

SCIENTIFIC MUSEUM.

For the Scientific American.
Agricultural Science.

MOISTURE OF THE SOIL—WATERING.—As stated in our notice of "Lindley's Horticulture," the following is condensed from the said work:

Water is one of the most important elements in the food of plants; they will not live in a soil which, without being chemically dry, contains so little moisture as to appear dry; on the other hand an excessive quantity of moisture, is in many cases equally prejudicial. In winter, in northern climates, and during the dry season in the tropics, plants do not require so much moisture. This does not apply to aquatic and marshy plants. When plants are in a state of growth, and as soon as young leaves sprout forth, perspiration commences, and a powerful absorption of moisture must take place at the roots, and the younger the leaves, the more rapid their perspiratory action. As a general rule, the ground should be abundantly supplied with moisture when the plants first begin to grow. To keep plants tender—such as lettuce and spinach for table use—they should have a plentiful supply of moisture.

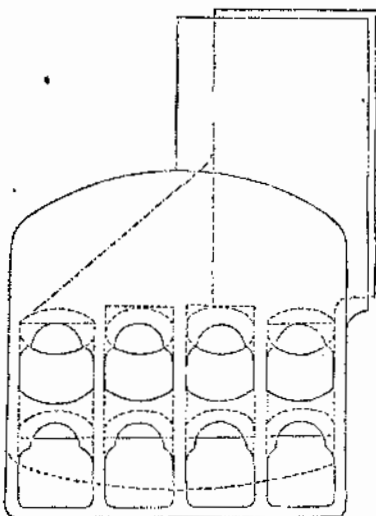
Market gardeners deluge their strawberries with moisture while the fruit is swelling; this increases the size of the fruit, but detracts from its flavor. When succulent fruit is ripening, the supply of water should be diminished,—this happens in nature all over the world. Fruits are impaired by growing on a wet soil—the plum and grape often burst in wet seasons. Melons require a great supply of moisture, but every plant has its own peculiar wants, and it does not do to make some plants grow in a wet soil, for instead of flowers and leaves, they only produce a superabundance of leaves and ill-formed shoots. It is an excellent plan to drain gardens and orchards. Glazed flower-pots are unfit for most plants; they prevent evaporation, and are not so good as the common unglazed ones. Painted wooden boxes for flowers are, for the same reason, to be avoided. Covering the soil in summer in our country, by what is called *mulching*, is excellent; this consists in covering the surface of the ground, around plants or trees, with some good non-conducting substance. Some gardeners use spent tan bark, others barn-yard litter, straw, &c. This maintains a uniform temperature and moisture for the roots. Mulching is excellent for delicate fruit-bearing trees and obviates the necessity of artificial watering. It is injurious to water plants artificially in the hot sunshine. They should be watered early in the morning, or, after sundown, and the watering pot should be raised high to allow the water to mingle with the air before it falls on the plants. Rain or soft water, is the kind to use. It is a bad plan to deluge plants by slashing pailsfull of water on or around them. By pouring water daily around plants and newly transplanted trees, if the soil is stiff, is a very injudicious practice. The ground by this system soon becomes very hard, and this prevents access of air to the roots. While planting a tree late in spring, the hole should be abundantly watered before the upper layer is laid on. Although moisture is essentially necessary to the growth of plants, artificial watering should be performed with great care. Dry air, acting upon a vegetable tissue of delicate surface, causes mildew, which is prevented in annuals by an abundant watering. The mildew which attacks the young fruit of the foreign grape when reared here in the open air, is very troublesome. This is prevented by dusting the flowers of sulphur over the bunches; but the best way to prevent this mildew in these vines, is to lay down half the young shoots of the vine annually, thus forming new plants, as the old ones shrivel and mildew in three or four years. The ravages of insects, on spinach, the onion, and the pea, are often prevented by an abundant artificial watering.

Powerful Antidote.

