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VOL. II. No. 5.

TORONTO, CANADA, MAY 16, 1870.

NEW SERIES.

The Field.

Laying Down Permanent Pasture

This is a matter the importance of which is as yet little understood by our farmers. What we mean by "permanent pasture" is not land laid down to grass with a view to the crops of hay to be obtained from it, but such as is intended to be used for many years in succession solely for pasturage, and generally speaking on land that is not well adapted to the growing of grain and roots; and also in cases where, owing to the introduction of the dairy system of husbandry, it is most desirable to economize labour as much as possible, and yet obtain the best results from the soil as regards its productive capabilities.

The preparation of the soil is a matter of primary importance. If the land has been previously cropped, it must be brought to a high state of tilth, and made free from weeds, by a root or corn crop, heavily manured. In the fall, after the preparatory crop is removed, the soil should be ridged up with the plough and left to lie for the ensuing winter. In spring the cultivator and harrow may be set to work to level the surface and bring it to as fine a tilth as can be got for the reception of the seed. The seed should then be sown as soon as the land is dry and warm, and brushed in or covered in with a very light harrow. No other crop should occupy the land, and if enough seed of good quality is sown, (less than thirty pounds per acre is too little), there will be a heavy thick growth of grass covering the soil by the end of July or middle of August following. Care must be taken, however, not to allow stock to run on the land till the grass has become well established, and the soil compact and full of the roots of young grass. Sheep

will do no harm, if not allowed to eat down the grass too closely; but as a rule it is better to keep out stock the first year. When it is desired to make a permanent pasture out of low lands, or restore a wet meadow already run out, it will be necessary to thoroughly summer-fallow the ground first, and seed down the following spring.

The greatest difficulty we have at present to contend against is a want of knowledge as to what are the best and most desirable grasses to be used for this purpose, suitable to the conditions of our climate. To obviate this and make sure that enough will grow and become established in the soil to continue on the productiveness of the meadow, it is desirable to procure as many kinds as we can that are adapted to that purpose, and mix them together. White clover, small alsike clover, rye grass, Kentucky blue grass, orchard grass, and rib grass, together with some others well known in Britain, will succeed here. But there are still many very desirable varieties that have never yet been tried, and it requires some outlay, and considerable patience in order to test the matter properly, and it would be well for some of the better class of dairy farmers to try experiments to that end and report results.

After the pasturage has once become permanently established, it can be kept up for many years by an occasional dressing of well composted barn-yard manure, superphosphate, or even a mixture of plaster and unleached ashes, giving at the same time a sprinkling of fresh seeds on those spots that show signs of having run out. Particular care must be taken all along to carefully cut out, root and branch, all noxious weeds that may make their appearance, and not to allow stock to pasture it down too closely in the autumn so as to have the roots unprotected during the winter.

About Hop Growing.

Last year we warned those who had hop plantations not to be too hasty in sacrificing them, under the then prevailing idea that the business of hop growing had been overdone, and that the low prices then prevailing would but result in future loss to the growers.

What we then said proved true, and great breadths of land, probably over one-half of the entire area devoted to hop growing in the United States, were turned under by the plough, and sown to corn or wheat. As a consequence, there was but a small crop grown, and this, coupled with the fact of an almost entire failure of the crop in England, raised prices to a very remunerative figure for a really good article. Still the price did not go to any extreme rate, owing mainly to the large surplus left on hand from the previous year.

A writer in *The Country Gentleman* of April 7th, discussing this matter, says:—"The recent estimates made of hops on hand, and the requirements of the trade, show that the merchantable hops will be all used up long before the new crop will come into market," while at the same time the European markets will take all that can be spared from here, and let the new crop be ever so good or heavy, the prices must pay, for there will be an empty, hungry market for them in the fall of 1870." In view of these facts, it will be well for those who are so fortunate as to possess hop plantations to take the greatest pains they can this spring to have the land made clean and mellow, and everything possible done to ensure a good return the coming season, and especially to endeavour to secure a growth of large fine hops, rather than to crowd the vines with small ones. Particular attention must be paid to curing and putting up,

for it is only really *prime* hops that will command a ready sale at top prices. Begin the work early; set the poles as soon as the frost is out of the ground, then loosen the crown of the hill with a garden fork or pronged hoe, and take out such sets or runners as it may be desirable to set aside for future use, or for sale to those desiring to make plantations. This done carefully, cover over the young buds now exposed, with a covering of earth sufficient to shield them from spring frosts. Then apply some good fertilizer—either superphosphate or a mixture composed of equal parts of unleached wood ashes and plaster, giving half a pint of the material to each hill, and applying it to each as fast as cleaned out and the buds re-covered. The earlier this is done the better, for if neglected till late it is of little value. Everything depends on having a good start early. The mixture of ashes and plaster is said to be very fertilizing to the hop, and at the same time disagreeable to the hop louse, often preventing its appearance to any extent.

Manufacture of Beet-root Sugar for Farmers' Use.

INTRODUCTORY REMARKS.

Under this head I propose to place before my brother farmers a series of three articles:—

First—The growth and cultivation of the beet root crop, the yield per acre, and the effect on the land, with some general information relative to the mode of prosecuting this branch of agriculture in Britain.

Secondly—The machinery required, such as may be suitable for farmers to enable them to prosecute the enterprise on a small scale on their own farms, bearing in mind at the same time the fact that all must be done at very little expense at the outset, or no farmer will feel justified in going into it. As the outlay requisite, even on this reduced scale, might be more than one farmer would desire to make, if depending alone on his own consumption, the idea of one such factory, conducted on this principle, on every five or six farms, similar to cheese factories, would meet this difficulty.

Thirdly—I propose describing the process of manufacture, so far as to enable each farmer who may be able to make the outlay (after having grown a few acres of beets and erected some inexpensive machinery) to manufacture them into a useful family syrup, or coarse sugar, adapted for the sweetening so much wanted and so often used in all the farm houses in Canada, and without which no Canadian housekeeping is complete. The spare time that would occur after his own work of manufacturing was done could be filled up by doing the same thing for his neighbours.

It may be argued that the farmer has the maple sugar, and wants no other for home use; but I am well posted on this particular head, having made maple sugar for many years, and although I fully endorse the idea of its being very advisable to make it, yet I am prepared to show that beetroot sugar can be furnished at half the cost—apart from the fact that thousands of people in Canada have no sugar bush, and the manufacture is at the best of times very precarious, and often can only be conducted during a few days in each year.

The manufacture of beet root sugar has of late occupied the attention of the farmers in Canada, as well as that of the commercial world. There are many instances of its success in the United States as well as in Britain, and there is now a bill before the legislature of this country to incorporate a company for its manufacture in the usual way.

The profits of this enterprise are estimated at from 30 to 40 per cent. on the capital engaged, and probably it will be found fully up to this mark. These profits are, however, entirely based on the presumption that the roots can be grown and delivered at the factory at \$4 per ton of 2,240 lbs.

Now, we will set aside any doubt or controversy on this subject. When the supply is required to be hauled several miles, during all sorts of weather, and under the disadvantage of muddy fall roads, it may be that this price would not be found to pay the farmer. But certainly the roots can be delivered at the farmer's own barn, or within a mile of it at some neighbour's, at that price. It will amount to about \$4 a two horse load, and such a load can be repeated from the field many times daily, and leave a good profit for raising them. And this is apparent from the fact that this is the price in England, where the delivery is often extended several miles, and the rent of the land on which the roots are grown is often as much as £2 to £3 per acre, the soil not being one jot more favourable to the production of the root than ours.

So, setting aside, then, any doubts of the factory paying the stockholders, there is no doubt whatever that the raising of 12 to 18 tons of roots to the acre, and disposing of them under the above circumstances, would amply repay the producer.

Experience has fully proved that the cake, when deprived of the sugar and water, is very nearly, if not quite as nutritious, as the roots before being manufactured. One great reason for this is that they contain eighty to ninety per cent of water, and cattle do not do well on this food alone, nor when forced to consume so large a portion of liquid to obtain about fifteen per cent. of dry food; and the sugar that has been extracted from the roots in process of manufacture does not prove an economical source of fat-forming food, when it can be put to other uses, as there are many much cheaper. Nor does it equal other food for making milk, as cows will not do as well on it as other stock, and,

moreover, numberless experiments prove the absolute necessity of returning to the land all the cake first raised, or certain depreciation is the result. To such an extent did we carry this at home that we did not allow the greens, after being cut off, to be eaten by cattle, as they were thus carried off the land, and the loss of potash by this means was enormous. Nothing that I am aware of will yield as much potash from the same weight of ash as the refuse of beet root.

We always ploughed all the greens under as soon as the crop was harvested, and forty bushels of excellent wheat was the invariable result of the following crop. The manure from the consumption of the roots was in our case always used to produce the next crop of beets.

Now, therefore, we will assume these facts, and look deeper into the interests of the farmer individually.

Having followed the idea so far of raising the roots at a profit, and being well aware that an ordinary good crop often reached fifteen to eighteen tons an acre, we will see if he cannot afford to manufacture the sugar direct.

The farmer will not, probably, with such appliances as he may possess, make a good or merchantable article, but directly the want arises there will be no lack of capital, enterprise, or invention, to complete the manufacture of a prime article of commerce. The supply of such has always followed in the wake of the demand. I have for many years lived in the country in Canada, and well know that a plan by which any wholesome sweet could be manufactured for use in a farmer's own family, be it ever so coarse, would be a most welcome boon.

We in the country have plenty of milk, butter, cream, eggs, meat and flour, but we have no practical way of obtaining sugar without buying it—excepting from the very partial supply of maple sugar—and one great item in our store bills is for sugar alone, that is, if we indulge in it—and we all wish to do so, and generally will have it.

Now I maintain that the growth and manufacture of beet root, with its luxury in house-keeping, and cattle food of the residue, is quite within reach of the farmer who can and does farm one hundred acres of good land, if he has the ordinary appliances, and intelligence and ability to make use of them. Now, if all this can be shown, and a practical scheme pointed out, we may safely calculate on the immediate benefit to be derived. The necessity for hauling the beet root will prevent its extensive growth, unless in the immediate neighbourhood of some factory. If a team has to go five miles with a load of one ton—which work is usually to be done at the very worst time of the year for short days and bad roads—there will be little else done that day, and the cost of such a day's work would not be at all remunerative under \$150, which forms a most serious charge on the gross receipts of \$4 for the load. Every-

thing, therefore, determines us to advocate the idea of working up the roots into some merchantable article at the farmer's own home. An acre of roots may safely be calculated to yield fifteen tons under favourable circumstances. The yield of ten per cent. of such syrup, as heretofore described, is but average, and will often be exceeded, according to all authorities. The price of such may be set down at 5 cents per pound, as it will be almost, if not quite sugar; and the gross return from an acre of beet root would be about \$168 without calculating any value for the cake.

CULTIVATION

In the British mode of raising the roots the greatest care is taken to secure absolutely genuine seed as any faulty or old seed will result in "rips," as they are termed, by which a considerable reduction in the yield per acre is often produced.

The White Silosian is generally supposed to be the best, although several kinds are in use in Prussia, Germany and France, and each has its special advocates.

Examining the construction of the shell containing the seed, we find it composed of two or more cavities, each holding a small brown seed. If these seeds are quite fresh, one sown every six inches is a plentiful seeding, but unfortunately this is rarely the case. It is a class of seeds very subject to natural depreciation, or to wilful adulteration. Absolute trial of its germinating powers will alone determine its value. In former years, when in England, I have often grown this plant, and have experimented on its culture in many ways, and after all have decided that the best course to pursue is to drill in the seed, and not under any circumstances to bury it more than one to one and a half inches deep; a roller should follow to cover all securely. Previous to sowing, the seed should be steeped for 24 hours in water; this greatly facilitates its germination.

In preparing the land, it is by some considered very important not to use any manure the same year; the previous crop, however, ought to have been well manured. Many farmers dissent from this opinion, and manure highly the same year. The land must be clean and well pulverized, and never worked except when quite dry. Beets and mangolds abhor hard baked earth, and never do as well in it.

The most approved way of preparing the land is to manure heavily in the fall, about September, and at once ridge and furrow the land with deep ploughing; the manure will then be all thrown together under the ridge, and be fully decayed by the spring, and as a very much larger surface will also then be exposed than if the land lay flat and level, there will be a proportionate number of weed seeds germinated, and all there is in the manure will grow or decay

Early in the spring, after the land is dry, split the ridges with the plough, so as to leave it quite rough, turning another side up,

thus exposing more surface for the growth of weed seed. In two weeks harrow well across; this will again destroy all weeds; and repeat the harrowing about the middle of May. The land will now be quite free from weeds, all having grown within the influence of the atmosphere, and the soil will be very fine and loose. Now drill in the seed about two feet apart, and thick enough in the row to be sure of a plant every four or five inches at least. Directly the rows can be seen, run the horse hoe through them, passing as close as possible to the young plants, so as to be quite sure not to injure them, and in two weeks, or about the second week in June, hoe the rows carefully by hand, leaving all the plants, so that the grubs may be supplied without danger of losing the crop. This, of course, costs more in seed, but much less in loss of plants. In a week or two hoe again, still leaving all the young plants, until they are about four or five inches high, when they may be considered out of reach of their enemies, and may be thinned out to nine inches, or even less. Seven inches apart will not be found too close. A moderately small root yields much more sugar than large ones. The chief work is thus done with horse power, and a man will easily hoe an acre a day, when he has only to strike the hoe through the rows, the centre part being kept quite clean by the horse hoe. You will now find the great advantage of your previous care with respect to seeds, and the crop will soon begin to cover the ground. As soon as this is the case, you must have a peculiarly and properly constructed plough, that will earth up the rows somewhat, but at the same time not cover the hearts of the plants in the least—such as will leave the land in a succession of little ridges, one on each side of each row, about four inches above the level, but not overflowing towards each other. We used such a plough for many years and one of this kind will do three acres a day. This will effectually finish the weeds, and will prepare the roots to produce the greatest quantity of sugar from a given quantity grown, as all portions of the root that are out of the earth are almost, if not quite worthless for sugar. The plants will now take care of themselves until the end of September or beginning of October, when, if required, pulling may be commenced.

Of course, they will continue to increase in size until the frost stops Nature's operations, as all roots whose leaves are green in autumn grow twice as fast the last month as during any month previous. This is the case with turnips and mangolds, as is well known; but with beets, frost must be carefully guarded against, and harvesting the roots must be commenced and completed before any injury from frost is apprehended.

Opinions as to the best mode of digging differ most materially. Some advocate the spade or fork, while I most certainly never used either, but always the plough. This requires very careful manipulation, but is

better and much cheaper than any other mode. When a deep furrow is run close to one side of the row, and another in the bottom of that, the roots will be quite easily thrown out, so as to be readily taken by the greens, and after shaking off the loose earth that adheres to them, a smart blow of a knife will sever the crown, and allow the root to drop into a basket placed to receive it. Care must be taken that as little injury as possible is inflicted on the root in the act of digging, and absolute freedom from frost is requisite in any place where they are stored. Pitting in the field, from this cause, is bad, as if they are to be exhumed during winter, many will be frozen and injured in the process. It is infinitely better to use a root-house, carefully ventilated, underneath the rails that are to form the floor on which the roots rest, and the current of air, so admitted, is to be directed by corresponding apertures to an exit above, wherever the roots may show some signs of vegetation or heating.

