Science and Art.

The Earth that we Walk on.

It may surprise some readers to learn that all the earths—clay, flint, chalk. &c., are nothing more than the rust of metals; that at one time, during the age of this world, they were all shining brilliant metals. Geologists speak of the earth as being hundreds of thousands of years old. All their philosophy is based upon mechanical science; the formation of strata, the upheaving of mountains, the burying of forests, have been attributed to some "great convulsion"—that is, to some shaking together of the earth's crust. Whether this great age of the world be true or not, it is very certain that before any of these events could have taken place, the formation of each of the earths must have been the work of ages; otherwise the metals of which their base consists could not have been so completely rusted as to assume an earthy texture. To understand this we must leave the mechanical, *i. e.*, the geological theory, and enter upon the primary or chemical theory. It cannot be disputed that the first changes of the earth's surface were of purely a chemical nature. Combinations took place then as now; the metallic bases, by mere contact with the atmosphere or water passed into oxyds, as the chemist calls them, or earths, as expressed in daily conversation. Chemists thus recognize something like 40 different kinds of these oxyds or earthy bodies, some being very scarce, and others as plentiful. By the merest touch of air some of the metallic bases of these earths instantly pass into the rusty or earthy state; some by contact with water are so energetic that they burst into flame. By this process of reasoning we come to the conclusion that the world is one mass or globe of mixed metals, of which the mere crust has become rusted, or of earthy form; the outer rind, as it were, preventing any rapid combination taking place with the metallic surface, five or six miles below the face of the dry land. Eruptions from volcanoes are probably produced by the sea getting down to the metallic surface through some fissure in the earth's crust; decomposition of the water then takes place; fire, flame, and steam causing an eruption. It would be an instructive lesson to man to quarry into the earth's crust the depth of ten or twelve miles.

SEPTIMUS PIESSE.

London.

Benzole.

This liquid carbo-hydrogen, so valuable as an economical solvent of india rubber, gutta percha, resins, and other difficulty soluble substances, is readily prepared by Mansfield's process.

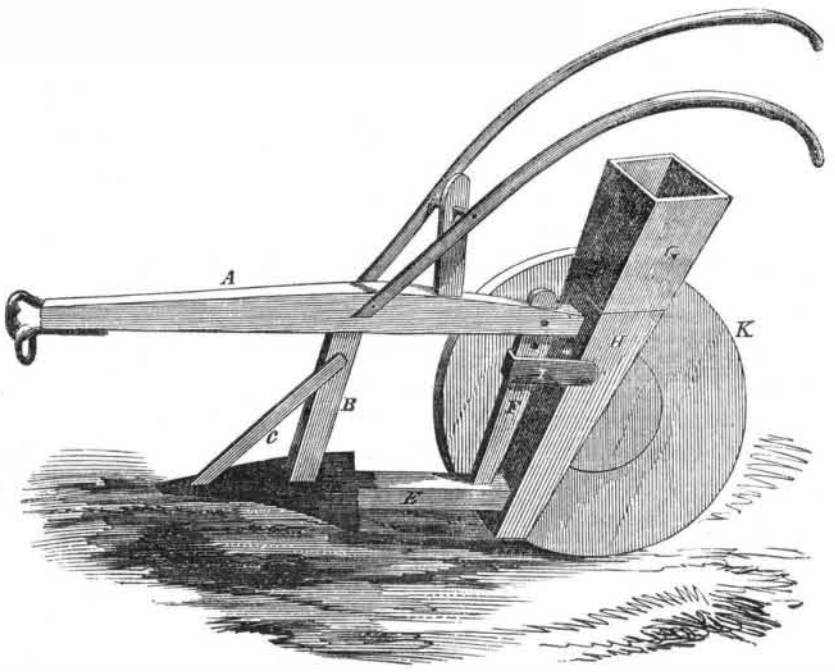
The light coal naphtha, obtained in the early stage of the distillation of coal-tar, is distilled in a metal retort having its head surmounted with a chamber containing cold water, so that the liquids less volatile than water may be condensed and fall back into the retort or into a separate receiver, while those more ethereal pass on in vapor to a condensing vessel kept cool with water or ice. The liquid ceases to pass as soon as the water in the chamber commences to boil, because all vapor volatile below 212° has then been driven over into the condenser. The distillate is rectified by a second distillation, as above, taking care this time, that the temperature of the water surrounding the head of the still shall not quite reach 176° Fah., that being the boiling point of benzole. The distillate obtained before the temperature within the retort has risen to 194°, is a yellowish volatile oil, which at 4°, drops one half of its bulk in crystals.

