

New Inventions.

American Association for the Advancement of Science.—(Continued from page 3.)

Chemistry—Cobalt.—Dr. Wolcott Gibbs read extracts from a very long paper, giving the results of the researches which he and Dr. F. A. Genth, of Philadelphia had been conducting for several years into the nature of those peculiar bases formed by the union of ammonia with the sesquioxide and sesquichloride of cobalt. He alluded to the value of the chromolithographed scales of color, devised by Chevreul, and the very singular result that in compound cobalt salts the ordinary image always partakes of the peculiar rosy or purple tint of cobalt salts, while the extraordinary image is of another tint, perhaps that of the other bodies present; the salts being examined by reflected light. These investigations involve the question of compounds of organic with inorganic bodies, that is, for example, ammonia with a metal, or the radical of alcohol with a metal; thus ultimately affecting medical chemistry. Dr. Gibbs alluded to a series of substances which he had discovered, and to which he gave the name of thio-cobalts, from their containing sulphurous acid.

Prof. T. S. Hunt, of Canada, making some remarks upon the great value of this paper, thought that the thanks of chemists were especially due to Dr. Gibbs for directing their attention to a new mode of looking at salts, from the basic rather than the acid side. Prof. Gibbs had shown that one form of ammonia cobalt combined with two equivalents of acid, another with three, and had called them bi-acid, tri-acid, &c., bases. He also spoke of the value of investigating, as Prof. Gibbs had done, the action of said vapors—such as those obtained by treating saw-dust with nitric acid.

Atomic Arrangements.—Chemical Laws.—Prof. Alexander delivered an address on this subject, beautifully illustrating his views by models, of crystals of different forms, showing how the atoms must arrange themselves in the production of different substances. The law was an elucidation of that published in a series of articles in Vol. 4, SCIENTIFIC AMERICAN, respecting which no chemist should be ignorant, as too many of them are.

The Old American Elephant.—The remains of the elephant and mastodon, and other extinct giant mammalia, are found in the northern parts of our continent, showing that at an early period they were inhabitants of these regions. How or why they became extinct no one can now tell, but it has been held forth that the cause was a change of climate. Those geologists who have taught that the earth was at one time a mass of fire, have asserted that it gave to our now northern regions, at one period, a tropical climate, and the evidence they have adduced in support of these views was, the remains of the elephant—a tropical animal—found in the northern regions. Col. Foster read a paper on the geography of the fossil elephant of North America, which exploded the theory of the supposed former great heat of our northern regions completely.

The fossil elephant of America was not the same as our tropical elephant: he was adapted to a sub-arctic climate. He was clothed with fur, and his food consisted of northern plants and shrubs. He said—

"From all the facts, I am disposed to believe that the fossil elephant commenced his existence before the drift agencies had entirely ceased—when the water stood at a higher level—when the contours of the continent were different—when a different climate prevailed, and when a sub-arctic vegetation stretched far towards the tropics—at a time when the valleys were excavated by the returning waters, and the streams assumed nearly their present direction. I would designate it as the Fluvial Period. Cotemporary with these fossil elephant and mastodon was the fossil beaver. In bulk he was twice the size of the existing species, and was adapted to a wide geographical range, and tenanted the streams and lakes. Herds of cattle roamed over the plains while the tapir wallowed in the swamps. In the milder regions of the

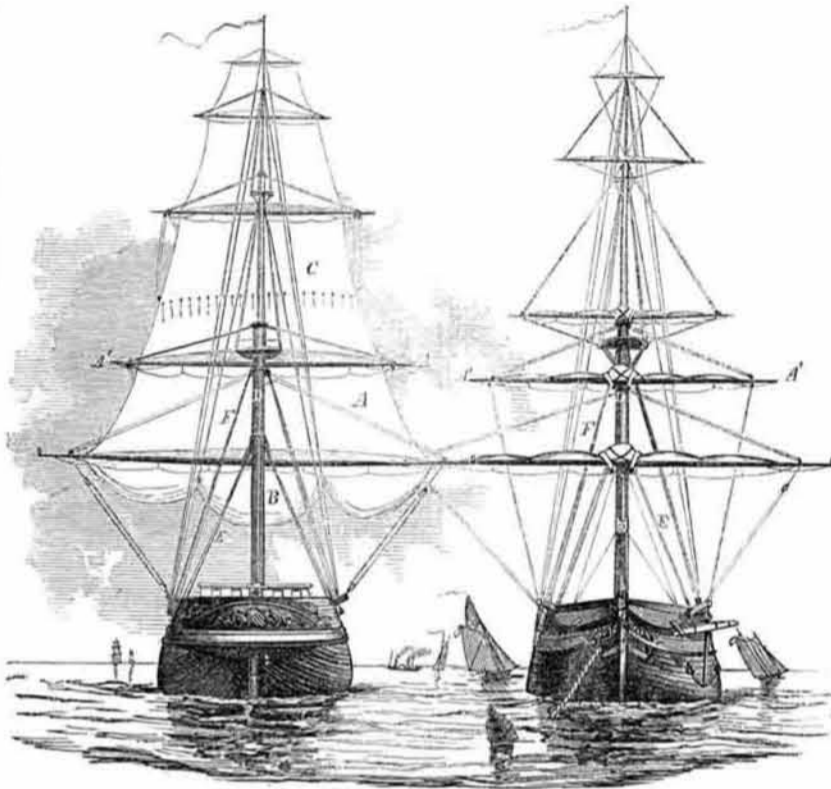
South, visited by the elephant and mastodon in their migrations, lived the great leaf-eating megatherium, the mylodon, the megalonyx, the hippopotamus, the horse, the elk, and the

deer, all belonging to extinct species, while at the head of the carnivores stood the colossal lion (Felix Atrox) which then, as now, was the monarch of the forest."