Almost, but not quite freezing, is the correct temperature. Germination from heat will totally destroy the sugar they contain, and constant care in this particular must be exercised.

In another article I propose to offer some suggestions as to the construction of such cheap but efficient machinery as will enable the syrup to be obtained sufficiently pure for home consumption.

C.

The Wild Oat.

A correspondent from Howick, who signs himself "a constant reader," makes enquiries respecting this terrible pest to farmers. He was referred to the June number of the CANADA FARMER for 1868; but as there are many new subscribers, who may not have our back numbers, and as it is impossible to say too much against this pestilent weed, or to caution farmers too strongly against allowing its introduction into their farms, the following information will doubtless be acceptable.

The wild oat, the botanical name of which is *Avena fatua*, is well known all over Britain and Europe, and is universally dreaded, and no expense or pains is spared to keep it under. Notwithstanding this, although possibly it does not increase in the old country, it certainly holds its own, and still maintains its existence. It is a winter oat, lives and thrives through our severest seasons, never winter kills, has no parasite or special insect destroyer that has, as far as we know, ever been described. Its seeds have a most unrivalled vitality, and an unlimited power of adaptation.

It flourishes everywhere when it once gets a foothold, and, let the crop be what it may, it fraternizes with it. It starts with the fall wheat, grows taller and faster, and more luxuriantly, and ripens its seeds before the wheat ripens; consequently, by the time the wheat is gathered its seeds are principally self-sown, or they are sown when harvesting the crop. If a spring crop is sown, it

comes with it, grows with far greater luxuriance than either oats or barley, and ripens either with or before them. Each seed has either a hook or a series of hooks, with which it attaches itself to passing objects, so that cattle carry it from place to place whenever they pass through the ripe stems. It is very fond of any manure heap or waste place, and affords a plentiful crop. If cut off before the seed stems attain a certain age and strength, it actually becomes a biennial, and almost perennial, in its nature. The seed lies any length of time in the ground, and is always ready to put forth at every favourable opportunity. Cattle will not eat it when they can get anything else, but they will eat it. These being the attributes of the plant, it may be easily seen that a more dangerous one for the Canadian farmer cannot be found. When often cut down, it will bear seed on stems only a few inches high, although on favourable soil the plant in its natural state reaches the height of from four to even six feet.

In our newly cleared lands it is most dangerous; it gets possession of the soil, and as the plough cannot be used amongst the roots and stumps, it flourishes beyond measure, and once in the soil, it is believed to be all but impossible to eradicate it. There is only one cure, name'y, absolute eradication; the plant grows so large, and so much higher than the rest of the crop, that it is easily distinguished, and must be pulled up by the roots; nothing else will do. If any part of the crown is left in the soil it shoots forth again. Absolute root and branch work is the only thing that can be depended on.

Of course, a thorough summer fallow will get rid of all the seeds which are in any way so exposed to the air as to germinate; like all plants in a seedling state, the wild oat is then easily killed. But the seeds do not germinate easily, and plough and cultivate as you will, there are always some left in the soil. It seems also to have the power of sinking to the subsoil, and once there, it will remain in a state of preservation for ages. As an instance of this, the writer's father had a farm in England on which wild oats were certainly known, for they are known all over England, but they were not plentiful, and from having been well kept under, were not even a nuisance, although duly weeded out of the growing grain with the docks, thistles, etc., every spring. Well, there was one field which it was supposed would be greatly benefited by the bringing up of an inch or two of subsoil, and this was done in the fall, so as to give it the benefit of the winter's frost. The field was well manured, and sown to peas. In due time the peas came up, but with them so plentiful a crop of wild oats, that they would have smothered the peas but that peas like something to climb on. The whole crop as green stuff amounted to more tons per acre than I should like to say; it was all cut green and fed to cattle in the way of soiling, and destroyed in the farm-yard, and every exertion was used to eradicate

the wild oats by immediate ploughing, and fallow, or rather hoed crops; but that field was many years thoroughly infested with the wild oats, and they certainly had all been brought up by that two inches of subsoil, which by its appearance might have remained till that time undisturbed since the deluge. The second best protection against this pest is well harrowing the stubble after harvest; this sets the wild oats growing, and they are then, of course, destroyed by the subsequent fall or spring ploughing.

The Canada wild oats were first seen in the County of Perth, near Stratford, and are supposed to have been brought in by some Germans who imported barley for seed. They were at first thought a great curiosity by Canadian settlers who had not made their acquaintance before, and were even propagated for fodder and as a winter oat—no one knew the danger, and all were consequently careless. When they once got thick in the crops, the birds, cattle, and above all the travelling threshing machines, spread them like wildfire. Settlers, too, who were short of feed, bought straw and hay, and thus inoculated their farms. Now, the Perth farmers spare no trouble to eradicate the wild oats and keep them off their farms, and many have bought threshing machines rather than run the risk of importing the wild oat in the travelling machines. The borrowing and lending of winnowing machines has also been a fertile source of the spread of the weed, but cattle, birds, and the clothes of men have done their share.

VECTIS.

The Cultivation of Carrots

Having received several letters from subscribers wishing for information as to the best mode of growing carrots, we re-publish in reply to such enquiries a portion of an article on the subject contributed to the pages of the CANADA FARMER of last year by an esteemed correspondent—W. R. of Cobourg. The republication, moreover, is justified not only by the excellence of the article, but because the number containing it is now out of print.

The carrot crop is deserving of more attention than it generally receives, as it is one of the surest of our roots, withstanding our summer drought better than any other of our root crops.

In preparing the ground for carrots, the best way is to manure and plough the land in the fall, and if there is time subsoil it at the same time, as carrots delight in a deep mellow soil. Then cross-plough the land in the spring, as soon as it can be done. After it is in order, and after harrowing and cultivating and rolling too if required, drill the ground up in drills, say about thirty inches wide—not that carrots require so wide a drill for their growth, as eighteen to twenty-four inches would be wide enough for that; but room is required to clean the carrots—so that they can be easily cultivated between the rows.

If the ground had not been subsoiled in the

fall, we would drill up the land, and then run the subsoil plough up one drill and down another as deep as we could, and then drill up the land anew, so that the seed would be sown directly above where the subsoil plough had run. There is a marked difference in the length of the carrot when thus treated, and when the ground is drilled up without any subsoiling. Carrots are often sown by hand; but if the seed is properly cleaned they can be sown with a drill, care being taken that the drill does not choke up. I generally use a light roller, attaching the seed drill to it, thus rolling the drill I am sowing, and the seed sown. In this way the seed is well covered, and the drills left fine and smooth. The carrot is a slow seed to start, so that the weeds are generally before them, and require to be checked as soon as possible. So soon as the young carrot can be fairly seen, a drill cultivator should be run through them. Up one drill and down another will be sufficient, then take a sharp hoe, and pare the sides of the drills as close to the young carrots as possible, walking backward—and paring half the drill on each side, so that the weeds may not be trodden into the fresh loose earth, but die as quickly as possible. When they are well pared off thus, all the weeds left in the row (which need not be much more than an inch wide) will not hurt the young plants much, till they are sufficiently strong to thin out. In thinning and weeding them, use a small sharp hoe about four inches broad. It may be made out of an old cradle scythe, as by this means one can thin and clean them much faster than when all the weeds in the row are pulled by hand. After they have been thinned they ought to be gone through again—some time after—hoeing out all the weeds and any carrots that may have been left too thick. Carrots, like all other root crops, are the better for having the ground stirred frequently between the rows; indeed, they would be all the better if cultivated once in a week or ten days, if time can be found to do so.

Though carrots grow slowly at first, they grow rapidly in the fall, and may be left in the ground as long as there is no danger from frost. I have pursued different ways of taking them up, according to circumstances; sometimes when they are white carrots, standing well up out of the ground, the harvesting has been done in this way: with a hoe cut off the tops, and draw them out of the way; then take a subsoil plough, with the side plate taken off, and run it close alongside of the rows of carrots, loosening and raising them up, so that they can be thrown into a cart or waggon without any further trouble. If the ground is clear and mellow, this is perhaps the quickest way. Another plan is to run the subsoil plough alongside the row of carrots, and then pull them up and cut off the tops. This method has to be pursued with orange or red carrots, as they do not grow at all above the ground like white carrots. But where the ground is stony, or

there are stumps in it, or where a subsoil plough is not at hand, I have never found any better way than taking a common plough, and going as close as possible to the row of carrots, so as not to damage them, and then pull them over to the ploughed furrow, throwing them in heaps, and leaving room to pass again with the plough. In this way they have to be pulled out of the heap on the next row. It is best to plough two furrows for each row of carrots, one pretty broad, so that the furrow next to the row of carrots may be as deep and as close as possible. These have been the methods pursued on my farm; if there are better or quicker ways of taking them up, I shall be glad to hear of them.

Carrots, as long as they are growing in the ground, will stand a great deal of frost; but they should be secured as soon as possible after they are pulled, as they are then easier damaged by frost than the turnips are.

The principal advantages of carrots are, that they stand our summer droughts well, are very seldom injured by insects, make excellent feed for horses, cattle, sheep, and even pigs, and do not impart any unpleasant flavour to the milk of cows, as turnips do—but if the red or orange varieties are used, they give a rich colour even to winter butter.

The disadvantages attending their culture are—their slow growth at first, so that if the ground is weedy, there is danger of their being choked as they come up; then they are slow and tedious to hoe and weed, especially the first time over; moreover, they seem to be rather an exhausting crop on land; at least we never see the following crop as good after carrots as after turnips, mangolds or potatoes in the same field. I have generally found carrots, when grown alongside of turnips and mangolds, yield a greater quantity from the same amount of ground, but they have required more time and work in hoeing and cleaning.

I have occasionally, as an experiment, tried sowing carrots late in the fall, but with no decided advantage. They grew well enough, but were harder to hoe, grew very little, if any, larger than when sown in spring, and were very apt to run to seed.

Potato Planting.

To the Editor.

SIR,—As it is getting time for planting potatoes, I will give you my method and experience with regard to them. I planted mine in rows last season, some of which I manured heavily with stable manure, and the others with a mixture of lime (slacked) and unleached wood ashes in equal parts. This I put in the drills two inches deep, laying the sets about a foot apart immediately on top of the composition. When my potatoes began to grow—they were the kind known as Garnet Chilis—I noticed that those which were manured with barnyard manure came up strong and rank, and perfected a much larger growth above ground than the others; but on digging I found the

result underground quite reversed. Those grown with lime and ashes had decidedly the advantage in the size of the tubers, and I would earnestly recommend the lime and ashes mixture to intending planters. My ground is sandy, and I feel sure it should have a much better effect on clay soil. Whilst on this subject, I may state that the Garnet Chili is esteemed in my neighbourhood as the best variety of potato grown, being early, of good size, without being hollow, and free from rot. The Early Rose here did prodigiously well, both in earliness and productiveness, but was by no means free from disease. I attribute this to the means used in forcing, that has been resorted to in order to supply the demand at the recent highly remunerative rates; but I do not think it will ever take the place of the Garnet Chili as a good keeper, free from rot, and so, and until the new crop comes in. The potato admits of being produced much earlier in the season than it generally is by a very little trouble.

For an early crop I put half a peck of some early variety, say Chilis or the Old English Ashleaf Kidney, into the corner of my hotbed at the end of March or the beginning of April; they will soon sprout, then as early as the frost is out of the ground, take them up and plant in an sheltered part of the garden, taking care to break the shoots as little as possible; have some straw at hand to cover the rows after they come up, should the weather look frosty—the object in covering them is that the growth may not be checked by the frost; the freezing of the tops does not by any means kill the plants. Potatoes are one of the easiest vegetables we have to transplant, and any scarce variety may be propagated very easily by cuttings from the tops, which may be stuck in flower pots in hotbeds, from six to twelve in a pot, according to its size, and afterwards transplanted into open air beds, and from thence re-transplanted into hills or drills, according to the approved mode of the cultivator. As a rule, however, I may remark that potato sets are planted very much too closely together, both in hills and drills. They ought to be at least eighteen inches apart, and in hills not more than two sets in each; the sets should be cut to two eyes, and if the potatoes are like the Chili, with few eyes in them, one is sufficient.

Potatoes started in a hotbed, or in a light warm room, and planted out in the early part or middle of April, according to the season, may be dug in the beginning of June for new potatoes, and a second crop of celery, white turnips, late cabbage, or any other late vegetable may be grown on the same piece of ground.

P. E. B.

Ottawa.

The cultivation of cinchona is greatly extending in British India, the Government plantation at Darjeeling being especially prosperous, where three distinct species of the Peruvian bark are cultivated with success, and nearly one thousand acres are under cultivation.

How Draining May be Done for Nothing.

I am satisfied that there are a great many farmers who would do some good jobs at draining if they knew how and where to begin, and if they could find the time. Many farmers do most of their work themselves, only hiring a little by the day at the busy seasons, and of course pay a round price for it. If they would hire by the month they would, of course, get the men much cheaper, as the day labourer has to get pay for the idle days by charging extra prices for the days he works. My advice and practice has been to hire help and give constant employment for the time agreed upon. Then, when there is no regular farm work pressing, I commence a drain. I begin at the lower end and work up hill, keeping the bottom nearly level till I get a depth of four feet, then keep it not less than that depth, letting the water run off behind me. This ditch digging I keep as knitting work, as it can be taken up at any time when there is nothing else to do, and can be left as readily. If I have any haying to do, and do not wish to start a machine till the dew is off, I say to my man, "You may go to your knitting work till I call you." If a shower stops work on the hay, or if it is too wet to hoe, or I have just finished some job, and do not want to begin another to-day, I say, "We will dig in that drain till chore time."

If I am going away with the team I let my man work in the ditch. Indeed, I have found a great many days when I should have had nothing for a man to do had I not a piece of draining on hand. Then again, had I not had a steady hired man, my regular farm work would have suffered severely at times. So the plan seems to work well all around. The man is sure of constant employment, and gets as much in a month as it he worked by the day, and I get more work for the same pay, and the man is just as well satisfied. He makes more time, but runs no risk of being unemployed.

I have done some jobs of draining that perhaps would have cost more than the land is now worth if I had had it all done at common day wages. But as it has been at odd times, when I should perhaps have thought it was not just the right kind of weather to hoe, but just the kind to go fishing, I really think I may reckon it as having cost almost nothing.

This kind of draining I recommend for small swales that are now worthless, and are giving no income except a little bedding hay. When the fall is sufficient, and small stones are plenty that may need to be put out of the way somewhere, they may be used for drains with advantage. I have done all my draining with stones. If I were on a clay farm, and wanted to drain it all at once and had the capital to do it with, I should probably use tiles and do it in a more business-like way.—Cor. in *Germantown Telegraph*.

When to Prune Hedges.

