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EDITORIAL.

A New Soil Gospel.

A mild sensation in the circle of students of soil chemistry has been created by the issuance from the United States Department of Agriculture of Bulletin No. 22, from the Bureau of Soils, by Dr. Milton Whitney, chief, entitled "The chemistry of the soil as related to crop production," the theory and teachings of which, if accepted as correct, are calculated to upset and discredit most of the beliefs and practices of agricultural scientists and practical farmers alike. We have in the past been taught, and have believed, that soils vary greatly in fertility, according to their nature and composition, some lands being naturally poor crop yielders, and others generous in their returns to the husbandman. That under methods of farming where no plant food is returned to the land, either in the form of stable manure, of decayed vegetable matter, or of a commercial compound, including the essentials to crop production—nitrogen, phosphoric acid, and potash—the amount of plant food in the soil is decreased by each crop grown, and that, as a consequence, sooner or later we fail to secure the yields of former years, until we furnish our crops available plant food in addition to that in the soil. The teaching of Bulletin No. 22, in brief, is that all soils contain practically the same amount of available plant food; that practically all soils contain sufficient plant food for good crop yields for all time; that the application of plant food in the form of farm manures, leguminous crops (as clover), or of commercial fertilizers, has little value in influencing the available plant food supply, but may possibly improve the physical condition of the soil; and that the problem of controlling the yield of crops is simply to control soil moisture, through control of soil texture, and this is to be realized by "a simple rotation and change of cultural methods."

If this new doctrine were accepted as sound, the growing of clover as a restorer of fertility may be abandoned, and the inventors who are racking their brains to produce a manure-loader as an additional labor-saving appliance for helpless farmers, will be disappointed in their hopes of a fortune from their patent, and may turn their attention to the construction of an endless chain tramway, driven by the herd bull on a tread-power as he takes his daily exercise, to convey the manure from the stables to the rivers, or to the filling of gullies, since the adoption of stone and concrete basements renders it impracticable to move the barns readily, as is said to have been formerly the practice in some Western States, when the manure in the yards became higher than the stable doors.

While the farmer knows from observation and experience that a system of continual cropping without returning something to the land, in the way of fertilizing material, is liable to lead practically to the same result as that of presenting cheques on the bank till there are "no funds" to his account, the importance of intelligent cultivation is also liable to be underestimated, and if the author of the bulletin in question will follow up his message with a clear definition of the changed "cultural methods" which are to ensure good crops, he may place the farming community under lasting obligations. His idea appears to be that by proper cultivation at the proper time, a sufficiency of moisture may be retained in the soil, no matter what the weather conditions may be, to grow and develop the crops to a maximum yield. The successful outcome of crops in seasons of plentiful rains, even on what are regarded as comparatively poor farms, and the reduced yield in a dry season even on good land, certainly supports the theory that moisture is a principal requirement, and that given this, with sufficient drainage to readily remove an excess of water, good crops are reasonably certain, and that the crops of average farms, in average seasons, suffer not so much from lack of the chemical elements of fertility, as we have been wont to think, as from the lack of uniform moisture to render these elements available as food for plants. Water is the great conveyor of the fertility that is in the soil to the growing plant, and tillage facilities the movement. These truths deserve more attention than they have yet received, but to do this we must not forget others equally and fundamentally important.

The observant farmer has learned from experience that in the case of corn, roots, and other hoed crops, frequent cultivation after rains, both before and after planting, serves to maintain the moisture in the land and immensely benefit the crop, but the perplexing question is how to apply the same principle in the case of grain crops, the nature of which is to preclude the possibility of cultivation after seeding? A term of about three months is required for the growth and development of these crops, and if a protracted season of drouth ensues soon after seeding, which is always a possible contingency, the question arises, What is the "cultural method" that can be applied to meet such an emergency and ensure a sufficiency of moisture to give the best results? Possibly the author of Bulletin 22 has the sequel up his sleeve, and it may be the planting of grain crops in rows sufficiently wide apart to admit of cultivation during the growing period, the young plants being protected by shields from being covered in the operation. This would, of course, preclude seeding to clover with a grain crop, but would not trouble the author, since his contention is that clover is not necessary to the maintenance of fertility, and, at all events, if used in a rotation, clover can be quite as successfully grown without the so-called nurse crop as with it, if not more so. Indeed, the nurse in this case is often responsible for the choking and early death of its protege, especially in a dry season.

