Illinois, had discovered that sulphur was a perfect cure for cholera, by destroying the *ozone*, then up went the price of sulphur like the mercury after a storm.

The cures for cholera are legion. Tobacco, Brandy, Opium, Camphor, Sulphur, Charcoal, Brandreth's Pills, Gunpowder and a host of other things. We believe that the Cholera which is at present in our city, is nothing but a sympathetic disease, and in my letter last week to the Scientific American I recommended a simple mode of treatment, as I consider it to be as good as any other.

We have instances of sympathetic affection influencing families, institutions and whole districts of country. The Hospital at Harlaem in which the children were seized with sympathetic fits, and cured by the famous Borhaeve, is an illustrious example. So are the religious fits of various sects, so eminently pourtrayed in Mr. Davidson's work on the subject. If there was any argument more strong than another to prove that the disease called Cholera said to be in our city at present, is nothing more than sympathetic affection, it is this, that adults alone have been the sufferers. A slight attack of diarrhœa being the basis of the disease, imagination did the rest. In such cases confidence in the prescription is the best certainty of cure. Bathing, regular exercise in the open air, calmness of mind, (the best point of all in the Mayor's proclamation) and an attention to domestic cleanliness, are sure preventatives of disease. It is indeed true, that people of the most regular habits, are sometimes affected with sickness. No one can doubt this. But it is as positively true that fear and excitement are grand elements in creating and in spreading contagious diseases.

New York. J. W., M. D.

[Ozone according to the experiments of Professor Schonbein, is a distinct peroxyd of hydrogen, and at the ordinary temperature forms a peculiar compound with olefiant gas without apparently oxidising in the least, either the hydrogen or carbon of this gas.—Ed.

The stock for the construction of the Electric Telegraph from Quebec to Halifax has been subscribed for, and the line from Halifax to Farther point, on the St. Lawrence, is commenced.

Improved Method of Tempering Edge Tools.

For heating axes or other similar articles, a heating furnace is constructed in the form of a vertical cylinder, the exterior made of sheet iron lined with fire brick 4 ft. 8 in. diameter, or of such outside diameter as to give it an inside one of 4 ft. and 3 ft. high. In the interior of this cylinder, several fire chambers are formed, usually four; the inner wall of each fire chamber is 18 in. long, 4 in. from front to back, and about 4 in. in depth, forming, in the whole, a circle of 3 ft 4 in. diameter: under each there are grate bars, and air is supplied through a pipe, connected with a blowing apparatus. A circular table of cast iron, 3 ft. 4 in. diameter, is made to revolve slowly on the level with the upper part of the said chambers; this chamber is sustained on a central shaft, which passes down through the furnace, and has its bearing in a step below it; a pulley keyed on to it serves to communicate rotary motion to the table. When the axes or other articles are to be heated, they are placed upon the table with their bits or steeled parts projecting so far over its edge as to bring them directly over the centre of the fire, and the table is kept slowly revolving during the whole time of heating. When duly heated, they are ready for the process of hardening. The hardening bath consists of a circular vat of salt water; within the tub or vat, a little above the surface of the liquid, is a wheel mounted horizontally, with a number of hooks around the periphery, upon which the axes or other articles are suspended; the height of the hooks from the surface of the liquid is such as to allow the steeled part only to be immersed; as soon as the hardening is effected, the articles are removed from the hooks, and cooled by dipping in cold water. With the best cast steel, a temperature of 510° Fahr. has been found to produce a good result in hardening in about 45 minutes.

Supply of Coal.

Last February, at a meeting of the Institution of Civil Engineers in London, a paper was read "On the Coal Field of South Wales," by Mr. J. Richardson. Reference was made as to the probable duration of the supply of coal in Great Britain, from the several mineral districts of which the extent is already known. This was variously stated by eminent authorities at between two hundred years and seventeen hundred years

Great Britain has about 12,000 square miles of coal;—Now, if that quantity is sufficient to last for from two hundred to seventeen hundred years—with an increasing demand for home consumption and an augmenting export trade, amounting, at present, to upwards of 6,000,000 of tons annually—how long may we safely estimate the supply of the Great Central Coal Field of the West, comprising, as it does, an area of at least 70,000 square miles.

Wheeling (Va.,) Silk Manufactory.

The editor of the Wheeling Gazette has been examining the stock of silk goods manufactured from the cocoons, at the Wheeling Silk Manufactory of John W. Gill, Esq., and is really surprised to find that goods so beautiful in texture and color are produced in Wheeling, or, indeed anywhere in the United States. In the texture, particularly, it thinks them superior to most imported articles of the same sort, certainly so far as durability is concerned. Mr. Gill is first, if not the very first, to establish the manufacture of the finer silk fabrics in the United States.

To Editors and Publishers in the U. S.

Mr. Vattemare wishes to place in the "American Library," which is now being formed in the City Hall, Paris—"A Collection of American Newspapers, presented to the City of Paris, by the Journalists of the United States, July 4th, 1849." He will thank all editors and publishers to send to the "Boston Daily Bee," (the editor of which has undertaken to form the collection,) a copy of their paper published on the Fourth of July, 1849, with a copy of each semi-weekly and weekly which they may issue during the first week in July. Papers published in other American nations, and old or rare newspapers, will be thankfully received. Acknowledgments will be made through the Boston Bee of all donations received.

Coolidge said not to be Dead.

A paper published in Maine, entitled Mann's Physician, states there is reason to believe that the body found in the cell were Coolidge should have been, may have been the corpse of some stranger resembling Coolidge, and that Coolidge has been restored to liberty. We do not assert it with the fullest confidence but we have many very strong reasons to believe that Valorus P. Coolidge is not dead—which we could give to the public, where we called upon. On the other hand, the Hallowell Cultivator says the body of Coolidge was given up to his relatives by the State Prison officers on Monday, and was taken to North Livermore by his brother on Tuesday.

[The above first report will find many believers, those who were not satisfied with the report of Coolidge's death. The name and examination of the prisoner who was the alleged cause of detection has not publicly been known.

Influence of the Press.

In Montreal the newspapers have always been Tory for the most part. The popular papers at Toronto have ever been Liberal—for progress. Mark a result. The St. Andrews' Society of Montreal expelled Lord Elgin almost unanimously, though he is a Scotchman, and lineal representative of 'the Bruce of Bannockburn,' for exercisingh e royal prerogative on his oath to the best of his judgement. The St. Andrews' Society of Toronto, sixty members being present, voted to His Excellency an address of thanks for his conduct, with but one dissenting voice.

All the St. Andrews' Societies in the United States, go with the one in Toronto in sentiment. The Vandals who sacked the Parliament House of Montreal, cannot be trusted in any country.

Law of Patents in Prussia.

Every invention is submitted to the examination of the Patent Commissioneas, in order to ascertain whether it is quite new, or an improvement. The specification must have good and correct drawings, [nothing said about a model,] with a clear description, which should be "sealed or packed up in a convenient way, and sent with some lines to the Minister of Trade and Commerce at Berlin, by which the latter is informed of the application for a patent" for the thing described. Patents not being granted to foreigners, it is necessary to name some citizens of Prussia to whom the grant may be made. Foreigners usually employ an agent to obtain their patents. Cost of Prussian patent two and a half Prussian thalers—[about two dollars.] "The examination is a very thorough one," and if the invented object has a likeness with an existing one, or the improvement is not a real one, or if published the delivery of a patent is refused.

Cockroaches.

We have often heard it asked, what end those disgusting creatures serve in the economy of Nature—or in other words, what they are good for. We have just learned. It will hardly be believed—but we assert it as a fact that the manufacturers of Sherry Madeira wine communicate to the liquors their peculiar flavor, by an infusion of baked cockroaches, which interesting insects or "big bugs," are roasted in an oven set apart for this most odorous and peculiar use. We hope our veracity will not be impeached, as we have for authority one of the most extensive and respectable wine merchants in this city; who in confirmation of the above fact, related to us that a friend of his, not content with the delicate flavor thus imparted by the manufacturer had every day brought to him for dinner, a live cockroach, with which he amused himself, pampering his appetite by dipping it up and down in his Madeira.

[We clipt the above from an exchange.—We have seen it in a number of papers. Who can believe it to be true? Surely no person of common sense.

It is said of Burke that he always read a book as if he were never to see it again.

Most men look through new books as if they contained nothing new. The consequence is —* * * * *.

Mr. Foskit, the inventor of the New Boiler Feeder, noticed in our last, resides at Meriden, Ct. not Windsor.

Coal in Massachusetts.

The Boston Times says that it has been ascertained by geological examinations, heretofore made by Prof. Hitchcock and Dr. C. T. Jackson, and more recently by Thomas S. Ridgeway, Jr. Esq., Geologist and Mining Engineer, Philadelphia, that there is good Anthracite Coal in the town of Marshfield in this State, and we learn that the Marshfield Coal and Mining Company, incorporated at the last session of our Legislature, have contracted with some experienced English miners to bore to the depth of 200 feet, are progressing rapidly, (now at the depth of 40 feet,) under the superintendence of Thos. S. Ridgeway, Jr. Esq.

Turkish Education.

The Turkish government is interesting itself in having men thoroughly educated in every branch of agriculture, for the purpose of introducing among the subjects of the government the best practical information in farming. In all the Turkish houses you will see one side on which the blinds are always closed. These are the apartments of the women: who live entirely separate from the male portions of the family. At the age of twelve, boys are removed from the society of their mothers and sisters.

Land Speculation.

We see it asserted in a number of papers that Mr. Maclay, recently a democratic member of Congress from this city, has purchased in connection with his three brothers, very nearly, if not altegether, a whole county in the State of Illinois, at the head of navigation on the Illinois River. The tract was mostly purchased by soldiers' land warrants which were purchased at a cost of not over sixty cents an acre. The land is said to be unsurpassed in America.

Sub-Rosa.

This compound word is often used in writing and conversation, as significant of secrecy. It is said that its derivation is as follows: anciently, the Greeks consecrated the rose to Hippocrates, the genius of Silence. And either the rose or its representation was placed upon the ceiling of their dining-rooms, implying that whatever was done therein should be kept from public knowledge. It was done sub-rosa, or under the rose.

