

## SCIENTIFIC MUSEUM.

## Mineral and Nitrogenized Manures.

It is well known that Liebig has favored what is termed the "Mineral Manure Theory," while the late Prof. Norton held different views, and believed in nitrogenized manures, that is, manure produced by decayed vegetable or animal substances. In England two farmers, Messrs. Lawes and Gilbert, have been experimenting to test the two kinds of fertilizers. Their experiments have extended over a number of years, and have been on quite a large scale. They took a field at the close of a four years' rotation, when the manures added at the commencement of the course were exhausted. On this ground they have cultivated wheat for ten years under various circumstances. One plot remained unmanured, and the produce of this served as a standard and starting point for comparison during the whole period. Thus, if its yield in 1845 was seventeen bushels per acre, the improvement over this in an adjoining plot, otherwise the same, was set down to the advantage of whatever manure had been employed. Such a system of cropping, continued for so long a time, affords results that are worthy of much confidence.

The first year's comparative practice was with various approved mineral manures alone. It was found that, with the addition of large quantities of these, the increase of product over the unmanured plot, was but trifling. In the next year the same character of mineral manures was employed, but with the addition in several cases of ammoniacal or nitrogenous substances; in all of these the effect was quite marked, the yield increasing to 10, 12, and 14 bushels above the unmanured plot.

This, in short, was the character of all the results; sometimes ammoniacal manures alone were added, and then the increase was several times more than by mineral manures alone. One experiment was very striking. Four hundred weight per acre of Liebig's special mineral manure for wheat was applied to a plot and produced an increase of but about two or three bushels; upon this same plot, in the next year, a purely ammoniacal manure gave an increase of ten or twelve bushels. To make the experiment still more conclusive, no manure was added to this plot for the next crop, and the yield then fell again almost to the original standard.

## Gastric Juice.

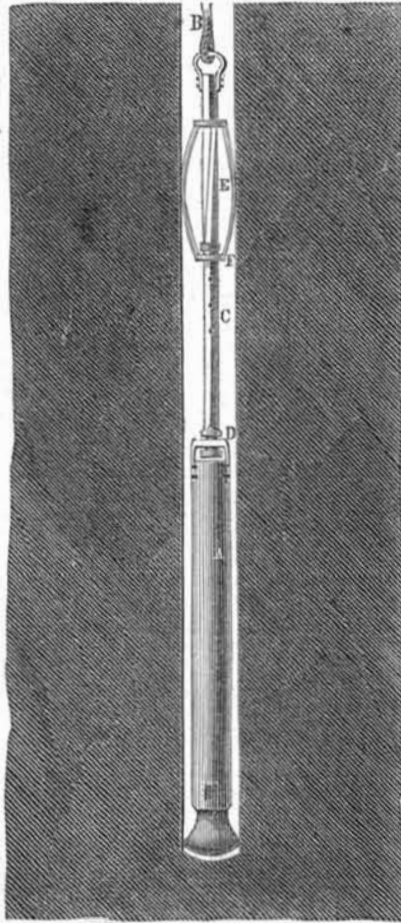
At a recent meeting of the Academy of Sciences, in Paris, M. Cavisart read a paper on the "Alimentation of one Stomach by the Digestive Apparatus of another"—that is, the improvement of the digestion of weak stomachs by the addition of gastric juice taken from the stomachs of animals. Much has been said, studied, and written on this subject; but, as yet we have few, if any, facts tending to throw light upon it. M. Cavisart brought forward no practical proof to sustain the theory, but appeared to have no doubt in his own mind that indigestion is caused by a deficiency of gastric juice, and that if this deficiency were supplied from the sources which he suggested, digestion would at once become perfect again. As gastric juice is, in its natural state, of a taste and appearance that would be repulsive to the patient, he proposed that it should be reduced to a powder or paste, and mingled with the aliments, and thus introduced into the stomach. He seemed to have no doubt that the gastric juice of an animal would in all respects supply the place of that of the human stomach.

