

FARM.

Culture, Humus, Lime, and Fertilizers.

A SHORT TALK ON THE IMPROVEMENT OF PARTIALLY EXHAUSTED SOILS.

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We are constantly in receipt of enquiries from correspondents with regard to the purchase and use of commercial fertilizers, and we are pleased to note in this not only a desire on the part of our farmers to bring up the yields of their fields, but an improved condition of their finances. A profitable employment of these necessarily somewhat expensive forms of plant food can only follow a knowledge of their composition and of the special requirements of our various farm crops, and we shall always be most pleased to furnish all possible information on these points.

There are, however, one or two facts that have been forced home upon the writer in connection with the enquiries referred to that it may be well to draw attention to in the columns of the ADVOCATE. They have been learned from the examination (chemical and physical) of many samples of soils that accompanied the requests. Most of these are examples of "worn" or partially-exhausted soils, soils that have been repeatedly cropped without any adequate return of plant food having been made, and which, for the most part, show a deficiency in humus (partially decomposed organic matter), and, as a consequence, exhibit a very poor mechanical condition. Such soils fall into two great classes, or, rather, are represented by two great types: the hard, compact, refractory clays, and the light, loose, porous sands. Of course, it is not to be understood that all the samples sent in for examination are either the one or the other of these extremes. No two soils are exactly similar, either in texture or composition, but we may adopt this classification for convenience of treatment, without affecting the accuracy of our deductions or the value of our suggestions.

Now, in the first place, without minimizing in the least degree the value of commercial fertilizers, we do not hesitate to say that on such soils as are here referred to these concentrated forms of plant nourishment cannot give their best returns. Chemical fertilizers, for the most part, present their plant food in soluble and, therefore, immediately soluble forms, and, consequently, to be used to advantage, must be applied to soils possessing good tilth: that is, to those which provide the seed a comfortable, warm, moist and aerated bed in which to germinate, and the plant a suitable medium in which to develop its root system. Neither of the two classes of soil above referred to do this. It therefore behooves the intelligent farmer to employ such means as are in his power to ameliorate and improve his soils so as to bring them into a condition more favorable for crop growth before making any extensive outlay for fertilizers. More attention must be paid to cultural methods, not only as a means of liberating inert or locked-up food in the soils, but for bringing about good tilth; and, further, we would emphasize the great desirability of a rational rotation of crops, one in which clover or some other legume finds a place at least once every fourth or fifth year.

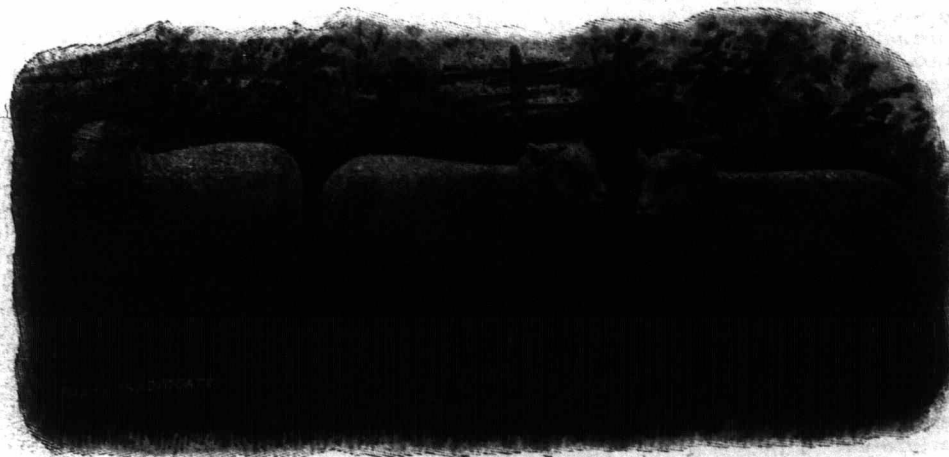
Draining, plowing, harrowing, cultivating are all means towards "fining," mellowing, a soil; towards making it retentive of moisture, air and warmth; and, further, though this fact is often lost sight of, are agencies that indirectly supply much plant food. To explain all this fully would require several articles. Our purpose at present is simply to point out the importance of soil culture, as well from a chemical as a mechanical standpoint, and to emphasize the fact that a soil's productiveness depends as much upon its condition as upon its composition.

