

it also causes the valves to shut with less noise, and prevents the pipe from undergoing such violent strains. If short, while a much larger amount of work is done, all the operations take place with so much ease, that the machine is less shaken and put out of repair than in the former apparatus. When the force which opens the valves, *v v'*, and compresses the air in C is expended, this air expands, and in doing so, assists the retrograde motion of the water in the pipe. The air in C, in expanding, has for a moment a less pressure than the external air, a circumstance which is turned to useful account in keeping both C and F supplied with air, as will be noticed presently. The valves, *v v'*, remain open so long as the opening pressure exceeds that which is exerted upon them by the fluids in F. The air-vessel, F, also derives advantage from the mattress, C, for as soon as the valves, *v v'* are opened, and water enters, compressing the air in F, the water is not immediately forced up the tube, G, but can accumulate somewhat in F, and thus act with great effect, for it is evident that the pressure required to open the ascension-valves, would be much greater if the whole column of water, G, passed suddenly from a state of rest into one of motion at the moment the valves were opened, and they would in such case also remain open a much shorter time.

One of the great defects of the fire-engine, is the absorption of the air in the air-chamber by the water, which takes place all the more rapidly as the pressure is great. Now the air in F becomes dissolved rapidly in proportion to the increasing elevation of water in the ascension tube: wherefore in order to keep up a constant supply, a small snifting valve is added at S, consisting merely of a tube with a fine capillary bore left entirely open. At the moment when the water of the ram is relieved from pressure, the density of the air in C becomes slightly less than that of the outer air, as already noticed; consequently a small portion of air rushes in through the valve with a noise like the sniffling of a person's nose, whence this kind of valve is called a snifting valve. A portion of the air thus admitted finds its way through the valve, *v v'*, into F to supply the place of that which is dissolved and carried off by the ascending-column. At every blow of the ram, *i. e.* every time the valve, B, is closed, and the water is under compression, a small jet of water is darted out of the snifting-valve; this valve therefore acts as a sort of pulse to the machine, drawing in air and jetting out water, by regular periodical movements. Indeed the pulsatory motion of the ram becomes painfully evident where the column to be raised is considerable. In such case, the ground over the pipe is shaken at every blow, and a tremor is felt in every room in the house against the wall of which the supply pipe ascends. By covering this pipe with felt, the evil may be to a certain extent mitigated, but not entirely overcome.

#### Lumber.

The quantity of lumbersurveyed at Bangor averages annually about 200,000,000 feet, whose value cannot fall far short of \$3,000,000. The quantity got to market this year is less than last year, owing to the great drought in the early part of the season. The demand has been great, and the prices of all qualities have run a dollar higher per thousand feet than last year, so that although the quantity will fall short by some 15,000,000 feet, the sales will amount to nearly a quarter of a million dollars more than last year.

#### The Salt of Florida.

In 1829, the easterly half of the Island of Key West, consisting of a series of salt water ponds, was leased by the proprietors to the Lafayette Salt Company, who put up works on it, principally consisting of covered pans, after the plan adopted at Cape Cod and at New Bedford, from which the company must have taken from 15,000 to 20,000 bushels of salt annually, until 1846, when the hurricane almost entirely destroyed the improvement. The wreck of the materials was sold to Charles Howe, Esq., who bought the landed property and rebuilt the pans and vats. He also constructed ground pans after the manner of those in the Bahamas, from all of which he took in 1847 and 1848 an average

of over 38,000 bushels. The years 1849 and 1850 were not quite so successful, from the wetness of the season; yet there was still made in those seasons an average of 20,000 bushels.

The works were considerably increased in extent last year; but from the unusual fall of rain, no more than 20,000 bushels were raked. This year 500 acres were exposed to evaporation, and it is believed that near 60,000 bushels have been made.

#### Great Improvement In the Treatment of Flax.

A great improvement in the early preparation of flax has been discovered in Ireland by a Mr. Watt. By it the flax is prepared for scratching without fermentation in 24 hours. The coarse flax is steamed along with some lime water, or high pressure steam itself will answer, for five hours in a close tight vessel, it is then taken out, run between heavy fluted rollers, and dried when it is fit for scratching. By this process the woody matter is rendered easy of separation from the fibrous; in scratching, very little tow is made. It is a plan highly spoken of by the Royal Flax Society.

