## FARM AND FIELD.

### *PROFESSOR BROWN ON ROOT CULTURE, THISTLE KILLING, AND SUMMER-FALLOWING.*

Professor Brown is, in our opinion, one of the most accomplished agriculturists of the age. As teacher of scientific and practical agriculture, and farm superintendent in our Farmers' College, he is emphatically "the right man in the right place." He has already done wonders in the reclamation and improvement of the Model Farm. His reports are, all of them, replete with valuable instruction, and the last is a rich mine of thought and fact. We could easily enrich every number of the RURAL CANADIAN with useful extracts, until the next report issues from his fertile brain and facile pen. On most agricultural subjects we are content to sit at his feet in the attitude of humble discipleship, and to accept his teachings as those of an oracle. It is a treat to spend a few hours with him on the domain he manages so well, and we only wish we could do it oftener. Nevertheless, there are some points on which we differ, and in regard to which we occasionally break a friendly lance. On these points the Professor is strictly orthodox, and we are heterodox. Nevertheless, our consolation is, that in agriculture as in theology, the heterodoxy of to-day is the orthodoxy of to-morrow, and we do not despair of making a convert some day of the doughty Professor. The main points of agricultural theory and practice on which we disagree are set forth in the heading of this article; and as the Professor has expressed himself pretty freely upon them in his last report, we propose to have a little tussle with him in the spirit described by the author of "The Newcastle Apothecary," which we believe should always pervade controversy, though it is too often wanting—

> "Who first shake hands before they box,
> Then give each other plaguy knocks,
> With all the love and kindness of a brother."

Professor Brown says on page 148 of his last report:—

"I am unable to understand how any soil can be maintained in the highest state of fertility without a division under root cultivation. We know the value and importance of a division under cultivated corn; what a bare fallow, or rest, means, and what clover can do; but no form of thorough cultivation, cleaning, manuring and surface rest, is so reliable as by turnips and mangolds. This is certainly no new statement to the Canadian farmer, but in many cases it is a doubted one, and entirely denied in others. What is usually implied in the raising of a root crop?

Fall manuring (farm-yard).
Fall ploughing.
Spring ploughing.
Grubbing.
Harrowing.
Rolling.
Harrowing.
Rolling.
Special manures.
Drilling.
Horse hoeing.
Hand hoeing.
Horse hoeing.
Hand hoeing.

"This appears formidable, and it certainly means no play. It means a first-class fallow and the securing of twenty tons per acre of a material that converts the winter months into a soiling with green fodder,—freshening all animal life, enabling the farmer to use up much roughness of other materials that would otherwise become less valuable, adding immensely to the manure pile and cheapening keep sixty per cent. I do not go the length of those who argue that were no crops obtained—that is, in the event of turnips being a failure—all the attendant operations as above specified more than repay the cost; but I do affirm, after twenty-two years' practical experience, that a stock farm is a bare, miserable affair without roots.

"Thus, then, from the unpropitious conditions of 1875, our field has become, with one exception, a cropping subject of high value. That exception is *thistles*. I have to confess to being unable, in every example, to eradicate this enemy by root cultivation. Much has been said about thistles on this farm. Do I not say enough for the management when I now affirm that comparatively no thistle has been allowed to mature its seed during the past six years, and that they are cut over three and four times a season? We have had to take to bare summer-fallowing in the worst cases."

We make the following extracts from other parts of the report, so as to have the whole case fairly stated:—

"After a turnip crop, that, with its assumed thorough manuring and cultivation, backed by drainage, is considered to be one of the best restorers of fertility and the holder of a rich surface, we laid down to grass (timothy and clovers), stealing a crop of barley as usual—barley, because less exhaustive and less destructive by shade than other cereals. There are various opinions on this important question of what, if any, crop should be taken the year of grass seeding. The best theory says no crop; but all the best practice steps in and shows results fully justifying this sort of double annual production."

"Field No. 2 has been ploughed four times to check thistles. No. 4 was drained to a considerable extent, loose stones and blasted stones removed, and an old snake fence, with its years of accumulated dirt, thoroughly cleaned. No. 5 was bare fallowed by four ploughings, fast stones blasted and removed. No. 6 has been cleaned of stones and stumps, and ploughed four times as a bare fallow."

