

FARMER'S ADVOCATE

vessels mature, to form mysterious changes the piles which are found in as this struggle is over, all animals, dies a is not necessary for the it dies from simple ex- per time to cut and during the four or five inflorescence, or in should not be cut until developed, and the ear and any corn that is ear cannot form and y worthless as fodder. from these facts that cut for fodder should three periods during olds quite early, others still others as late as way when the hot, dry l August are reached, ter, a supply of fodder per stage of growth to amount of nutriment.—



United States two shier, leaner and worth ould have been if the Canada or England. rays be so, for growers these large sheep need the small Merino, and not consist of Indian old have some roots, oil cake. When sheep they are too hot and ol becomes harsh and er supply of roots and ood will produce soft,

ED WITH STRAW.

y, cut or whole, is well und meal is sprinkled t, the whole goes, in first stomach, and the of the stomach is complete digestion. uryman derive better hen fed in this way, consumed in a given of it can be fed with-

out producing scouring. Meal produces scouring when more is fed than can be digested. It is imperfectly digested meal, more than anything else, that disturbs the bowels in this way. Less meal will produce scouring in cattle when fed alone than went fed mixed; evidently because, when mixed, by having the action of the first three stomachs upon it, the work is well along by the time it reaches the last division, and hence will be done not only more thoroughly, but also more easily and rapidly.

SEVENTH MEETING OF NORTH NORWICH FARMERS' CLUB.

President's Address.

The plough has been the emblem of agriculture for ages. It has always been considered as the beginner of all the work on the farm. Without it the farm, for arable culture, was useless. Being so very important, therefore, we are not surprised to find the ancients possessed of instruments analogous to the plough of the present day. Then ploughs, however, were very rude in construction, being, in some cases, a simple sharp pointed stick drawn by some beast of burden. We are surprised, though, to learn that with this very rude implement, the ancients used to raise crops rivaling, if not excelling, ours, with our almost perfect plough, in this, the great day of advancement.

Within the last fifteen years the plough has undergone a wonderful series of changes as regards its form and the power applied to work it. Twenty years ago the sole object of the farmer with the plough was to turn over the ground as quickly as possible. It is not so now. The old farmer used to be able to turn over, not plough, two and a half acres per day, whereas, now if we plough an acre and a half in a day we call it a fair day's work. You are all, no doubt, more or less acquainted with the old fashioned plough. The old number four and premium ploughs are not easily forgotten if once seen. Those were the days when the farms were skimmed; now is the day when the penalty is to be paid. After having used the old ploughs with their wide, shallow furrows, as long as they could make it pay, they introduced the narrow furrow but deep running plough. The consequence was the farmer brought up from beneath virgin soil, and his crop improved; also he could not plough so much in so short a time, and consequently he could not raise as much wheat. This caused him to rotate other crops with wheat, and thus, all things working together, the standard of Canadian farming raised.

In coming right to the point we ask why do we spend so much time, labor and money in ploughing? To answer this question we should have to go to the chemist, and even he could not answer it fully, because the soil is a very complex mixture of elements, which differ in number and kinds in different localities. Thus we might have a soil composed almost entirely of inorganic matter, as much; another containing a mixture of the two; another of a sandy nature; and another of the stiff clay.

The first great practical thing we look at in ploughing is the loosening of the soil and the admission of the air. Air is necessary in the soil, for without it seeds will not germinate. This has been proved by some experiments which were made to induce germination of seeds in other gases, which failed.

By the soil being loosened the roots of plants are permitted to descend with greater ease, consequently the plants make a more rapid and vigorous growth. Furthermore in connection with the admission of air, the vegetable matter which may be in the soil is more or less decomposed. To decompose vegetable matter naturally, you must have either free oxygen gas or else some compound which contains so much oxygen that it will readily part with some of it. All soils contain more or less iron. Now there are two rusts or oxide of iron found in the soil, one which is poisonous to plants and the other which is not. The one which is poisonous has not as much oxygen as the other, and is in the sub-soil to a greater extent than in the soil, because the air does not get to the sub-soil enough to change it into oxide or rust, which is not poisonous. Now on some farms if deep ploughing is introduced the crops are ruined for some years, just because of this poisonous oxide of iron being in the sub-soil in large quantities. Some years ago near Brantford the farmers introduced a plough they called the jointer. It was what is called a trench plough. With this plough, to which three or four horses were attached, they turned up some of the sub-soil. When harvesting came the crop was ruined. Of course they blamed the plough and its advocates for the injury, when it was their own ignorance of a principle long known and explained.