## Camphor an Antidote for Strychnine.

Dr. Pudduck, in a letter to the London "Lancet," states that camphor is an antidote to that terrible poison—strychnine. An intemperate man, by exposure to cold, was attacked with acute rheumatism, and while he was so suffering, strychnine was prescribed in doses of the sixteenth of a grain, given three times a day. By mistake the druggist divided the grain into six parts, with sugar, instead of sixteen powders. The first dose produced severe twitchings, and the second dose threw him into violent convulsions. A messenger was at once dispatched to Dr. Pudduck, with the intelligence that his patient was dying. He hastily

went to him and discovered the mistake by the frightful paroxysms of the sick man. No time was to be lost, he at once prescribed 20 grains of camphor in six ounces of almond mixture, to be taken every two hours. The first dose completely quieted the convulsions, and there was no need of a second.

Thomson's Artesian Well Borer.



This engraving represents the Artesian Well Borer of John Thomson, of Philadelphia, for which a patent was granted on the 30th of March last.

It is a cylindrical iron bar, nearly fitting the bore-hole, and about five feet long; to the bottom of this is attached the chisel for drilling. On the top of this cylinder, at D, is a swivel, with a square iron bar, about four feet long and one inch diameter, passing through an elliptical steel spring and fixed to the rope, B. The elliptical spring, E, is of four strips, 18 or 20 inches long, and embraces the sides of the bore-hole in the rock, the lower disc of which has a round, and the upper a square hole for the bar, C, to work in. It will be observed that there is a twist of about a quarter turn upon the upper end of the bar, C, and a ring or shoulder, movable at pleasure, is fixed upon this bar and within the spring, as represented at F. The spring, E, acts as a brace by pressing outwardly and remains in a fixed position while the machine is at work. Various methods may be adopted for working this apparatus either by manual power or otherwise, as all that is necessary is to raise and drop the machine about 18 inches, more or less, by means of the rope from the surface of the ground.

The figure in the engraving represents the machine suspended in the hole in the rock, having been raised a little; its operation is as follows:—The power from the top, by pulling the rope, lifts the whole, except the spring, E (the bar, C, merely passing through it); but as C is a square bar, and the top disc of the spring has a square hole neatly fitting it; and as there is a twist upon that portion of the bar, it follows, as a matter of course, that the whole apparatus (except the spring) will turn round a portion of a circle when rising, agreeable to the twist upon said bar. Having thus raised it 18 inches, the shoulder on C, represented within the spring at F, will be high the top of the spring, and the next action is the drop, which must be done in the freest manner, when down comes the weight, A, exactly in the same position in which it was suspended, without in the least following the back course of the twisted bar which merely resumed its former position in the fall. This straight drop of the heavy weight was obtained from the swivel, D, for although that swivel lifts the weight and bears it round with

itself in the rising, it will be observed that there is no weight upon it whilst in the act of falling, as the bar, C, comes down as quick as the bar, A. In raising for the second stroke, the heavy cylinder, A, with the chisel is swung round another portion of a circle by means of the twisted bar passing through the spring, and being suspended freely in the middle of the bore-hole, the drop is perpendicular and in the position in which it is hung. The spring is gradually carried down as the boring proceeds. According to the nature of the rock, the chisel will make any number of strokes or cuts for each revolution by shifting the shoulder, F, to another position upon the bar, C, which allows more or less of the twist to pass through the spring.

To clean the hole or boring, the machine is wound up by the rope to the surface and the cleaner substituted for the chisel.

A Committee of the Franklin Institute, Philadelphia, examined this machine at work last month, they reported that it was a great improvement on the Chinese mode of boring artesian wells, and considered it the best instrument in use for that purpose. Any size of hole may be drilled with it, and it will work for a few feet in depth or many hundred feet, by simply lengthening the rope. Any kind of power may be applied to work it, and a good machinist can construct one. The common chisels and cleaner are used, but are modified to suit the machine. The cleaning out of the hole is done rapidly, as there are no rods to detach as in the common machine. An advertisement of Mr. Thomson will be found in the first and second numbers of this volume of the Scientific American. The claim is for the spring brace and the twisted bar, and will be found on page 238 of our last volume.