April is as good as any time to prune hedges, whether of hemlock or Norway spruce, arbor vita, or the maclura. The thing to avoid is a hard frost, and we rarely have it in April. Box-edging in yards and gardens can also now be pruned. This, instead of cutting-off square at the top as many do, exposing a dead or yellow interior nearly the whole season, should be pruned on both sides to a point, cutting a little above last year's growth.

One thing should be borne in mind by those who are growing young hedges, which is, not to allow them to grow too large before the pruning-shears are applied.

An evergreen hedge, particularly, by commencing to prune when the bushes are about four or four and a half feet high, can be made in any shape or form that may be desired, without leaving unsightly stumps. They always seem to us as though they liked to be pruned. They sort o' feel a little proud, at least they look smart and jaunty, after having their heads cropped.

Young hedges should receive careful attention, or they will become an eyesore instead of an ornament—and many such eyesores can be seen in the county of Philadelphia. They should be cautiously forked under the branches, at least every particle of grass and weeds should be removed, and if the soil is not rich apply a good mulching of manure; but if sufficiently rich, grass, straw, or refuse of any kind may be used. The hemlock, especially, which makes the most beautiful of all hedges, and the only one that really does well under shade, shows the effect of manure by a luxuriant growth of the darkest-green foliage that nature can present.—*Germantown Telegraph.*

Potato Planting.

To the Editor.

SIR,—I have often thought that certain qualities of land were better adapted for certain kinds of potatoes, and my surmises receive confirmation by a comparison of my own experience with that of Mr. Membery. I found, for example, that in the Cuzcos and Goodrich varieties the amount of rot last year was about equal, but not worth notice in either kind. My crop was not as large as Mr. Membery's, but was nevertheless a matter of astonishment to my neighbours. I find that a change of seed pays well. I noticed an interesting fact in regard to cutting and planting; at one time I had not enough cut to finish planting the patch out, so I took the potatoes with me, cut them in the field and planted them instantly; and I saw when hoeing them that the outside row, which had been thus planted, was in advance of the others, and I know of no other cause. I could see to a hint where the sets had been so cut and planted.

JOHN HOLLOWAY.

Scarboro'.

Cultivation of Broom Corn.

This is a crop that can be grown to most advantage on rich warm soils. The land must be well cultivated, and brought to as high tilth as can be done. It is planted in rows, thirty inches to three feet apart. The hills are to be eighteen inches apart in the rows; a tea-spoonful, containing about thirty seeds, is usually allowed to each hill, in order to make sure work, and when the plants are well up, all but eight or ten of the strongest are pulled out and thrown aside. If old well-rotted manure can be had, some may be applied by covering into the hill before planting the seeds. About half a bushel of seed will plant an acre. If too few stalks are in each hill they will become large and coarse, which is undesirable, as the finer the brush is, provided it is not too slim, the greater is its value to the broom-maker.

After the crop has been well established, and the first hoeing done to kill the weeds and thin out the plants to the right extent, the land is to be kept mellow and well cultivated with the plough and horse-hoe, the last ploughing being done when the plants are three to four feet high.

As the seed as well as the brush is of value, and the first autumn frost kills the plants, the operation of harvesting should be performed as soon as the seed is ripening and before frosts come. The stalks are bent down at a height of two feet from the ground, laying those of two opposite rows across each other obliquely, leaving a clear passage between every other two rows for the convenience of passing through when it is ready for cutting. After it has been so bent over, the brush will cure sufficiently in from four to six days to be cut, which is then done with a sharp hook or sickle, leaving about one foot of the stalk, or even less, in the ground. After being cut, it is sometimes laid out to dry still more; but if the weather has been very favourable, and the brush is dry enough not to heat or get mouldy when packed away, it is carried to the barn. If it is bound in small sheaves, there will be less trouble in getting off the seed. If not perfectly dry, the brush must be spread out on scaffolds in the barn till dry. The process of extracting the seed is called "scraping the brush;" this is done in a machine invented for the purpose. It is an upright implement of elastic wood or steel, fastened to a bench of the requisite height for an operator to sit at. The brush is taken in hand, and the top part, as far as the seed extends, is brought down on the top of the machine, forced through between the teeth, and drawn outwards toward the operator. This separates the elastic portion of the brush, and when drawn out the seeds are scraped off in the process. An average crop of broom corn yields from five to eight hundred pounds of brush, and sixty to seventy bushels of seed. If the stalks are cut before the seed is ripe, the brush is stronger and more elastic and durable; but the value of the seed then lost is a

serious item, and unless the grower can make certain of obtaining as much higher a price as will cover the loss of seed, he will not submit to the sacrifice. The seed weighs forty pounds per bushel, and is said to be valuable for feeding stock, though we have had no actual experience in that way to enable us to state its value for that purpose. Sometimes the broom-makers will contract to take the whole crop on the ground at a fair price per acre, and attend to the cutting and curing themselves, when they desire to take pains to have a particularly good article of brush.

Raise Your Own Seed.

Farmers should pay more attention to the matter of raising the seed required to produce their root crops and garden truck. The matter of supplying seeds has passed in a great measure out of the hands of the actual growers into those of a class of middlemen, who come between the grower and the retailer, and as has been shown by recent investigation in Britain, the competition among them has become so close and keen that every possible device is being resorted to in order to make profit, and yet undersell one another as far as price is concerned. Thus it comes that the adulteration of seeds, especially those of turnips, mangolds, carrots, and other largely grown roots and vegetables, is carried on to an extent that makes it almost imperative on the farmers to rouse up a little, and endeavour to put a stop to the adulteration by themselves raising their own seed, and thus, by withdrawing custom from the seed-dealers, teaching them the lesson that "honesty is the best policy."

As many are aware, there is some care and caution required to grow the seeds of many plants successfully in such a manner as will prevent intermixing, or hybridizing, as it is called. This disposition to mix must be guarded against, and a little knowledge of the characteristics and habits of some of the most important roots will be of value. Many vegetables belonging to the same species or family have a natural tendency to mix, if two varieties are fructified near enough each other for the pollen of one kind to be thrown on the flowers of the other. Two kinds of turnips, cabbage, beets, etc., if planted near each other, in order to produce seed, will result in a cross or hybrid. So, if turnips and cabbage, or pumpkins and squashes, are planted near each other, the seed resulting would be neither turnip nor cabbage in the one case, but produce a valueless cross between the two, and neither squash nor pumpkin in the other, but a hard warty vegetable having neither the sweetness of the pumpkin nor the flavour of the squash. But beets and carrots, turnips and mangolds, or parsnips and celery will not cross upon each other, and any two of these, as above given, may be in close proximity to the other without danger of hybridizing. Care must also be taken to keep watch on the ripening process, and

collect all the seed in good time, before the pods open and the birds take their share.

By a little attention to this matter, and the selection of good sound roots, perfect in form but not over large in size from which to raise the seed, a farmer would in most instances obtain a sufficient supply of good seed at small cost, and of a much better and more reliable quality than he could obtain at the stores.

Field Operations

In the summer of 1867 I drained ten acres with tiles 36 feet apart; this was too far apart; some more drains had to be put between them; the land was in grass and ploughed only middling. I got twenty minots of oats from Mr. Evans, Montreal; these were sown on this field the 19th of May, and reaped the first week in September, the produce being 71½ bushels per acre. The cost of draining was two shillings per rod, with tiles.

Some fields of oats, that looked very fine, rusted; I had one on undrained land, sown June 3rd, very heavy, four and a half feet high, that got rusted; neither straw nor oats were much worth; if they had been cut the day after the rust was discovered, there would have been over two tons of good feed per acre, worth more than \$20 per acre. Barley gave about 35 bushels per acre—it was much laid; fall wheat 25 bushels, and Black Sea spring wheat 25 bushels per acre; peas about 25 bushels (not all threshed); potatoes 100 bushels (a failure); turnips and yellow globe beets very good; hay was from two and a half to four and a half tons per acre; all was top-dressed; the fields netting four to four and a half tons per acre were cut twice. My hay was not much better than usual, and the other crops were not so good. Cold rain was continuous—the thermometer at 40° in August. The money value of my crop was not half what it was in 1868, and the cost much higher. Another twenty acres might have been cut a second time, but there was no room for it. One field had been cut six years, and gave over 2½ tons per acre; another, sowed with nine pounds of red clover, three pounds of Alsike clover and four quarts of timothy, was very heavy, being three and a half to four feet long; the harvesting was very expensive, as it had to be done with a scythe, and was very slow work. I have cut hay nine years in succession, and obtained good crops; by top-dressing, the land never grows any worse.

As I am not much in favour of pasture, I will say nothing about it. In the fall or spring before breaking up a grass field, manure it with eighteen good loads of yard dung; next fall plough six or seven inches deep, sow, as early as you can, two and a half bushels of well cleaned oats, harrow diagonally twice with a Shares harrow, and then lengthwise with a common harrow.

If the ground is dry, roll. Dress with forty pounds burnt bones, one hundred pounds at least of gypsum, one hundred pounds of salt, and one or two bushels of ashes; I also use from thirty-five to one hundred pounds sulphate of ammonia; I have sometimes used guano, but I do better with bones and ammonia. After harvest, plough and subsoil as deep as you can for roots or corn; manure in spring, grub, scuffle, roll and harrow until the surface is fine to the depth of five or six inches. I generally scatter fifty pounds of burnt bones, or one hundred pounds ground bones, mixed with four bushels ashes, one hundred and fifty pounds plaster, and sometimes one hundred pounds of salt. I also make drills very shallow, so that the top of the drill is about eight inches wide, and put the seeds in there. Last year I made a divider of two pieces of wood, about thirty inches in length and two inches in diameter, secured at fourteen inches wide for spacing marks, going into the ground about one inch deep for the yellow globe beets and Swedish turnips; they took more time in planting, but saved much seed, and there was no thinning of any account; the hoeing and cleaning were done much better than usual, and cheaper; the crop was very good. The corn was a failure with me for the first time. I think barley is as good a crop as corn, and less trouble, as people cannot be got to do the work; one man costs a dollar daily to hoe in this place, while in Scotland the daily wage is only one shilling; indeed, men are often not to be got at any price. I find turnips and beets are good to heat and ferment with hay and broken grain. By grating or cutting them about a quarter of an inch thick or less, and mixing in a covered box for 48 hours or more, they are well cooked, and fit for use. Cattle should get the food most likely to produce the article wanted. If cheese is wanted, give clover, pea chaff, and straw, and peas ground, oats or rye ground, bran and straw, all fermented. If beef or butter is wanted, instead of pea meal use ground corn, barley, or oil cake. Cattle are so much purged in summer with the green clover that I intend to cut hay and mix it with the clover and pea meal. If I live you will hear about it.

I drained eight acres with tiles last summer, 27 feet apart, three feet deep and up wards; the cost was 2s. per rod; the ground was very hard and wet; it is now just right. There were a number of large pine stumps taken out with a machine made by N. S. Blaisted & Co., Victoria Foundry, Ottawa, the cost of which was \$40.

No farmer here has put any lime on his land, except what I have done, and that is only three fields, or 30 acres. I put seventy bushels on the acre, when it was fallow. No doubt, the fields are suffering for want of lime. About one hundred pounds pure lime or more should be applied yearly. It is a pity that agriculture is not taught in the common schools.

I will conclude my letter by giving a receipt for what I have found a never-failing renovator of grass lands:—

3 bushels ashes, at 15c.	45c.
10 pounds burnt bones at 1½c. ...	70
(Or, 80 lbs. ground bones)	
¼ barrel plaster.....	90
100 pounds salt	60

\$2 65

I have got a machine to sow fine dry manures, when two bushels of lime will be added to the above. I have not tried ammonia on grass as the crop is always heavy enough without it.

During periods of comparative leisure, I have been looking over the back numbers of the CANADA FARMER and sometimes wonder at the amount of information that is to be found there.

JOHN ROBERTSON.

Bell's Corners.

Comparative Value of Hay, Corn and Roots.

An acre of ground retained expressly for hay yields on an average not more than one and a half tons of vegetable food; an equal space planted with carrots or rutabagas will yield from ten to twenty tons, say fifteen tons, which is by no means a high average, and has often been attained without any extraordinary cultivation. It has been ascertained by careful experiment that three working horses, 15½ hands high, consume hay at the rate of 200 pounds per week, or five tons and 400 pounds per annum, besides one and a half bushels of oats per week, or 78 bushels per annum. By a repetition of the same experiment it was found that an unworked horse consumed hay at the rate of four and a quarter tons per annum.

The produce, therefore, of nearly six acres of land is necessary to support a working horse for one year; but half an acre of carrots, at six hundred bushels per acre, with the addition of chopped straw, while the season for feeding them lasts, will do as well, if not better. These things do not admit of exact trials, as some of your agricultural friends can testify.

It has also been proved that the value of one bushel of corn, together with the fodder upon which it grew, will keep a horse in good working order for a week. An acre planted with corn and yielding sixty bushels, will be ample to keep a good sized horse in working order for one year.

Let the farmer, then, consider whether it is better to maintain a horse on the produce of half an acre of rutabagas or carrots, or upon the produce of an acre of corn—or, on the other hand, upon the hay and grain from six acres of land, for it will require six acres of good land to produce the necessary hay and grain as above. The same reasoning might be made use of in the feeding of cattle and sheep.—*Stock Journal*.

Practical Drainage.

The enthusiast always has some troubles and difficulties to encounter and overcome, in whatever science he may enter, either as an amateur or as a devotee; it is only by these means that his mind is opened up to find out the remedies for the evils, and the march of advancement thereby promoted. The drainer frequently meets with reverses that seem to him inexplicable, he cannot discover the cause of them. Everything may have been done most properly and correctly, the levels rightly taken, the grips carefully bottomed, the drains accurately laid, and yet they won't work. The water won't run out, or they choke up by roots entering into them, in spite of most careful work.

Drains, like all other things, have enemies to fight against, some of which are for long a source of a great deal of anxiety and perhaps expense to the drainer; one of the chief of these is roots. If drains are laid too near the surface, the roots of plants get into them, sometimes water, carrying the roots of rank grasses, deposits them in some hollow where they very soon vegetate, and grow to great length, choking up the drains in a short time; the soil too sometimes is a source of trouble, particularly where drains are laid in light sandy soil, near old trees. At almost any time it is a bad plan to lay a drain within eight or nine feet of a tree that has wide-spreading roots, and particularly in a light soil. The channels in the soil, that conduct the water from the surface to the drain, will also tend to lead the root of the plant to the water from which it seeks its nourishment. This is a constant source of annoyance in draining lands that are under wood that is of any age, such as orchards, or parks and pleasure grounds, plantations, etc.

In such places as orchards, where trees are thirty feet and over between the rows, the drains ought to go exactly in the centre of the row, and be laid to a good depth, to avoid the trouble our correspondent at Virgil has experienced. It is a common practice to lift drains that have been laid in sandy soil a few years, as the sand works in to fill them up, or roots obstruct them. This class of soil never has the same qualities as the clays, and so far what applies to the cropping applies to the draining. The drains must go deeper, and at greater distances apart, and require more looking after for a short time after they have been laid.