This liquor, by agitation with one-tenth its volume of strong nitric acid for the removal of the oxydable substances, and, subsequently, after separation from the acid, with one-fourth its volume of oil of vitriol, to separate neutral oils, basic, and coloring matters, is prepared for the last distillation. All the distillate obtained below 194° is to be reserved and washed with water, and finally with an alkaline solution. The purification is completed by congealing it at 4° Fah., and pressing out the solid portion, filtering and drying by means of chloride of lime.

The volatility of benzole imparts great value to it as the solvent of resins for forming varnishes, or artificial cuticles in dressing wounds and burns. Those resins, as copal, &c., which do not dissolve in the liquid, yield readily to the vapor.

Air or coal gas, surcharged with benzole, yields a flame of highly luminous power. So also, when mixed in the proportion of one volume to two of alcohol or pyroxylic spirit of ·840, it forms an admirable burning fluid. It moreover possesses anæsthetic properties.

PLANTING PLOW.



The annexed engraving represents a planting plow, for which a patent was granted to B. M. Snell, on the 20th of March last.

The nature of the improvement consists in so constructing a planting plow by combining a plow, resembling a subsoil one, with a seed dropping apparatus, operated by the wheel of the plow, for the purpose of depositing the seed under the surface in the soft and prepared bed.

A is the beam, from which descends the stock or coulter post, B. *c* is the coulter; the share is secured on the post, B; E is a bar extending from the rear of the share and united to an upright, F, whose upper end passes through the rear of the beam. This upright is furnished with holes and a pin, by which the plow is made to plant deep or shallow as required.

The seeding apparatus consists of a hopper, G, and dropping tube, H, secured by a strap, I, to the upright, F, and to the end of the beam. This hopper has a sliding bottom and hole therein, which, when the slide is forced in, an opening is made for the passage of the seed into the tube. On the back of the hopper and dropping tube is secured the axis of a pair of wheels, *k*, (one shown,) one of which is furnished with a cam or angular striker hat forces in the slide of the hopper on each rotation of the wheel.

The object of this improvement is to create a soft bed for the reception of the seed in the earth without the disadvantage attending the open furrow made when the soil is thrown out, and the seed frequently deposited on a hard soil or bed, and of course disadvantageously to its growth; also to obviate a difficulty in planting corn on a hill side, wherein the open furrow made is liable to create a wash of the land in heavy rains, occurring soon after planting, which frequently renders re-planting necessary, besides the loss of soil where most needed. By this improvement all the properties of a light bed and retention of the fertilizing property of the manure is obtained, particularly where such as guano or other volatile article is used, as it is not thrown to the surface, as would be the case if the ordinary tine or small mold board planter were used.

More information may be obtained by letter addressed to S. Oliver, Agent, Hancock, Maryland.

Artificial Mineral Manures.

