SCIENTIFIC MUSEUM.

New Theory of Earthquakes.

The general belief of men respecting the cause of earthquakes, is the igneous theory; in other words, they believe the centre of the earth is a molten mass, and that it is sometimes agitated, causing volcanoes and earthquakes. Those who entertain this belief have ingeniously strung together a great number of facts to prove that volcanic eruptions and earthquakes, *are* in general simultaneous and confined to the same localities. This, however, is not so, for many earthquakes take place when and where there are no volcanic eruptions.

A correspondent of the "London Mining Journal," named Drummond, writing from Comrie, in North Britain, presents a theory entirely different from that of igneous action; he attributes earthquakes to electrical influences, and we believe that Sir Charles Lyell has expressed a belief in the same agency.—Mr. Drummond resides in a district where many shocks of earthquakes are felt every year, and some of them have been so severe as to overthrow houses. The place is a highland village in the bosom of a mountainous country, and the shocks are never felt at many miles from it, hence it must be the centre of the earthquake's influence. He states that no shocks have ever been felt during easterly or westerly winds. All earthquakes that took place there were preceeded within 24 hours by much wind and rain, but they have taken place oftenest in dull, thick, wet weather. The shocks were not felt alike in the same district; the houses which suffered most were built on wet places, no houses built on a depth of dry soil suffered. The earthquakes that have occurred when the weather was dry, were more abrupt, and of greater velocity than those which took place in wet weather. They have often taken place when there were two currents of wind in the atmosphere, one moving contrary to the other. During all the *great* earthquakes, vast quantities of aqueous vapors were in the lower regions of the air, which shows that vapor has much to do with the cause of earthquakes, and Mr. Drummond considers it the medium through which electricity acts to produce the quaking phenomenon.

The earthquakes commenced in that place in 1788, when a magnetic rock was opened up into a quarry for free stones. This has been opened and worked two or three times and it has been observed that according to its exposure by the quarrymen, so was the frequency of earthquakes increased. When shut up they decreased, and ceased for a while altogether, from 1809 to 1817. The rock was then worked again, and the earthquakes commenced their old tricks again. The quarry was again closed, and the earthquakes almost ceased, until it was opened again in 1834, and worked to a far larger extent than ever, exposing a great amount of the magnetic rock surface. The earthquakes, during this time, became fearful and continued to do so, until 1846, when it was shut up, and they have now assumed a milder form. Sounds are often heard in the mountains like central explosions of artillery.

Recent accounts from India inform us that some terrible earthquakes have taken place there; they continued for two weeks, the earth heaving like the billows of the ocean. Earthquakes frequently take place at a great distance from volcanoes, at periods when no volcanic eruption precedes, corresponds with, or follows after. The igneous theory may be true, but it certainly does not account for all earthquakes, and Mr. Drummond says, "I might as well try to submerge the British Isles as to attempt the solution of the earthquake problem upon the hypothesis of its being the effects of molten matter in the interior of the earth."

Force of Winds.

On the island of Martha's Vineyard, in that part of it called Nashauquitsy, there is a natural curiosity illustrative of the force of winds. It is a tree of the Hornbeam kind, which stands in the centre of a small cove in a hill, in such a position that the wind blows upon it from an easterly direction, and can blow from no other. Consequently, at the elevation of near twelve feet the trunk begins to curve to the westward. The westward growth projects from the tree about twenty-five or thirty feet. Not a limb projects to the eastward. The same kind of tree left to grow according to the usual laws, in protected places, is quite comely and of good proportion in its growth.

Flour Packer.

The annexed engraving represents a machine for packing flour in barrels, the invention of Samuel Taggart, who has taken measures to secure a patent.

Fig. 2. Fig 1.