Our correspondent, "N. S. C.," cannot do better than lift his drain, put it further away from the tree that has been the cause of the trouble, and if he can do so, lay it

in deeper than it was before. He should lay the tiles with collars, as a further safeguard, but on no account should he try to drain with spigot and faucet jointed pipes. These pipes are only adapted to places where the joints can be made up tight, for such purposes as carrying water to a cistern, or sewage from a house. If the joints are left open the roots will get in, just as well as into a tile, and if they are closed, no water will be able to get into the pipes. These pipes can be got from almost any brickyard; to be effective they ought to be hard burned and glazed inside and outside, they are usually made in two feet lengths.

The joints can be made up in several ways; the easiest and the one most in use when there is no pressure of water in the pipes, is to make up the joints with well-wrought hard clay puddle; but if the pipes are to lead water, or be under pressure, the joints must be made up with good water lime, in equal quantities of water lime and clean sharp sand.

ALAN MACDOUGALL, C. E.

Improving Old Meadows.

There are on many farms old meadows that it would be undesirable or inconvenient to break up and put under tillage just at once. Much can be done towards improving these so as to make them yield a heavier crop of forage of better quality until the time comes when the farmer can summer-fallow the land or bring it into the regular rotation of the farm. In some cases the soil of these meadows is naturally rich, but from a deficient amount of grass seed having been originally applied, from the coarser wild grasses having choked out the better cultivated ones, or from the soil having become too compact, there seems to be a much smaller yield of pasture than ought to be the case. To improve such pastures let a heavy sharp-toothed harrow be run over the surface both ways, to loosen it somewhat and cut the sod so as to make the roots take a new start and send up fresh stems; after this is done sow some grass seed, including clover, then top-dress the land with a mixture of superphosphate, plaster, and ashes, one-third of each; giving at least two hundred pounds of the mixture per acre; and finish by carefully rolling the surface with a light roller to get all level and slightly compress the newly sown grass seeds into the soil. The improvement will be quite manifest the first season, if the work is well done at the right time, say from the middle to the last of April, but still more so the year after, when the fresh sown grass seed has had time to take root and spread over the soil.

The Canada Thistle Controversy.

It is a most extraordinary thing, that Canadians should consent to the prefix "Canada" to this troublesome and destructive weed, when it is not even a native of the country, but an imported and naturalized settler in our soil. The Americans, however, have absolutely dubbed it "The Canada Thistle," and we have foolishly accepted the cognomen, and now everybody speaks of it as if it belonged exclusively to the Dominion.

The proper botanical name is (*Cirsium arvense*). It is the Barley Thistle of England, Scotland, and Ireland, and it is as well known on the Continent of Europe as it is here, and was so known before a tree was felled in the present Province of Ontario.

The various letters and communications which have appeared on the subject at times in the CANADA FARMER cannot but do good. Truth does not now, as in the Athenian days, lie at the bottom of a well, but at the bottom of a discussion. Since the present subject has been so extensively handled (metaphorically) in this journal, the writer has never lost an opportunity of discussing the matter in all its bearings with every practical farmer whom he could get to talk on the subject, and they one and all agree with him that the "summer fallow," in one shape or another, is the only effectual remedy; and while it cures the evil, the treatment benefits the land. Farming without summer fallowing is, in Canada under present circumstances, an impossibility. It is an evil, and accepted as such, but it is a necessary evil, and is the cheapest eradicator of weeds which we have. We can better afford to spare a crop than to hoe one sufficiently often to ensure the killing of the weeds. The short seasons, the want of cheap labour, and the impossibility of housing and consuming under cover more than a comparatively small root crop, leave us no other resource; or at all events, it is of many evils the least.

I do not for a moment mean to deny that clover, in a great degree, smothers and keeps down thistles, but I very much doubt whether it kills the roots. The thistle is a perennial, and can live and remain in a quiescent state with very small help from its leaves, provided it remains undisturbed in the ground. It hibernates, so to speak, until the favourable moment arrives for it to put forth new leaves and flowers, and then bursts into full vigour, and produces seed within four months from the time of making its appearance. The writer has himself, in digging a pit for sand in the old country,

where the soil was rich and loose, and favourable to the growth of the plant, traced thistle roots eight and nine feet deep into the earth, in almost a straight line down; and this was a sand pit, dug in the middle of a broad ornamental path, a road in a gentleman's pleasure grounds, which was kept hoed several times a year, and where the thistles could only take breath, as it were, by the leaves above the surface some two or three times in the season; but, nevertheless, there were the roots, dark, hard, and woody, a bunch of roots underground, the stems in the top soil, and a single or double root extending downwards from about eighteen inches to two feet below the surface, each stem or root well furnished with buds, and all ready for a favourable opportunity to start forth as a new plant. The writer has heard observant well diggers state that they have traced these roots much deeper in the soil than the depth here mentioned. At the accession of fresh vigour from any cause, such as favourable season or the like, these branching underground stems would start forth nearly, if not quite, horizontally, and with rapid growing feelers, like the stolon of a strawberry, they would seek for a more favourable spot for the development of overground branches, and on finding such a position, would come forth like a giant refreshed. By the sides of the broad path in which the sand pit was excavated, there were flower borders, filled with annuals and small growing perennials, and it was amusing to observe how the thistles seemed to seek for the protection of the cultivated plants, from amongst the roots and stems of which they would shoot forth with a power which seemed to show that the entire sap of the original root and of all the branches which had been checked in other directions, had concentrated itself in the newly emancipated stem; and if, by carelessness or otherwise, that stem was allowed to come to flower, you then saw the "Canada" thistle in all its glory, a giant among thistles, and with a vigour seldom seen here in Canada except on a dung-heap. This was, of course, a most favourable place for the growth of thistles, and nothing but the best possible methods of cultivation kept them under. There were the roots deep in the soil—hard, woody, and apparently of great age—and it only required a favourable time to develop them. Seedling thistles were scarce, and so few as not to be observable, the cultivation was too good for them; but the perennials were always ready, whenever the ground was still long enough for them to make headway from the original crown of the root existing in the soil below

plough gauge. Now, this being the nature of the thistle, how can a crop of clover "eradicate" them? It checks them, keeps them down, and renders them so weak that they do not flourish or come to seed; but I am well convinced they are there for all that, and are ready to make the most of the first favourable opportunity.

The growth of the Canada Thistle, when in a perennial state, is like that of the Horse-radish and other similarly deep-rooted plants. It sends forth in the spring one of its long and rapidly growing underground branches, this pushes ahead until it finds sufficient light and air for the favourable growth of the flower or stem. It comes to the surface, and if all is favourable, there it at once develops the seed stem; but if it comes out into a mass of clover or other fast-growing vegetation, it still pushes onward to the light and air, the crown of the growth always ready to push out the seed stem; but it does not finally push forth until the favourable place is reached. These stems thus grow with the clover until the crop is ready for the scythe, and are then mown with the crop; thus cutting the thistle just when it had made its greatest exertion to live, and when it can actually least bear the check. The stems being thus cut off down to the ground, the thistle has to form a new series of buds and headings, but it is generally too late for a second blooming; then the plant seems to husband itself for another year. A bunch of short leaf stems and corresponding leaves grow amongst the second growth of the clover, although they are not very observable, and the plant prepares itself for the next year's campaign against the farmer.

Now, except in the loosest kinds of soil in Canada, the thistle does not grow so deeply here as in England; for instead of growing downwards to great depths, it goes to the extent of the plough gauge or a little below, then runs out horizontally, instead of vertically, and in some of the worst thistle-infested ground roots can thus be traced in the bottom of the furrow for ten feet or more. All these roots are furnished with the regular complement of eyes for new shoots, all are within reach of the surface, and hence when the circumstances are favourable they all put forth at once, and form one of those mats of growth, known as a "patch of thistles." These can only be destroyed by ploughing below the roots, and thus bringing them into the loose soil, then continually moving them to the surface, where they have time to grow or form new shoots, and in one season of summer fallow, if ploughed, or what is equivalent to ploughing, moved

by the cultivator or grubber often enough, they are killed and thoroughly destroyed.

The Canada Thistle has two kinds of existence, the annual and the perennial life. As an annual it is as easily killed as the most delicate foreign exotic. The least movement or stirring of the soil and exposure to the sun for even so short a time is fatal to it; but the perennial requires a different course of treatment altogether; no half measures will do with it. If you plough only half enough, you have, by cutting up the roots covered with eyes from long pieces into short ones, made thousands instead of tens of plants; each piece when severed and divided is ready to spring into a separate and individual existence. But if you plough (or move them in the soil) often enough, and the soil is dry, you make root and branch work with them, and (except on the deep, loose soil) you have got rid of them for the time altogether. One of my informants had a field, which, from being cultivated too much before the stumps were out, was so full of thistles and other weeds, that he summer-fallowed it for two years successively, and the place is now free of them.

The plan now pursued so as to save the greatest amount of labour and time is—to let the thistles grow up as thick and as high as they will, until they are just in full flower; then if they are too thick for the horses to walk through, as is often the case, they are mowed, and the land is thoroughly ploughed. The cut thistles, which are almost as good as a green crop, are ploughed in and the ground well cultivated. The thistles have made their growth to the utmost, and the roots are in the weakest and most expended state, and two ploughings with cultivating will then make clean work. Clover is excellent and necessary, but is an abatement only and not a "destroyer" of the perennial root of the Canada Thistle.

VECTIS.

Alsike Clover.

Alsike clover is so called from having been first imported from Alsike, in Sweden. It is indigenous throughout Sweden, Denmark, most of Russia, and some parts of southern Europe. Botanically it is called *Trifolium hybridum*, and partakes of the character of both the red and white clovers. It is somewhat richer in nitrogen than red clover, but less so than white clover. It is distinguished from red clover by its more slender stem, smaller leaves, and whitish flowers, which turn to a pink shade as they get old. It is unlike the white clover, in having erect instead of creeping stems, wedge-shaped

leaflets that are toothed on the edge, and without the notch in the middle of the leaf, giving the heart shape to those of white clover. Its seeds are only one-third the size of those of red clover, though nearly resembling those of white clover, but lighter in colour, being lemon-yellow, with some purple ones. Its seeds ripen in July, so that to obtain seed it must be left to ripen its first blossoms, as no seed will be produced from a second-growth crop.

It is perennial in character, but not so much so as other clovers, the duration of a crop seldom exceeding three years, but it so readily seeds itself that it will continue to flourish in the same place many years, if not continually cut before the seeds can ripen.

It first attracted attention in England from being found to succeed well on soils that had become "clover-sick," and would no longer grow red clover. It has more fibrous and less tap root than red clover, making it less liable to be thrown out by frosts. It does not give as heavy a crop as red clover where the soil is entirely suitable to the latter, but the hay is said to be of finer quality and more relished by stock. It does not stand drought so well, from its lack of tap roots, nor does it enrich the land as much as red clover. There are two varieties—the large and the small Alsike—the former being, probably, only the original plant largely developed by extra cultivation or rich suitable soils.

Forests and Tree Planting.

To the Editor.

Sir,—With your permission I will make some remarks on a subject most important to Canadian agriculturists. I allude to the propriety—in fact, the absolute necessity—of replacing, to some extent, the forests we have too hastily and ignorantly destroyed.

Old Canadian farmers complain, not without cause, that while, formerly, all the influences of the weather seemed to aid and encourage the toiling husbandman, they too often, of late years, appear united to oppose him. Twenty or thirty years ago, amid all the embarrassments of surrounding forests, impassable roads, and unsaleable produce, Nature was his friend. All winter long a dense and level covering of snow protected his wheat, and the warmth of spring was relieved—the fervent heat of summer mitigated—by the frequent succession of cooling, fertilizing showers. But now—"tempora mutant, et nos mutamur"—the roads are good, the markets often liberal, the annoying forests have almost disappeared; but with them, it seems, has disappeared the former friendliness of the Canadian climate. Now, the un-

restrained winter winds, sweeping over the almost treeless plains, drift the snow into vast masses, exposing the young wheat and clover to the destroying action of frost. The leaning trees and roughened bark in his orchard, too, show the effect of the fierce blasts. Summer returns, but not as formerly. The crops are seriously injured by its increasing dryness. Warmth is no longer accompanied by moisture; sufficient rain falls only in exceptional and injuriously cold summers. The rain, absent when most needed, is collected and precipitated, during autumn and early spring, in heavy floods which wash from the uplands the fertile soil. Insects, too, formerly unknown, now destroy the farmer's crops; while the birds which once protected him have in great part left the unsheltered country.

These grievances are no slight ones. Our wheat lands have not, of late years, produced an amount at all equal to their former yield under similar culture, even choosing for comparison crops untouched by insects. As a late writer in your journal observed, "on new land, now the midge has gone, we cannot get nearly the amount of wheat per acre we did on similar land, before the midge came." Nor does grass take root and flourish as it did, or roots succeed as well.

That the removal of the forests is diminishing the great source of fertility—the reserve moisture of the land—is abundantly evident in Canada. Every old resident in the earlier cleared portions of Ontario can remember former rivers, now shallow rivulets, and former brooks, now utterly dry. Even in the recently settled districts it is already manifest. I was last week told by a gentleman (by the way, one of our principal authorities on scientific farming in Canada) that while passing, some time since, through Grey and Bruce, his attention was frequently directed to the drying up of the land. Many scanty streams were pointed out to him as having, fifteen years before, given steady and sufficient power to mills.

It is unnecessary to speak of the scarcity of fuel and timber, an evil that is rapidly becoming serious, and the cause of which is too plain to need investigation. But I will mention that the number of insects is greatly increased by the destruction of forests. Few insects injurious to agriculture multiply in or near woods: and the most destructive—the grasshopper of North America, and the dreaded locust of the East—breed in seriously injurious numbers only where large surfaces are destitute of trees.

A word may also be said concerning our friends, the birds. With the trees, they leave us. The forest borders are vocal with song, and when the gray morning calls the creeping things of the earth out of their night cells, it summons also from the neighbouring wood legions of their winged enemies. The activity of these hostile legions may be judged from the observation of Michellet, that "one pair of sparrows carry weekly

to their nest four thousand caterpillars and coleoptera."

That the injurious drought experienced in most of our late summers is directly owing to the removal of trees is placed beyond doubt by numerous well authenticated observations. I will quote some opinions of distinguished writers on the subject:—

Marsh says:—"The ravages committed by man subvert the relations and destroy the balance which Nature had established between her organized and her inorganic relations; and she avenges herself upon the intruder by letting loose upon her detached provinces destructive agencies hitherto kept in check by organic forces destined to be his best auxiliaries, but which he has unwisely dispersed and driven from the field of action. When the forest is gone, the great reservoir of moisture stored up in its vegetable mould is evaporated, and returns only in deluges of rain to wash away the parched dust into which that mould has been converted. The well wooded and humid hills are turned to ridges of dry rock, which encumbers the low grounds and chokes up the watercourses with its debris; and, with little exception, the whole earth, unless rescued by art from the degradation to which it tends, becomes an assemblage of bald mountains, of barren, turfless hills, and of swampy and malarious plains. There are parts of Asia Minor, of Northern Africa, of Greece, and even of Alpine Europe, where the operation of causes set in motion by man has brought the face of the earth to a desolation almost as complete as that of the moon."