M. Mentere relates, in the Gazette Medical, some of the experiments which he witnessed while travelling with M. Orfila, the famous poison chemist. During their visit to the Museum of Natural History at Prague, they

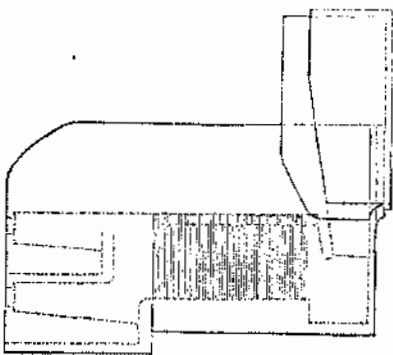
were introduced to Dr. Ellenberger, who exhibited his experiments with antidotes for mineral poisons, particularly strychnine and morphine. After relating the various trials he made on himself, he proposed to perform an immediate experiment. He sent to the apothecary for 30 grains of acetate of morphine, which Orfila pronounced pure. He, (Dr. Ellenberger) put it on his tongue and swallowed it to the alarm of all present.—One minute after, he swallowed a white powder, and the poison produced no effect. He had often performed like experiments with strychnine, but recently in performing one he lost his life. The secret of his antidote has not been revealed. It probably has died with him. We hope it may be found in his papers. Some other person will no doubt re-discover it, or something as good, since it is known that such a thing had an existence.

On Boilers.—No. 24.
FIG. 49



MARINE BOILERS—B. H. Bartol, Engineer, has a work on the "Marine Boilers of the United States." It is not a treatise on Boilers, for the author has not entered into explanations, nor does he discuss principles or practices in relation to the construction, draught, and working of the boilers; but he presents correct drawings to scale, and gives the dimensions of machinery, fuel consumed, &c., of 64 American steamers, and the data he thus furnishes for the engineer is exceedingly useful. A great amount of heating surface, combined with strength, has been the grand desideratum in steam boilers. These qualities are carried out in the best manner in locomotive boilers, by the employment of a great number of tubes surrounded with water, the heated products passing through the interior. In some cases, like Dimpfel's boiler, the water passes through the interior. These are called tubular boilers. Tubular boilers, although employed a number of years ago, on steamboats, were objected to by many, as being difficult to clean out, and because salt and limous incrustations were formed so rapidly in the

FIG. 50.



boilers of sea steamers. In 1842, however, we find that steamboat boilers, with tubes of three inches diameter, were common on the Clyde; but, judging from the opinion of the Editor of the "Glasgow Mechanics' Magazine," expressed ten years ago, they found no favor with him, as they did not with many other engineers in England. The principle of employing a very great number of tubes, for the boilers of ocean steamers, has been more fully carried out in our American steamships than in any of those yet built in Europe. How much economical advantage is possessed by them (the profit and loss) we have not sufficient data to form an opinion. Figs. 49. and 50 are a longitudinal and a

transverse section of the Atlantic. This steamship has four iron boilers, back to back, which are distinguished for their great amount of fire surface. The whole amount of fire surface is 19,044 square feet, tube surface 13,560 square feet; grate 572 square feet. The ratio of fire surface to the cubic foot of cylinder, is 21½ to 1, and of grate surface 33¼ to 1. In the Franklin, the ratio of fire surface to the cubic foot of cylinder, is 11 3-10 square feet to 1, and of grate surface 28 4-10 to 1—a very great difference certainly. The consumption of bituminous coal per hour in the Atlantic is set down at 5,880 lbs., in the Franklin 6,160 lbs. The water evaporated by 1 lb. of coal, in the Atlantic, is 7½ lbs.; in the Franklin 5 lbs. The ratio of heating and grate surface to the size of the cylinder, is, by this comparison, a correct rule to guide us in forming a correct judgment of the economy of fuel by different boilers. The equilibrium point of economy, taking all things into consideration, is not known, but this will be determined before many years pass away. The tubes of the Atlantic's boilers are only two inches outside diameter.

A Singular Case.

A singular case of mesmerism, or something else, has occurred in this town within a few days. Anna Norwood, aged about 17 years, daughter of Mr. Jonathan Norwood, of Montague, was engaged doing housework in this town. On the evening of the 20th ult. she was present where several gentlemen and ladies were engaged in trying to have communications with the "spirits," by "rappings and tipplings." During the evening she was thrown, as was supposed, into a mesmeric state, out of which she was partially brought sometime in the course of the night. The next forenoon she did some baking and other housework, but about noon went into a supposed mesmeric state again, in which she has remained to the present time. On Friday, the 23rd, she was taken home to her father's, in Montague City, and one of the persons who was with her at the time of her going into the mesmeric state, sent for, but he had but little influence over her. During the whole time she has been subject to the most distressing convulsions, it taking from two to six men to keep her on the bed. When not in convulsions she would frequently carry on a conversation with the persons present, always calling them by the names of those persons who were present when she went into the mesmeric state, and talking upon subjects connected with them.—She lies with her eyes closed, and has the appearance of a person mesmerised. On Tuesday her mother went into a similar state, being mesmerised, as is stated, by her daughter, while attending upon her. Mr. and Mrs. Cheney, of Athol, who are considered among the best of the "spiritual mediums," were sent for on Wednesday, and although the daughter could not be brought out of the state, she was evidently benefitted, and her convulsions have been less frequent since. Several physicians have visited her, but cannot help her, and consider it the most singular case they have ever seen.—[Greenfield (Mass.) Gaz.]