#### An Old Book.

The Camden Literary and Library Association have in their possession a large book, originally published in Latin, at Rome, in the year 1639. It is a curious specimen of composition and typography.—[Exchange.]

[We have an older book than that.—It is a large Bible in the Dutch language published at Hague, July 29th, 1637. It embraces the old and new Testaments, of the translation adopted by the National Synod of Dordrecht of the Netherland Reformed Kerch. The characters are the German text, and are as beautiful as any type of the present day. It is strongly bound and well secured with huge brass clasps. Every book has its first chapter adorned with an introductory ornamental capital letter, which, for beauty of design and grace of execution, has no superior now. So beautiful indeed are these letters that before the book came into our possession some sacrilegious wretch cut a great number of them out for transferring, no doubt, to adorn some modern picture Bible.]

#### Teeth.

Healthy teeth depend mainly on healthy digestion, and on cleanly habits as regards the teeth. They must, of course, be confined to the purposes for which they are designed. If they are employed for the purpose of cracking nuts, biting thread, unscrewing needlecases, or turning the stopper of a smelling-bottle; if the mouth is used as a kind of portable for a tool-chest, in which a pair of scissors, a knife, a vice, a corkscrew, or any other instrument, may be found at the time of need—then serious and irretrievable injury will eventually be done to the enamel of the teeth, which no healthiness of digestion nor cleanliness of habit will avail to remedy.

#### Magnetic Iron Ore.

The editor of the Ste. Genevieve, (Mo.) Plaindealer has received a beautiful piece of iron ore from the Pilot Knob, which possesses magnetic properties to a very high degree.—It is thought that the mountain abounds in this species of ore.

#### Gold by the Ton Without Owners.

There is now at Melbourne a large quantity of gold, which was sent from the diggings by escort, and which has never been claimed. The amount is stated at eight tons, and these eight tons of gold are watched and warded by a corporal and five men.

The Canadian Executive has given notice that a tract of twenty-four millions of acres, lying mainly northeast of Lake Huron, in the latitude of the American mining districts of Lake Superior, will, as soon as surveyed, be thrown open to the landless in gratuitous tracts of one hundred and sixty acres. Alternate sections will thus be given away without price, those lying between them being reserved for sale to cover the expenses of surveying and opening the country to immigrants.

On the Erie Lake Shore Railroad, at Elk Creek, Pa., a magnificent bridge spans the stream, one hundred and fifteen feet above

the water, and about a third of a mile in length. It is built on the plan of How's Truss Bridge, has about two million feet of lumber in it, and is a most stupendous wooden structure.

#### Patent Office Building.

In addition to a wing on the eastern side of the old building, and which is now completed, it is proposed to erect a similar edifice on the other side. The plan of the west wing contemplates the construction of each story in one continuous room of sixty-three feet in width, and two hundred and seventy feet in length; the floors to be supported by arches springing from granite piers in the sub-basement, and from marble piers in the principal and attic stories; in consequence of the great descent of the western half of the Patent Office square, the west wing will have a sub-basement of seventeen feet in height, entirely out of the ground, making one more story in this than in the eastern wing. The architect shows the importance of bringing the centre building, as nearly as possible, into harmony with the wings, and suggests the propriety of altering the basement windows to bring them into conformity with those of the new building. This is conceived not only necessary to the beauty of the design, but also to the comfort and convenience of the clerks who occupy the rooms they light.—Another incongruity in the external appearance is the rock work of the basement of the centre building, standing, as it does, in juxtaposition with the smooth marble basement of the wing. Mr. Walter recommends, as a method of obviating, as far as possible, this objection, that the rough surface of the granite work be dressed off, and brought as nearly into conformity to the marble as may be done without cutting it into rustics. He expresses the opinion that it would be hazardous to attempt to rusticate this part of the work to correspond with the wing, as it is very doubtful whether the joints would hold good to the depth of the rustics. If, however, the wall is brought to a smooth surface, and painted like the rest of the building, the want of entire uniformity would not be observed.

#### Circular Saw.

The above is an invention lately patented in France, by M. Smyers, machinist at Chatemoue, for sawing and polishing slabs of slate. It consists of two circular saws mounted on separate shafts, which dress at the same time with the greatest exactness, the two opposite and parallel sides, and afterwards the two other sides in a perpendicular direction to the former. The slab placed in a truck is approached of its own accord by the movement of the machine as the saws turn round. It follows that the operation is performed very rapidly, and with very little manual labor. This machine is applicable for slabs of marble and stone.