Baron Humboldt says that "Trees, by the transpiration from their leaves, surround themselves with an atmosphere constantly cold and moist. They also shelter the soil from the direct action of the sun, and thus prevent evaporation of the water furnished by rains. In this way they contribute to the copiousness of streams. When forests are destroyed, as they are everywhere in America by the European planters, with an imprudent precipitation, the streams are entirely dried up, or become less abundant. In those mountains of Greece which have been denuded of their forests, the streams have disappeared. The inconsiderate felling of woods, or the neglect to maintain them, has changed regions noted for fertility into scenes of sterility."

Dr. Cleghorn states that "Climate and irrigation, in India, have rapidly deteriorated since the destruction of certain forests."

Gardner says:—"Since the partial removal of the dense forests surrounding Rio Janeiro, the quantity of rain has so seriously diminished that the Brazilian Government have prohibited the felling of trees in the whole Corcovado range."

Buchan speaks of the valley of Aragua, in Venezuela, as suffering from drought to such an extent that its lake (Tacarigua) was nearly dry. Being devastated by war for twenty-two years, it recovered its forests, and at the

same time its lost waters. Boussingault corroborates this.

In the United States, Dr. Pyper instances that, near his own residence, large mills were turned for thirty years by a stream which, flowing from some wooded hills, failed utterly when those hills were cleared of trees, and was useless for ten years. But, during that period, a second growth having sprung up, the water again increased, and now runs the year round. Bryant remarks that the destruction of the forests is yearly making our summers drier, and our streams smaller; and speaks of the Cayahoga, where one of Perry's Lake Erie squadron was built, being now so shallow that a skiff can scarcely pass.

To these instances and observations, out of a number that might be almost indefinitely extended, I will only add that the disappearance of springs is held by all writers to prove the infrequency of summer rain. The annual rain-fall is not diminished by the clearing of forests; rain still falls, but heavily, and at long intervals. No springs are nourished by the torrents, which, flowing rapidly seaward over the land, leave it shortly as dry as before. Where trees are numerous, rain falls frequently, numbers of springs are fed, and a constant and regular supply of moisture is preserved throughout the soil.

When we consider what have been the results, in countries more fertile than our own, of a similar course to that we have hitherto pursued in Canada: and when we remark, that we have actually begun to experience, in no slight degree, similar results; it appears certain that we must either, by judicious replanting, restore our former climatic conditions, and give ourselves once more a well-sheltered and fertile land—or it must become, at no remote period, almost barren, the prey of wind and flood, destitute of fuel and timber, and devoured by insects.

As to the manner in which such replanting should be conducted, different plans have been proposed, concerning which I will merely state that, from my own experience, I have reason to place little faith in the ultimate utility of reserving narrow strips of the original forest. Six or eight years since, when clearing a lot, I allowed a portion of the woods to remain, forming a northern shelter, one hundred yards in depth, across the farm. But though it does now, and may for years, answer an excellent purpose, destroying influences are at work. The forest trees, exposed to sun and wind, can bear neither. The bordering trees die yearly; the wind tears the sapless roots from the soil: the mouldering trunks fall, and expose an inner border, to die in their turn. In ten years there will be none left.

By excluding cattle, young trees in such reservations will spring up and flourish. But this course is very far inferior to actual planting. There is no necessity, for this purpose, to import expensive trees from foreign countries. Canadian trees will surely grow on

Canadian soil—and I know no foreign importations comparable with them. I have noticed our ordinary maple, planted in open ground, reach a height of forty feet in ten years—and no tree, to my eye, is more beautiful in summer—none nearly so beautiful in the autumn.

Let us draw a lesson from nature. Those who have travelled, in autumn, the lonely road bordering the west coast of the Georgian Bay, cannot have passed unnoticed the fine effect presented by the rising slopes of the Blue Mountains, whose broad surfaces, covered with interspersing groups of maples and evergreens, show, in rich contrast, dense masses of dark green and burning crimson. With a plantation of such trees, I intend, shortly, to replace my decaying shelter. I should have done so before—but *l'homme propose, et Dieu dispose*.

Conversing on this subject lately with some of the principal farmers of one of our best cultivated townships, I was informed that they would gladly see the passing of an Act compelling every owner of cleared land to plant and nourish a proportionate number of trees, yearly. We might, indeed, not unreasonably imagine that a subject, which has engaged the attention of every Government, save the Spanish, in Christendom, would be worthy the notice even of ours. But the time of that august body is too much occupied by more important matters. Were it a scheme for retaining or transferring political power, it would receive the most anxious and lengthened deliberation from our representatives. Were it connected with place or salary, it would command the profound attention and consideration of almost the whole House. But as it is merely the inconsequential affair of conferring a lasting benefit on the country, and as, moreover, there lacks that apparent *sine qua non* in Canadian legislation—an English Act on the same subject to copy—there is little chance of Governmental help. In the United States, much has been done in this matter by municipal authority, and perhaps our Township Councils might do good service in it.

R. W. PHIPPS.

Toronto, April 10th, 1870.

Potatoes in England.

With regard to my own choice of potatoes, it has settled down to very narrow limits. My first crop is the Early Ten-week, the oldest and the earliest of all. 2nd, the old Ashleaf (true), the finest in flavour of all the race, but rarely found pure. 3rd, the Royal Ashleaf. 4th, the Lapstone, or Haig's Kidney. This sort I received from Messrs. Backhouse, of York, more than twenty years since. These four kinds supply my table from May till May in the following year, and are always good. Mr. Radclyffe has kindly sent me a few of the Yorkshire Hero, and also some of Pebbly White, both of the Lapstone race, which is so remarkable for its fine flavour. It may be to the peculiar soil here that the excellence of

the above kinds is owing, for in some cases it is sandy loam resting on sand, clayey alluvial loam resting on gravel, and the same resting on the boulder clay, all highly calcareous. I have tried many kinds, nearly all of which have proved failures with respect to flavour, and I have come to the conclusion that all those who love a good potato, should try several kinds, and ascertain which suits their soil before they cultivate any sort to a large extent.

Mr. Radclyffe's calcareous soil seems to suit the Kidney potatoes, and those who can grow them well would not eat any round variety for a continuance.

The Early Ten-week is in use here for about a fortnight, and then adieu to the rounds. It is strange to see the Early Rose potato puffed as it was a year or two ago in America. Neither that nor the Early Goodrich are early, second early, or eatable, when grown in my soils. I strongly suspect that the dry, hot American climate will not admit of the cultivation of our fine Ashleaf varieties, or they would never boast of such an inferior sort as the mis-named *Early Rose*, so insipid, so late, and so coarse, that one must be in a state of potato hunger to eat it.

The Ashleafs, as far as I can learn, seem to attain to great excellence in calcareous soils, for in the neighbourhood of Bath, the market gardeners sell their baskets of Royal Ashleafs more readily than those of any other kind; to use my informant's term, "it was a fortune to them."—*Cor. in Cottage Gardener*.

DESTROYING QUACK OR COUCH GRASS.—"Beginner," Winchester, N. S., wishes information on this point. This grass, *Triticum repens*, is in reality a species of wheat of a perennial character, increasing and spreading rapidly by means of underground creeping jointed stems, each joint of which sends up a fresh plant to the surface. It is one of the most difficult weeds to extirpate, and where it has become very abundant in the soil it requires time and patience to get rid of it, as, like the Canada thistle, every piece of joint left with any vitality will take root and become the nucleus of a new stool of plants. If the land is much filled with couch grass it will be well to plough it early in June, then harrow well till the matted roots and tops are pretty well drawn out to the surface. This done, have them all carefully gathered up with a hand-rake into small heaps, and burned. This done, summer-fallow the land thoroughly for the rest of the season, every time it is ploughed repeating the same process of harrowing, gathering, and burning what quack may still remain. Next season plant the land to corn or roots, follow that with barley, and seed down to clover. Where the grass is only in patches here and there about the fields, it can be prevented from spreading too much by the land being carefully ploughed, harrowed, and hand-raked on those spots, and the tops and roots gathered and burnt.

Rural Architecture.

Design for a Hill-side Barn.

The accompanying design for a barn has several features which, though not all combined in any one existing structure, have each been separately tried, to the writer's knowledge, and found to conduce very greatly to the convenience of housing and feeding stock, as well as storing field produce. One great point kept in view has been to secure all the requirements of a stock barn and root-house, and the most convenient arrangements for tending animals with the least amount of labour. Persons about to erect a structure of the kind will probably find it desirable to make some modifications to suit special cases; and if the plan is not exactly copied, it may be serviceable as giving useful hints for guidance in building.

Amongst the advantages which this design embraces may be reckoned the excellent ventilation provided. By the arrangement indicated, the trap-doors (1, 1,) on the main floor answer the double purpose of filling the root-house below, and affording the means of perfect ventilation to the heaps of roots when required, by removing the obstructing shutters at the opening (4, 4) under the root-house floor, and admitting a draught of cold air to ascend through the roots, and escape through these traps in the floor.

The grave objection to the usual plan of allowing the breath and exhalations of cattle to pass into the grain or hay stored above is also entirely avoided by providing the spaces marked 2, 2. This construction secures an opening over each row of cattle, so as to admit of such exhalations readily escaping into the floor above, instead of being, as they too frequently are, compelled to pass into the mow.

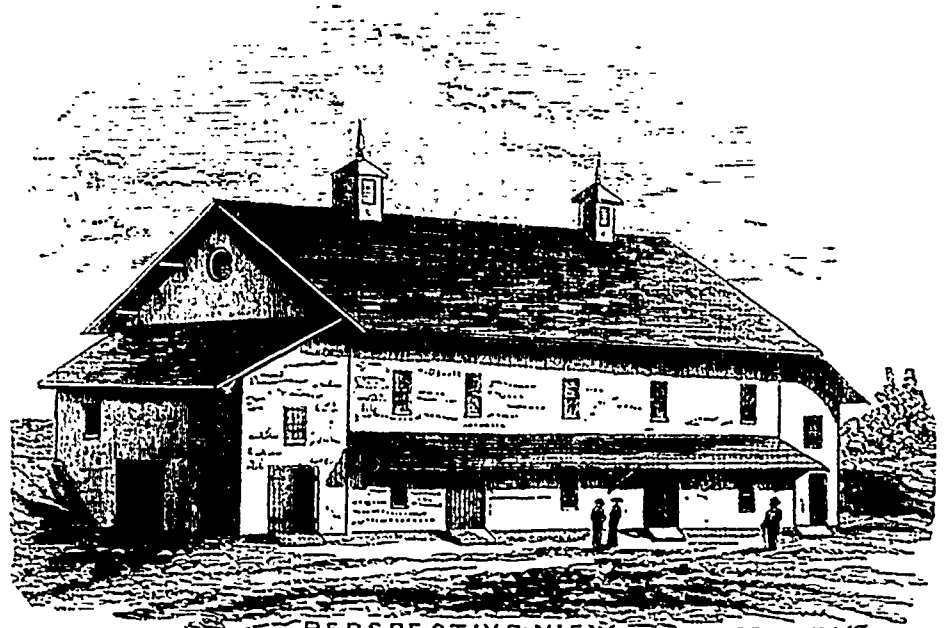
And again, the arrangements combine perfect ventilation with an exceedingly convenient space through which to feed the cattle with hay or straw from the barn floor.

It will also be noticed that the barn has three floors, one of 12 feet in width, at each end, and one of 20 feet in the centre. There are doors in these floors opposite each other, to allow of the free passage of air in summer. By an error in the drawing, the doors over the shed roof are represented as windows.

On the lower side, which is not designed for the egress of waggons, the doors open outwards, and over the waggon shed below. This shed will be found

extremely useful to drive under, on the return home from market or elsewhere, and also permits all loading to be done most conveniently from the barn floor

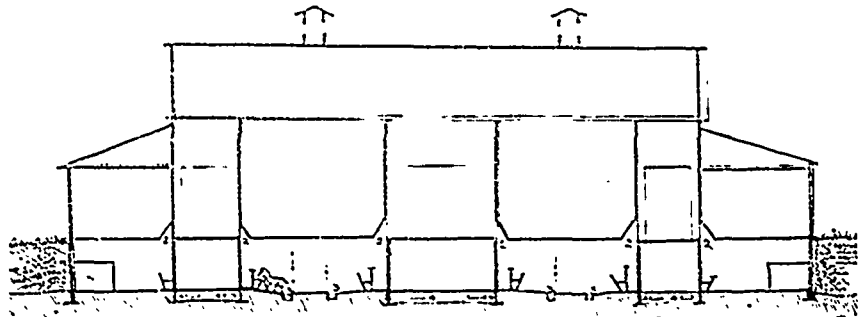
the doors. This arrangement, which I have had in my barn for many years, is most excellent, as it protects the barn floor from rain, and the sills from conse-



PERSPECTIVE VIEW DANORENELLIS

through a small trap into the waggon whilst standing under the shed. This is not shown in the drawing, as it would only require a board, on which the racks should be caused to slide down.

quent decay, and is quite out of the way and never needs repairs. The two end floors are no loss of space, as they can be filled with grain at harvest, to be threshed out first in time for storing roots, and as

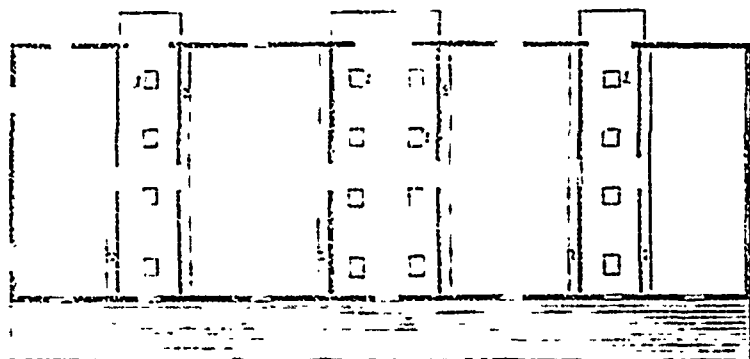


LONGITUDINAL SECTION.

SCALE OF FEET.

It should also be stated that each door to the front or entrance is provided with a hood, formed by a portion of the roof projecting about seven feet forward, and about two feet in excess of the width at

they are only about eight feet high, the portion overhead can be occupied, as the other parts of the barn, with grain. When threshing is done they form a most convenient granary, storehouse for tools, &c.



SECOND FLOOR PLAN.

Of course, a hill side is the best and most convenient locality in which to build such a barn, but it is by no means absolutely necessary. To form an ascent, as a substitute, only requires four pieces of flatted timber, about forty feet long, placed four feet apart from centre to centre, the upper end to be fastened to the sill, and resting thereon, and the lower well bedded in the earth at the foot—the whole to be covered with a double layer of straight twelve-foot rails, if plank is not to be had, and well secured by others crossing at the ends, and pinned to the timber underneath. I prefer rails to plank, as, when covered with some chaff, they form a much more secure foothold for horses, but, of course, afford more resistance to the wheels. When we consider that all the product of the barn, after being once hauled in by horses, has again to be passed in detail to its destination, it will at once be manifest that a great advantage exists in causing it to work down hill into racks and cribs, instead of all having to be carried out on a level by hand.