IMPROVED RIG FOR VESSELS.

Figure 1.

Figure 2.



Improved Marine Rig.

The invention shown in our engraving consists in the introduction of an extra sail and yard, A', between the lower sail, B, and the top sail, C. For this purpose the lower mast, D, is elongated, and strengthened by double shrouds, or rather by dividing the shrouds, as indicated by E F.

Fig. 1 is a front view, sails furled; fig. 2 a back view, sails opened. The improved yard and sail is attached to the mast in the same manner as the present lower yards and sails. The inventor reduces the length of the top masts in proportion to the increased length given to the lower masts, so that the weight carried aloft is no greater than that involved in the ordinary rig. The division of the shrouds is alleged to afford a better support

for the lower masts, notwithstanding the increased length.

The inventor does not claim the dividing of the top sail, as in Forbes' or Howe's rig, but the employment of a separate and distinct sail and yard, which he calls a Storm Yard and Sail, on the lower mast, so that in the event of a ship losing her mast heads or topmast, the vessel would still have storm sails and courses remaining, to work with. It is said that on ships rigged in this manner the yards could be so distributed as to have one reef in the top sail, or none at all, as desired, thereby avoiding the many accidents in reefing. For further information address the inventor, Mr. Geo. F. Trescott, Charleston, S. C. Patent applied for.

MACHINE FOR DIGGING POTATOES.

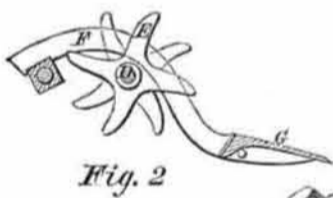


Fig. 2

Fig. 1



Improved Potato Digger.

The improvement herewith illustrated is the invention of Mr. T. Baker, of Stillwater, N. Y., for which he has applied for a patent.

It consists of a cast-iron frame, mounted upon two wheels, on whose shafts A, are two driving gear wheels, B, meshing into pinions, C, on shaft D. Shaft D is armed with curved finger

ers or teeth, E, which project up between the separating bars, F. In front of these bars (see fig. 2.) is a scoop-shaped mold-board or share, G, which lifts the earth and potatoes, and by the advance of the machine they are pushed back to the base of bars F, where the fingers, E, work through. By these fingers the potatoes are carried over the rounding curve of the separator bars, F, and dropped behind the machine, upon the ground or into any receptacle that may be attached to receive them. The earth is sifted through the bars F, leaving a smooth and even surface wherever the machine passes.

The chief features of novelty consist in the curved grate bars, F, by which a hollow is formed at their junction with the mold-board, G, for receiving the hill of earth and potatoes. Second, the earth is discharged through instead of over the separator bars, F, the raised or rounding parts of which prevent the earth from passing freely over, but allowing the potato to be carried over by the fingers, the earth and potatoes being agitated in their passage from the fore to the after part of the machine. The depth to which the mold board cuts is regulated by levers, H, at the back of the machine.

The two wheels on which the machine runs pass between the hills. The curve of the bars, F, being eccentric to the axis of the cylinder, clears the fingers of all vines or roots.

A recent trial of this machine proved it to be perfectly adapted to the work for which it is intended. All the driver has to do, is to ride on the machine and guide his team.

The apparatus is simple, strong, and durable, the whole being made of iron except the pole. It weighs only about three hundred pounds. The machine readily recommends itself by its neat proportions and philosophical principles. It is adapted to save a large amount of labor, converting what has heretofore been a tiresome drudgery into a pleasant recreation. Address the inventor for further information.

Chemistry of Electricity.

There exists between the living plant and the soil supporting it, an electric current, which always moves in the same direction; that is, the soil is constantly positive, the plant continually negative. This fact was first observed by Becquerel, Sen., and for several years it had been pointed out by him as one of the causes of atmospheric electricity. On repeating his experiments, lately, he was struck by certain anomalies in operating on the bank of a stream, and at certain distances from plants. He discovered that electrical currents change their direction and intensity with the chemical composition of the water in the soil; alkaline waters being negative and acid waters positive.

A Handsome Tribute.

At a recent meeting in the Academy of Sciences, at Paris, M. Boussingault, while analyzing some bottles of water brought from the Dead Sea, declared that Commander Lynch's expedition had thrown more light on the climate and topography of that region than any the world has yet seen, although, within the last twenty years many bold travelers have explored that singular lake.

New Steamer.

The new American steamer *Adriatic*, of the Collins' line, the largest steamer afloat, is announced to sail from New York Oct. 16th, on her first voyage to Liverpool.

SPLENDID PRIZES.—PAID IN CASH.

The Proprietors of the SCIENTIFIC AMERICAN will pay, in Cash, the following splendid Prizes for the largest Lists of Subscribers sent in between the present time and the first of January, 1857, to wit

For the largest List,	\$200
For the 2nd largest List,	175
For the 3rd largest List,	150
For the 4th largest List,	125
For the 5th largest List,	100
For the 6th largest List,	75
For the 7th largest List,	50
For the 8th largest List,	40
For the 9th largest List,	30
For the 10th largest List,	25
For the 11th largest List,	20
For the 12th largest List,	10

Names can be sent in at different times and from different Post Offices. The cash will be paid to the order of the successful competitor, immediately after the 1st of January, 1857.