

raising abundant crops by this process, and the application of various kinds of manure. There can be no doubt that, for them, their system is excellent and highly remunerative. Their method of tillage is:—after the wheat crop is harvested, the land is pared and ploughed. In spring it is ploughed twice and sometimes thrice, for turnips. In the next spring it is ploughed once, and sometimes twice for barley; so that the sheep droppings may be well mixed with the soil, and thus ensure an even crop. The third crop—clover—is sown with the barley or oats, and gives a year's rest to the teams, until the land is broken up with one ploughing, and sown with wheat the fourth crop.

The great difficulty in the way of the introduction of the course into Canada, is the turnip crop. It is not meant that root culture would not be productive of highly beneficial results, but that the amount of labor which is necessary for it is almost unattainable in the present state of the country. The principal part of the labor is not in the preparation of the soil for sowing, but in the after tillage and harvesting. In England, there is no difficulty in procuring any number of laborers, at any given time, and at a moderate rate. Here, the case is entirely different. At some seasons, it is very difficult to get men; and the busy time with the turnip crop is during one of those seasons—namely, wheat harvest. In this climate, turnips ought not to be sown before the end of June; if sown sooner, they become dwarfish, and rot readily. We usually begin wheat harvest about the 17th July; so that if the turnip crop be sown in the end of June, the proper time for thinning and hoeing it would be during harvest, when to attend to it, would be to neglect the wheat crop, and run the risk of losing it. Then the plan of feeding turnips to stock, on the land, as in England, would not do in Canada after the middle of November, as the severe frost would render it impossible for sheep to eat them. Neither could they be allowed to remain in the ground during the winter, as the severity of the weather during that season would completely destroy them for food. To make the turnip crop valuable, it would be necessary to house it, and this would require a large amount of labor. Turnips can only be raised to advantage on a small scale, for winter food for cattle and sheep, not to the extent of the fourth part of the available land of every farmer. As a substitute, Indian corn has been tried; still it has the disadvantage of being a cereal—carrying off from the soil some of the same substances which constitute the food of other plants of its class. In fact, in the absence of root culture, it is a very difficult matter to have a proper system of husbandry. However, even a change of cereal crops is better than no change at all. The system of planting corn after wheat, then barley or oats, then clover and afterwards wheat, is much practised in the United States and Canada. This course has been found to answer well.

It would give, consecutively, one-fourth of the cultivated land on a farm for turnips, potatoes, corn and peas; one-fourth for barley or oats; one-fourth for clover, and one-fourth for wheat. Were this plan pursued, and all the farmyard and artificial manures applied during the first year of the course, except gypsum on clover, I have no doubt that farming would be more lucrative than at present. All the crops would be more abundant, and there would be more system and regularity about the work of the farm than now prevails.

In the mode of tilling for wheat, the first and great point is to drain the land. In many places in Canada, the soil is so wet that wheat cannot be sown with even the probability of a fair return from it. A large portion of the country is of this character. The really first-rate wheat land in Canada, as in the State of New York, is limited in extent. I admit that a great deal of land is sown with wheat, but I do assert, and the result fully bears out my opinion, that in its present state, that is while wet and undrained, a great deal of land is sown with wheat which ought not to be sown with that kind of grain, for it only results in failure and disappointment. The first step then is thorough draining where it is needed, on all land intended for the growth of wheat. Wheat must have dry soil or it cannot grow well. The Genesee country and other districts famed for the growth of wheat are dry. The sub-soil of those places being gravelly, forms a permanent drain for superabundant moisture. It is gratifying to find that public attention is being directed to the subject of draining, and I gladly embrace this opportunity of urging its general adoption.

The next important point in the cultivation of wheat is deep tillage. The old furrow of six inches deep and nine wide won't do. The roots of the wheat plant must have no such obstruction as hard pan at the depth of seven or eight inches. The land ought to be turned to the depth of twelve or fifteen inches. The plan of turning a sleek pointed furrow, may be very well as a piece of fancy work, but will not answer practical purposes. Change your rules at your ploughing matches. For the narrow and shallow furrow substitute a wider and deeper one, carry the rule to your farms and you will find a vast difference in the produce per acre. Instead of breaking your summer fallows or clover sod with two horses, do it with three or four, or with what is an excellent plough-team, a span of horses and yoke of oxen.

A very essential matter is to clear the land thoroughly of grass and weeds. The great enemy to wheat is the spear or couch grass, and it is a very difficult one to get rid of; if not checked it bids fair to take possession of our best wheat lands. In England it gives a great deal of trouble, and the wish to get rid of it has led to various experiments. The old system of summer-fallowing,

although partially successful, was found to be expensive and not so thorough in its effects as it was desired; it cost a great deal of labor and did not do the work effectually. The best English farmers set it down as a system requiring double the number of teams necessary for the present improved mode. They discovered that the mere ploughing of land did not kill the grass, and that even four and six ploughings did not eradicate it, that even after all that it still lived and infested the soil. They now act on the principle that to destroy speedily and effectually the vitality of a plant it is necessary to cut off the communication between the roots and leaves because no plant can long survive without coming into contact above ground with the atmosphere. They found that the *ordinary plough, unaided by any other implement*, cannot effect the object. In England they use what is termed the "paring-plough;" one kind of which (Bentall's) cuts the ground to the depth of two or three inches; another, and I think the preferable one, (Kilby's) not merely pares but turns over the ground. After this paring process, the ground is ploughed deeply; thus the grass is buried at a considerable depth where it remains undisturbed, to serve as manure. In the Genesee Country, as in other places in the U. S., a rather different plan is pursued, still the principle is the same. The ground is pared and ploughed at the same time, by an admirable implement called the Michigan subsoil, or double mould board plough. It consists of two ploughs, one placed before the other, and on the same beam. The forward one takes a furrow slice two or three inches deep, separating the tops of the grass from the roots, and laying its slice in the bottom of the previous furrow; the hinder one follows, raising a furrow slice eight or nine inches deeper, which it lays on the slice cut by the forward mould board. During the process of ploughing the soil is broken and mellowed, so that the work of harrowing can be afterwards easily and well done. The grass is so deeply buried, that harrowing or even light ploughing cannot afterwards bring it to the surface, to waste or grow again. Land ploughed with this plough, during the late wet season, after lying without being harrowed for six or seven weeks, scarcely showed a blade of grass, while that in an adjoining field, ploughed with an ordinary plough, and afterwards well harrowed, was quite green. The reason is obvious. Sod ploughed in the ordinary way sends grass through the seams of the furrows as soon as turned over. This growth spreads through the furrow slices binding the whole together. When cross-ploughed the sod is not rotted, but is turned over in square pieces, which can scarcely be shaken apart, and then wheat is sown to struggle among sods and grass which grow again and choke the young plant. The practice of turning up again clover which has been ploughed down for manure, is certainly not in keeping with the idea that in