Again, the arrangement of the horsepower, which should be stationary, (not, however, shown here) works to great advantage in such a barn as this, as all chopped straw or hay made on the upper floor will readily be fed to cattle below, through the ventilators over their heads, and the pulped turnips below are readily mixed therewith.

The provision for the supply of water is not shown, as, from the great difference in localities, no one plan can be applicable to all. My own opinion is that the exercise for the cattle of walking once a day to water, is better than if water were brought to their heads.

Racks are not shown, as I would much prefer cut feed, and consider the saving thereby quite equal to the cost of cutting, and it also affords the best means of feeding pulped turnips, and stock will do much better than if allowed to eat turnips without such mixture.

The large doors in the sheds at the end are designed to allow of one being always open, to suit the cold wind in winter, according as it blows from one quarter or another, and also to allow of a team being driven in through the sheds to clean out the manure.

We all know many countries in the tropical climates depend on the rainfall for supplying cattle with water, and if large cisterns were constructed, and the barns in Canada provided with cavitroughs, there would be a very large supply thus obtained. In many districts

where water is scarce, it may be well worth while to attend to this. Spouts can be formed by nailing two pieces of inch boards, one five and one six inches in width, into the form of the letter V, and supporting them on brackets attached to the rafters. Such cavitroughs will be found to answer quite as well as the expensive ones of metal. The joinings or butts can be made tight by making an opening first with the saw, and then driving a piece of inch hoop iron half into each butt, as a second or third board is added, and the whole must afterwards be pitched with softened pitch in the angles. Such a trough will last 20 years, if well done, and no sap wood used.

C.

Do not allow your boys to work with old, heavy and inferior tools, if you wish to cultivate and encourage their mechanical taste. Good tools will make a boy feel a pride in doing well the work before him.

Do not allow newly sawed boards to lie spread upon the ground at home or at the mill. Put them up with sticks when they first leave the saw, or a portion will be spoiled by warping.

VARNISHING.—When applying varnish do it quickly; have the material cut or reduced with spirits of turpentine until it flows nicely and without a gummy feeling. Do not brush after the varnish begins to set, but thoroughly before. A heavy or very light coat will not prove best, a medium coat should be the rule. After a little practice all of the furniture of the house, and the buggies, carriages, etc., about the premises may be kept looking like new with little expense, and without employing a practical painter.

A NEW WHITEWASH FOR WALLS.—Soak one-fourth of a pound of glue over night in tepid water. The next day put it into a tin vessel with a quart of water, set the vessel in a kettle of water over the fire, keep it there till it boils, and then stir until the glue is dissolved. Next put from six to eight pounds of Paris white into another vessel, add hot water, and stir until it has the appearance of milk of lime. Add the sizing, stir well, and apply in the ordinary way while still warm. Paris white is *sulphate of baryta*, and may be found at any drug or paint store.

FARM WORKSHOP.—Skill in the use of tools is a most useful and profitable accomplishment, and nearly all boys take pride and delight in acquiring it. Keep a workshop, then for your boys, who will spend many an hour in it that would otherwise be worse than wasted. It will save you time, trouble, and vexation, and will educate your boys in a useful and valuable acquirement. It will soon repay its cost, and no farmer should think that he can afford to do without one.

Stock Department.

Notes on Canadian Herds.

No. IX.

In the townships of Markham and Pickering the Short-horns have become pretty widely distributed, and there are some young farmers who have already formed a nucleus from which, in time, they expect to attain a position that will enable them to compete for the honours of the show-yard with some of the older established breeders.

Mr. Wm. Miller, Jr., of Atha, is among these. His farm comprises 250 acres of fine land in the best state of cultivation, the soil being a rich clay loam, well adapted to carry heavy crops of grass, and with buildings in every way adapted to comfortably house a large amount of stock. His flock of long-wooled sheep, one hundred in number, Leicesters and Cotswolds, are counted among the best bred in the country. He took several of his sheep to the great fair of the Agricultural Association of St. Louis, Missouri, last fall, where he carried off many of the best prizes. A Cotswold ram, imported by him from England in 1868, is a very fine animal. He has a few choice Short-horns. Among them we note Liza Logan, a red and white cow by imported Captain (11240) from Kate Kearney by Duke of Wellington (3654). She is a fine cow, of great size and substance, tracing back to imported Princess by Lancaster (360), and Golden Pippin by North Star (459). This cow is now 14 years old, and has produced many fine calves, the most noted among them being Maid of Atha, sold when young to Mr. M. H. Cochrane, and by him recently sold to Mr. King, of Minnesota, for \$1,600, probably the highest price yet given for any Canadian bred Short-horn female. Bessie Lee, a roan cow of great size and depth, is by Young England, 5281, from Liza Logan. A red and white bull calf, Count of Atha, from her by Highland Chief, 6864, is a fine animal. Rose of Atha, a roan heifer by Oxford Mazurka, 8750, from Liza Logan, and Flower of Atha, a roan heifer by Prior, 7155, from Bessie Lee, are two large fine ones. Miss Syme 2nd, by Marion Duke of Airdrie [434] from the imported cow Miss Syme, is a neat roan heifer, full of promise. White Rose, by Baron Solway [45] from Mayflower by Sortworth Duke, 13892, is a white four year old that looks neat and good.

Mr. Miller has several very fine high-grade short-horn cows, from which he ob-

tains produce by pure-bred bulls, that readily command very high prices for dairy purposes.

A near neighbour of his, Mr. James Whitson, has a fine dairy herd of high-grade short-horns, and also a few thoroughbreds, among which we note Fanny Fern, roan, six years, by Charles [118] from Mr. J. M. Bell's imported cow Lucy Neal. She is a fine milker, and has already bred six calves at single births, her last being a red heifer calf not yet named, got by Highland Chief, 6864. Nelly, a neat two-year old red heifer, is from her, by Bell Duke of Oxford [830], and a very neat young red and white bull, Prince of Orange, is also from her, by Prior, 7155. Strawberry, roan, six years, by Warwick [780] from Handsome, is a short thickset animal, with a yearling roan bull calf, Duke of Atha, by Bell Duke of Oxford. Miss Beaty, a dark roan heifer by Warwick [780] from Charlotte, is small but neat. Sonsie, a white four year old, by Prince of Bourbon [568] from Fair Helen, comes of good milking stock, and has her first calf, a roan heifer, by Baron Booth of Lancaster, 7535, that seems a real beauty, and gives great promise for the future. Mr. Whitson has recently purchased a red bull, Duke of Riggfoot, by Bell Duke of Oxford [830] from Mayflower by Prince of Wales [578].

William Thomson, Markham, farms 300 acres of George Miller's large estate, and has made the beginning of a choice breeding establishment. His flock of sheep, numbering over 100 head, mostly Cotswolds, is kept up to a high standard of excellence. He has already a few Shorthorns, and expects about midsummer to receive, in conjunction with Mr. John Hope, a number of choice animals from England. He now owns the red bull Western Duke, bred by F. W. Stone, Esq., of Moreton Lodge. Of the females, we note Sanspareil 10th, a red three year old heifer, by Marion Duke of Airdrie [434] from Sanspareil 8th. Maid of Laprairie, roan, four years, by Royal Arch [631] from Cambridge 5th. Daisy, red and white, seven years, by Young Tweedside [760] from Snowdrop, is a large heavy cow. Miss Bell, a red and white two year old heifer, is by Bell Duke of Oxford [830] from Beauty by Sir Robert, 3439, and is a fine handsome one. Mayflower, red and white, and Pride of Markham, also red and white, are two fine young ones, by Bell Duke of Oxford, from Bracelet by Duke of Bourbon [181] Fanny, a white two year old heifer, is by Prince of Bourbon [568] from White Rose. Highland Maid, a dark roan yearling, by

Highland Chief, 6864, from White Rose, is a pretty thing. Dairymaid, a red yearling, is by Victor from Daisy. Mr. Thomson has also quite a number of fine high grade cows, adapted specially for breeding the best kind of dairy stock, from pure bred bulls. When his expected importation arrives, we hope to pay another visit to the farm and give a full account of each.

Near Malvern, in Scarborough township, is the farm of James Lawrie, famous for his Clydesdale horses, of which there were several in his stables. He has a fine herd of Ayrshires, including some recently imported animals from Scotland. His two imported bulls, Avondale Farmer and St. Andrews, are splendid ones. Of the imported cows we saw Dandy, that took the first prize at the Highland Agricultural Society's meeting in 1868, Avondale, that took the third prize, Duchy and Tibbie Head, and a very fine yearling heifer, Blossom. Besides these, he has several other pure bred Ayrshires of his own breeding, from earlier importations, as well as some fine young heifers and bulls from his more recent importations in 1868. He has one fine roan short-horn cow, Dahlia 2nd, by Sir C. Napier [672] from Dahlia. She has a very handsome roan heifer calf, Lucy. His Ayrshires are among the best in the country, and were selected with special reference to obtaining a strain of high milking qualities, and he has carried off several prizes at the Provincial Exhibition.

Care of Young Lambs.

We have received several letters asking for information on this subject, which we fear cannot now be answered in time to be of much value. As we have given many articles on the subject previously, we did not think it necessary to recur to the matter this year, and we would remark that if our subscribers carefully kept their copies of the paper, they could consult the back numbers instead of writing for information that has, in many cases, already been given time and again.

As the lambing season will be about over by the time this article will get into print, we shall confine our remarks to the care of the lambs during the later stages of their growth. When the ewes are in good health and condition, they will give an abundant supply of milk from the beginning, if well fed on good hay and roots, with access to water. Those that show weakness, or a deficient supply of milk, may be separated from the rest of

the flock and put by themselves where they can be fed more liberally, and get an extra allowance of oilcake, or oatmeal and bran mixed with water. Great care must be taken not to let the lambs out from under cover on raw damp days, or when rain is falling; they are very apt to get chilled and then die quite unexpectedly. If the sheep must get out early for exercise and a mouthful of grass, it is better to keep the lambs at home in the sheds until the weather gets quite comfortable and the soil warm, as they are easily chilled, even by lying on the cold damp ground in the fields. Chilled lambs may be restored, if taken up in time, by being immediately placed in a bath of water, made as hot as the hand will bear. As soon as it revives and gets lively, it should be rubbed thoroughly dry. If it will then suck the dam, the risk is over, but should it appear weak, a small dose of spirits—say a teaspoonful of whiskey mixed with some warm milk—should be given, by pouring down its throat. Then wrap the lamb in an old blanket, and keep it in a room comfortably warm, till it recovers. Lambs can be restored by these means when so far gone that they appear almost quite dead. If the lambs are to be docked, the operation is best performed when they are quite young, say two or three weeks old. A great deal more care might be used in this operation than is commonly done, for the neat appearance of the flock often depends much upon the way their tails are cut. To do this properly requires two persons, and careful handling. The lamb is to be held by one, in a standing position, the skin of the tail being drawn somewhat forward towards the back, so that when the cut is made the loose skin falling back will cover the wound. Each lamb is to have its tail left of exactly the same length, and to make a neat job, the cutting is to be done from the under side of the tail in a slanting direction outwards towards the end. A very sharp knife must be used, so that a clean surface cut is ensured. Three to four inches is the length of tail usually left. Castrating the ram lambs should not be performed till some days after docking, and not until the weather is warm enough to prevent danger of swelling from the cold, yet before flies become troublesome. When this operation is performed, a little turpentine should be applied to the cut part, and the lambs kept confined where they can have a bed of dry clean straw day and night, till they are healed up, which is usually in a very few days. If, from neglect, lambs are not docked or castrated till the weather is very warm, and flies are

numerous, the chances are that many will be rendered unsightly, or even lost, through the cuts getting full of maggots. To prevent this it will be necessary to carefully apply a coating of tar, or a mixture of tar, butter, and turpentine, to the cut surfaces, and to look at each every other day till they are quite healed up, and all danger over. When the ewes are sheared, should they be found full of ticks, the lambs will most likely be full of them also, and should be dipped, all but their heads, in a solution of tobacco water made by steeping a pound of strong common tobacco in a tubful of hot water. Add enough water to make about twenty gallons, and dip the sheep in when the water gets cold. Miller's Tick Destroyer answers the same purpose. All applications for this intention should be used with care.

When to Stop Feeding Fat Animals

Throughout the vegetable kingdom, from the smallest flower to the mammoth denizens of the forest, and all through the animal kingdom, from the animalcule to the largest elephant, philosophers have ever discovered a beautiful law of limitation which maintains the perfect harmony that is apparent in every part of the universe of natural things. Were it not for the operation of this beautiful law, our horses would continue to grow until they would be of such huge proportions that they would be utterly worthless and a nuisance. And human beings would continue to expand, until the largest giant of the present day would appear like a pigmy. We cannot have failed to witness the benevolent and advantageous operation of this law in rearing and fattening domestic animals.

If a calf is fed, for example, with regularity and uniformity of food, until the animal has attained the size of a large bullock, he will take his feed with avidity, and secrete flesh and fat satisfactorily, until the utmost boundary of this law has been reached. Then, feeders must look well for deterioration. After the system has become so full of fat within and without that the law of limitation forbids any further development, nature will begin to make an effort to relieve the animal system of injurious plethora. This is the practical point, in breeding domestic animals, to stop feeding, and hurry them away to the slaughter-house, as all feed and all effort beyond this point will be worse than lost; because it will be utterly impracticable to develop one single point of a beast beyond the prescribed limit of this unalterable law.

A great many cattle breeders who have fed mammoth oxen and swine, have experienced serious difficulty in maintaining the appetite of their fattening animals. Of course, as soon as the system refuses to secrete any more fat, the energies are concentrated to expel unnecessary and hurtful food. A farmer in Cen-

tral New York fed a large Durham bullock until the animal was five years old; and he ate with avidity and concocted what was eaten, in a satisfactory manner, up to that period, after which the appetite became indifferent; "he would not feed well." The utmost boundary of limitation had been reached. Yet, as the proprietor persisted in feeding the bullock another year, he learned that all his anxiety, labour, and feed, during that year were lost, as the animal was not so heavy at the end of the sixth year as at the close of the fifth. Besides this, nature made such a desperate effort to throw off the pernicious influence incident to a state of plethora, that the bullock manifested unmistakable symptoms of gout, apoplexy, and other complaints which are sure to follow overfeeding, when the system does not require nourishment. Therefore, to save the valuable animal from farther depreciation, the proprietor hurried him off to the slaughter house.

These facts assure us that there is a period during the fattening of domestic animals, beyond which it is not profitable to feed. That point does not appear in all animals, even of the same species, at any given age. When animals are well fattened, and they manifest little desire for food, the sooner they are slaughtered the less will be the loss in continuing the fattening process. But so long as the animal appears healthful and full of life, and will take his regular allowances of feed with a keen relish, the indications are reliable that the feeding may be continued longer with satisfactory profit. But in many instances the appetite is cloyed by an occasional overfeeding. As soon as a fattening animal has been overfed, a long period must elapse before the appetite will again be sharp. This often occurs before the animal is half fattened.—*Etc.*

Feeding Animals.