Liebig gives the following proportions of salts as the basis for manures. 1. 2½ pts. carbonate of lime and 1 pt. potash (or 1 pt. of a mixture of potash and soda.) The potash usually contains 60 per cent. carbonate, 10 per cent. sulphate, 10 muriate, and some silicate of potassa. 2. Equal parts of phosphate of lime, potash, and soda. The above mixtures are each fused separately in a reverberatory. According to the peculiar wants of the soil, the proportions given may be varied, and also different substances added, such as plaster, bones, silicated alkali, ammonia, phosphate of magnesia. According to Stenhouse, the calcareous phosphate may be obtained from urine, as well as from guano and bones, by adding milk of lime, drawing off the liquid from the deposit, and drying the latter. 100 lbs. urine yield nearly ½ lb. of the precipitate, which when dry contains 2·5 phosphoric acid, 2·5 lime, &c., and 1·7 nitrogenous organic matter.

ACID PHOSPHATE OF LIME—It is some years since this salt was proposed as a manure, and repeated trials since that time have fully demonstrated its efficiency. The simplest method of preparing it is as follows: Bones are thrown into heaps, where they soften by fermentation. They are then covered with half their weight of water in wood or stone vats, and half their weight of oil of vitriol added. The whole passes into a pasty state in the course of eight or ten days, when it is mixed with earth, charcoal, or sawdust, to render it pulverulent. If it be required to apply the salt in a fluid state to land, the paste is diluted with 100-200 times its bulk of water.

How Our Bodies are Made up.

Eating is the process by which the noblest of terrestrial fabrics is constantly repaired. All our limbs and organs have been picked up from our plates. We have been served up at table many times over. Every individual is literally a mass of vivified viands; he is an epitome of innumerable meals. Liebig states that an adult pig weighing one hundred and twenty pounds, will consume five thousand one hundred and ten pounds of potatoes in the course of a year, and yet at the expiration of that period its weight may not have increased a single ounce.

Eyes and Cold Water.

The aquatic furor has become so general, that for the simple reason that cold water is a pure, natural product, it is claimed to be a universal and beneficial application. Arsenic is a pure, natural and simple product; so is prussic acid, as obtained from a peach kernel. A single drop of tobacco oil will kill a cat or dog in five minutes.

Many persons are daily ruining their eyes by opening them in cold water of mornings. Cold water will harden and roughen the hands, and much more will it do so to the manifold more delicate covering of the eye; or the eye will, in self-defence, become scaly in the manner of a fish; that is, the coats of the eye will thicken, constituting a species of cataract, which must impair the sight. That water, cold and harsh as it is, should be applied to the eye for curative purposes, in place of that soft, warm, lubricating fluid which nature manufactures just for such purposes, indicates great thoughtlessness or great mental obliquity.

[The above, from *Hall's Journal of Health*, contains good advice.

Fresnal Light in California.

A Fresnal light has been erected on a point at the entrance of the San Francisco Bay. It is 52 feet above the level of the sea.

German Silver.

German silver spoons of a yellow color contain copper and arsenic, and should never be used. Pure German silver is white.

Importing Eggs.

A thousand dozen hens' eggs were recently imported into this city from Havre, France. This is rather a disgrace to our poultry-mania people.

LITERARY NOTICES.

THE KNICKERBOCKER—"Old Knick" comes to us this month fresh and blooming with poetry and prose. The first article is entitled "My Campaign Reminiscences,"—a tale of the Mexican war, and is full of thrilling incidents from beginning to end. The Editor's Table, as usual, is full of sparkling wit—the nectar of cheerfulness.

GAZETTEER OF THE WORLD.—We have received from Lippincott, Grambo & Co., Philadelphia, a specimen number of the new Complete Pronouncing Gazetteer of the World. It will contain notices and the pronunciation of names of near one hundred thousand places, and will be the most complete volume of this description ever published. It will consist of over 2000 super royal pages, with a steel plate map of the world.

COACHMAKER'S ILLUSTRATED MAGAZINE—The May number of the above named magazine contains two lithographic plates, embracing five figures,—a Rockaway, a Jersey Wagon; a Trotting Buggy; a Boston Chaise, and a light Rockaway,—besides a number of wood-cuts explaining branches of carriage making. It is an excellent number, and contains a great variety of useful information. C. W. Saladee, editor and proprietor, Columbus, Ohio.