An English Clock in Constantinople.

A large clock showing the time upon two faces and striking the hours and quarters has been placed upon a tower built for the purpose in the Arsenal at Constantinople. The clock was built in London and is the first public clock put up in a Mahommedan country.

The Masons employed on the Smithsonian Institute at Washington, have struck for higher wages—$2 per day. They claim this on the ground that it is a customary price for good workmen, and that the same was paid to the Masons in constructing the Patent Office, and other public buildings at Washington and Georgetown. We are not advocates of strikes of this kind, unless there are good reasons, but in this case we should think the laborer worof the hire he asks.

The mine at Gold Hill, in Rowan County. N. C. has been yielding $360,000 per annum, during the last five years. It is now worked by eight different mining companies, who have invested capital to the amount of $300,000. It was discovered 18 or 20 years ago.

Ninety thousand land-warrants have been issued to soldiers who served in the Mexican War, giving away to them as a bounty 13,800,000 acres. So that, estimating the value of this land at $1,25 an acre, we must add $17,230,000 to the aggregate cost of the Mexican War.

If the robbin and other small birds are encouraged to build near the habitations of man they will prefer such locations to extensive forests and swamps, where hawks and crows and snakes are more apt to be their neighbors.

Arrangements, it is stated, have already been made for printing the Scriptures in five of the principal cities in Italy, and colporteurs appointed for distribution.

The Mineralogist.—The description and locality of every important Mineral in the United States.

(*Continued.*)

SULPHURET OF MOLYBDENUM. (MOLYBDENITE.)

Occurs in masses and crystals, of a lead gray color; brilliant lustre; lamellated structure; specific gravity of 4.5; infusible; unctuous; plates flexible; dissolves in carbonate of soda. Found at Brunswick, Blue Hill Bay, Camdage farm, Bowdoinham, Me.; Landaff, Westmoreland, Franconia, N. H.; Shutesbury, Brimfield, Shaftsbury, Mass.; Brookfield, East Haddam, Saybrook, Ct.; Warwick, Island of N. Y., in the Highlands, N Y.; Franklin furnace, N. J.; Chester and Delaware Cos., Philadelphia, Pa.; Baltimore, Md.; Crown Point, Westchester and Putnam Cos., N. Y.

NACRITE.

Resembles a whitish soft earthy talc, with a greasy feel, occurring in minute scales; friable; swells when wetted or heated. Found at Brunswick, Me.; Smithfield, R. I.; Farmington, Ct.

ARSENICAL NICKEL.

Occurs usually massive, of a pale copper red color; metallic lustre; specific gravity of 7.35; brittle; when heated emits the odor of garlic; dissolves in aqua regia; forms green solution in aqua fortis. Found at Chatham, Ct.; Frederic Co. Md.

NOVACULITE. (WHETSTONE.)

Is a finely grained slate, of light and dark shades of color; compact texture; translucent on the edges; fissile; fragments sharp edged; specific gravity of 2.74; fusible; Localities: Kennebec River, Me.; Thetford, Vt.; Malden, Dorchester and Charlestown, Mass.; Berks Co. Pa.; 7 miles west of Chapel Hill, N. C.; Lincoln and Oglethorpe Cos., Geo.; Unionville, Bush Creek, Md.; the Cove of Wachita, As.

COMMON OR SEMI-OPAL.

Compact and amorphous; colors, white, gray, yellow, bluish, greenish to dark grayish green; translucent and nearly opaque; brittle; scratched by quartz and scratches glass; infusible: insoluble. Found at Litchfield, Ct.; Corlær's Hook, N. Y.; Falls of the Delaware and Easton, Pa.; Bare Hills, Md.

PARGASITE.

Occurs in rounded grains of a grayish or bluish green color; much lustre and specific gravity of 3.11. Scratches glass; fusible; translucent. It is found at Chester, Mass.

PICROLITE.

Is a fibrous variety of serpentine, occurring massive, of a greenish color, splintery fracture, glimmering lustre and specific gravity of 2.60; fusible with borax; translucent on the edges. Found at Kelly Vale and Weatherfield, Vt.; Milford and West Haven, Ct.

PIMELITE.

Is a green clay or earth, occurring in crusts or little indurated masses, dull or glimmering in lustre; soft, unctuous and infusible, but turns dark gray. Found at New Fane, N. H.

PINITE. (MICAREL.)

Occurs massive, also in prismatic crystals of a greenish white color, brown or deep red; glistening lustre; argillaceous odor; and specific gravity of 2.9; yields to the knife; powder, unctuous; infusible. Found at Bellows Falls, N. H.; Lancaster, Mass.; Haddam, Ct.

PITCHSTONE.

Is an unstratified and volcanic rock, of a gray, green, blue, yellow, brown, red or black color; slaty structure; resino-vitreous lustre; specific gravity of 2.3 to 2.6; scratches glass; generally fusible. Found at Bare Hills, near Baltimore, Md.

NITRATE OF POTASH. (NITER.)

Is a white crystalline salt, having an acrid, bitterish taste; deflagrates. Occurs in Madison Co. Ky, and Rackoon Mountain, Geo.

POTTER'S CLAY.

Occurs in masses, of a grayish white, reddish or bluish color; specific gravity of 1.08 to 2. Soft and unctuous; when dry, receives a polish from the nail; becomes tenacious and ductile when wet and worked; infusible. Found at Martha's Vineyard, Mass.; Bordentown and Burlington, N. J.; Philadelphia, Pa., Maryland and Missouri.

Several cannon balls found in the Vatican Gallery at Rome, have been placed in the collection of coins, with the inscription, "Gift of Pio Nono."

Lightning Conductors.

No building can be considered secure without a good conductor, and nine-tenths of those now having them are not much better off, owing to the fact of their faulty construction, their inadequate height and termination, and the very negligent manner of their application. As the conducting powers of the rod is greatly influenced by extraneous circumstances, it should be made, not only with great care, but in strict accordance with those principles which experience has proved necessary, in order to attain the highest possible degree of this essential requisite.

The Conductor should be made either of copper or iron,—the first is by far the best, as it is not liable to rust, and possesses eight times the conducting power of the latter; but its very high price operates to exclude it from general use, and causes iron to be preferred, as its moderate cost, brings it within the means of every citizen and farmer throughout our city and country.

The Conductor should be of a rounded form three quarters of an inch in diameter—the larger the better security, as the conducting power is in proportion to the solid mass, it should be continuous, the bars of which it is composed being well screwed into each other, or nicely adapted by means of a mortice and tennon jointed and pinned firmly together, by which the surfaces are brought into the most intimate contact.

The Conductor should be terminated at its superior or upper end, by a stem of copper, capped either with one or more points of gold platina, or silver; but of these, the first is the best, as its conducting power is much greater than either of the other metals, and if made solid, or well galvanized, is less liable to rust, a common result in a climate so moist and variable as that of ours. In addition to this, the rod should be well painted with several coats of black paint, which not only protects it from the moisture, but also tends to increase its conducting power.

As to the application. The efficacy of a conductor is greatly increased by its height above the building, and in this particular the greatest possible ignorance prevails, not only in the community at large, but in those who profess to understand the subject, and to furnish the necessary means for protection to others.

It is a common occurrence, all over the land, to see large barns and public buildings of great dimensions, say of thirty, forty-five or sixty feet in extent, protected with a small rod, elevated two or 3 feet above the chimney or ridge of the roof, an experiment not only dangerous in itself considered, but a useless expense, without securing in any way, the object for which it was applied.

The established rule is, that a conductor will protect a space every way only twice the length of its height above the building, and this rule should never be violated in the adaption of the conductor, for if it is placed only three feet above the ridge of the roof of a house or barn say thirty feet in length, it follows of course, that only six feet in every direction from its point receives protection, whilst the rest of the building is left exposed to almost certain destruction, if struck by lightning under these circumstances, and in this way it can be readily understood why houses having a rod of the ordinary means of protection have fallen in many parts of our land.

One conductor is sufficient for almost any sized building, provided its elevation is equally great, but when this is not desirable, two or more placed in different situations should be employed—particular if there be several high points of chimneys.

It should be secured to the building by means of iron or wooden stays, embracing necks of glass bottles, rings of horn or dried wood, through which the rod should be passed—thereby removing all danger of the lateral discharge, which however, is not great, if the rod be perfect, and due attention be paid to facilitate the discharge at its termination into the earth's surface.

The termination of the rod should be into earth permanently moist, which is found ordinarily at five or eight feet in sandy or gravelly soil. This is of vast importance, and, if overlooked, will endanger the building and its inmates, however perfect the conductor may be in its construction and application; much, almost every thing depends upon this principle being carried out, that the rod must be inserted into earth permanently moist

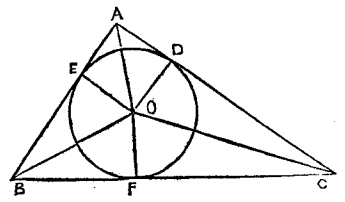
In order to guard the rod from rust, when passed into the ground, it will be necessary to paint it a number of times with good black paint, and the hole, in which it is inserted, should be partially filled up with fine charcoal, and this not only retains moisture when wet, but likewise counteracts that tendency to rust which proves so destructive to iron with a few years' exposure to our climate.

With due attention to these directions, buildings may be considered safe, but galvalized rods are better than painted ones, that is, the iron coated with zinc by scouring it bright and dipping it into a bath of molten zinc and salamoniac.

Solution of Problems on Page 288, No. 36.

The solution of Problem 1, in your journal of last week, seems to depend on the property of right angled triangles, embodied in the following Proposition:—

In a right angled triangle, as the sum of the three sides is to either of the legs, so is the remaining leg to the radius of an inscribed circle.