It has not proved profitable to feed cattle large quantities of grain at a time. A moderate quantity, fed with great regularity, and the comfort of the animals generally attended to, so that there may be a constant and continued improvement, has succeeded best. We have known a number of experiments giving results similar to the following:—

A neighbour who had provided himself with a platform scales for this purpose, fed a fine steer first with four quarts of barley meal daily in addition to his fodder, and found by weighing that he gained regularly eighteen pounds a week. But he was urged to "push him," in order to see what could be made of so fine an animal. He was accordingly fed with eight quarts a day, when the increase immediately became less; and on increasing the meal still further per day, he gained nothing. Overfeeding had proved an injury. It is important to avoid the error of feeding animals too little for a time, and then attempting to make up the deficiency by overdosing. The best way, and in fact the

only way for success, is to keep up a constant increase, year in and year out.

For feeding swine, it is important to grind the corn—for cattle less so, and it will depend much on the distance to the mill, cost of conveyance, grinding, etc.

The precise amount gained by steaming food for horses we do not think has been accurately determined.

As to the quantity of general feeding for cattle, they should have at the rate of two and a half pounds daily for each hundred pounds of their weight—a large animal, of course, requiring more than a small one. This quantity, moreover, varies with the character of the animal, the condition and quantity of the food, care in feeding, etc.; but it is about a fair average, when the food is of a mixed character, part chaff and part meal. Swine require about three pounds for each hundred pounds of live animal.

Rye sown in autumn makes early food for soiling; clover next, then orchard grass, early corn fodder, etc.—*Country Gentleman.*

Lincoln Sheep.

The original type of the Lincoln was a most ungainly animal, the largest and coarsest boned of all the breeds of sheep in England.

Possessing a large, long frame, standing high on the legs, with a large amount of offal, they were slow feeders, and feeding principally on the marsh lands of Lincolnshire, their flesh was coarse-grained and deficient in flavour. They were valued only for their wool, which was of a long staple, soft and silky, yielding a fleece of great weight, averaging eight to fourteen pounds per head. The general introduction of turnip culture, and consequently a desire to make a profit in two ways, by feeding sheep for the butcher as well as their wool, induced many Lincolnshire farmers to attempt an improvement on the breed by crossing with the Leicester. This reduced their size and offal, giving an earlier maturity and more aptitude to fatten, but seriously reduced the value of their fleeces, and while proving satisfactory up to a certain point with breeders on the wolds, was not gone into much by those on the marsh lands. This was a bad beginning, for the only good quality the breed possessed, in their peculiarly soft long wool, was being sacrificed, while their qualities as mutton sheep were still far from equal to those of the Leicester. Still so much crossing had been done that a pure Lincoln became difficult to find. Then, when the breed had become nearly crossed out, one or two breeders made the attempt to rescue it, and by dint of careful selection and breeding, in a measure improved its appearance, while still retaining that which was its chief value as a breed, its long silky wool and heavy fleece. So little valued is the breed for its flesh, that at the present day Lincoln sheep are the lowest priced of any brought to Smithfield market. Fed on the rich marsh

lands of Lincolnshire, they acquire great fatness and yield a large amount of tallow.

Several specimens of the breed have been imported into Canada, though they can scarcely be said to have been pure, showing an evident cross of the Leicester, and their flesh being found objectionable while their wool had acquired brittleness from the cross: they have mostly been merged into flocks of other breeds by further crossing them. A few yet remain, but the mixture of Lincoln blood in Leicester or Cotswold flocks, with a view to add a longer staple and greater weight to the fleece, has resulted disastrously by reducing their saleable qualities for the butcher, without proportionately increasing the value of their fleeces. As a breed of sheep exclusively for producing wool, the Lincolns are valuable, if kept pure but in no possible way can they add any value to another breed by crossing, except perhaps the Merino; and truth to tell, there is nothing gained by crossing any breeds on each other unless it be in the first cross of a Southdown on the larger breeds to produce early lambs for the butcher: or the grafting of a better breed on the nondescripts yet extensively found in the hands of the poorer class of farmers with a view to continue on the strain till it has bred some good quality into such flocks.—J. M. in *Country Gentleman*

A bill has recently been introduced into the House of Representatives at Washington, for rescinding the import duty on animals imported into the States from foreign ports for breeding purposes. It has been approved and adopted by the committee on ways and means, and incorporated into the general tariff bill.

The *Farmer* (Scottish) says in reference to the recent importation into Britain of cattle from South America:—"The result of the sale of the cargo which arrived from the River Platte last month is not at all promising. £5 for oxen, 10s. 6d. for sheep, £1 a head for cows, and £1 for calves, will not yield much pecuniary return to the consigner. We doubt if such sums will pay freights; indeed they hardly can. Best from America must, we think, to be profitable, come over dead, and not living."

AYRSHIRES FOR CANADA.—We have pleasure in noticing from our exchanges that at the sale of Ayrshires, bred by Mr. Dew, of Merryton, Scotland, last factor for the Duke of Hamilton, which took place on the 8th of April, twelve of his choicest animals were purchased for Mr. John L. Gibb of Quebec for his farm at Compton, P. Q. Several of these we are told have carried off first class prizes at the Highland Societies' Shows and one of the heifers is said, by first-class judges, to be the best in Scotland. Mr. Gibb also expects with these a number of superior Cotswold sheep and Suffolk pigs, all of which are expected to arrive the middle of May, and will be duly advertised.

Veterinary Department.

Injuries to the Horse's Foot.

The sensitive structures of the foot are exposed to many injuries, and a frequent cause of such is the foot coming in violent contact with a sharp stone or other hard substance. Another common cause is an undue or irregular pressure of the shoe either upon the heels or other parts of the sole. Injury from the last mentioned cause is most likely to be produced in horses with flat feet, because the shoe in many cases bears upon the sole as well as upon the wall of the foot, and very soon produces a bruise of the sensitive structures, if the horse is driven upon a hard road. In the winter season, when travelling upon snow, or at farm work in other seasons, horses are not so liable to bruises from improper shoeing. But it is different when they are subjected to a journey upon macadamised roads a rapid drive of a few miles frequently producing a very severe injury. To protect the sole in horses with flat feet the shoe should be properly seated, so as to bear upon the wall, and rendered concave towards its upper and inner circumference, so as to prevent any pressure whatever upon the sole.

The symptoms of bruises are more or less tenderness when the horse is travelling, which is greatly increased when he treads upon hard ground. When standing he inclines to point the foot. There is also an increase in the temperature of the foot, which can be readily detected by applying the hand above the coronet. The arteries leading to the foot are throbbing, and the general heat of the limb is increased. Where the injury is severe, the symptoms enumerated are of a more aggravated character, and the inflammatory action set up frequently terminates in suppuration, or the formation of matter within the foot. In any part of the body the process of suppuration is attended with great pain, but it is much greater when suppuration occurs within the foot, owing to the soft tissues being covered by such a hard and resisting structure as the hoof. Therefore the symptoms of suppuration in the foot are very well marked indeed. There is great lameness, heat, and frequently knuckling at the fetlock joint, produced by the animal endeavouring to take the weight off his foot. In some cases, also, a swelling of the limb will occur, resulting from the extreme irritation produced in the foot. If the foot is gently tapped with a ham-

mer, the horse at once evinces pain, and the precise spot may often be detected by using the pincers. Bruises are generally confined to the fore feet.

Although bruises are easily detected by a professional man, by the common observer or incompetent practitioner they are frequently overlooked, and give rise to very serious results, often terminating in permanent lameness. When matter forms, if not given a free and dependent exit, it must necessarily find its way to the nearest soft tissues, a swelling appears on the coronet, which becomes soft and fluctuating, and finally breaks and discharges matter. An examination will show one or more sinuses within the foot, and all produced simply from a bruise. In other cases bruises may cause laminitis or navicular disease, rendering a horse almost useless for road work.

Ontario Veterinary College

EXAMINATION FOR DIPLOMA.

The winter term of instruction having been brought to a close, a number of students in the Veterinary College presented themselves on the 7th April, in the Agricultural Hall, for examination, some for the primary test of proficiency, and others for their final trial and diplomas. The examination embraced the various subjects included in the course of study pursued in this valuable institution, namely: Anatomy, Physiology, Surgery, the Pathology and treatment of disease, Materia Medica, and Chemistry, and was in all respects a fair and thorough ordeal. The candidates acquitted themselves in a highly creditable manner, and gave evidence at once of their own industry and diligence in the acquisition of knowledge, and of the careful training they had received in the College under the instructions of the energetic and able Principal, Professor Smith, and his coadjutors. It is gratifying to learn that the number of students continues to increase, and includes young men from all parts of the Province. The new and commodious building lately erected, with the dissecting room and adjoining hospital, has increased the facilities for the practical study of anatomy and disease, and must prove a valuable aid to the efficiency of the institution. The examinations on the present occasion were conducted by Drs. Thorburn, Bovell and Rowell, and Messrs. A. E. Clarke, V.S., of the Royal Artillery, and E. T. Hagyard, of Brampton. Mr. Cowan, of Galt, and Mr. Thomas, of Guelph, both graduates of the College, took part in the proceedings. Dr. Beatty, of Cobourg, was present as the representative of the Board of Agriculture, and a number of graduates also showed by their presence the interest they felt in the institution in which they had once been students. Among these were Messrs. Cathers, of Belleville; Elliott, of Elora; Coates, of Brampton; and Sanderson, Jr., of Richmond Hill. The candidates who were successful in the final examination were:—B. Richardson, Flesherton; D. Cumming, Milton; T. H. Lloyd, King; J. Casar, Kilmanagh; J. Craig, Sandhill; and the following gentlemen passed the primary examination:—J. Bryce, Brantford; A. Harthill, Jr., Toronto; C. Elliott, Sandhill; J. Mayhew, Sandhill; and J. Bailey, Laskay.

The following additional names complete the list of students who have attended the lectures during the past session:—Seniors—D. McIntosh, Kingston; D. G. Sutherland, Creamore; T. Hope, Ayr; A. Thompson, Sandhill; Juniors—R. Evans, Sleswick; J. G. Caesar, Waterloo, Iowa; J. A. Richardson, Mono Mills; J. Splers, Glen Allan; W. H. Robinson, Junior, Omagh; W. Sweet, Exeter; J. Hawkins, Tilsonburgh; W. Fair, Drumbo; W. Colclough, Mount Forrest; T. Churchill, Clinton; W. Churchill, do; J. Gibson, Teeswater; S. Ottiwell, Glasgow; B. Hutchins, Ottawa; G. W. Ainger, Ohio; J. Elliott, Sandhill; H. Henderson, London. In the evening a supper was given by the students to the friends of the institution in the College Hall. Amongst those present were the President of the College, Dr. Smith, who was supported on the right by the Rev. Dr. Barclay and Dr. Rolf, and on the left by Dr. Richardson and Dr. Kennedy. Dr. Thorburn and Dr. Buckland acted as croupiers. Amongst the gentlemen present were Mr. W. Christie, Mr. James Grand, Mr. Joseph Grand, Mr. Boswell, Mr. Clarke, V.S. of the R.A.; Mr. J. Laidlow, Mr. L. Cuthers, Belleville; Mr. Smith, senr., Mr. J. B. Bond, Mr. R. H. Ramsey, Mr. John Geering, Mr. Thomas, Mr. Heward, and others. In the course of the evening the usual toasts were proposed and responded to; and amongst the remarks made was an important one by Dr. Smith, relative to the necessity of Government recognizing the profession and prohibiting the assumption of veterinary titles without a collegiate education.

Treatment of Acute Laminitis in Horses.

In acute laminitis the treatment must necessarily be energetic, and therefore the horse requires the greatest care and attention. In the early stage of the disease, with a full pulse, a moderate abstraction of blood is attended with benefit, as it tends to allay the great fever. The shoes should be removed, and the limbs bandaged, and poultices applied to the feet, and the horse placed in a comfortable stall or box, which should be well bedded with clean straw. If the horse lies down, so much the better; he should be allowed to lie quietly, and the poultices changed and renewed every three or four hours. In all cases where the bowels are constipated, a full dose of purgative medicine has a good effect, and also sedative medicines may be given every four hours until the urgent symptoms are removed. In recommending blood-letting, the safest and best place to bleed from is the jugular or neck vein. Bleeding from the toe, which is often resorted to, is frequently attended with bad results. In cases where suppuration is suspected, the result of the acute and continued inflammatory action, an opening must be made at the toe. Laminitis is a painful and very dangerous complaint, and in all severe cases a competent veterinary surgeon should be consulted without delay.

Empiricism.

To the Veterinary Editor.

SIR,—Knowing the interest you take in everything connected with your profession, and the zeal for its advancement in this country, which has stimulated you to such persevering and successful efforts in the establishment and well-being of the Ontario Veterinary College, I am induced to address you on a subject of the gravest importance, and one which it concerns the farmers themselves, even more than the profession, to bring into public notice.

Before the establishment of the Ontario Veterinary College, the people were—in consequence of the paucity of competent practitioners—compelled, in a measure, to employ such as they could obtain. This necessity has now, at least in the thickly settled places, ceased. Yet new aspirants to veterinary practice are continually appearing (mostly imported), who impudently assume the title of Veterinary Surgeons; many of them assuring the public they are graduates of some recognized British school. By such fraudulent representations they secure the patronage they would not otherwise obtain. By their mal-practice they frequently cause much loss to their employers, which, combined with their gross ignorance, has a tendency to bring the profession into contempt.

Are we not as a body much to blame for this state of affairs? Have we through the press endeavoured as we ought to enlighten our agriculturists on the absolute necessity of a proper training to qualify a person to practice any branch of the healing art? Many have never heard of the establishment of the veterinary school, and accept the *ipse dixit* of these impostors as genuine. It is the farmers they prey upon. A good horseman appears to know them intuitively, and laughs at their pretensions. Many persons are strangely inconsistent in this matter. For the ailments of their families they seldom employ any but qualified practitioners, whilst for their animals they will frequently consult any empiric who has the impudence to advertise his services. Surely this would be altered could we but convince such persons, reasoning by analogy, that if a knowledge of anatomy, physiology, and pathology, the action and uses of drugs, be necessary to the human practitioner, they must be equally so to the successful practice of the veterinary art, whose patients are governed by the same hygienic laws, liable to the same diseases, their anatomy and physiology nearly identical, and the action of medicine on their system similar. Is not a regular course of training and study as much required by one as the other? In what does a knowledge of medical science consist but the accumulated experience and research of many of the greatest minds for the past two thousand years, each contributing but a small share towards raising it to its present high position. This, fortunately, has been handed down to us, and can be acquired by study, and study only;

and he who lays claim to a knowledge of diseases and their curative treatment based on any other ground, is a mere charlatan and impostor.

But what, as a graduate of the college, I have just ground to complain of, is the impudent assumption of the name, Veterinary Surgeons, by unqualified persons; this is an injury to the profession, and a fraud upon their employers. Colleges were founded for the purpose of instructing and examining students as to competency, and granting diplomas to the same for the protection of the public. This design, wisely framed, is entirely frustrated by such fraudulent pretensions as I have referred to; many parties thinking that, without a regular qualification, persons would hardly dare assume the name, put implicit faith in this bold assumption. Thus what was intended to be a safeguard to the public, is made the very means of deceiving them. Would it not be well to publish in the pages of the CANADA FARMER the names of all legally qualified practitioners, and their location, until steps could be taken to procure some legislative enactment making said assumption an indictable offence?

