Voelcker on Soils.

Dr. Voelcker, the eminent English agricultural chemist, lately delivered a lecture before the Chemical Society of London on the productive power of soils in relation to the loss of plant-food by drainage, in which he took occasion to refer to the inutility, for most purposes, of the analysis of soils, as ordinarily conducted. He states that there are many apparently similar soils—that is, soils in which analysis shows like quantities of the same constituents — which differ widely in their productive powers, owing to the fact that the indications are of ultimate composition instead of showing states of combination in which the ingredients exist in the soil.

Another consideration of importance is that soil analyses throw no light upon the physical or mechanical conditions which affect the fertility of land. The productiveness of land is much influenced, too, by the character of the sub-soil and its composition in relation to the surface-soil, of which a soil analysis conveys no information. Again, meteorological conditions, such as the aspect of the field, the prevailing wind, the amount of rain, and the distribution of the rain-fall in the year, are all of the utmost importance in farming, and are, of course, not indicated by any analysis.

Dr. Voelcker, however, would not be considered as regarding such analyses as of no value, since in many cases quite the contrary is the fact. For instance, it is easy to determine whether a soil is deficient in lime or not, and thus ascertain whether it is proper to impart a dressing of this mineral. It is also known that potash salts may be applied with great advantage on some soils, while on others their fertilizing effects are scarcely perceptible; and the determination of the question whether there be enough potash in the soil will enable us to decide upon the proper action in this respect.

Again, it is possible to ascertain, by finding whether there is potash in clay, as to its being benefited by burning; burnt clay being an excellent fertilizer if the clay contains undecomposed silicates of potash; but the expense of this process would be entirely wasted if the clay be naturally poor in alkaline silicates. Again, peaty soils are often completely barren, this condition being due, in most cases, to the presence of sulphate of iron and finely divided iron pyrites, so small an amount as ½ per cent. of the former being quite sufficient to render a soil entirely unproductive.

We can also ascertain by analysis whether a soil contains an excessive portion of one or more matters otherwise useful to vegetation, such as nitrate of potash, chloride of sodium, etc. It appears to be the fact that all soils which contain readily soluble salts, in quantities admitting of precise determination, are more or less unproductive, although the salt may be a very effective fertilizer, when applied in a weaker solution. Thus, a soil containing 1-10 per cent., or even less, of common salt, hardly grows any crop; this being the case with land inundated by the sea. Such a proportion, indeed, of any substance is much greater than could at any time be applied with safety, while very minute quantities are frequently of the utmost efficacy; for so small a quantity as 50 pounds of nitrate of soda, applied to an acre of grass land, or to wheat or barley, and thoroughly washed into the soil, will produce a most marked effect in the darker green colour and greater luxuriance of the herbage compared with the portion not so treated. One hundred pounds of ammonia applied to an acre of land, in the shape of sulphate or of chloride of ammonium, has been known to raise the average produce of wheat 20 bushels, with a corresponding increase of wheat straw; and 300 pounds of superphosphate of lime, of good quality, has been found to increase the turnip crop in favourable seasons from six to ten tons per acre.

If a man wishes to make a living by farming, Dr. Voelcker thinks that at least from three to five times as much of all the more important fertilizers must be put annually upon the land as is removed from it in the crops, a depreciation in the crop resulting when a materially less amount is applied.

Leaves for Barn-yard and Stable.

Forest leaves are excellent to supply the stable-yards, and where straw is scarce also the cow-stables and hog-pens. They can be most conveniently gathered after the first snow, or at least before the wintry blasts have scattered them. They then lie compactly, and being moist, can be handled with greater facility. A cart with a few standards stuck in the sides will hold a considerable quantity; and the best thing to gather them or load them with is a wooden hand-rake, a wooden four-tined straw-fork is also very handy when the leaves are moist. Leaves absorb large quantities of the liquid manure, and are an excellent fertilizer in the spring. They can be gathered, too, when other labour about the farm is slack.—*Germantown Telegraph.*

TOP DRESSING.—W. J. W. writes:—"I quite agree with your correspondent "Old Country Man," that top dressing with well rotted manure finely communuted, is the best for grain or grass, and that little or nothing is lost when it is once spread; but I think that unless kept under cover, much is lost before it is rotten, and that the best of it, viz., the liquid; and, moreover, if you put out fresh dung full of juice, and plough it in one year; next time you turn it up, and thus it makes a top dressing. Put on a proportionate quantity of long manure, so much short, and plough in the first year, and my experience leads me to think that the rotation will be about equally benefited either way; but for one crop I prefer the top dressing.

ARTIFICIAL RAIN.—The latest agricultural experiment in England is surface irrigation by artificial rains. At Stoke Park this has been tried, the surface experimented on being a tract of twenty acres, in grass; and the water has been applied in artificial showers, in the night, every night during the season of 1871, excepting when natural rains made it unnecessary. The apparatus consists of pipes laid in the ground, supplied from elevated reservoirs, into which the water is pumped by machinery. A few figures will show the result per acre: Interest (5 per cent.) on cost of machinery and pipes, $7 50; superstructure and fuel, $7 50; manure and other top-dressing, $67 50; cost of harvesting, $12 50; total expenses, $95. The value of the product of each acre is stated at $200; the net profit is thus $105. Land of the same character, and in the same tract, not so irrigated, netted only $45 per acre.

DROUGHT IN CALIFORNIA.—The *Pacific Rural Press*, commenting on the formation of a company in San Francisco to raise $100,000 for the relief of farmers who have lost their crops by drought, says:—The imperative demand for an enterprise of this character upon the part of the capitalists, merchants, and business men of this city, will be patent to all who are familiar with the present distressed condition of the farmers in those portions of the State which have suffered most from drought. In many localities whole families are upon the brink of starvation, and are only sustained by the assistance of charitable strangers. They have no means whatever to procure seed or put in their crops. It is the purpose of this company to come to the aid of such persons, and provide them with funds, with the agreement that the money furnished them shall be refunded from the proceeds of the crops.

GRINDING WHEAT WITHOUT MILLSTONES.—At a recent meeting in Edinburgh of the British Association of Science, a paper was read by Mr. Thomas Carr upon a new mill for grinding wheat. It is described as reducing wheat by percussion while it is unsupported and projected through the air. When the wheat passes through the machine, it is struck by a series of bars moving in opposite directions. These reduce the wheat so instantaneously to a state ready for bolting, that no injurious heat is caused, and consequently the flour is of a much superior quality to that obtained by the usual way of grinding, and also at a much less cost. An Edinburgh firm has one of these disintegrating flour mills in full operation, and the advantages in its favour over the millstones it supersedes are pointed out in Mr. Carr's paper. It rarely needs repairing in comparison with other mills; requires fewer men, and thus saves in wages; is free from loss by scorching, occupies less space, and requires less driving power; and in addition to all this, produces a superior quality of flour.