Scientific American.

NEW YORK, MAY 14, 1859.

Draining Farm Lands.

The benefits resulting from the underdraining of farm lands has been a settled question for many years in those countries of the old world distinguished for science and skill in practical agriculture. It is also a settled question with some of our enterprising farmers, but with the mass of them it is a new subject, so far as their own practice is concerned. A healthful general interest is now felt in this matter by our agriculturists; and this, we think, must eventuate in good results.

Underdraining consists in cutting deep narrow trenches on lands, for the purpose of tapping undersprings near the surface, and also for carrying off rain water that would otherwise collect and stagnate near the roots of the plants. Some contend that underdrains should also embrace the feature of admitting air and ventilating the under surface of soils. This question should never be touched upon in this connection; the removal of the surplus and stagnant water is the main object of drainage. Underdrains are covered and placed at such a depth from the surface as not to interfere with the plowing or with other mechanical operations in the field.

There are differences of opinion among practical men as to the proper depth, and the requisite distance apart at which drains should be laid. This arrangement must depend in a great measure on circumstances. Deep drains are far more expensive to cut than shallow ones, but then a smaller number are required in each field. At one period two-and-a-half feet drains were common in Britain, now five-feet drains are becoming more general. Four-feet drains situated forty feet apart will afford effectual drainage to any field, but the proper depth depends almost entirely upon the nature of the land. If the cutting is through hard-pan, three-feet drains situated thirty-five feet apart will be the cheapest, and answer perhaps as well. They must be placed beyond the reach of frost as an imperative condition; when this is secured, they can be cut deep or shallow, according to the nature of the ground, so long as they are able to carry off the surplus and stagnant water.

The material of which the drains are made is an important feature. The oldest drains were formed by cutting to the proper depth, laying up the cuts with a layer of cobble or loose stones, then placing some brush-wood or straw over these, and filling up with the soil. These drains soon choke up with mud, and they have been mostly superseded by open drains, formed of unglazed tile or earthenware tubes, molded and burned like brick, and having joints or collars where the ends join. They are the most expensive drains at first, but the cheapest in the end. One kind of tile consists of a flat bottom, with a semi-tubular top. They are laid down in such a manner as to lie in perfect line, with a slope of about one foot in the one hundred feet; his fall is sufficient to carry off the water. Tubes of about one and a half inches in diameter answer for the lateral drains; these should lead into one general or main discharging drain of large diameter. Where flat stones are abundant, very good open drains may be made by laying them on edge to form the sides, then covering them on the top with flat caps. Loose stones, if they can be obtained, should be laid upon the top of covered drains before the soil is filled in.

Considerable engineering skill is required in laying out a field for proper drainage, so as to give all the drains the proper incline, and carry off the water by the natural slope of the land. As there are elevations and depressions in most fields, no *particular* directions can be given for laying out all the drains in them—they must be planned according to the circumstances of the case. There are few of our farmers who have not sufficient ingenuity to engineer their own fields and lay out their own drains, if they apply themselves to the work.

All stiff and springy soils should be drained, and especially those which have clay subsoils, as these retain the water and form undersprings which injure the roots of the plants. One great object of drains is to tap shallow springs, and another is to carry the rain water down through the soil, and prevent so much surface evaporation, as it carries off the heat, and reduces the temperature of the plants and ground. Sandy soils with gravely under strata do not require drains, as they afford good drainage from their very constitution.

A recent number of the *Mark Lane Express* (London) contains an article from its American correspondent—Mr. Henry S. Olcott, of this city—a scientific agriculturist and able writer on such subjects, which affords some very useful information on underdraining. He describes the case of Mr. John Johnstone, an intelligent farmer who resides near Geneva, N. Y., as an instance of great success in draining farm lands, He commenced operations about nineteen years ago, and has laid about forty-seven miles of drains upon his farm. During one season, when six of his neighbors raised only seven bushels of wheat to the acre, his fields yielded twenty-nine bushels. This case is cited as positive proof in favor of the profits which may result to every farmer who underdrains his lands thoroughly. We know that the great majority of our farmers have not a sufficient amount of capital to carry out such a system of improved agriculture, but we think that most of them can do something, however little, to introduce and commence the work of progress in this department of practical agriculture.