Now, first as to root culture. Formidable as is the Professor's account of the cost of a root crop, he does not state it all. He stops at the "hand-hoeing." After that there is the pulling, hauling, pitting or cellaring, carrying and cutting. Sure enough, all this "means no play." In our view, it means no profit. When, after all this toil and trouble, the product is brought to the nose of the animal, a feast is provided which consists of 90 per cent. water, and only 10 per cent. of solid nutriment. Now, we affirm that 90 per cent. of water and 10 per cent. of food can be set before the animal far more cheaply than in the form of turnips and mangolds. We hold that, both in summer and winter, cattle should have constant access to water, that they may take it, not in wholesale drinks as man usually compels them to do, but in frequent sips as nature inclines them. Of course this implies what is, unfortunately, lacking on the generality of farms, but ought most certainly to be present, either naturally or artificially, on a model farm—a plentiful and ubiquitous water supply. Given such a supply, and we maintain that good, well-cured clover hay, with the addition of a little meal, can be furnished far more cheaply than a diet of roots, with the necessary addition of straw, hay, cornstalks, or other coarse fodder.

There is another objection which especially applies to the turnip crop. We do not know if it lies against mangolds. It is undoubtedly exhaustive to the land. There is a mysterious loss of fertilizing matter somewhere and somehow. The turnips and the succeeding crop or crops of grain do not square the account with the manure applied. Farms that are largely and regularly cropped with turnips do not improve in fertility to the extent they ought in view of the dung and tillage given them; and be it remembered that "tillage is manure." We have a theory, and we wish Professor Panton would put it to a careful, scientific test, that while clover, in some as yet unexplained way, attracts and fixes ammonia, the turnip unlocks and scatters it in some way equally inexplicable. However it may be accounted for, there is a leakage and waste of manurial richness resultant from turnip-growing.

We believe that while turnips are a useful and profitable crop in Britain, where the climate is moist and cool, they are not so well adapted to this country, where summer drought and a hot sun cause the broad leaves to exhale, instead of absorbing, ammonia. Moreover, there is less handling of a turnip crop in Britain than here. The roots are largely consumed on the field where they grew. The crop is thus returned to the soil that produced it, whereas we feed it in the stall, and cart the manure made from it to another field.

"Thistle-killing" and "summer-fallowing" may be discussed together, with the preliminary remark that they have a close relation with root culture, as will be seen in the course of the argument. Thistles "cut over three or four times in a season." "We have had to take to bare summer-fallowing in the worst cases." No. 2 "ploughed four times to check thistles." No. 5, "bare-fallowed by four ploughings." No. 6, "ploughed four times as a bare fallow."

Now, we affirm that all this is "Love's labour lost," and before all the thistles are eradicated from the Model Farm, we put in a humble petition to the Professor, that, amid his multifarious and valuable experiments, he will try this one, in the results of which we have unbounded confidence, and the success of which would bring vast richness to the farms and farmers of Ontario. Take a thistley field, give it a good fall ploughing, as early in the spring as possible, harrow it down, and sow clover on it, according to what the Professor admits to be the best theory, viz., *no other crop* with it. Or, if the nature of the soil admits of it, thoroughly prepare the land in the fall by both ploughing and harrowing. On this plan the clover seed can be sown "on the last snow," and will get an earlier start. Just before the thistles bloom, run the mower over the field. The clover will then get the start of the thistles, and smother them down. Two seasons of this process, the life-time of the clover plant, will eradicate the thistles, give cuttings of clover to pay for the labour and use of the land, and leave the field in a clean, rich condition, far ahead of any bare fallow "ploughed four" or forty times.

While the Professor is trying this experiment, we could wish that every farmer who reads this article would "go and do likewise." We shall cheerfully give one whole number of the RURAL CANADIAN, if necessary, to report the results.

The Professor says, "We know what clover will do." To some extent, doubtless. But we boldly proclaim that it will do what the Professor never dreamed of in his most imaginative moments. It will give us a cheap substitute for turnips and mangolds; it will exterminate the Canada thistle; and it will deliver us from the sweltering and unproductive toil of bare summer-fallowing. Nor will the stock farm, thus managed, be a "bare, miserable affair," either.

### *BROOM CORN.*

Broom corn land should be rich, warm and dry. Good, well-rotted manure, plaster, guano and ashes, all give good returns. Prepare the land as you would for a crop of Indian corn, making the rows three or four feet apart, according as you use the Dwarf or seed of a larger variety. At