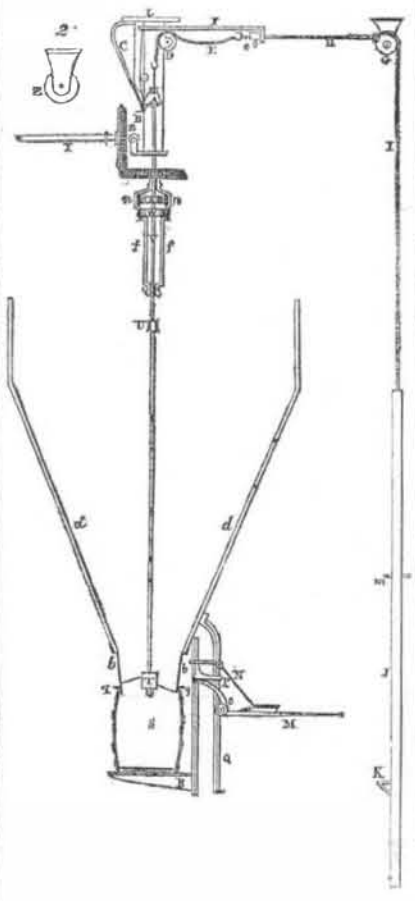

Fig. 1 is a vertical section of the machine, and fig. 2 shows the pulley, Z, drawn to a larger scale.

A is an iron box in which revolves the upper end of the shaft, V, and having the auger, T, attached to the lower end. B is a catch to hold the box, A, to its required height, when the machine is not at work, and is acted on by the spring, C. D and G are pulleys on which run the chain, E, and rope, I, these are connected by the bar, H. *e* is an adjustable stop for regulating the chain, E, which is slack when the machine is not in operation. F is an iron strap, having a recess at one end to receive the upper part of the catch, B, the other end is turned down at a right angle with a hole for the square rod, H, to move through. *q q* is a flange attached to the cast-iron tube, *b b*, and is so constructed as to regulate the requisite height for the barrel, S, to rise, and likewise to prevent the flour from being forced out by the pressure of the atmosphere when the auger is lowered into the barrel. R is an iron plate for the barrel to stand on, and is attached to the slide, P, which latter works in the guide, Q. O is a cam connected with the lever, M, for raising the barrel, the lever being held down, when this has been done by the hand or stop, N. *f f* is a hollow shaft with vertical slots at opposite points and equal distances apart, in which the clutch driver, X, passes up and down. W is a clutch collar made movable in the recess of the shaft, *f f*, and having ribs on its periphery, which serve both as guides and to keep it to its place. U is a coupling to connect the packing shaft, V, and Z, is a pulley over which can be passed a rope to regulate the action of the auger.

The machine is worked in the following manner: the barrel, S, being placed on the stand plate, R, is raised up to the flange, *q q*, by the lever, M, and the flour chest, *d d*, being filled, the operator places his foot on the pad, K, and his hand upon the pin, *m*, and forcing down the rod, J, springs the catch, B, throwing it out from the box, A, when the auger, T, is carried down to the bottom of the barrel. The auger being now in motion advances upward towards the top of the barrel, packing the flour in its progress, the driver, X, being gradually forced upward at the same time, on arriving at the collar, W, it comes in contact with the ribs on the inside of the same, and carries it up to the stops, *n n*. The driver, X, continues to advance until it leaves the ribs on the inside of the collar, W, when the shaft, V, suddenly stops, at the same time the collar drops down to its place, as shown in the engraving.

The operation of packing the barrel with flour is now completed, and the catch, B, having taken effect when the driver, X, was within about half an inch of its required height, holds the auger up within the tube, *b b*, which prevents the flour falling from the chest on the mill floor until the barrel has been replaced by another. This machine is more simple, economical, and durable than any of the kind now in use, and is capable of packing from 50 to 100 barrels per hour.

Applications for machines can be made and further particulars may be known by addressing the inventor, S. Taggart, Indianapolis, Ind.

Niello.