The New Commissioner of Patents.

The Hon. W. D. Bishop, ex-Member of Congress from Connecticut, has been appointed by President Buchanan to fill the important office of Commissioner of Patents. Fortunately for the interests of the inventor and the Patent Office, the two preceding Commissioners—Judge Mason and Mr. Holt—were not only able men, but they held broad, liberal and comprehensive views respecting its management. They manifested large sympathy for the inventor, and had the moral courage to interfere in his behalf and to protect his rights by over-ruling wrong decisions which, in the infirmity of human judgment, are by no means uncommon. This independent and manly course of action not only secured for them the cordial respect of all applicants, but also impressed the Examining-force of the Office with the conviction that the Commissioner of Patents is, by virtue of his office, the highest in authority. Had they pursued any other course of action, instead of the respect and confidence of all, they would have failed to secure the esteem of any. Instances of this kind could be named, but we forbear. We may say, however, in reference to Judge Mason and Mr. Holt, that they are now two of the most popular men in the country.

From a personal acquaintance with Mr. Bishop, of many years' standing, we are prepared to say that he will make an able and popular Commissioner, and while he will receive and courteously respect the opinions of others, he will, in the main, do his own thinking, and will decide all questions submitted to him upon the facts, and without prejudice. Mr. Bishop is a *progressive* man; he believes that the end of all improvement in the arts and sciences has not yet been attained; he comes of a progressive stock, and it is perhaps not too much to say that his late father, Alfred D. Bishop, was the most energetic, persevering and clear-headed business man in the State of Connecticut. The newly-appointed Commissioner has no sympathy with "old-fogyism," and he will be likely to carry out the general practice of his predecessors, which has conferred so much dignity and glory upon the Patent Office. Although, probably, the youngest man ever appointed to the office of Commissioner, Mr. Bishop is nevertheless well qualified for its duties. He is a graduate of Yale College; has studied law; and in successively filling the positions of Superintendent and President of a prominent railroad, he has been accustomed to practical thinking, and, moreover, has an unusual taste for mechanism.

That Mr. Bishop is no mere novice in the matters that appertain to his new station is evidenced by the fact that he has been a reader of the Scientific American for many years, and is conversant with the progress of invention, and with the business of the Patent Office so far as it is developed through the columns of this journal. As a member of Congress he represented an intelligent constituency, distinguished for their manufacturing enterprise and skill, as well as for their ingenuity; and during this period he held the important position of Chairman of the Committee of Manufactures. We predict for Mr. Bishop a successful and popular official career.

Horticulture and Mental Cultivation.

The love of cultivating gardens seems to be innate in man, and only requiring, where it seems to be absent, some small incentive to call it forth, with all its grandeur and holy influence. It is the primeval occupation, and taught our first parents love to the Deity and each other, in the umbrageous shades of the pristine Paradise. It is the natural associate of a cultivated mind; and strange to say, some of the most beautiful pastorals and rural poesy in the English language have been written by men who lived in London, and who derived their inspiration from house-sparrows and bricks and mortar, thus showing that with the cultivation of the mind—the approach to the pure Adamic intellect—came the yearning for the flowers of the garden and the evergreens of the shrubbery. It is also illustrated on our own continent by the dwelling-places of our great minds. We expect to find the giant intellects of the age at the centers of learning, deep in the massive study, and surrounded by the apparatus of collegiate information. To a certain period they are there, but how soon Irving buries himself with nature only, at Sunnyside; and Emerson, the philosopher, flies to quiet Concord, to contemplate, amid trees and flowers, the abstract truths that he evolves.

All nations, at all times, have acknowledged the value of horticulture as a humanizer and civilizer, just as cultivation of intellect calls for associate cultivation of flowers and plants. The one induces the other.

An anecdote will prove this.