More information about instruments, and the sale of rights may be obtained by letter addressed to Mr. Thomson, No. 75 Otter st., Kensington, Phila., Pa.

## The Great Storm in August.

Professor Gibbs, of the Charleston (S. C.) College, has published in the Charleston Courier some speculations and observations on the great August storm. He says that similar storms have occurred with more or less violence, at different points in the same general range, for the last three years, on very nearly the same day of the same month. Anticipating the advent of the one this year, he kept a meteorological register; and distinct evidence of its approach was given by the barometer on the 23d of August, four days before it reached Charleston. Observing this, he prevented some friends from going on a sailing excursion, who would have otherwise been lost. After some statements as to the variations of the barometer, he says the course of the storm may be derived from the following facts obtained from the journals, though they are not sufficient to assign with great precision the path of the centre of the storm, regarded as a revolving and progressive atmospheric disturbance:—

At Key West the storm prevailed during the 22nd; the wind at N. N. E., shifting to E. S. E.

At Mobile, on the evening and night of the 25th and the morning of the 26th, until noon; wind from S. E., shifting to S., then to W., to W. N. round to N.

At Pensacola, storm severe on the 25th and 26th, wind E., then S., then W.

In upper part of Georgia, heavy fall of rain on the night of the 26th and morning of the 27th.

At Charleston, high wind on afternoon of 27th and until after midnight; wind S., very little rain.

At New York, violent wind on the night of the 28th and 29th; course of wind not given.

At Boston, storm during the 29th; course of wind not given; fall of rain in that region  $3\frac{1}{2}$  inches.

From these facts Prof Gibbs infers that the centre of this storm, originating east of the Island of Cuba, passed over the northern portion, or perhaps the middle of that Island, pursuing a tract nearly westward, reaching Matanzas about noon on the 22d; thence curving towards the north in a semi-circular path through the eastern part of the Gulf, at the rate of about ten miles an hour, reached

Mobile about midnight of the 25th and 26th, or a little later, thence northwardly, north-north-easterly, and north-easterly through Alabama, northern part of Georgia, near Tennessee and North Carolina line, into Virginia, reaching the interior about noon on the 28th; thence north-easterly to New York, at midnight on the 28th, and to Boston at noon on the 29th, its velocity during the terrestrial part of the course being from twelve to fifteen miles per hour, and taking just one week for its travels from Matanzas to Boston.

[The storm commenced in New York at 5 P. M. on the 28th August, and it was most severe between 7 and 10 P. M. It commenced to blow from the south, was in the east at 7 o'clock, continued in that quarter for five hours. It shifted to the north, and was in the west the next morning. The rain came not in drops but in sheets. The storms around New York are mostly rotary, and the rain comes either from the south or east.

## A Man in the Air.

Wonderful events always take place in obscure corners, thus foreign papers contain accounts of a curious balloon ascent from some out-of-the-way place of a small town on the frontiers of Spain. It is stated that a Spaniard named Antonio Moles made a small balloon without any car, except a small table, on which he lay down like a boy on a sled. Upon his legs were two umbrellas, so to speak, acting freely upon their sticks, and in each hand was a set of silken screens, opening with hinges and expanding or contracting at will. A rope, attached around his neck, communicated with the valve of the balloon, and around his body was a belt containing six or seven pounds of shot for ballast. Upon cutting himself loose from the earth, the balloon rose gently some two hundred feet, the atmosphere being perfectly calm. The aeronaut then commenced a motion very much resembling swimming, and the balloon began to fall off with considerable rapidity, the speed increasing as the machinery of impulsion began to work more freely. He went five miles in a straight line, and then returned, performing the whole ten miles in 20 minutes.

E. Walker, of Philadelphia, has raised a new kind of potatoe, which yields about six times more than the Mercers, and is of a better quality.



## Manufacturers and Inventors.

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