This is a kind of enamelling, practised, according to some writers, as early as the seventh century, but afterwards lost until Finiguerra, an eminent goldsmith of Florence, brought it into great repute in the 15th century. The art is interesting, as it is supposed to have given the first idea of printing from engraved plates. It consists in engraving a subject on gold or silver, and filling the engraved lines with black or very dark-colored enamel. In the general effect of works in niello, there is considerable resemblance to damascening, except that in the latter the engraved lines were filled up with the precious metal, while, in the former, a paste or enamel was made use of. This enamel was a compound of silver, copper, lead, sulphur and borax, forming a dark-colored paste, which was carefully worked into all the lines of the engraving, and fused, by heating the plate. It contrasted favorably with the bright surface of the silver chalice or other article so decorated, producing an effect not unlike that of a copper-plate engraving, or of a daguerreotype. This kind of work, at one period, constituted the favorite means of adorning, not only all kinds of vessels used for sacred purposes, but also sword-hilts, knife-handles, and other articles in which the precious metals formed the basis to work upon. In the Museum, at Florence is the most valuable specimen of ancient niello now existing, being a plate for a pix executed by Finiguerra himself in 1452. An interesting specimen is to be seen in the British Museum, consisting of a silver cup mounted in gold, the ornaments being in niello. This long-neglected art has been revived and again brought into notice by a silversmith of Berlin, named Wagner, who has now settled in Paris. A very successful work in niello was sent by the Messrs. Gass, of Regent street, London, to the Great Exhibition. It was a silver gauntlet niello bracelet, designed by D. Maclise, Esq., R. A., descriptive of "The Promised Gift."

Artists in niello find it necessary to take proofs of their work as they proceed, and so in ancient times it is stated that the work was examined by filling the lines with a black fatty material, and then pressing a mass of a peculiar kind of clay upon the design so as to obtain an impression. This process so nearly resembled printing, that it is only to be wondered at that the latter art was not earlier discovered. It is said that the important secret was at last revealed by a female accidentally placing a bundle of damp linen on a niello plate which had been proved in the workshop of Finiguerra, and which happened to be lying with some of the black material still remaining in the lines. The damp linen absorbed the black, and gave a perfect impression of the plate to the astonishment and delight of Finiguerra, who immediately instituted a series of experiments which ended in the discovery of the art.

Artesian Well.

Ezra Cramer, living near Walkersville, Md. has succeeded in obtaining a plentiful supply of pure, soft water on his limestone farm, by the artesian process of boring; at the depth of 27 feet a solid stratum of limestone was reached, and perforated to the depth of 93 feet further, when the auger suddenly dropped about 9 feet, and an exhaustless supply of pure cold water rose to within a few feet of the surface of the rock.

Wonderful Phenomena.

On the 31st ult., Mr. John Hepler, residing near Monroe, Wisconsin, while plowing in his field, seeing a heavy cloud rising, which indicated a shower, unhitched his team, and in company with his son, each of whom had a span of horses, set out for his house. They had not proceeded far, when a tremendous explosion fell upon them, killing the father instantly, and both spans of horses, together with a loose one which was following the others. The son was stunned by the shock, and lay senseless for some time, but is now nearly recovered. The most singular circumstance in this casuality is, that the horse upon which the son was riding was killed, while the boy, though a higher object, survived this terrible thunderbolt.

Human Bones found in Guano.

From the ship Brandscompt, unloading Peruvian guano, at Leith, Scotland, there were exhumed the remains of three persons, evidently Peruvians, buried in the guano, and which had apparently not been disturbed in the process of loading the ship. The remains illustrate a curious property in the guano in preserving bones, hair, and clothes, while completely decomposing flesh. It is not known when the bodies were originally interred, but the bones were all found as if they had been preserved in a museum; the hair remained upon the skull, and the clothes were but very little decayed.

Feeding Bees.

Put a pound of brown sugar in a low tin dish, wet it with water, and lay a number of small strips of wood across for the bees to rest on while at work. One pound of six cent sugar produces two pounds of honey.

LITERARY NOTICES.

LITTELL'S LIVING AGE—No. 3 of the new series of the above work has a most singular and able article on Saul of Tarsus; it appears to be from the pen of Rogers, the able theological writer of the Edinburgh Review. There are ten other articles in it of great excellence. Republished by Littell & Son, Boston.

BIBLIOTHECA SACRA—This able review is published at Andover, Mass., by W. F Draper & Brother, and is conducted by Prof. E. A. Park and S. H. Taylor, M. A The number for April contains many fine articles, and the conclusion of the interesting Autobiography of Dr. Karl Gottlieb Bretchschneider, an able German pastor and editor.