Let A B C be the triangle right angled at A, and E D F the circle inscribed in it, of which the radii O D, O E and O F, are drawn to the point of contact D E F. Now it is evident, that

2. Area ABC=BA, AC. And also 2. Area ABC=2.AOB+2.BOC+2.COA=ABxOE+BCxOF+ACxOD=(as OE=OF) OD) AB+BC+AC. OD.

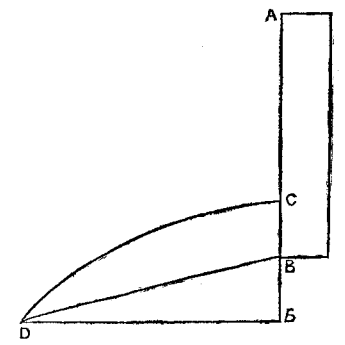
Hence AB+BC+AC OD=BA. AC. And AB+BC+AC : BA : : AC : OD. which was to be proved.

To apply this to the case in question. If AC be 16 and AB be 9, BC must be $\sqrt{16 \times 16 \times 9 \times 9} = 18.357$. We have then this proportion, 16+9+18.357 : 16 : : 9 : 3.321=the radius of the circle. Double this, or 6.642, is the diameter.

JOSIAH T. TUBBY.

New York, May 30, 1849.

SOLUTION TO PROBLEM 2.



Let A B denote the height or sides of the vessel. C the hole from which the water spouts in the parabolic curve D B. Draw the line D *b* and join B *b* so that the angles B *b* D shall be a right angle. Then B D is a maximum, and since the angle *b* B D is constant B *b* is a maximum, also *b* D. But when D *b* is a maximum D*b*. tan. BD*b*=*b*B or 2 AC. tan. BD*b*=2 AC=AB or 2 AC (tan. BD*b*—1)=AB or 2 AC (1—tan. BD*b*)=AB : : AC= $\frac{AB}{2(1-\tan. BDb)}$

Taking the positive value I find A C=9,433 feet, which was required.

RICHARD HINCHCLIFFE.

Ballard Vale, Mass.

[Mr. Hinchcliffe sent a solution of Problem 1 also. It was the same as Mr. Tubby's. We have received so many new problems, and solutions to those already proposed, that we have concluded to publish no more, as it requires too much attention to examine them.

An invention is announced to protect banks from robbery. The moment they touch the locks, a galvanic battery knocks them down and rings a bell.

The Crank.

BY JOHN BOURNE.

Many persons had supposed that there was a loss of power by the use of the crank, because it is not capable of exerting much power at the dead centres, (top and bottom,) but at those particular periods, there is little or no steam consumed, so that there can be no waste of power, for the steam used constitutes the power expended. Those who imagine that there is a loss of power by the crank, confuse themselves by confounding the vertical with the circumferential velocity. If the circle of the crank be divided by any number of equidistant horizontal lines, it will be obvious that there must be the same steam consumed and the same power expended where the crank pin passes from the level of one line to the level of the other in whatever part of the circle it may be, those lines being indicative of equal ascents or descents of the piston. But it will be seen that the circumferential velocity is greater with the same expenditure of steam when the crank pin approaches top and bottom centres, and this increased velocity exactly compensates for the diminished leverage, so that there is the same power given out by the crank in each of the divisions.

Many plans have been projected as substitutes for the crank and for gaining lever power, but they all display an ignorance of first principles,—no power, speaking critically scientific, can be gained by a multiplication of levers and wheels, and those who have substituted other mechanical contrivances for the simple crank, have generally found out what the greatest of mechanics, James Watt, found out long ago viz: that the crank was the best substitute for all other contrivances to accomplish the same object.

He tried the Sun and Planet wheels, contrivances which have no superior in their line, but them he wisely laid aside for the crank, and we venture to predict that the crank will hold its own for 100 years to come, with all other contrivances to convert a reciprocating into a rotary motion.

Source of Electricity.

The earth is the great reservoir of electricity, from which the atmosphere and clouds receive their portion of this fluid. It is during the process of evaporation that it is principally excited, and silently conveyed to the regions above; and also during the condensation of this same vapor the grand and terrific phenomena of thunder and lightning are made manifest to our senses.

In order to form a correct estimate of the immense power of this agent in the production of electricity, we must bring to our view the quantity of water evaporated from the surface of the earth, and also the amount of electricity that may be developed from a single grain of this liquid. According to the calculations of Cavallo, about five thousand two hundred and eight millions tons of water are probably evaporated from the Mediterranean Sea, in a single summer's day. To obtain some idea of the vast volume of water thus daily taken up by the thirsty heavens, let us compare it with something rendered more apparent than this invisible process. President Dwight and Professor Darby, have both estimated the quantity of water precipitated over the Falls of Niagara, at more than eleven millions tons per hour. Yet all the water passing over the cataract in twenty days, would amount only to that ascending from the Mediterranean in one day. More recent estimates make the mean evaporation from the whole earth as equal to a column of thirty-five inches from every inch of its surface in a year, which gives ninety-four thousand four hundred and fifty cubic miles, as the quantity continually circulating through the atmosphere.

To Treat Peach Trees.

The peach trees are only of a few years duration now, after which they wither and die. It has been suggested that grubs are the cause of this early decay and that they can be destroyed by removing the ground around the root of the tree and adding wood ashes or newly burnt lime which should be left till fall and then be removed so that the frost can get to them. If this is properly managed, the latter will effect the destruction of the worms without injuring the tree.

New Inventions.

New Self-acting Railroad Switch.

Mr. W. S. Whiting, of New Haven, Conn. has invented a most admirable self acting Rail road Switch or apparatus for shifting the rails at turnouts. It is not easy to explain this invention without an engraving, although it is excedingly simple and operates like clock work. Suffice it to say that the rails are shifted by the wheel of the locomotive in the following manner: One section of the road has the ends of the two rails made so as to be raised up a few inches above the level of the track, one rail at once. This is done by the ends of the rails resting on a walking beam rocker under the track, which as one end is up, raises one rail and the other end when down keeps the rail that rests on it level with the track. This rocker is attached at its middle to a horizontal rod or bar running parallel with the track, and attached to that part of the track which is moveable or has to be shifted. It will readily be perceived then, that as the end of the projecting rail is depressed by wheel of the locomotive running on the track, that the rocker underneath, will oscillate the horizontal bar to which the moveable track is attached and shift the track to receive the locomotive and train. In this way the track is always shifted for the approaching train—there can be no mistake about this action, at least for the operating of a single track in one direction. At the same moment that the track is moved, a spring rod or clutch meshes into a small recess on a transverse bar and retains the track in its place in the most perfect manner. Measures have been taken to secure a patent.

Improvement in Power Looms.

Mr. Roger Lightbown, of Eaton, Oneida Co. N. Y., has recently made some improvements in Power Looms, for which he has taken measures to secure a patent. The improvements consist of three distinct features. 1st. An arrangement for arresting the motion of the loom more rapidly by the weaver than by any contrivance at present employed for that purpose. 2d. A superior mode of arresting the motion of the loom to prevent smashes by a self-acting lever that catches a cam placed on the driving pulley. 3d. A superior let-off motion to make the motion of the warp beam coincide or increase in speed as the warp is given off or the diameter of the beam decreases.

New Wagon Wheel.

The Philadelphia Ledger says:—"Isaac B. Ward, of Camden, N. J., yesterday exhibited at the Ledger Office the model of a wagon wheel, constructed upon a novel principle, for which he is now an applicant for a patent. The tire is of wrought iron, and felloes also of iron, cast in segments, so as to be substantially screwed to the tire. The spokes are of wood, and the hub of the ordinary construction. Mr. Ward has made several wagons with wheels of this description, and they have been in practical use for several months.—They can be made cheaper than of wood, and will probably outlast ten ordinary wheels."

Electric Light for Daguerreotypes.

Faithful daguerreotypes have been taken in the city of Dublin by an ingenious artist, by using terrestrial instead of solar light. The light employed was the famous electric, which produced pictures with marked fidelity of outline and a depth and delicacy of shade which elicited much admiration. This is a valuable discovery indeed.

Steam Plough.

Mr. Henry Cowing, of New Orleans, La., has invented a steam plough, or rather a land locomotive for operating the plough, which is intended especially for the sugar plantations of Louisiana.

Chapman's Balance Rotary Slide Valve.

Mr. James W. Chapman, of Washington, Davis County, Ind., has made a valuable improvement in the slide valve, which is operated by a rotary motion in a circular steam box, which admits the steam above and below the slide to balance the pressure of the steam upon the slide. The slide could also operate by a semi-rotative motion but the rotary motion appears to be the best. The principle upon which the valve is constructed exhibits great ingenuity and a good understanding of mechanical principles, as it can cut-off at any point desired.

G. W. VERGER'S IMPROVEMENT IN SURGICAL APPARATUS.

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

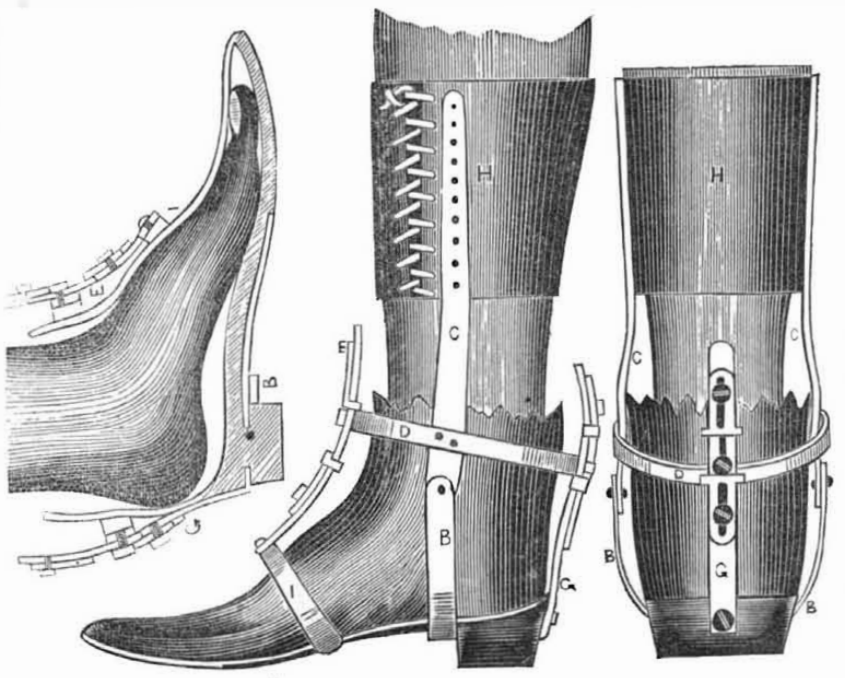
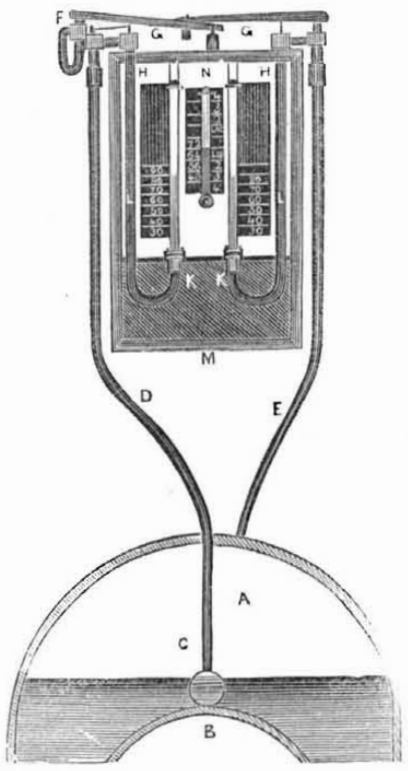


Fig. 1 is a side elevation of a boot with the improvement attached. Fig. 2 is a section of the same, and fig. 3 a back view of the same. Similar letters refer to like parts.

