

Scientific Museum.

Scientific Memoranda.

ON THE ALCOHOL OF BENZOIC ACID—Cannizaro has found that the oil which results from the action of an alcoholic solution of caustic potash has the constitution $C_{14}H_8O_2$. It is colorless, heavier than water, refracts light strongly, and boils at $204^\circ C$. In its relations to re-agents it behaves like an alcohol, the aldehyde of which is represented by oil of bitter almonds. By the action of nitric acid at a gentle heat the new alcohol is converted into oil of bitter almonds; the action of chromic acid converts it into benzoic acid. The vapor of the alcohol passed over red hot platinum sponge yields an oil which is specifically lighter than water and is probably $C_{14}H_6$. By passing muriatic acid gas into the alcohol the liquid separates into two layers, of which the upper is the chloride $C_{14}H_7Cl$. This is a highly refracting, strong-smelling liquid, heavier than water, and boiling between 180° and 185° . With caustic potash it gives chloride of potassium and the alcohol is regenerated. Warmed with an alcoholic solution of ammonia, the chloride gives sal-ammoniac and a crystallizable base which fuses at a higher temperature than Toluidin. By mixing a solution of the alcohol in acetic acid with a mixture of sulphuric and acetic acids, an oil is obtained which is the acetic ether of the new radical, $C_{14}H_7O + C_4H_3O_3$. This is a colorless liquid, having an aromatic odor and boiling at 210° . With caustic potash it yields acetic acid, and the alcohol.—[Ann. der Chemie und Pharmacie.]

ON FORMING VESSELS OF GOLD BY THE AID OF PHOSPHORUS—The property of phosphorus, of precipitating certain metals from their solution, has long been known; and gold is among the number. M. Levol has used this process in forming gold vessels, so useful in chemical research. He takes the perchloride of gold, and places in it, at the ordinary temperature, some phosphorus, molded of a form convenient to serve as a nucleus for the vessel of gold. To give the phosphorus the desired shape, it is melted in a water-bath near $60^\circ C$. in temperate, within a vessel of glass having the form required. After cooling it, the phosphorus is taken out solid from its envelope, breaking it if it be necessary. The precipitation of the gold or the construction of the vessel is then begun; and it finally remains only to remove the phosphorus by re-melting it and washing, by the aid of boiling nitric acid, until the last traces are removed.—[Silliman's Journal.]

The Beard and Moustache in the Arctic Regions.

Now let us start out upon a walk, clothed in well-fashioned Arctic costume. The thermometer is, say 25 degrees, not lower, and the wind blowing a royal breeze, but gently.—Close the lips for the first minute or two, admit the air suspiciously through nostril and moustache, presently you breathe a dry, pungent but gracious and agreeable atmosphere. The beard, eyebrows, eyelashes, and the downy pubescence of the ears acquire a delicate, white, and perfectly enveloping cover of venerable hoar frost. The moustache and under lip form pendulous beads of dangling ice. Put out your tongue, and it instantly freezes to this icy crust, and a rapid effort and some hand aid will be required to liberate it. The less you talk the better. Your chin has a trick of freezing to your upper jaw by the luting aid of your beard; even my eyes have often been so glued as to show that even a wink may be unsafe.—As you walk on you find that the ironwork of your gun begins to penetrate through two coats of woolen mittens with a sensation like hot water.—[Dr. Kane's Journal of the Grinnell Expedition.]

Sugar in the Living Animal.

One of the greatest discoveries of our day, says a French paper, is that made by Claude Bernard, of the constant formation of sugar in the liver of animals. Feed an animal how you will—with food containing saccharine matters, and with food containing no trace of them, you always find the animal has, from the blood, formed sugar for itself. This sugar, which is

secreted by the liver, is, like all secretions, under the influence of the nervous system; you have only to cut what are called the pneumogastric nerves, and in a few hours all the sugar vanishes. The amount of sugar thus formed in every healthy animal may be increased by certain influences, and then it gives rise to, or is the indication of, various diseases. In one disease the quantity is so great that M. Thénard extracted 15 kilogrammes of sugar (something like thirty pounds) from the secretion of one patient! Real sugar, too, and of irrefragable taste, according to Boussingault,

who tasted it. But now attend to this: what Nature does in disease, man can do in the terrible theatre of experiment. Claude Bernard has proved that there is a very small region of the spinal column (by anatomists styled the *medulla oblongata*), the wounding of which (between the origin of the pneumogastric and acoustic nerves) provokes this increased secretion of sugar, and if with a sharp instrument you wound a dog or rabbit in this place, you will find that in a little while sugar has accumulated to an immense extent in the blood and other liquids.