After due and intelligent attention has been paid to the mechanical treatment of the soil, it will be in order to ascertain how it stands in regard to humus or vegetable matter. The color of a soil is an excellent indication of the amount of this constituent present, but its degree of mellowness may also be used to form an opinion on this point. A dark soil, friable and mellow, will be found to be one rich in humus and, consequently, in nitrogen, since the former is invariably the storehouse of the latter. On the other hand, a grayish, compact, hard clay that puddles when wet, and a light-colored, loose sand, lacking cohesiveness, are soils usually deficient in this constituent. To apply a rough chemical test, we may place a small quantity of the air-dried soil on a stove plate heated to dull redness; if there is but little charring, the soil is poor in humus. For all such, barnyard manure is, of course, most valuable, but the amount of this fertilizer is, unfortunately, on many of our farms, quite inadequate to keep the acreage of land cultivated in good heart. Recourse must then be had to green manures, and of such there is none so valuable as clover. As is now well known, this plant not

only enriches the soil when plowed under, with a large amount of humus, but also furnishes it with a very considerable quantity of nitrogen which it had been enabled to take from the atmosphere. The growing of clover (eight to ten pounds of seed per acre) with the grain crop in the rotation will not lessen the yield of grain, and the beneficial effect upon succeeding crops will be noticeable for several years.

Again, many soils—even upland soils—are found to be more or less acid, and many more to be deficient in lime. To gain a knowledge of a soil in these respects, place a handful of soil in a tumbler and cover it with water; after stirring, allow the soil to settle, and first try the soil solution or extract for sourness by placing in it for a few minutes a small piece of blue litmus paper. If, on withdrawing the paper, it is seen to have been turned red, the soil is sour. Such a soil will be benefited by lime or wood ashes. Whatever may be the result of the litmus test, now add to the soil in the tumbler a teaspoonful of strong vinegar. If there are but traces of an effervescence, the soil is poor in lime. Sour soils and those proved deficient in lime will be found to have their productiveness increased by an application of 20 to 40 bushels of lime every fourth or fifth year. Wood ashes would be still better, for they supply potash and phosphoric acid in addition to lime.

We have only given a bare outline of how the farmer may arrive at the knowledge of his soil's wants, and how they may be cheaply supplied; the study of the reports of the Chemical Division of the Experimental Farms for the past few years will furnish him with fuller details. Our object has been twofold: first, to lead the farmer to a closer study of his soil and its requirements, and, secondly, to assure him that the use of commercial fertilizers can only be attended with profit when applied to soils that are in good mechanical condition and that are fairly well supplied with humus and lime.



IMPORTED SOUTHDOWN SHEARLING RAM AND IMPORTED SHEARLING EWES.

Ram one of first-prize pen at Royal Show, England, 1898, and ewes first at Toronto, London, and Ottawa, 1899.

OWNED BY W. & G. TELFER, SPRINGFIELD FARM, PARIS, ONT.

Wheat from Peace River, 700 Miles North of Edmonton.

To the Editor FARMER'S ADVOCATE:

When I came out from Peace River this last fall I brought with me some samples of grain, which I showed here at the Bulletin office, Edmonton. I am sending you some samples per mail, which I trust may arrive in not too bad shape. The samples were gathered on August 28th, and I selected ears not over ripe, so that they would not shell more than need be. I have brought them nearly 700 miles, and now they have about 1,100 more to go to reach you. I also send you photographs of a couple of scenes on my farm at Vermillion, and also of the samples I brought out, taken before I started. I was standing beside them to show the relative height. I am 5 foot 9½ inches. There are samples of wheat, barley and oats.

The season in the Peace River was a favorable one for growth, but the grain was slow in ripening. I left there the 5th of September. The weather was fine from the 1st of September, and the grain would be all cut, I think, by the 12th. I have not had a chance to hear from there since, as the Government, I am sorry to say, think our country is not worth, nor its people deserving, a mail accommodation. Twenty years of pioneer work in the very heart of the "wilds," and proving the exceeding adaptability of the far-away region to the growth and prosperity of almost everything that is grown or raised in the Northwest, counts for little or nothing with those who make politics a trade.