This improvement consists in securing to the shank and heel of the boot designed for the fractured or otherwise injured limb, a series of curved and spring and jointed bars I, E, G, B, C, corresponding as near as possible with the boot to which they are contiguous, extending over the front part and instep, and upward behind, and on the sides of the ankle of the boot, and on the sides of the calf of the wearer, and attached at this last mentioned part to a pad H, corresponding with the form of the calf of the said leg, in such a manner as to cause the weight of the body of the wearer to rest entirely on the lower part of the calf of the leg, except a slight pressure on the front part of the foot, and thus suspend the ankle above the heel of the boot as represented in fig. 2, and relieve it of all the pressure of the body, forming a double acting graduating spring support for fractured or otherwise injured ankles, and enabling persons thus afflicted to walk without the aid of crutches or other support, and with much greater facility than with them. The oval bar D, being attached permanently to the bar C, and loosely to the slotted spring bars E, G, allows a slight movement to the leg of the afflicted person. This apparatus is already patented and has been successfully applied in many cases of fractured ankles at Philadelphia where the ingenious inventor resides.

Lyman's Patent Steam and Water Guage.



This is an invention of Mr. A. S. Lyman, of St. Louis, Missouri. A, is the boiler. B, the flue. C, box on the flue. D, iron tube connecting box with water guage. E, iron tube connecting boiler with steam guage. F, elastic valve. G G, levers resting on elastic and steam valves. H K, iron tubes filled with mercury to L, and with water from L to H.—M, case enclosing guage. N, thermometer.

Steam Guage.—This consists of an iron tube (of any required length,) one end of which is attached to the top of the boiler, and the other curved in the form of an inverted siphon; connected with this is a strong glass tube, sealed at the top, and placed in an upright position, beside a scale, properly graduated, to show the number of pounds inch of steam in the boilers. The longer leg of the iron tube H K, is, in part, filled with mercury, above which is a column of water. to protect it from the heat of the steam which is forced from the boiler, through the iron tube, until it comes in contact with the water.—The pressure of the steam on the top of the column of water compresses the air in the glass tube, and double the pressure drives the air into nearly half the space, as will be seen by the scale. The safety and correctness of the Guage depends upon the fact that the water is a good non-conductor, and incapable of transmitting heat downwards.

The Thermometer.—Air is expanded by being heated, and it requires a greater pressure to drive it into a given space when warm than when cold. Eight degrees of temperature makes a difference of one pound in the indication of the Guage; for this reason the thermometer is added, and the scale is made when the mercury stands at 72 degrees. At this temperature, therefore, the scale is strictly correct; when it stands at 8 degrees above, or 80 degrees, we add one pound to the indication on the scale; at 88 degrees, add 2 pounds. At 64 degrees, or 8 degrees below, subtract one pound; at 56 degrees, subtract 2 pounds, &c. &c.

The Water Guage.—The construction of the Water Guage is the same as that of the Steam Guage, with the exception that, instead of being connected with the top of the boiler, it is connected with a copper box, hermetically sealed, laying in the boiler, and on the top of the flue. This box is filled with water, sufficiently saturated with salt to prevent freezing, and has no outlet except through the Water Guage. The indications of this Guage vary slightly from those of the Steam Guage, for several reasons, one of which is, from the fact that the box is filled with salt water, and it requires more heat to produce a given pressure of steam from water which is salt, than from that which is fresh. As soon as the water falls too low, or is driven off from the surface of the flues, so that they begin to receive extra heat, the pressure in the copper box, laying on the flue, will increase rapidly. The Water Guage will indicate that increase, and the alarm above the case containing the Guage, will sound a short time before the flues receive sufficient extra heat to become dangerous. When the alarm is sounded, the flue caps should be opened immediately, the safety valve of the boiler raised, and ten or twenty pounds of the pressure suffered to escape. This will cause the water to rise in foam, wash off and cool the surface of the flues. There will be no danger of collapse from the sudden accumulation of steam by the water thus coming in contact with the heated top of the flue, if the alarm is attended to; but if neglected for any length of time, the safety valve should not be raised, but the fires should be partially extinguished and the pumps started. If these precautions are immediately observed when the alarm is sounded, no danger need be apprehended in any case. The boilers are then as safe as at any other time

Directions for detecting any incorrectness in the Guage.—The Steam Guages for cabins are so constructed that they will contain no more air than is introduced before the scale is made; should more be forced in, it will escape the first time the steam is down. The only way then to make them indicate less than the real pressure, would be to slide the scales upwards; but these are so fitted to the stuffing boxes, holding the glass tubes, that any interference of this kind would at once be detected.

The only method of interfering with the correctness of the Water Guage, and preventing the alarm, would be—

1st. By drilling or cutting a hole in the box laying on the flue, thus giving the water in this box vent into the boiler as soon as the flues receive extra heat.

2d. By fastening down the alarm valves.

Now if a hole is made in the box, it may be known from the fact that the vibrations of mercury in the Water Guage would correspond with those of the Steam Guage. If the valve should be fastened down, the small iron tube conducting the steam from the box to the Water Guage will burst open at the weld the first time the water falls too low, and suffer the water in the box to escape in the form of steam. This would take place before the top of the flues were heated to the temperature of 450 degrees, while it requires about 1000 degrees to produce a red heat, and would give sufficient warning.

If the mercury in the Water Guage falls considerably lower than that of the Steam Guage, and is moved by sudden impulses, the box is nearly empty of water, and should be immediately filled; but as the steam escapes from the main boiler and not from the box on the flue, in case of an alarm from either low water or high steam, this box never need be emptied, unless there is a leak in the tube leading from it to the Guage.

[This apparatus cannot be too highly praised, nor its importance too highly magnified. More information may be obtained by communicating post paid with Mr. Charles H. Tillson, St. Louis.

Important Discovery.

Mr. N. S. Day, writes us that he has just made the discovery of attaching cast iron in a fusible state to potters' clay.

New Electric Telegraph.

The London Patent Journal describes a new telegraph invented by Geo. Henry Bachhoffner, Doctor of Philosophy in the Polytechnic Institution in London, in which he claims an improvement only on the mode of actuating the pointers, and signalling by figures and letters on dials. In our opinion it is not at all equal to permanent marks, such as Morse's, House's and Bain's, the three that are now efore the American public.

NEW YORK, JUNE 16, 1849.

Street Cleaning.

Our citizens appear to be sublimely wide awake to the importance of dirty streets. Our city authorities appear to have the most scientific views of routing out the mud by getting into the mire. Troops of street cleaners are employed to hoe and sweep up street accumulations, and in order to do this smartly, a poor fellow has to keep one eye on the look out for the stages, for fear of being run down, and the other at his hoe or birch broom. The result of this system is beautiful small heaps gathered up near the pavement, in a beautiful long space of time, and as it is not convenient at all times for the mud carts to follow the sweepers, ten chances to one if the dogs, stages, carriages and carts dont have some fine fun in dancing over the same dust or mud after it has been three or four times heaped up by the scavengers. Our storekeepers, especially the tall ones in Broadway, have a fine way of keeping the side walks clean, by making them dirty. The way they do this is highly creditable to the intelligence of the age, and as the citizens of distant cities may desire to know about these things in order to copy the fashion of the Great Metropolis, we hereby append the method and charge nothing for the information.

Any person who has been in Broadway between 7 and 8 A. M. knows full well that there is nothing to be seen but a torrent of human beings rushing along with hurried tread. This is the grand period our storekeepers take advantage of, to wash their sidewalks with Croton and free them from the accumulated dust of the previous day. The scientific result of this is a perfect laying of the dust, with the deposit of a fine stratum of mud.—When the sidewalks are wet, on comes the crowd with the soles of their brogues well moistened to make the dry dust at the crossings adhere to them finely for a safe deposit on the first wet sidewalk. Every person who has paid any attention at all to the evil we speak of, knows, that our sidewalks a short time after being deluged with water in the mornings, present the appearance of mud puddles. The consequence of this is, that in the afternoons, if there is the least wind stirring, the atmosphere of Broadway especially, presents the appearance of a storm in the desert of Sahara. It is dangerous to the daylights and we should think more so to the goods of our merchants. Every person then seeks a bye street, in preference to walking up thro' the principal thoroughfare. It is a wonder that our merchants have been so long blinded to a remedy for this evil. The only way we can account for it, is to lay the blame on the dust having blinded their eyes. The remedy for the two evils we have pointed out, is to clean the streets and sidewalks after twelve o'clock at night and have them finished before five in the morning. There should also be more hydrants arranged along the sidewalks, by which some person appointed for that purpose, may go along and attach a pipe with a rose on the end of it, to sprinkle the streets at regular intervals. This would surely be a superior and cheaper system than the present ineffective one of sprinkling the streets with a horse and cart carrying a hogshead of water to keep down the dust upon the famous old principle that was invented by Janes Van Scrans in the year one.

