IMPROVEMENT OF EXHAUSTED SOIL.

In the *Plain Dealer*, you propose to treat largely and plainly of Agriculture, considering it as "the true basis of a nation's wealth," and you invite contributions from practical agriculturists on the various branches of that art. And as example is before precept in effect, I send you an account of the experience of a practical farmer in the restoration to fertility of a farm that had been reduced by cropping to perfect poverty, and to describe the process by which he had effected that object. First, he divided so much of the farm as he intended to cultivate into five divisions, occupying the whole breadth of his farm, each division to consist of seven acres, as he conceived that that portion would be as much as he could bring into thorough order for the first year, or perhaps as much as he could in any one year bring into a state of fertility. His first work was to dig an open ditch along his line of fence, 2½ feet deep, so sloped at the sides that the bottom would only be eight and nine inches wide, throwing the earth dug on the inside of the ditch to form a bank two or three feet high, along the top of which he put sawed hemlock posts. three feet long, sunk one foot in the bank, with two thin rails nailed on them, which would prove a fence against cattle or sheep for twenty years. His neighbor would have to share in the labor, and pay half the expense of such a fence. A similar open ditch he dug at the top to the breadth of fourteen acres, or two divisions of the five, the water from which to run into the line fence drain; and as he found some hollows or springy ground about the middle of the two first divisions, he dug a drain or drains two feet deep, filling the same with small stones, (or better, burnt tiles,) to the depth of nine or ten inches with some small spruce boughs laid over them; so that two divisions of the farm were so drained as to prevent surface water from lodging on the top of the ground. These cross drains were intended, of course, to empty into the open line fence drains.

The next work of our farmer was to prepare the first division of seven acres for crop, taking such crops out of the rest of his exhausted soil as he could get. He ploughed these seven acres seven inches deep, harrowed well, and cross ploughed in the fall to the depth of nine inches, harrowing and clearing the ground of stones, rotten stumps, etc., leaving it in that state till the fall. His next work was the making of a compost heap of forty or fifty cart loads to the acre. This compost consisted of bog mud, unctuous earth, slacked lime, coal and wood ashes, with vegetable leaves of cabbage, burdock, etc., in the proportion of one load of stable and barn manure to every three loads of mud, ashes, etc. With such a compost prepared and mixed together in the fall, and turned twice in Spring, until fermentation took place, and a moderate heat pervaded the mass, he spread on the ground as much of his compost one day as he could plough down next day, until the whole compost was put on the seven acres. He sowed these seven acres with wheat, clean red clover, and timothy, (free of that pest to soil—the ox-eye daisy); rolled the ground with a heavy roller, which completed his work on this first division. He was rewarded in harvest with the finest crop of wheat ever seen in this part of the Province; he threshed from straw upwards of three feet long, 159 bushels of splendid wheat; and next year with the product of the finest hay grown in this or any other country, to the extent of sixteen tons. —*Plain Dealer.*

HUMUS.

The value of coal is known to every one, the accumulations of countless ages of vegetable growth are stored up in a form which can be used in the production of light, heat, motion, or electricity, as we require their various forces. If coal did not exist, the world would be in a very different state from what it now is, and Great Britain would probably be still occupied by a population small in numbers, and with but very little wealth at its diposal. There is, however, another substance of similar origin, whose value is not recognized to the same extent as coal, though its use is equally important: I refer to the residue of vegetation, left near the surface of the soil since the last great geographical disturbance, a substance which is generally known as "Humus."

Probably one reason why the value of humus has not been sufficiently recognized, may be found in the fact that Liebig ridiculed the idea of its being an important element in the growth of crops, and since his time scarcely any one has had the courage to question the opinion which he had expressed on the subject. Humus is, however, not to be so readily disposed of, and, if I mistake not, it must occupy a somewhat prominent position in all discussions relating to the fertility and exhaustion of soils. Writers upon agriculture before the time of Liebig, considered that plants derived much of their carbon from humus. Liebig, however, asserted, and with much truth, that the atmosphere was the great source of the carbon in plants, but although perfectly aware of the fact that humus contained nitrogen as well as carbon, Liebig never thoroughly realized the importance of a soil supply of nitrogen to vegetation. As far as we judge at present, there does not appear to be any permanent source of nitrogen in the soil but that which is in combination with humus. If we apply nitrates to the land, that portion which is not taken up by vegetation is washed out of the soil. If we apply ammonia, although it enters into combination with the soil, it is before long converted into nitric acid, and, in this form, is either taken up by vegetation or washed away.

Our main stock of nitrogen, therefore, consists of that which has been stored up by a vegetation which we never planted. Humus then, like coal, is so much accumulated wealth; the one we convert into starch and sugar by means of vegetation; the other we use for the purpose of heat and motion. By growing wheat every year upon my farm, on unmanured land, and upon land supplied with abundance of all the necessary food except nitrogen, we obtain in both cases a declining crop, and in both the plots the land is considerably poorer in nitrogen and carbon than it was at the commencement of the experiments. In the produce there is but a very small difference between the unmanured land, and that supplied with all the minerals. This may be accounted for by assuming that the soil supplies, from its own resources, just sufficient nitrogen for such amount of minerals as are likewise available in the soil, and that beyond this, any additional supply of minerals produces no appreciable effect. What fertility there is in the soil we may, I think, be fairly justified in attributing to the nitrogen stored up, which had its origin in a former vegetation.

J. B. Lawes.

—*From Land and Home.*

We are pleased to know that Breeders of Thorough-bred Stock are increasing rapidly in numbers in this Province We have now to add to the Roll the name of Allen McDonell, Esq., of St. Andrew's, Co. Antigonish, who has bought at Guelph, Ontario, two Thorough-bred Short Horn Durham Heifers and three Calves, all of which he intends to keep for raising Stock on his farm. He has also bought two very fine Bulls for the Agricultural Society.

Glucose Manufacture.—There appears to be quite a furor in the West in connection with the manufacture of glucose from corn. A large number of factories are being set up; one at Chicago, it is said, will have a capacity of 20,000 bushels a day. A bushel of corn produces 30 pounds of glucose (grape sugar) or 3 gallons of sirup. The sugar costs 2 cents a pound, the corn selling at 40 cents a bushel.