Let us now consider the requirements of common ploughing as regards style of work. It seems to be the object of every ploughman to

turn a fine looking furrow, which is without a crook, jog or any such thing. In ploughing sod if the ploughman can turn the furrow so as not to crack or crumble it, he thinks he is second to none in the country. Now, I do not mean to undervalue a straight furrow, although I do not care about the ploughman being over careful to prevent the furrow crumbling. The more it crumbles the better it makes less work for the harrow. Supposing the furrow moderately straight, the first thing then to look at is the average depth. By this I do not mean the average depth of the length of the furrow, but of the width. Thus, suppose your man is ploughing, and for curiosity you measure the upturned edge of the furrow slice and find it to be six inches; well you say that is deep enough. But then suppose you cut out a piece of the furrow and measure the under edge, and find it to be only four inches, what is the average depth? Simple enough. Only five inches. No wonder your man's boot heels run over to land. I would therefore say special stress on this point. Let the bottom of the furrow be of uniform depth. Taking the above instance as an example, it is plain that the ploughman is leaving just one-sixth of the ground untouched. In a six acre field he only turns over five acres six inches deep.

Leaving the common plough let us now look into sub-soiling. Sub-soiling is the act of loosening the sub-soil without bringing any of it to the surface. To sub-soil two ploughs are required—the common plough to go ahead and turn the soil and the sub-soil plough to follow after and loosen up the bottom of the furrow. Sub-soiling is a practice which is eminently beneficial if performed with caution, yet it is one which, through ignorance, has been much abused.

The first thing gained by sub-soiling is a deepening of the soil. The soil differs, as you all know, from the sub-soil by being of a darker color. This dark color is caused by the vegetable matter, which the soil always contains in greater quantities than the sub-soil. After sub-soiling the roots of all the plants go deeper in the earth—perhaps down as far as the ground is loosened. Consequently when the ground dries its roots are left in the earth, part in the soil and part in the sub-soil. If enough of rot is left in the sub-soil the soil is deepened or assumes a darker color, and then the common plough can be run deeper. We would therefore naturally suppose that plants with long tap roots, such as red clover, would be well adapted to deepening the soil. By sub-soiling the soil is enriched. However, as in the deepening of the soil, the simple act of sub-soiling does not increase the richness of the soil. It is the plant that enriches better after sub-soiling than does the enriching. Plants are like pumps, but being a little better made than our common pumps they can pump both up and down. They pump down from the air, and pump up from the soil and sub-soil. If the sub-soil is loosened they send their roots down to greater depths and pump up food into its stem and leaves, and thus, if the plant dies on the ground, the soil is enriched by the matter drawn from the sub-soil.

Plants thrive better after sub-soiling. This is owing to the fact that the plant's roots encounter less opposition after sub-soiling is performed, and therefore descend to greater depths in search of food. It is well known that land, if kept open by working, is always moist. So it is with the sub-soil when loosened—it contains and holds more moisture than before it was broken up. All our nice growing showers, as we call them, go right down into the loosening rays of the next day's sun. They are held by the sub-soil and fed out gradually as the plant is in need, with but little loss by evaporation. Suppose the sub-soil is not loose. Then the shower on y wets the soil, because the sub-soil, in the summer, is so hard that a shower can never penetrate it. Consequently the water which falls is quickly evaporated and so much of it is lost.