American Carpets.

There are a great number of carpets manufactured now in the United States. No country in the whole world uses so many as ours. Among no people are they so universally employed as articles of domestic luxury and comfort. This is as it should be, the raisers of wool, the dyers, spinners, and weavers have surely a pre-emption right to a good carpet. This right is not either really or jocularly known among the working people on the other side of the big salt pond. The working people of England know nothing about the use of carpets in their houses, and they are not considered by the higher classes as having any right to such things. What ? a British journeyman shoemaker or blacksmith having a carpet in the house—the the thing would be considered preposterous, and if such a thing could be, it would certainly call forth the eloquence of Parliament for the passage of some bill to restrain the extravagance of the working classes, for whom, in the eyes of hereditary pride, bacon or brose, (in stinted quantity) is good enough food, and calico, corduroy, and Galashiel good enough and plenty enough of clothing. In our country the mechanic claims a carpetted room as an inherant right, and hence we have a larger market for carpets among our people than among the same number of people in any other country. The carpet trade of the United States is very extensive. There are large factories in Lowell, and Roxbury, Mass., Thompsonville and Tariffville, Ct., the large one of Messrs. Higgins in this city, factories at Auburn, N. Y. where beautiful carpets are made, and there are many other factories in this and other States that we might mention, but we do not write this article for that purpose. One object is to speak a word for the the right of working men to enjoy those things. Domestic comforts have a most beautiful influence in elevating the human character. Another object is to correct a very common error among our merchants, (who ought to know better,) and the public generally, respecting the colors of American and English carpets. It is a common opinion among our people who are unacquainted with "applied chemistry," that the English carpets are made of more permanent colors than the American carpets. We were surprised at a fact that came within our observation last week, of an English Turkey carpet being chosen in preference to an American one, altho' the latter was a superior article and of a more beautiful pattern. We enquired the reason of the choice, and was told that it was owing to the quality of the colors of the English carpets being more permanent than the American, and what surprised us most, was the belief of the merchant in the opinion too, which he assured us was universal, and "more especially," he said, "among our wealthiest people." This is really to be regretted, as it is a piece of sheer nonsense—vulgar ignorance. Some think that the waters of England are better for dyeing than those of the United States, and others think the dyers and drugs are altogether superior. We must spoil all such "far off fowls with feathers fair." The majority of the dyers in the United States are Englishmen or Scotchmen, the stuffs used in both countries are the same kind, and the waters are the same in both countries. There are good and bad in every land. The colors of the American carpets are as good as the English and the workmanship of the carpets not inferior. Those who have paid a high price for an English carpet, in order to get better colors, have made nothing more by the choice than the simple one of "a bad bargain" through ignorance; and those who have purchased American carpets for a lower price, can laugh at their more unfortunate neighbors and gingle a few of the saved gold dollars as a chorus both for the honor of their country and extra ballast to their purses.

Simpson's Propeller.

A correspondent writing to us enquires what we know about Simpson's mode of propelling vessels, the principle of it, &c., and thinks that the information would be interesting to many of our readers, as a great deal of attention has been directed to this subject. It is our opinion that Simpson's method of steam boat propulsion has not proved to be so good as it was represented to be by the English papers in 1847. None of the new crack British steamships have adopted them. Nevertheless it may do good to describe the principle of the invention. Simpson's propellers consisted of wheels acting horizontally in a case under water. The principle of the invention consists in the ejectment of a column of water in a parallel line with that of a vessel's motion acting against the water outside the vessel. Simpson's theory is, that as the wings of a bird act upon the air, which is beaten back as the bird flies onward, so the submerged water columns act as powerful water wings, beating back the denser mass of water with irresistible force. The invention and principle of it is at least beautiful, none can deny this. In our opinion it is superior, because more natural than the screw. It was tested in 1847 on a small steamboat, the Albion, of 20 horse power, and made 12 knots per hour. The diameter of the wheels was only 24 inches. This certainly was a great triumph, but since that time we have heard no more of it.

Scientific Memoranda.

The ship Portsmouth, just arrived at Warren, R. I. from a whaling cruise, reports that on the 18th of March, in lat. 57 S. long. 74 W. she experienced a severe gale. While scudding before it, a dense cloud gathered in the west, out of which issued a violent hurricane and many balls of fire. One of these struck cutting the pendants at the mainmast head, and fell in fragments on the deck, setting fire to the mainmast head and rigging, and doing other damage.

Lemons may be kept perfectly fresh for three months in summer by placing them in a closely covered jar, or pot, kept in an ice house. Each lemon is wrapped up in paper, but opened and wiped once in ten or twelve days, then covered again with dry paper, and put back into the jar, or earthen vessel, on the ice.

Mr. J. W. Chapman of Washington, Ia., has made some valuable improvements in vertical tube boilers, whereby a great saving of fuel is effected.

A race recently came off on the river Tyne England, between a Gutta Percha skiff 26 feet long and 3 broad, and one crack boat named the Percy. The result was a complete defeat of old wooden walls.

Capt. Bennett, of New York, is doing wonders on the western waters in raising sunken steamers by means of wreck pumps. He has just raised the Highland Mary, which was badly sunk and abandoned.

The foreman of the machine-shop of the Harlem Company in this city, has made a great improvement in oil boxes, by which the cars have been run 3,500 miles during 22 days with a consumption of only half a pint of oil to each box.

Clay, ashes, decomposed or rotten manure, with clover, it is said, has proved to be the best means of improving sandy plain lands.—Plaster is useful in situations where it will act. This can be ascertained by trial.

Dissolving Bones by Steam.

A statement has lately been made to the Highland Agricultural Society, North Britain, in relation to pulverizing bones by steam. It was stated that bones of any size could be reduced to a soft mass by this agency alone. A small boiler, with a steaming vessel connected with it, capable of standing a pressure of twenty-five or thirty pounds to the square inch, was all that was required. If the vessel was filled with bones, and subjected to the action of steam above the level of the boiler (as they will not dissolve if covered with water,) at twenty-five pounds pressure for a few hours, they will become quite dissolved—thus saving all the expense of grinding, and the sulphuric acid commonly used, which amounted to double the price of the rough bones. All the bones were so much softened, that the largest pieces found could be easily crushed fine by the pressure of the hand. Dr. Anderson, the chemist of the society, thought, the steaming would be cheaper than grinding.—Professor Traill thought the steamed bones would be preferable to these dissolved with sulphuric acid, because, when the acid was added to bones, there was a destruction, in part at least, of the animal matter. The gelatine, which was of itself a valuable manure would be saved by the steaming process.

Ancient Pyramid of Balls.

While Mr. S. Blanchard, of Prospect, near Belfast, Me., was looking a short time ago for some stone of a peculiar shape at low water mark on Sandy Point, he discovered thirty six cannon balls from ten to 24 lb., lying buried beneath the surface, covered with a sort of cement, and stacked in a perfect pyramid form.

Potatoe Sugar.

The manufacture of sugar from fecula by sulphuric acid has been carried to a great extent in France. The way this is done is by large leaden boilers, one ton of water being first heated to the boiling point and 22 pounds of sulphuric acid at 60° diluted with twice its weight of water, is added to it. The vessel is provided with a wooden cover, coated with copper, which has near the rim an opening of about 12 inches in width to allow the liquor to be stirred with a wooden rod. After the liquor begins to boil about eight hundred weight of starch flour is gradually sifted into it, which must be continually stirred and added in very small quantities to prevent the formation of lumps, and the boiling is uniformly continued.

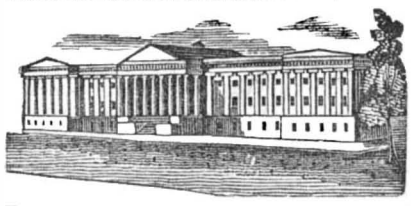
In some factories the starch is first mixed with water and placed in a vessel above the water and made to flow into the boiling acid in the boiler in a uniform stream by a tube. This is allowed to be the best way. The boiling is not continued for more than about fifteen minutes after all the starch is mingled in the boiler, The fire is then regulated so that the liquor ceases to boil, or if the boiling is done by steam, which is the best way, the steam is shut off or the quantity regulated at pleasure. About 22 pounds of chalk is then added, or such a quantity as to neutralize the free acid, which can easily be known by the introduction of a piece of litmus paper. The chalk must be added very slowly, on account of the violent evolution of the carbonic acid, which is set free by the new combination which produces the sulphate of lime. The liquor is then strained through coarsely pulverized burned bones which is spread on straining cloths in wooden filtering frames.—The sulphate of lime which is deposited is finally used as a mauure, it being first washed with water, and the water may be afterwards used for another process. The filtered liquor is gradually brought into flat pans and evaporated rapidly until it is reduced to about half the volume, when it is a second time heated to boiling with charcoal and bullock's blood, then refined and filtered. 100 parts of dry starch yields about 100 parts of sugar, which is obtained by concentrating the syrup to 36° Reaumer, and decanting it into casks provided with taps, when it is left slowly to cool. At the end of two days crystallized sugar is found in the casks and some liquid syrup, which is drawn off by the tap or faucett. In some factories the syrup is more concentrated and then drawn off into tinned copper vessels. This way does not form such regular crystals as if the syrup was weaker. This every chemist will fully understand. Here we have chemistry systematized into a regular manufacture of making sugar from potatoe starch, sulphuric acid, water and chalk.—These are some of the wonders of improvements in science. The starch sugar syrup is used extensively in Burgundy for giving more *body*, as it is called, to the wine. It is also used for making better spirits than the kind made direct from the fermented potatoe. Ten pounds of this starch syrup is generally mixed in a 50 gallon wine cask. This sugar is also used for confectionary and a number of other purposes. We hope that none of our readers will be so afraid of sulphuric acid after this, although they may well ponder on the change produced by its action. Flour has but little taste of itself, and the acid is most bitingly sour, yet what have we as a produce of the mixture ? A most charming sweet.—Well may we say, "out of the sour cometh forth sweetness."