When the Rev. Mr. Boyd was appointed rector of Skipton Parish, in Yorkshire, England, he found a rude, unrefined, and, to a considerable extent, immoral population. The first step he took towards their amelioration was to lay out and plant a beautiful flower-garden attached to the rectory, to which he gave free access to his parishioners at all times. He afterwards encouraged some of them to ornament the gardens attached to their cottages by giving them plants and seeds; and in the course of a very few years this rude population was, by the kindly influence of horticulture and floriculture, transformed into a most orderly, gentle, and refined community.

This may be called a novel way of preaching the gospel, but it is a good and practical one, and we look to some such result as this from our own Central Park. Philadelphia finds it in her squares and fountains; Boston in her common; New Haven in her elms; and other cities should depend more than they do upon trees, flowers, shrubs and evergreens for the extinction of rowdyism, and less upon an uncertain punishment of offenders.

The benevolent ladies of our own city are beginning to appreciate the value of horticulture as a female employment, and are about to establish a horticultural school for females upon Long Island, where poor orphan girls may be taught gardening as an art. In after years those girls, saved as they will have been from the vicious influences of a large city, and having a stock of robust health and an occupation that will keep their body and mind in active and pleasant exercise, will thank the lady, Mrs. Phelps, who founded it, more by the grand work they shall achieve, than by mere empty words.

It is a healthy sign of the onward intellectual march of the race, that gardening, as a business, and by amateurs, is becoming more and more extended, and that the army of civilization is looking with love and fondness at the trees and flowers, the leaves and grass, the blossom and the fruits, that are found with successive beauty upon the waysides of its track through the ages.

Electricity and Steam Boiler Explosions.

Our cotemporary, the *North American*, states that some years since, Richd. L. Loyd, of Philadelphia, discovered that electricity was the cause of steam-boiler explosions, and that by supplying them with a metallic lightning conductor he prevented such catastrophes. This discovery, it says, remained in neglect for a number of years, but is now revived by George T. Barry, of the same city, who had heard of Loyd's experiments. He has heated a boiler red-hot, then pumped 30 gallons of cold water into it, and no explosion followed, because it had a metallic conductor to carry off the electricity. It says "the belief is universal that all steamboat or factory boilers, if tried by the simple test of pumping water into them while red-hot, must inevitably explode."

We, at least, disclaim such belief, because we know it is not correct. We have, in one instance, ourselves, run cold water into a red-hot boiler without producing an explosion; we did this cautiously, to be sure, but we have been informedof several cases where less caution was observed, and no explosion followed. Explosions are liable to occur if cold water is admitted into a red-hot boiler, by the generation of a very high pressure of steam when the metal is greatly weakened with the heat. We do not see how electricity has anything to do with explosions, or that an electric conductor can afford any additional security to a boiler. There may be something in this electrical theory of explosions, but we really cannot perceive it.

To prove this electric theory, it is stated that a nine-inch bomb-shell, partly filled with water and sealed up, was heated red-hot, and the water converted into steam, without producing an explosion. No sooner, however, was there a spark from a galvanic battery sent into it by a wire than the shell was bursted into fragments.

If this circumstance really took place, which we much doubt, it would not prove that the explosions of steam-boilers are caused by electricity, because in this very case the electric spark was generated in a battery, not in the boiler. The metal of the boiler itself is a conductor, and it is connected by pipes to the machinery and the water-pump, so that if any electricity is generated in a boiler, it must be carried off as soon as it is formed. We know, indeed, that if a steam-boiler is isolated on glass legs and steam made to issue from a narrow orifice on the safety-valve, a large quantity of electricity will be generated by the simple friction of the steam; but the boiler itself is never surcharged.

Cure for Hydrophobia.—A correspondent of the Providence *Journal* recommends asparagus as a cure for hydrophobia in any stage of canine madness. The directions are: "Eat the green shoots of asparagus raw, sleep and perspiration will be induced, and the disease can thus be cured." This remedy proved effectual to a man in Greece after the paroxysms had commenced.