But, with all its benefits, sub-soiling is of comparatively little use on heavy soils, unless preceded by the drain. The sub-soil plough is the great auxiliary to the drain. In ploughing this part it allows by the loosening given the sub-soil by it the water from above to descend through to the drain quicker than enabling the drain to perform its work in a shorter space of time. In some places, such as very stiff clays, the rain is fact would not pay for itself unless followed by the sub-soil plough. Seeing, therefore, the beautiful harmony which exists between the drain and the sub-soil plough in improving land, if they be taken up in their right order, viz., first the drain and then the sub-soiler. Let us now look at the discordance well as the evil produced if the sub-soil plough be used alone. First take the sub-soil plough alone, and let a farmer use it at that season of the year which would insure its best advantages. It does its work well, and to all appearance you would see no advantage in having the land drained. But wait till the spring. At that time of the year it would seem as if all the water off the place had collected in that sub-soil; and why? Simply because you have made the dish which held to much water before to hold still more by deepening it. But this is not all, neither is it the worst evil which follows

such a course. This water, being in the sub-soil, is harder to evaporate, for this is the only way by which it can get away, consequently the land remains wet for a longer period of time. Further, the original cementing materials which before hardened the sub-soil will sink to a lower level and then form another hard part, though which water will hardy pass, besides being so low down that any future sub-soiling will not break it up. The consequence is the field is worse than it was at first, as well as almost past improvement. Manures also would be almost useless, because they will not decay in an excess of water. Such a course adopted by a farmer, and followed up with such results may well cause his evil to multiply, and him to declaim sub-soiling to be the greatest curse ever introduced by high farming. But whose fault is it? Surely his own. The sub-soil plough is a great improver, but, like all other profitable things, if not used in its proper order is an injury. Suppose the drain is put down after sub-soiling what is the result? The drain will not be put down at least for two or three years after, consequently, during that time the same evils will follow as before men in ed. After the drain is down it does not do its work very well, because of the second hard pan formed after sub-soiling, whereas if the drain had been down before the ground was sub-soiled all the cementing materials would have passed into the drain.

In reviewing these remarks, how plainly can we see the intimate connection between the drain and the sub-soil plough. Neither one produces its complement of good without the other. The drain alone may carry away larger amounts of water, but how much accelerated is its work if followed by the loosening action of the sub-soil plough. On the other hand how useless are all attempts by sub-soiling to permanently improve the farms unless preceded by the drain.

As far as my experience goes in sub-soiling I may say that I have tried it, with marked success, for the croft. The root was a great deal longer and grew right along through the dry and wet weather. I have dug down by the sides of the carrots when they were about as big as a pencil at the top, and found them a foot or eighteen inches long. However, I was careful to select a piece of ground of a very rich, deep loam. I would not in any case sub-soil extensively before draining. Still I would not mind trying a piece of nice high and dry land, especially a field which suffered greatly from drought.

For a sub-soil plough I took a common iron beam plough, took off the mould board, bolted the handles together, had a draught rod attached to the landside and hitched the clevis of this rod. The draught being thus so much on the land side of the plough makes the plough follow in the tracks of the off horse.

We now pass on to the trench plough. Trenching differs only from common ploughing in depth. Where common ploughing rarely exceeds a depth of eight or ten inches trenching goes down as far as eighteen or twenty, and even thirty inches. As a practice it requires great caution. Sometimes it is the making of a farm, and at other times its ruin. If the sub-soil contains large quantities of iron it would not do to trench. If, on the other hand the sub-soil does not contain much iron, but instead some compound which would be very desirable, such as lime, plaster, &c., why then trenching is just the thing. Take a farm which has been shallow ploughed, & skinned as we call it. The crops previously have been very light. Trench plough that farm and the crops will equal if not exceed those on the best farm around. But, bear in mind, the land should be drained first.

Other things being right for trenching there are still two evils to be avoided against in trenching, and they cannot always be well managed. In the sub-soil there may exist the eggs of some insect, which, if brought up to the warmth of the sun, may prove a scourge to the farmer. There may also be the seed of some noxious weed in the sub-soil, which if brought up would prove a great nuisance, but if left below would do no harm. With regard to the insects fall ploughing may destroy them, but the weeds we cannot get over.