#### An Important Discovery.

A certain correspondent of the Courier and Enquirer has made an important discovery in voltaic electricity, which may be practically applied to the cure of weak nerves. It is this:—

"If a cylindrical piece of zinc is placed near the top of a broom-handle, and another about fifteen inches below, connection being made between the two by means of a wire, a person taking hold of the top piece with the right hand, while the left is placed on the copper or lower piece, forms a voltaic circle, which becomes powerful the more the broom is used. The hands must be without gloves so that the metals are in contact, and the windows of the room should be open when the broom is used, so as to admit the air freely. The discovery is invaluable to females in a weak state for want of active life, and to males it can be applied to axe handles."

We sincerely recommend the application of this discovery to weak persons of both sexes.

#### Worth Trying.

A lump of wet saleratus applied to the sting of a wasp or bee, will stop the pain in one moment, and prevent from swelling. It is a sure remedy for rattlesnake bites if applied immediately.

Anthracite coal was pronounced a humbug only 40 years ago.

#### Clipper Ships—American and English.

The Niagara Mail says, "two British ships, the Crysolite and Stornaway, have sailed a race from Canton with three American vessels, the Racehorse, Surprise, and Challenge and the result is that both British ships have got home first, the American not having yet arrived," and adds, "and perhaps the Scientific American, who is an amateur in this sort of thing, will tell us the difference here between losing a race and being beat." We can, for we know all about it; the Crysolite and Stornaway, (both Aberdeen built clippers,) left Canton 11 days before the American ships. We never like to make reckless statements; with an intention to mislead.—Whenever it is shown that a British clipper ship has beat an American one in a fair race—day for day—we will give the winning ship full credit for the same, and not feel the least chap-fallen. The Mail will now no doubt perhaps be kind enough to tell us since we have answered its question, why is it that none of the British skippers or ship builders have yet taken up the Boston challenge of £10,000 for a race from London to Canton and back between two ships, American and British of 1,200 tons burden each. If the British ships are swifter sailers, why do they fear to take up the challenge. There is more money in London than Boston, yet there the Boston challenge still stands unaccepted. Jonathan has thrown down his mailed glove to John, and he has not yet dared to lift it. If the people in Canada have such confidence in the British ships, why do they not take up the challenge?

#### Color of the Sun.

Busolt allowed the sun to fall through the six-foot heliometer of the Konigsberg observatory first upon white paper, and then upon a disc of the finest gypsum cast on a mirror. He believes that he has discovered the peculiar color of the solar spots to be purple, and that they are surrounded by a splendid yellow, and a larger pale yellow halo. The sun itself is said to present a colorless surface which is sprinkled over with purple spots.

#### Perpetual Motion.

It is a well known fact to us that many of our countrymen have an opinion that the French Academy of Sciences, and the British Royal Society have standing offers of great prizes for the discovery of perpetual motion, and squaring the circle. With respect to the former problem, at the last meeting of the French Academy of Sciences, a letter was read from the American Consul, Mr. Goodrich, requesting, in the name of one of his fellow-citizens, information relative to a prize said to have been proposed by the Academy for the discovery of perpetual motion. It was unannouncedly—

"Ordered, That Mr. Goodrich be informed the Academy has not only proposed no such prize, but it has adopted a rule that no communication relative to such a subject be taken into consideration.

#### South and North Carolina Railroad.

The railroad from Columbia, to Charlotte, N. C., was opened to the public on the 28th of Oct. last. It is 108 miles long, and passes over the Catawba river by a splendid granite bridge having 9 arches. The grading is going on from Charlotte to Salisbury Central Railroad, N. C., so that in a few years we can leave Chester for New York without having to cross the briny deep to cross between Charleston and Wilmington. Yours C. H. Chester, S. C.

#### Anastatic Printing.

Joseph Dixon, of Jersey City, an able chemist, is the discoverer of anastatic printing. He invented the art of taking true copies from books and pictures long before Appel, and copies of his workmanship have been preserved in our Patent Office. He is the gentleman who deserves both the name and the fame of its original discoverer.

#### Gold in Canada.

A letter from Toronto states that gold has been found at Rennsta, a few miles south of Owen's Sound. At the last accounts 150 men were working the mines, and many others were preparing to leave Owen Sound for the diggings.