The charcoal porters and venders of London have entirely escaped the Cholera. Charcoal is an absorbent of various impurities, and a powerful antiseptic.

Our London Patrons.

We are happy in being able to inform our English patrons that such arrangements have been completed with the London Patent Office that the Scientific American may hereafter be found there. Messrs. Barlow & Payne are agents at 89 Chancery Lane, and will receive remittances on account of the Scientific American from those who may desire to subscribe.

Terms—3 dollars per year and postage paid out of the United States.



LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending June 5, 1849.

To Gideon Griest, of Adams Co. Pa. for improvement in Brakes for Carriages. Patented June 5, 1849.

To F. P Taylor assignee of J. W. Briggs, of Cleveland, Ohio, for improvement in Cockeyes for Harness. Patented June 5, 1849.

To Jacob and John Pringle, assignees of Jas. Cox, of Ebensburgh, Pa. for improvement in extension machines for raising bricks, mortar &c. Patented June 5, 1849.

To F. Bush & J. H. Pratt, of Meriden, Conn. for improvement in making ivory fine tooth Combs. Patented June 5, 1849.

To Carlton Dutton, of Rochester, N. Y. for improved Railroad turnout. Patented June 5, 1849.

To A. Gilmore, Wayne, Me. for improvement in Bee Hives. Patented June 5, 1849.

To T. A. Davis, of New York City, for improved Trap and method of Setting it. Patented June 5, 1849.

To J. E. Dow, of Washington, D. C. for improved Tent frames. Patented June 5, 1849.

To Edward Steacy, of Strasburg, Pa. for improvement in Grain Drills. Patented June 5, 1849.

To C. B. Hutchinson, of Waterloo, N. Y. for improvement in Wind Mills Patented June 5, 1849.

To E. R. Brown, of Albany, N. Y. for improvement in Parlor Cooking Stoves. Patented June 5, 1849.

To A. Downes, E. Mynders, H. C. Silsby & W. Race assignees of B. Holley, of Seneca Falls, N. Y. for improvement in Pumps. Patented June 5, 1849.

To Stephen Coats, of Lafayette, Wisconsin, for improvement in Corn Ploughs. Patented June 5, 1849.

To H. B. Babcock, of New York City, for improvement in Metallic Alloys. Patented June 5, 1849.

To Christain Buckhardt, of Cincinnati, Ohio, for improvement in the consumption of fuel in Steam Boiler and other furnaces. Patented June 5, 1849.

To J. D. Willoughby of Chambersburg, Pa. for improvement in Seed Planters. Patented June 5, 1849.

To Joseph Heygle, of Cumberland, Md. for improvement in Smut Machines. Patented June 5, 1849.

To James Scott, of Portland, Me. for improvement in Sun Dials. Patented June 5, 1849.

To Jesse Reed, of Marshfield, Mass. for improved Steering Apparatus. Patented June 5, 1849.

To Henry Bacon, of Tecumseh, Michigan, for improvement in Subsoil Corn Ploughs. Patented June 5, 1849.

To C. Perley, & J. Terry, of New York City, for improved shank pointer stopper. Patented June 5, 1849.

To Ezra Ripley, of Troy, N. Y., for Chills for Casting Rasps, Files, etc. Patented June 5, 1849.

To G. W. Brown, of Tylersville, Illinois, for improvement in Cultivators. Patented June 5, 1849.

To S. S. Fitch, of New York City, for improvement in Shoulder Braces. Patented June 5, 1849.

To Richard Coffin, of West Haverhill, Mass for Machinery for operating railroad gates by means of the Locomotive. Patented June 5, 1849.

To Wm. H. Marston of New York City, for improved Gun Lock. Patented June 5. 1849.

To Geo. E Warner, of Springfield, Mass. for improvement in Machine for raising Brick, Mortar and other materials, to any required heighth for buildings in progress of erection. Patented June 5, 1849.

A new steamer named the San Francisco, exploded her boilers at St. Louis on the 23d ult.

The History of the Solar System.

By J. P. C. Nichols, Professor of Practical Astronomy in the University of Glasgow.

It may be thought that, when the astronomer has surveyed the extent of the sidereal universe, and has assigned their places in it to our solar system, describing the distinctive features of the latter, and the indissoluble sympathies of its members, his task has here ended. But in this, as with other branches of knowledge, we have no sooner reached what appears to us satisfactory in this line of inquiry, than difficulties pursue us from unexpected quarters. It soon occurs to the inquirer, that though the law of gravitation explains how it is that the elements of our system are bound together, and many multiplex relations of all the orbs we see, still there are facts of the highest import, connected with our system which the law of gravity does not account for, and does not even remotely touch upon. We find in particular one very important disposition of the orbs of our system, namely, their all lying nearly in the same plane. All the planetary bodies, and also the satellites, by which some of them are attended, are very nearly in a plane, which is the plane of the equation of the sun. If we take the sun's equator, and extend a plane which cuts through it equatorially, the orbits of the planets are found to lie very nearly all that way. The law of gravity affords no explanation of this fact. We see that gravity will sustain the planets in the plane, but so it will sustain comets in their planes, and these latter are in no way connected with that plane. These planes are inclined at angles; very different angles to the sun's equator. The law of gravity cannot then account for this remarkable disposition of planets in one plane. We find also that the planets are moving round the sun almost in circles, but not precisely; they move in ovals or ellipses. Comets too move in ellipses, but in ellipses much more elongated, and the law of gravity agrees with both kinds of orbits. This is the second remarkable fact, that the orbits of the planets are all ellipses, slightly elongated, almost approaching to circles. Another point to be noticed is, that the planets all move round the sun in the same direction. Gravity has nothing to do with the fact; accordingly, we find comets moving in all directions. Once more; the planetary bodies and the sun itself rotate on their axis, and this motion too takes place in the same direction that the bodies move in their orbits. This remarkable concurrence of circumstances manifests to us a power very different from blind chance.

We have now, then, to start afresh with our speculations, and to ask what is the true cause of these remarkable dispositions. Before proceeding further however, there is the exception to the general statements which must be noticed. It relates to the satellites of Uranus. Sir W. Herschell who discovered this planet, imagined he saw six satellites around it; since his time only three have been observable.

These satellites do not move in the same planes as the planets, but in others nearly at right angles to them. Are we to conceive that this exception forbids us to say that the previous harmonies shows the order of the system; or are we to say that the correspondence of all the other planets and satellites establishes the general fundamental order, and that the case of Uranus is an exception referrible to some disturbing cause, with which we are unacquainted? It appears to me that this exception must be due to some disturbing cause, and is to be treated as an anomaly, and not to overturn the results of our investigations as to the rest of the system If any one shall feel himself entitled to say that the instance of Uranus forbids us to assume the general fact as the fundamental order of the system, then a bar is put to the investigation on which I am about to enter. The facts I have related must be regarded as peculiar to the solar system, and as constituting its indenductity. What are we to make of these irregular concurrences—whence came they? There are, I think, but two possible answers to this question—either we must say, these are the dispositions originally impressed on matter, when it was brought into being in accordance with the creative fiat; or that they are now in the system in consequence of that system having progressed out of some previous form of being; that form of being, being indicated distinctly by these circumstances. To which of these views shall we incline? Look at the blossom of spring, its delicate structure, its true adjustment, its brief existence. But this existence is not of the briefest.

(*To be concluded in our next.*)

Motion.

BY B. F. STICKNEY.

No. 1.

The primary cause of motion, does not appear to be fully understood. That there is a Universal Fluid prevading all things that exist, appearing under different names, such as Electricity, Galvanism, Magnetism, Nervous Fluid, Fire, Light, &c., no one will doubt.—Although invisible, it is a material pervading all space, demonstrating its power by its effects. There is in this fluid; as its fundamental quality, a perpetual motion, from which all motion, is derived. Every animal, and every vegetable, is a machine having perpetual motion, derived from the universal perpetual motion, as an inherent quality in the universal fluid. By this fluid "we live, move, and have our being," and so does every other animal and vegetable. Could its action be suspended for one minute of time, the millions of worlds must fall into chaos. We are told that this fluid can be so applied as to produce animal life, and sustain it, (in the lowest grade of animalcula.)

Much has been spoken and written to show how animal life is sustained. They minutely survey every part, but more especially the vesserial system; they show how the air is taken into the lungs, and the component parts that are required to produce a healthy action. They show how this atmospheric air is taken into the lungs, and the changes it undergoes there before it is expelled; how crimson venous blood is changed to scarlet arterial blood and say it is by the absorption of oxygen. But they appear to have no use for this universal fluid, the primary sustainer of all life. This fluid being invisible, but little is yet known of its action. It is has various forms of motion as invoillionier, zigzag, and vibratory, or alternate. It is continually moving from high charged localities, to less charged; called positive and negative charges. It is one of the peculiarities of this fluid, to collect in globular masses before it changes from its positive to a negative locality, and the concussion of the atmosphere by its rapid motion, makes a great noise that we call thunder. We perceive the same upon a small scale in the electric spark. We sometimes see this alternation of motion in 2 clouds at a distance of ten or twenty miles apart; thundering and lightning, at regular short intervals, first one, and then the other, as regular as the motions of a pendulum, yet we see no fluid pass from one to the other, nevertheless, it is fair to conclude that it does pass. But in this great question of sustaining animal life by respiration, we conceive that this fluid is to be looked to as the primary agent. When we inspire, we say we take in atmospheric air. Can we take in this combination of gasses (oxygen, nitrogen, hydrogen, and carbon) without this fluid, that pervades all space? Were it possible to deprive this air of the all-pervading fluid, we conceive it would not sustain life for a moment.

Another question that arises, is, if we say that this fluid in question is the nervous fluid, then what is the common avenue of entering and leaving the nerves? It is probable that the most common entrance is by the skin or through the lungs? if we say the latter, then would it not be a plausible mode of extending the theory, by saying that this nervous fluid entered the lungs and friction taking place in its passage, the latent fluid becomes active, and a chemical change takes place and the changed composition of gasses is expelled, and a new quantity is revived. Thus action and re-action is kept up like the clouds and the electric spark above mentioned. And by this process the nerves are supplied with the fluid, and the lungs and the heart are kept in motion and the blood propelled through the arteries and veins.