But it is not on every farm that enough can be found to sub-soil or trench either one. There is, however, a Canadian inventor who claims to have a common and sub-soil plough combined in such a way that one team, or at least three horses, can draw it to a depth of twelve inches. This is not very deep sub-soiling, but even at a depth of only twelve inches I cannot hardly conceive of a span of horses can do the work with any sort of ease. The only way that I can see is for farmers to combine their teams, or in other words, to change work. After the President's speech most of the members present gave their ideas. I merely give the conclusions drawn from their remarks, as far as they agree in opinion. Only one member advocated the fine-looking prize ploughing made by our prize ploughs. All the rest advocated the use of (on moderately heavy lands) the jointer plough for ridging the land of spear grass and other troublesome plants. Most agreed that soil, if ploughed in the spring by our nicely combing Scotch ploughs, suffered

very severely from the drought. The idea seemed to be that for fall ploughing the furrow should be combed up to allow of better drainage, always ploughing up and down the incline of the field, but in spring the furrow should be laid nearly flat, in order to reduce the effects of the droughts.

Our meeting in January is to be the annual meeting, and we expect to procure a lecturer especially for the occasion. And now, Mr. Editor, I think I have done my duty this time at least. This, of course, is my last letter for this year, and so in conclusion I wish you and the readers of the ADVOCATE a "Merry Christmas and a Happy New Year." Hoping to have something more in next year's volume, I remain yours, &c., B. J. P.

New Durham, Ont., Dec., 1872.

THE "ROMAN BIT."

Some of our contemporaries, says the *Broad Arrow*, have called the attention of the public to the "Roman Bit," an invention patented by Count Vincenzo di Tergolina, and which, so far as we can judge of its merits from our own limited experience, is likely to prove an acquisition of considerable value to our cavalry regiments. The desirability of being able in cases of necessity to restrain the horse by pressure applied to the nose, has long been recognised, but hitherto the efforts made to apply the principle practically have met with little success. Count Vincenzo di Tergolina seems to have been completely successful in this respect, and has produced a bit which is no less humane in its application to the horse's mouth than it is powerful and effective in the hands of the rider. One of its merits is that a runaway horse cannot seize the bit between his teeth, and another is that it can be exactly adapted to suit the temper of the horse, and it is at the same time so easy to handle, owing to its powerful leverage, that it reduces the strain on the horseman's hand to a minimum.

ROOT UP THE WEEDS.

Two boys, John and Will, were employed by a gentleman to keep the paths of his garden weeded. John contented himself with taking of the top of the weeds. He soon cried, "I have cleared my path," and, having swept away the leaves he went off to play. Will was much longer at work, for he stopped to take all the weeds up by the roots, and he was well tired when he got home. But the rain came down in the night and all the next day, and when the boys' master went a few days after to look at the two paths, John's wanted weeding as much as at first, while Will's was clear and only needed a few turns of the roller to make it quite neat. So John was sent back to do his work properly, and very tired he would have been had not Will good-naturedly helped him to finish his task. Only thorough work is worth doing. Faults only half uprooted will appear again and again, and we shall almost despair of curing them. Will you remember this?

USEFUL OINTMENT.

A glycerine ointment of much repute for chaps and excoriations is made as follows:— $\frac{1}{2}$ oz. spermaceti melted together with a drachm of white wax and 2 fluid ounces of oil of almonds by a moderate heat; the mixture is poured into a mortar, when a fluid ounce of glycerine is added to it and rubbed till the ingredients are thoroughly mixed and cold.

A WORD TO OUR READERS AND CORRESPONDENTS. We are obliged to lay over for our next issue several original articles, communications, editorial notices of our exchanges, and other interesting matter. This is partially caused by the time hallowed Christmas tide occurring at the time of our getting to press. Our correspondents, we are happy to say, are increasing in number, and their communications on matters connected with agriculture are quite an interesting feature in the ADVOCATE.

The Belfast (Me.) Journal says: "Young lady clerks are increasing among the stores in this city." That's right; let the increase and multiply. It is a Bible injunction.