I do not wish to complain, but years ago the Hudson's Bay Company gave us a very good mail service; latterly, the country is flooded with Klondyke mail matter, and the consequence is no one will undertake so much, and we are practically destitute of anything that could be possibly construed into a mail service. There requests and petitions of the inhabitants are of no earthly avail.

Peace River, Athabasca. E. J. LAWRENCE.

[The samples arrived in capital shape. The

wheat, a red-bearded variety, resembles very closely the red-bearded wheat so common among Red Fyfe. The berries are large, full, plump, well-matured and a good color, some few kernels, however, showing slight marks of frost.—Ed. F. A.]

Giving the Girls a Chance.

In the long ago the cry was raised, "Give the boys a chance," and many and varied have been the schemes propounded, in behalf of the farm boys of Ontario, looking towards the accomplishment of this end. We are all pleased when we think that the boys of this fair Province are largely in the way of greater privileges and larger opportunities than were possible to the present generation of men who were the boys of a quarter century ago. The extent to which the boys of to-day are making use of these open doors to broader lives and greater usefulness is a matter beyond our control. Ontario's educational system is the admiration of the mighty nation to the south: in point of completeness and soundness through the whole series, from rural school to university. There are some lines along which Canadians, well content as they are with their machinery of education, must be willing to be taught by the live citizens of the republic.

While it is true that Canada's institutions of higher learning in the arts and sciences have opened wide their doors to the women of the land, who wish to stand on the same professional plane as their brothers, it is also true that there is not in the whole Dominion a single school or college offering such a course of study and training as would tend to fit the farmers' daughters of to-day to be the farmers' wives *par excellence* of to-morrow. The question is far from being one of narrow individual opinion. Smile as we may at the monocled and bifurcated specimens of femininity which occasionally loom up, we conclude, after mature deliberation, that they are not typical of the genus *New Woman*. She, in her best type, is a stable institution, here to stay. There is among the women of the time a perfectly legitimate desire to secure a greater share of the world's knowledge, that they may be the better fitted to be the intelligent companions of modern man.

It is now several years since the subject of co-education at the Ontario Agricultural College was first broached; much comment, favorable and otherwise, has been offered upon it. The pre-eminent position which the institution holds among the similar schools of America is beyond question. Her equipment is admirable, her staff is composed of men who work with an eye single to the advancement of her interests, but her gloomy halls have never yet been enlivened by the joyous laugh of the coed.

A brief acquaintance with the working of the Woman's Department of the Michigan State College confirms me in the belief that the Woman's Course, as here outlined and followed, is a splendid thing. It aims to offer to young women the same opportunities as are within the reach of young men. It

extends over a period of four college years of three terms each. President Snyder has summarized it as follows: "It affords an opportunity to acquire a thorough knowledge of English, mathematics, history, literature, French, German, botany, chemistry, entomology, natural philosophy; but the distinguishing feature of the course is the emphasis it lays on homemaking. There is given, in addition to other studies, in the freshman year, a very full course in cooking. The object of this instruction is to familiarize students with the most healthful, attractive, and at the same time economical methods of preparing such articles of food as are found on a well-appointed table. A course of lectures in Domestic Science is given during the sophomore year. Students during this year also spend four hours per week in the sewing room. A thorough course is given in plain sewing, cutting and fitting. Millinery is given as an elective during the junior year. While the practical work has been emphasized, it is not the intention to despise what are called the accomplishments. A thorough course in drawing, a course of lectures in the graphic arts, a course of lectures on the history of art, with illustrations, and elective work in painting, are also given. Two years of instruction on the piano, free of charge, are offered to young women who are pursuing the regular woman's course and not deficient in more than two studies. There is a chorus class free to all who may desire such instruction. Electives are offered in floriculture, fruit culture, kitchen gardening, millinery, invalid cooking, dairying, poultry raising. This course is put on precisely the same footing as the other course, and the graduate is given the degree of Bachelor of Science."

It is certainly comprehensive in its scope, and experience has shown that it is well adapted for the work in view. Further than this, there is a beneficial effect upon the great body of men students in the different courses. The presence of so many women (this year about a hundred) cannot but have a refining and elevating influence. The tendency with men students is to overlook many of the little