MALONE'S HAND CORN PLANTER.

Figure 2.



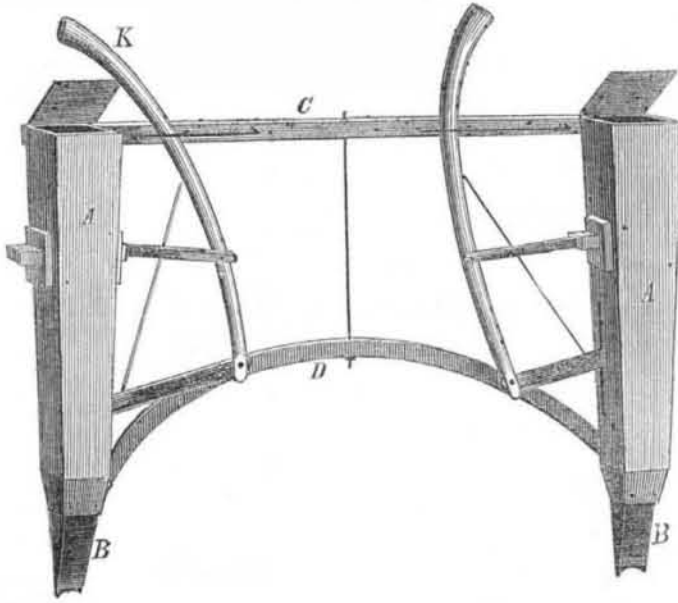
Figure 1 is a perspective view, and figure 2 is a side section of one of the tubes of the patent Hand Corn Planter of Samuel Malone, of Tremont, Tazewell Co., Ill.

This machine is small and light, not weighing over 10 lbs., and is capable of planting, by a smart person, from 4 to 5 acres per day on smooth ground. Two crops of corn have already been gathered, that were planted by it, and it is now at work at the spring business in the great agricultural State of Illinois.

A A represent two seed tubes made gradually tapering to their lower extremity, and having metal points, B B, which form the holes in the ground for the corn; these tubes are united together by the cross-pieces, C D. *ec* represent two chambers in each of said tubes, *e* being the chamber for the vertical slide, *d*, or covering piston, to work in, and *c* for the seed to fall through, as seen in figure 2. These two chambers run into one near the extremity, and thereby leave a space for the seed to fall into before being discharged, as seen in figure 2. The spring side, *b*, of the metal point keeping the corn in the chamber as long as desired, and also yielding when necessary, and allowing of its escape into the ground, the spring being operated upon by the vertical slide or plunger, *d*; it is connected to one end of a rod or arm working in a slot placed in nearly a horizontal position, and attached by its other end to one of the handles, K, fig. 1,—said handle having its fulcrum secured in the lower cross-piece, D. The arms and rods are joined, arranged, and operated in a similar manner, as knee levers, the plunger having a perfectly vertical movement. The handles of the planter are moved back and forth in the brackets, when it is desired to operate the slides. *a* is a horizontal slide working through the seed tube under the hopper; this slide is joined to one of the handles of the planter by an arm. In this slide two passages are formed for the corn to escape through from the hopper; these holes may be reversed, and both or one of the holes in the slide made to receive seed and deposit into the tubes. The horizontal slide, *a*, and the vertical piston operate at the same time, one receiving seed while the other is discharging it into the ground.

This machine is made light and portable, and is operated and carried across the field by the handle, K. The farmer stands behind and at the center of the machine, and lays hold of the handles with his hands, lifts and carries the ma-

Figure 1.



chine from place to place, forms the impression in the ground by pressing the tubes downward by the handles, and then operates the slides and opens their seed passages by drawing the handle towards his sides, and forces the seed into the ground by moving the handles by his sides.

The horizontal slide, *a*, is like the slide valve on a steam engine; the seed passes down through either the one or the two openings in it, into *c*, as shown by the arrow, while the piston, *d*, pushes it into the ground. The handle, K, gives an up-and-down motion—raising and forcing down *d*, while it gives a horizontal motion to the valve, *a*. It is a very simple machine, and no doubt answers a very excellent purpose.

More information may be obtained from Mr. Malone by letter addressed to him at Tremont.

Manure for Strawberries.