Earth the Natural Friend of Man.

The great Roman naturalist, Pliny, in one of the most beautiful passages of his elaborate history of nature, observes:—It is the earth that, like a kind mother, receives us at our birth, and sustains us when born. It is this alone, of all the elements around, that is never found an enemy of man. The body of waters deluge him with rains, oppress him with hail, and drown with inundations; the air rushes on in storms, prepares the tempest or lights up the volcano; but the earth, gentle and indulgent, ever subservient to the wants of man, spreads his walks with flowers, and his table with plenty; returns with interest every good committed to her care; and though she produces the poison, she still supplies the antidote, though constantly teased to furnish the luxuries of man rather than his necessities; yet, even to the last, she continues her kind indulgence, and when life is over she piously hides his remains in her bosom.

The End of Prudence.

The great end of prudence is to give cheerfulness to those hours which splendor cannot gild, and acclamation cannot exhilarate.—Those soft intervals of unbended amusement, in which a man shrinks to his natural dimensions, and throws aside the ornaments of disguises which he feels, in privacy, to be useless encumbrances, and to lose all effect when they become familiar. To be happy at home is the ultimate result of all ambition, the end to which every enterprise, and labor tends, and of which every desire prompts the prosecution. It is, indeed, at home that every man must be known by those who would make a just estimate of his virtue, or felicity; for smiles and embroidery are alike occasional, and the mind is often dressed for show in painted honor, and fictitious benevolence.

Expenses of British Colonies.

An interesting return, moved for by Mr. Vernon Smith, supplies the following information respecting the Colonies: The North American possessions of Great Britain which include Canada, Nova Scotia, Prince Edward's Island, New Brunswick, Newfoundland and Bermuda, entailed a total expense, for the five years ended March 31, 1847, of £2,646,-094 for the pay of troops and commissariat expenses; the West Indian possessions entailed, during the same period, a cost of £1, 779,337 for the same purposes; the Mediterranean and African possessions, including Gibraltar, Malta, the Ionion Islands, the Cape Colony, Sierra Leone, Gambia, the settlements on the Gold Coast, and St. Helena, entailed an expense of £3,170,988; and the Australian and miscellaneous possessions an expense of £2,052,935. It follows that the colonial empire of Great Britain entailed upon the mother country, for the five years ended March 31, 1847, a gross total cost of £9,742,-354 solely for the pay of her Majesty's troops and for commissiariat expenses, being on an average, nearly £2,000,000 per annum.

Cocoa Nuts.

The tree is a native of Africa, the East and West Indies, and South America. It is a kind of palm, from 40 to 60 feet high; the trunk is entirely naked having immense feathers, each 14 or 15 feet long, 3 feet broad and winged. The nuts hang from the summit of the tree in clusters of a dozen or more. The uses made of the tree and its fruit would require a long description. It affords food clothing, shelter and protection in innumerable ways.

The Office of the Bat.

The Philadelphia Ledger says:—That a gentleman of observation and reflection, informs us that the common bat, which many people consider an annoyance when it flies into and about their house during the summer and fall evenings, will destroy and effectually clear a room full of mosquitoes in a few minutes. He says they are perfectly harmless, and from repeated observations of their visits and business, he believes their object in visiting a room is to make a meal of the flies, musquitoes and other small insects which collect there. He has watched them so closely as to both see them catch the insect and hear the fine snap of their teeth upon them. He, therefore, never drives a bat out of his room, as many people do, who do not know their usefulness.

TO CORRESPONDENTS.

"J. M. B. of Wis."—Your plan for conducting telegraph wires through glass pipes and then surrounding the pipes with cement, is not new. Mr. T. DeGolyear of this State, has made application for a patent on a similar plan, and claims the use of it for conducting water also. Your former letter was received with funds.

"M. D. E. L. of Vt."—The drawings of your plan for a portable battery," are novel indeed, there is no doubt but a patent would be granted for so ingenious a mode of killing people, and it is probable that the apparatus would be sought for by our goverment. Please send us a model.

"B. A. of N. C. and others."—We regret to inform you that No. 2 of Vol. 4 is out of print. Copies cannot be furnished.

"W. C. of Tenn."—A copy of Minifie's Drawing Book was forwarded to your address by Greene & Co.'s Express, last Thursday week.

"A. R. P. of Ind."—Notwithstanding the thousand and one Washing Machines that have been patented and are in use, we think yours is different from any that we have ever seen described. If you will send us a model (prepaying the Express fees) we will have your invention more thoroughly examined and write you concerning it

"R. C of N. Y."—Your ideas appear to be the right kind. Yet we are afraid you could not introduce the improvement. It is difficult to get men to try these things on a large scale. We would advise you not to be at much expense. The second plan, of carrying the Mail through tubes in which a vacuum was formed was brought before Congress last session, and a working model exhibited. They did nothing with the project. We have been informed that the same thing had been tried and laid aside as impracticable, in England. Your third proposition is a good one, but we would advise you to keep the plan as secret as possible until the right time arrives for its application; then bring it before the proper board. If you do not do this, others might appropriate your discoveries and reap all the benefits

"J. J. & C. of Mass."—Having examined the drawings, we see the advantages of more lever power as demonstrated, but then with such an increase there is always less speed.—The great advantage which you have is the mode of applying the power. The pistons are worked as advantageously, as running a car upon a level railway in comparison with running up an incline. The mode of calculating lever power, is familiar to every person, for every one who sees the engine to judge correctly of its advantages in comparison with others. There surely can be no doubt upon this subject; it there is, the only way to remove it, is for you to point it out on the machine. This you can do, and it is the best way to silence all cavilling.

"A. L. of Ga"—The cost of all the works which you enumerate will amount to $14,50. They cannot be forwarded by Mail, but we can send them by Express. Georgia money will be taken at par.

"A. T. of Tenn."—The best work on architecture is Ranlett's. The price is 50 cents per No. and there are about 15 No's. already published—Send us ten dollars and we will furnish you with the back No's. and the succeeding No's. up to No. 20.

"W. R. of N. Y."—The fee for the examination and the information you want would cost $5.

"J. W. C. of Indiana."—We do not get up models, inventors should always superintend them. In this way they can make them much cheaper. Both your inventions are good. We have a doubt however, about being able to get a patent on the boiler.

"A. C. B. of N. C."—In No. 32 Vol. 1, of the Scientific American, we published an engraving of an apparatus for "Kyanizing," and on page 413, vol. 3, is further information as to the art, and its application. The particular information which you solicit we are unable to give. Your order has been filled and and the belting sent abroad the schr. Mary which sailed last Wednesday. The cost was the same as the lot we first shipped you, and we hope will prove equally good.

"A. H. F. of Pa."—If your papers are not better executed than most of the specifications and drawings which are sent to us for examination and correction, we shall charge as much to correct your papers as we would to make a new set, in fact that is the usual manner in which we amend most of the specifications and drawings that are sent to us for examination If you have made out your papers according to the instructions contained in our publication on patents, they are correct.—$2 received.

"J. F. S. of Mich."—Unless you can furnish us the date of Mr. N's patent, we cannot give you the information you solicit.

"J. L. P. of S. C."—Your letters of May 28, and June 1st, are both received. Your proposed mode of connecting your magnets outside the cylinder is judicious.

"H. M. of O."—Unless you have some peculiar method of operating the floats on your wheel, the principle of causing the buckets to enter the water vertically cannot be patented If you will furnish us with a model or drawings of your plan we can better advise you than from a mere description.

"E. J. of Mass." "M. & D. of N. Y." "R. S. T. of Me." "" R. C. D. of R. I." and "W. N. S. and F. R. W. of Ct."—Your specifications and drawings with amount of Patent fee have been forwarded to Washington since our last issue.

"L. L. of N. Y."—Both of your specifications were sent to your address for signature last Friday week. Please return them as early as possible.

"B. B. of Me." "G. W. P. of Mass." and "W. F. of Ct."—We are waiting for the return of your papers—"hurry them up."

Moneys received by Mail on account of Patent Office business:—

E. J. of Mass., received $20 June 12th.—J. S. of Pa., received $10 June 11th. P. B. of Pa., received $20 June 4th. W. P. V. of N. Y, received $30 June 5th. J. G. P. of R. I., received $30 June 5th. W & P. of Pa., received $55 June 11th. E. B. W. of N. H., received $30 June 12th.

The letters that have been addressed us in regard to a situation as moulder and pattern maker, have been forwarded to the proprietor of the "Home Protection Foundry," for attention. We have failed to receive any advices from him and shall not be able to answer any further enquiries.

Notice.

J. Franklin Reigart, Esq. Patent Agent for Lancaster City and County, Pa., is authorised to receive subscriptions for the "Scientific American."

Advertisements.

For the Scientific American.

Patent Laws.—Subjects of Patents.

In my previous article page 304, I promised to discuss in this, those subjects which *should be protected by patent.* We know that we shall be found on opposite grounds to some decisions of the Patent Office, and Judge Cranch likewise. In reference to the opinions and decisions of the most eminent of our Jurists, we have often been forcibly impressed with a striking passage in the book of Job, " great men are not always wise."

There is no dispute about new mechanical combinations—these have always been considered the subjects of patents. The only difference of opinion on this point, is the similarity of alleged new combinations, to old ones. When there is a doubt about this, and there must be many, the Patent Office should grant a patent, and allow it to stand upon its merits. A fair Jury decision upon the evidence of competent witnesses, gives the best satisfaction to our law-loving people, and it would be well to have a reform in our Patent Laws, whereby a patent might be repealed, after it was fairly contested. No one should find fault with the granting a patent to Mr. Croker for a nail made of Muntz's metal—it is a new manufacture, but many things of as new a manufacture have been rejected, and according to the decision of Judge Cranch page 802, P. O. Report 1847, we find ourselves fairly pinioned on a *dead point.* He says: "A new effect from old means will not justify a patent." It is our opinion that a new effect from old means, if a new manufacture is produced, should justify a patent. It is the great fault with some analytic minds, that they sometimes pulverize the spirit of law as unscientifically as a miller does his wheat, by setting his upper stone too close. Fine flour is produced, but woe to the good housewife whose luck it is to get it. It has been nearly the uniform custom of the Patent Office to refuse patents for mere new articles of manufacture made from old substances. It will save many some expense to know this. The Muntz metal nail, however, is an exception, and it is very likely that another patent might be secured for Muntz's Improved Metal, but we will give this to the public as a public benefit. The composition consists of 56 parts copper 40 3-4 zinc, and 3 3-4 lead. Mr. George Frederick Muntz, M. P. secured a patent for this in 1847 and as this is an improved alloy Mr. Muntz says " the lead acts a very important part in the composition."