On the whole, the more one thinks of the new doctrine under discussion the less he is disposed to harshly criticise it, since it clearly embodies an element of truth and reason, and while we need not accept it in its entirety, we may learn helpful lessons from it, and may profitably adopt its principle in part, for it is certain that in many cases we may by judicious fall and spring cultivation conserve soil moisture to a large extent, to be utilized in growth and perfection of crops even in a dry summer. But let us not yield a jot or tittle of our faith in clover and manure as a means of imparting fertility and improving the physical condition of the soil by supplying humus, which increases the water-holding qualities of the soil and greatly helps to maintain uniform moisture. With the use of these, and an intelligent rotation, we may not only maintain fertility, but may on lands impoverished by injudicious cropping rebuild a fertility equal to or exceeding that which the pioneers of the country found.

"R. G." writes us, advocating the building of wooden silos in case of tenants and others who cannot afford the more expensive cement structure, or where in the event of barns being moved or altered the silo will only be temporary.

Illustration Orchards.

The New Brunswick Government this spring inaugurates a forward movement in fruit-growing by setting out eight illustration orchards. The principle is the same as in the case of the creameries, the cheese-curing and poultry-fattening stations, started by Prof. Jas. W. Robertson, the Dominion Agricultural and Dairy Commissioner. Last year the New Brunswick Government caused spraying outfits to be operated in several parts of the Province, and encouraged by the results, they take the still more advanced step to demonstrate in different localities the principles and practice of up-to-date orcharding. The intention is to continue until every county in the Province has at least one illustration orchard. As a preliminary condition, the owner of the land cultivates and manures the land liberally the previous season. The Government furnish the trees, and send a man to direct the proper planting and laying out of the orchard. Mostly winter varieties of trees will be planted, and the efforts confined almost wholly to apples and plums, which will be set out between the rows of apples, as they come into bearing early, and may be removed when the apple trees mature. The trees being properly set out, the owner of the land must sign an agreement that he will attend to the orchard for ten years, according to instructions issued him. He will be allowed the entire receipts of the enterprise. The orchards will be from one to two acres in extent, and be composed of 50 to 100 trees. These will be set in rows, 30 feet apart. On each side of the row a space 7½ feet in width will be kept absolutely free from growth and cultivated from time to time. In the fall a cover growth of clover will be planted on this strip. It can scarcely be doubted that good results will follow if such a plan is intelligently followed for a number of years. We will follow with great interest the results of these object lessons in fruit-growing.

The Ontario Forestry Policy.

This season will witness the inception of a more aggressive forestry policy for Ontario. The idea of the Minister of Agriculture for Ontario, Hon. John Dryden, is to immediately start a nursery on the Agricultural College farm at Guelph, from which in due course forest trees can be supplied to farmers. President Creelman, after consultation with the Minister, has selected Mr. E. J. Zavitz, graduate of McMaster University, and a student of Yale Forestry School, from which he is to receive his degree next autumn, for the summer at the O. A. C., to look after the nursery. The seedlings have already been ordered, consisting of white pine, Norway spruce, basswood, hard maple and white ash. Mr. Zavitz (who is no relation of Mr. C. A. Zavitz, the Experimentalist) will oversee the planting and care of the trees this summer. Other varieties will be added from time to time. These seedlings should be ready for distribution in the spring of 1905 and 1906. In addition to looking after the nursery, Mr. Zavitz will, during the coming summer, have charge of the existing wood lot, and gather seed from different varieties of forest trees in Ontario and plant them in the nursery. These will be transplanted as seedlings and ready for distribution in the following year. In this way it is expected to be able to supply farmers with suitable trees for re-planting a portion of their lands and improving their wood lots.

When the time comes for planting on the farms, the proposal of Hon. Mr. Dryden is that