The following is from a communication to the "Friend's Review," and may be very useful to many of our readers:—

"The writer had a very productive bed, 30 by 40 feet. I applied, says he, about once per week, for three times, commencing when the green leaves first begin to start, and made the last application just before the plants were in full bloom, the following preparation:—Nitrate of potash, (saltpetre) glauber salts, and sal soda, (carbonate of soda) each one pound, nitrate of ammonia, one quarter of a pound—dissolving them in 30 gallons of river or rain water. One third of this was applied at a time; and when the weather was dry, I applied clear soft water between the times of using the preparation, as the growth of the young leaves is so rapid, that unless supplied with water, the sun will scorch them. I used a common watering pot, making the application towards evening. Managed in this way, and the weeds kept out, there is never any necessity of digging over the bed, or setting out new. Beds of ten years are not only as good, but better than those two or three years old."

Attraction of Compasses on Ships.

The following facts will serve to show the necessity of the strictest attention to the accuracy of ships' compasses:—

"A Cunard steamer, on leaving Halifax, had steered such a course as should have carried her 30 miles east of Cape Race, in Newfoundland. The weather was wintry and foggy, and the captain coming on deck in the gray of the

morning, found, to his horror, his vessel apparently rushing to destruction on an iron-bound coast. By instantly reversing the engine the vessel was saved, when an examination of all the compasses on board was had, and the cause of aberration found to be, a new iron tube which had been placed inside the brass funnel of the saloon without the captain's knowledge, and thus the lives of many persons and the safety of a noble vessel jeopardized by a circumstance apparently so trifling."

LITERARY NOTICES.

ANATOMY OF THE INVERTEBRATA—By C. Th. SIBBOLD; translated from the German and edited with Notes and Additions recording the Recent Progress of the Science, by Waldo I. Burnett, M. D., Boston: Gould & Lincoln. This work marks a period in the history of American Scientific progress, and indicates an advance in the department of Natural History equal to that attained to by the savans of the old world. The work appears as a translation, but the notes and additions brought to it by the Editor are equally valuable and important as the text itself. The class Invertebrata, of which it treats, embraces, as is well known, those forms of animal life, in which there is an absence of the brain, spinal cord, and vertebral column. They occupy the lowest grades of animal life, and any extended research into their character must be necessarily microscopic. At the first glance it may seem that the work is wanting in the so-called practical information—but no opinion can be more erroneous. The growing coral reefs that endanger our Southern coasts, and obstruct navigation, are the work of the invertebrata: their microscopic bodies, which the sounding line brings up from the ocean depths, are our only sources of information respecting the character of the sea bottom, and last, but not least, would we refer to the opinion which is year by year gaining in weight, that it is only by a close examination and study of the forms of animal life that we shall be enabled to interpret and combat those strange and mysterious diseases which periodically visit with such severity man, and his great staples of vegetable food. To every student of natural history in this country the work is invaluable, and at present is the only standard.

PRACTICAL SURVEYOR'S GUIDE—This is a new work of the "Practical Series," published by H. C. Baird, of Philadelphia. The author of it is Andrew Duncan, Land Surveyor and Civil Engineer, Pittsburg. He has had more than 30 years' experience, and is master of his subject. The work is composed in four divisions: 1st. The arithmetical calculation of plane figures. 2nd. The calculation of surveys taken with the compass and chain, by latitude and departure. 3rd. The method of plotting, enlarging and diminishing maps, with remarks on copying and embellishing. 4th. Levelling and calculating cuttings and embankments, with tables and many useful practical rules. It is an excellent work, and is for sale in this city, by C. B. Francis & Co., Broadway.

HEWITT'S FIELD BOOK FOR RAILROAD ENGINEERS—Published by D. Appleton & Co., New York. This is, strictly speaking, a book for the Civil Engineer, the author himself being one of acknowledged ability. It is neatly printed with gilt edges, morocco cover with flap and pocket, and is designed to be a pocket companion; it contains many useful tables of sines, cosines, tangents, squares, cube roots, &c. It is very full and complete on the laying out of simple, compound, parabolic, and other curves. This book does great credit to both author and publisher.

THE ILLUSTRATED MAGAZINE OF ART—May number.—This splendid magazine continues its attractions; an elegant series of illustrations, and a choice variety of carefully prepared historical and literary contributions. It stands unrivalled as a work of excellence. A. Montgomery, publisher, No. 17 Spruce st.

PUTNAM'S MONTHLY—The May number of this choice periodical is upon our table. G. P. Putnam & Co., publishers, 10 Park Place, New York.

FRANK LESLIE'S BOOK OF FASHION—The May number compares favorably with its predecessors, and is a publication worth subscribing for, especially by the ladies. Price 25 cents per number; \$3 per annum. Published monthly at No. 6 John st.



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