It may be considered right in the Patent Office to refuse patents for alleged new manufactures or improvements in them, and to grant patents only for the means of producing those improvements, such as to refuse a patent for a wheel made of cast iron, suppose such a thing had never been done before, upon the ground of " no patent for a new application of an old substance," but the great wisdom of our Patent laws would grant a patent for the said wheel with a knub on a particular spot, or with one spoke of wood, another of iron, and another of cheese, it may be. We find no fault with this conduct if legal decisions are the fundamental rule of their action. It is our purpose to show that their rule of action has been erroneous. The principle of our Patent laws—the fit subjects of patents, is exclusively English, as embraced in section 12 of the Patent Laws, approved July 4th, 1836, which provided for the contesting of the validity of a patent in " any judicial court," where English decisions are looked upon as gospel and form the rule and guide of our jurists, but of which there are some of them not much better informed than they are about the divine revelation. For example, if a person was to apply for a patent for smelting iron by anthracite coal, using no new contrivance but only substituting it for bituminous, or charcoal, does any person think that according to the spirit of decision in our Patent Office, such a patent would be granted? It would not. But according to the spirit of the Patent Protection, we have the high authority of Lord Chief Justice Tindal, Webster's Reports, giving the opinion of the Court in sustaining such a patent although it was nothing more than the mere substitution of one kind of fuel for another. A new manufacture of iron was the result. The very first Patent law made, was by Act James I. granting exclusive right for *any manner* of manufacture for 14 years. Our Patent laws are based upon this principle, granting the patent to the first inventor. Now a mere manufacture is " something made by Art," and it also embraces the principle of " making anything by art." This is the construction put upon it by Mr. Justice Heath in the case of Watt & Bolton vs. Bull. The Justice in that opinion says, " I approve of the term manufacture." A new kind of elastic or other substance, such as a manufacture of gutta percha, or the introduction of the bark of a tree, to produce a new manufacture, is embraced in that decision, and is therefore the legal subject of a patent. We have no better evidence of this than the opinion of Lord Chief Justice Tindal in another case, namely that of Mr. Muntz, whose metal—and the nail of which we have noticed. The Chief Justice stated that " it did not signify whether the compound of copper and zinc was new in itself or not, the law only required that it should be new as a sheathing metal." The Muntz metal nail then of Mr. Crocker is the valid subject of a patent, upon this high ground. Our authorities should think of these things before an application for a patent is rejected upon such slight grounds as they sometimes are and when there is no interference.

Again, a Mr. Forsyth obtained a patent for using percussion powder as priming for fire-arms. He only claimed the application of it for this purpose, not the lock, or manner of using it. This patent was sustained by the verdict of a jury in the Court of King's Bench, Justice Abbot presiding. This is another fact for our Patent authorities to reflect upon.—We might multiply case upon case to show that the decisions of our Patent Office Court are distinguished by a narrow mindedness not strictly honorable with our professions as a people of devotion to improvements in the arts and encouragement to inventors.

JUNIUS REDIVIVUS.

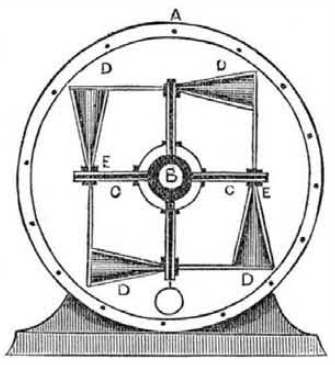
A New Discovery to Separate Potatoes of Different Qualities.

We learn from the London Patent Journal, (Barlow and Payne) that a Mr. James Anderson of Glasgow, North Britain, has secured a patent to separate potatoes of different qualities. According to actual experiment the patentee found that a potatoe containing 20 per cent of solid nutriment, was about the specific gravity of 1,080, that is taking distilled water at 52° Fah. as a unity; and will, of course, sink in water or other fluid of less than that density, or indicating a density of less than 16 according to Twaddell; while the same root, containing nutritious properties to the extent of 30 per cent., is of a specific gravity of 1,120, or equivalent to a liquid indicating a density of 24° Twaddell, and will of course, sink in a liquid of less specific gravity. Now, taking this a rule, which the patentee affirms he has almost invariably found correct, he is enabled to divide the vegetables into two, three and even more distinctive classes, according to the nutritious qualities they possess. For this purpose he places the vegetables in a pool, or vessel containing water or other fluid, brought to the density suited to the quality of the article. This is easily effected by adding salt, or a little clay, or earthy matter in solution, when the vegetables are to be immersed therein; and those which are of less specific gravity will float on the surface, and the heavier bodies preponderating, will sink to the bottom, when they may be collected respectively; these two qualities may be further subjected to immersion in liquids of greater and less specific gravity, according to their qualities, and by that means still further separate them, than had been effected by the previous operation, and which he finds of great advantage, whether taken in a commercial or manufacturing point of view, as it at once not only ascertains the more valuable article, but also determines for the manufacturer the best quality that may suit each individual purpose in which he may employ the same.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

FIG. 64.



VAN RATHEAR'S ROTARY ENGINE.

This is a rotary engine invented a few years ago by a German C. E., named Anthony B. Von Rathear, which he called a universal wheel.

This is a sectional elevation showing its interior construction. A, is an outer tight cylindrical case, within which revolves the hollow shaft B, passing through the centre of the case. C C, are hollow arms which carry upon their outer extremities the steam chambers or vessels D D, which are of a conical form and from which the steam escapes into the cylindrical case—the reaction against the surfaces of the cones at E, being the propelling power. The cylindrical case was exhausted by being connected to a condenser. The object of this rotary was stated to be the production of a rotary power engine by the reaction of the expansive force of steam—the steam rushing into an exhausted cylinder within which the apparatus for receiving the reactive force revolves.

It is curious to see what absurd views some men have of the application of steam to produce no result at all that can be defended upon the well known principles. The main principle of this invention, appears to be the same as Hero's old engine, the exhausting arms eject the steam into an exhausting vessel instead of exhausting into the atmosphere. It might be very ingenious to shoot a cannon ball at one object, in order to strike another by its rebound, like striking down nine pins, but we would certainly prefer to see the mark struck by the first percussion.

Portable Provisions for Travellers and Hunters.

Take a leg of beef, veal, venison, or any other young meat, because old meat will not so easily jelly, pare off all the fat, in which there is no nutriment, and of the lean make a very strong broth, after the usual manner, by boiling the meat to rags till all the goodness be out. After skimming off what fat remains, pour the broth into a large stew-pan well tinned, and let it simmer over a gentle even fire till it becomes a thick jelly. Then take it off and set it over a boiling water, which is an evener heat, and not so apt to burn the broth to the vessel. Over that let it be evaporated, stirring it very often, till it be reduced when cold into a substance like glue. Then cut it into small pieces, laying them single in the cold, and they may dry the sooner. When the pieces are perfectly dry put them into a canister, and they will be good, if kept dry, a whole East India voyage.

The glue is so strong that 2 or 3 drachms dissolved in boiling water, with a little salt will make a half a pint of good broth; and if you should be faint with fasting or fatigue, let a small piece of this glue melt in your mouth and you will find yourself surprisingly refreshed.

One pound of this cookery should keep a man in good heart above a month; and it is not only nourishing, but likewise very wholesome. Particularly it is good against fluxes, which woodsmen are very liable to, by lying too much near the moist ground, and guzzling to much cold water. But, as it will be only used now and then, in times of scarcity, when game is wanting, two pounds of it will be enough for a journey of six months.

But this broth will be still more heartening if you thicken every mess with half a spoonful of rockahominy, which is nothing but Indian corn parched without burning and reduced to powder. The fire drives out all the watery parts of the corn, leaving the strength of it behind, and this being very dry, becomes much lighter for carriage, and less liable to be spoiled by the moist of the air.

Thus half a dozen pounds of this sprightly bread will sustain a man for as many months provided he husband it well, and always spare it when he meets with venison, which may be very safely eaten without any bread at all.

Cure for Cholera.

Dr. Bird of Chicago, Illinois, we see stated in a number of exchanges, has discovered that sulphur is a complete curative of Cholera.—3 or 4 grains of sulphur is stated to cure the patient even after a collapse and when in the worst stages. Pills made of one part charcoal and 4 parts sulphur are recommended by Dr. Bird, and in any locality where the disease is prevalent, it is a proper precaution to take one of the pills in the morning, and for those attacked, to take one every two hours until relief is found.

Parsnips.

The cultivation of the parsnip, as food for stock, has not been generally tested. It is a hardy plant, and the yield, under good cultivation, is very large. This root is sweet and nutritious, and it is doubtless one of the most valuable for stock. In the Island of Guernsey, England, this root is cultivated very extensively for all kinds of stock, and with excellent success. It would be well if this root was more cultivated among us than it is. Every mechanic who has a small garden should not neglect to plant some parsnips.

LITERARY NOTICES.

The Scalpel.

No. 3, of this useful and ably edited Journal of Health, is filled with valuable matter which is of interest to every person. " Atmospheric Electricity, Hydropathy and Homœpathy impartially appreciated," are capital articles. The other articles are equally good.

Pictorial National Library for June contains a likeness and biography of Gen. Scott, besides several other illustrated scenes. The contents are as usual instructing and worth a careful perusal. The June number completes the volume. Published by Wm. Simonds & Co. Boston. G. W. Andrews, Agent, New York City.