[Here is a poor girl of a nervous temperament, and who should be in charge of an able physician, rendered helpless, at least for the time being, by the orgies of a set of dementians.

Chloroform.

The London Lancet says there are two modes of administering chloroform; one consists in using a small quantity of it, to be inhaled in a very short time, with hardly any admixture of atmospheric air. Patients are in this manner quickly rendered insensible. The method is dangerous; and though but comparatively few accidents have occurred, the latter have struck such terror into the practitioners and members of the community that this mode should never be followed. Chloroform should first be inhaled with a large quantity of atmospheric air; respiration should be allowed to go on regularly and normally, the chloroform is then gradually inhaled in a more concentrated form, and left off as soon as any unpleasant symptoms occur. Eight or ten minutes, and from three to five drachms are thus employed in obtaining anæsthesia; but this loss of time and chloroform is made up in the absence of danger,

Operations of the most delicate kind can thus be carried on for a whole hour; much as three ounces or more of chloroform are consumed, and no accident occurs.

LITERARY NOTICES.

LINDLEY'S HORTICULTURE—By John Wiley, of 18 Park Place, this city, has just issued the second American Edition of "Lindley's Horticulture," to which has been added Notes by A. J. Downing, a name familiar to all our horticulturists. Lindley enters into the theory of the action of plants, their growth, production, &c. He presents a great mass of information respecting the heat necessary for vegetation, also the moisture, and the best modes of treating all vegetables scientifically. We find the "Notes" of Mr. Downing to be exceedingly valuable, as the method of gardening in England and America must be different, owing to the great difference in climate; this is clearly pointed out and explained, when necessary, in the "Notes." The watering of plants is treated in a very satisfactory manner; as this is a subject of interest to every family which has a patch of ground for a garden, we present the substance of this chapter on another column.

ASSAYER'S GUIDE—This is a neat and excellent little volume, published by H. C. Baird, Philadelphia, and edited by Oscar M. Lieber, late Geologist of the State of Mississippi. It contains directions to Assayers, Miners, Smelters, for the tests and assays, by heat and by the wet process, of the ores of all the principal metals, and of gold and silver coins and alloys. It is a capital work, exceedingly practical and valuable. The author of it is perfectly at home, with this subject, and treats it in a plain and distinct style. It is for sale by John S. Taylor, 143 Nassau street, this city, who is also agent for the sale of the other excellent works published by Mr. Baird.

THE CAVALIERS OF ENGLAND: or the Times of the Revolution of 1642 and 1688; by Wm. Henry Herbert, pp. 428; J. S. Redfield, publisher, Clinton Hall, N. Y. This volume contains four legends of love and chivalry, viz., "The Brother in Arms, or the Three Noblest Victims for Opinions' Sake," "The Rival Sisters, or Inglesborough Hall," "Jasper St. Aubyn, or the Course of Passion," and "Venon in the Vale, or the Price of Blood." These legends are full of stirring interest, and are fit subjects for a neat book, issued in Redfield's uniform excellent style.

BRONCHITIS AND KINDRED DISEASES—By W. W. Hall, Md.—An interesting and valuable work to those afflicted with bronchitis or consumption in its incipient stages, has just been issued from the well-known publishing house of S. P. Redfield, Clinton Hall. We are convinced, from a perusal of this book, that, if it is as extensively circulated and read, as it should be, and its precepts followed, many valuable lives may be saved, annually, by means of its publication.

WALL STREET JOURNAL—This is the title of one of our favorite papers which we take home with us to peruse at our leisure. The "Wall Street Journal" is of the financial order, and its editorials are short, pithy, and convey, as far as we have acquaintance in such matters, correct impressions. In each number is chronicled the state of the Stock Market—the state and prospect of trade, a record of the real estate sales, etc. etc. Published weekly by Robinson & Co., 15 Merchants' Exchange. Price \$2 per annum.

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