What much amuses me is, that the titles these gentry modestly give themselves (the degree being a voluntary gift, bounded by their own generosity only), are in inverse ratio to their acquirements; the most ignorant are Professors, and so on down. There is one thing, however, in which they are unanimous, viz., in placing an inordinate value on their services. No matter if, through mal-practice, the treatment results in the death of the animal, or, by their unskilful efforts, a permanent blemish is the consequence, frequently causing a greater depreciation in value than the original disease, yet is their charge far in excess of that of the regular practitioner. So that even those who foolishly employ them on the score of economy, invariably find themselves egregiously mistaken.

Most of these gentry pertinaciously adhere to the old heroic method of bleeding and purging in every case, with a tenacity worthy of a better cause. Of any knowledge of the difference between sthenic and asthenic disease they are altogether innocent, treating all fevers in a similar manner. Scores of cases are lost yearly, not so much from the strength of disease, as by the force of the unnatural medicaments thrust down the throat of our much-abused uncomplaining servant. That so many recover under such treatment is astonishing, as so far from endeavouring to assist, they do all they possibly can against nature, and as a former writer remarks, they frequently kill by "regular adapted process."

I have drawn out this epistle longer than intended, but the importance of the subject must be my apology. I trust you may be able to devise some plan by which the above-mentioned grievance may be remedied, and sincerely wish you, and the school over which you preside, every success.

THOMAS BAKER, V. S.

Brantford, April 3rd, 1870.

The Nature and Symptoms of Strangles in Horses.

Strangles is an eruptive febrile disorder, peculiar to horses, usually attacking them when young, and deriving its name from its tendency to induce strangling or suffocation. In its normal form it is characterized by the formation of an abscess between the branches of the lower jaw.

This disorder is, properly, classed as an eruptive fever or exanthema, with the small-pox, scarlet fever, and measles of man, the distemper of dogs, and the vesicular apthæ or murrain of cattle and sheep. So far as is yet known, it is the only eruptive fever to which horses are liable. It possesses very notably the several characteristics of eruptive disorders. Its appearance and progress are marked by fever. Its eruption or abscess passes through a series of regular changes. It seldom occurs more than once in a lifetime. It especially seizes on young animals, and few escape its attacks. It runs a tolerably fixed and definite course, which cannot safely be interfered with. It usually spreads by contagion.

SYMPTOMS.—Many cases of strangles come on rather insidiously. The horse seems to be suffering from simple cold in the head; he runs at nose; his coat stares; he is dull and listless. In a day or two, however, all doubt regarding the nature of the complaint is set at rest by the formation of a tense hard nodulated painful tumor, located either in the cellular tissue underneath the jaws, or in the substance of the submaxillary lymphatic glands. Considerable swelling and tenderness also occur about the throat, the larynx, and parotid glands, and extend along the inside as well as externally, interfering somewhat with breathing and swallowing, exciting noisy respiration and coughing, and often inducing profuse escape of saliva and quidding of the food. The swelling gradually enlarges, softens, and if left alone bursts usually in from eight to ten days. Matter escapes, the animal is relieved, the appetite returns, swallowing and breathing are carried on as usual, and the horse usually thrives better than it had done before the seizure.

This may be regarded as a typical case of strangles. Some cases, running even a milder course, are ushered in by dulness, reddening of the nasal mucous membrane, and slight enlargement of the submaxillary glands, which, however, do not always proceed to suppuration. But it is a matter of common observation that when the tumors form regularly and discharge a considerable quantity of pus, the animal afterwards improves and thrives best. Some peculiar

morbific matter, probably present in the system of most young horses, thus appears to be thoroughly purged out of the body.

In severe cases, which are sometimes specially recognized as "malignant strangles," the tumor forms slowly, there is a great amount of low fever, the mucous membrane lining the throat and fauces becomes inflamed and even ulcerated, the breath is fetid, swallowing is almost impossible, respiration is quick and laboured, the throat outside, as well as in, is swollen and tender. The inability to eat, the great extent of inflamed mucous surface, the irritation of the inflamed lymphatic glands—which in such cases are filled with degenerate lymph—all contribute to depress the vital powers, and induce fatal low fever.

The abscess of strangles, though usually appearing between the branches of the lower jaw, occasionally occurs in other situations. Sometimes it forms in the glands of the armpit or axilla; sometimes in those in front of the point of the shoulder; sometimes in those about the back or quarters; or in those in the groin. More seriously still, the abscess occasionally forms in some of the internal glands, as in those of the thorax or mesentery, interfering during its formation with important functions, causing much febrile disturbance, and in bursting often imperilling life. The formation of these internal abscesses may be suspected when the intermaxillary tumor does not form properly, when there is no evacuation of pus, when the animal continues dull and feverish, his skin unthrifty, and his appetite capricious. If, in addition to such signs there is cough, some difficulty of breathing, and fulness about the lower part of the windpipe, the deposit may have found a site in the thoracic glands. Gastric derangement and colicky pains point to inflammation and suppuration of the mesenteric glands. Stupor or paralysis indicates the formation of abscesses about the brain—fortunately, a rare event.

Particular outbreaks of the eruptive fevers in the human subject are apt to manifest special peculiarities. The type is sometimes extremely mild, sometimes, on the contrary, it is very fatal. Scarlet fever, for example, is occasionally so easy, the eruption and disturbance to health are so slight, that the patient is not confined to the house, and the disease is scarcely recognizable; other outbreaks of scarlet fever are unusually severe; some are coupled with untoward throat symptoms; in others a large proportion of the patients get dropsical. Like eruptive disorders in other animals, strangles is apt to exhibit

tolerably uniform characters when occurring in particular seasons and particular localities. Sometimes we have to congratulate ourselves on a large proportion of simple and satisfactory cases; sometimes, on the other hand, the abscesses form tardily and irregularly, with much low fever and prostration; sometimes they are unusually large and diffused; sometimes they are prone to appear in unusual positions; sometimes they form and burst, but instead of healing kindly, they reform again and again. Occasionally large numbers of strangles cases are conjoined with symptoms of influenza, scarlatina, or oedematous swellings of the limbs. In some seasons the contagious virus of strangles or the inherent predisposition to the disease appears to be unusually strong; few young horses escape the complaint, and many older animals have swollen glands, staring coats, and slight febrile symptoms, which are technically recognized as vives or bastard strangles.—*North British Agriculturist.*

"Slabbering" in Horses.

To the Editor.

SIR,—As you are in the habit of discussing questions relating to the treatment of horses, I wish to make some enquiries as to the cause and cure of horses slabbering. There are various reasons assigned: 1st, by eating lobelia; 2nd, by the seed in the white clover; or, 3rd, by eating the spider webs that are in such quantities on the grass in the fall of the year. But these are false theories. I have been obliged to keep my horses stabled since the middle of July, on account of their excessive salivation. I put them on my meadows after haying, and on seeded wheat fields after harvest, but they were as bad as the old pastures. My soil is a clay loam; the grasses sown were red and white clover, with timothy. The pastures have been seeded two or three years, and the sod is dry. The clover straw, after being threshed, causes my colts to slabber. I might say that there are some scattering stalks of lobelia in my fields.

CHARLES CHUTE.

Port Burwell.

NOTE BY ED.—There is, as our correspondent observes, great diversity of opinion respecting the cause of this common fall ailment, and the question does not seem to be at all definitely settled. Our own experience leads us to suppose that it depends in great measure on the condition of the clover in the fall. In natural pastures of blue grass, with a large proportion of white clover, we have found it most troublesome, and in feeding horses on dry hay, with a considerable intermixture of clover, we have also occasionally observed the same effect, and have changed the food with advantage. A lotion composed of alum and water will alleviate the symptoms and expedite the cure.

Correspondence.

Hang on to our Farms and Hope for the Future.

To the Editor.

Sir,—I promised to finish the history of the trials and ultimate success of my friend Johnson, as related to me by him. He is one of those hopeful, "try again, never say die" sort of fellows, whose experiences are well worth any man's attention. One strong reason with me to continue this account, and fulfil this promise, is the consideration that others, who have possibly hitherto despaired of making their farms a success, may thereby be induced, as he did, to still persevere, and hope on, trusting to energy and industry to make all right at last.

I have, during a reasonably long life, seen many examples of this success, obtained by perseverance and "holding on" to a farm or other possession, till the course of events enhanced its value.

Who has not seen many an ordinary labouring man in Canada an example of industry, perseverance and hope, and whose ultimate success was dependent on the small increase of accumulation to be made from his wages? I have before my mind, and almost beside me, an instance of this persevering success. It is that of a man who worked many years for my family, and who married the house servant, and still worked on and still saved something. Some years he saved nothing; next year, probably, he saved a little; the next more. Money makes money. He bought some land; it increased in value. He sold it, and made something more. All this time, to my certain knowledge, he never lost a day's work, except from casual sickness, with an occasional statutory holiday. The result is that he now is worth at least \$6,000. He never earned more, during the twenty years he was in my employ, than one dollar a day, and often less. Meantime his wife was not idle. She always earned something one way or another, and always, under any circumstances, kept out of debt. This instance may be multiplied by scores, and shows that no man need necessarily be absolutely discouraged. He may not secure wealth all at once, but he can always persevere with hope, and if he makes but little progress this year, he may make more next; and if he live economically, and keep out of debt, he will beat all the bad luck in the world in the long run.

Now, I apply this principle to the farmers of Canada. Here there is always increased value in property from circumstances, and I say, "Hang on" to your farms, work away with hope; times and circumstances are changing; different branches of industry are arising every day, such as when I came to Canada could not be thought of. I came

ere nearly forty years since, and at that time nothing but wheat raising would pay expenses. Cattle and dairy farming were of no use whatever.

To show how low priced cattle were at that time, I perfectly remember the very first operation we made on arriving here from England was to purchase about twenty-seven head of cattle and steers, none less than four or five years old. They were all heavy, good cattle, and as it was the first week in September, the cattle were all in good case, and many were fat enough to kill. Now we paid for this lot of 27 head in all a check on the old Bank of Upper Canada for £67 10s., or \$270, just ten dollars a head all round; and I recollect distinctly that the lightest of those steers when killed, after running in some good pasture we happened to have for nearly three months, weighed 700 and some odd pounds—that is, beef, hide and tallow. So you see cattle were cheap enough then, and see now what they are worth. We bought any quantity of good butter, in those days, at 5 to 10 cents a pound, and bad butter was worthless, and could not be sold at any price. There was no market for it. Flour was two and a half to three and a half dollars per barrel, oats twelve and a half cents, pork and beef \$3. And these were not then considered low prices.

I know a person who bought 1,000 acres of land within five miles of the city of Toronto, at two dollars per acre, on time for payment. Now look at everything. Produce is double, and land many times double, and yet no one could foresee these changes. Farms are now worth from \$80 to \$100 per acre, which were then bought at \$2 to \$4 an acre. Land, that could not be given away a year since, will now be valuable, owing to some energetic persons building railroads to run near it. And so it is, and ever will be hereafter.

You will see similar changes, depend upon it, and will then think you have done well in "hanging on" to any property that you have, that is unencumbered with debt. And this progress will be far greater during the next epoch than that formerly made under similar circumstances, as the area of property to be affected is so immensely greater.

All these changes teach us a salutary lesson if we have the grace to profit by it, namely, not to fear for the future. Take care of the present and progress all around us is providing for the future. Use economy and perseverance, and above all things keep out of debt and the bailiff's hands, and leave it to time and circumstances to find profitable employment for us all on our farms, one way or another. Agricultural journals are doing much, and education more. If one branch of industry is cut down, another springs up.

Onward is the word, and hope our sheet anchor, deeply buried in the soil, to which we may "hang on," in nautical parlance,

until the farming horizon clears up, and we can again profitably "make sail."

But in using these words of encouragement I have almost lost sight of the details of my old friend's success and industry. His trials were great, and those of his excellent wife, raising at the same time a young family, still greater. Everything had to be overcome. His farm was bought about fifteen years since, and was situated one hundred miles from the front, and cost twelve dollars an acre on time. It also proved frosty and unproductive. He had no money or help, beyond what could be rendered by his ever cheerful wife, who could not and would not see failure before them. "We shall come out all right," she said. "The children are healthy, and time and circumstances will help us. Let us put our trust in Providence, and use all diligence. Our trust in Providence will ease our minds, and our industry will surely triumph in the end." And so it did. But I have made this preface so long that I must reserve the details for another communication.

Noxious Weeds.

To the Editor.

Sir,—Among the numerous subjects upon which you have written, there is one which has occupied a good share of attention, viz., the most successful methods of exterminating the Canada thistle. This, and the surrounding townships, are much infested with them, and as far as I can judge, the following process will prove to be the most efficacious method of getting rid of that ancient plant. But in this new country, where the stumps are mostly standing and fresh, the thistles cannot be operated upon properly, so the farmer will just have to do the best he can to keep them down until the stumps can be got rid of. But supposing the fields could be cleared of thistles, in most farms they would soon be there again, as most of the road allowances are quite overrun with them. I have seen them on the roads nearly as high as the fences, and blooming beautifully.

But there is another noxious plant which abounds in this part of the country, and which is much dreaded and much talked about—which, if you have taken notice of in your columns, I have not observed it—that is the wild oat. There are some on my lot, though they have not got spread over the whole clearance yet; but on many old cleared lots they are widespread, and where thick they quite choke the sown crops. Now if you could give information respecting the history of the wild oats, and the best means of banishing them, it would oblige me and many of the surrounding farmers.

A CONSTANT READER.

Howick.

NOTE.—Our correspondent will find an article on the wild oat in the number of the CANADA FARMER for June 15, 1868, and a short notice in that of Dec. 1, of the same year; also one in the present issue.

Notes from Grenville County.

To the Editor.

SIR,—Having some business to transact near Ingersoll, I made arrangements with a friend there to send me some crown peas. He sent me three bags, weighing in all 340 pounds; the freight on this quantity amounted to \$2 02. At such rates, how much would peas be worth at Sarnia or Windsor, to be sold at Montreal at sixty cents per bushel? Or how is grain to be freighted from the western parts of Ontario, by way of the Grand Trunk and Intercolonial Railway to Halifax or other remote parts of the Dominion?

I have been amused at the great amount of anxiety shown by some of your correspondents in regard to extinction of the Canada thistle. I have been accustomed to farming all my life, and am still on the young side, and I hold that any farmer that can not extirpate Canada thistles is not worthy of the name. I have killed them in so many different ways that it would be tedious to mention them all. Good summer-fallowing in a dry season will kill them. On pea ground immediately after the peas have been harvested if the ground is dry and loose, plough the land two furrows deep, one plough following the other; then as soon as ploughed, cultivate and harrow effectually, and continue doing so, at intervals of a few days, as long as the land remains in a fit state to work. Manure on the surface, plough again in spring, sow with spring wheat or barley, and seed with clover (ten or twelve pounds to the acre, if more all the better), cut the first crop of clover about the end of June, and as soon as the second crop is a foot high, plough it under; cultivate and harrow as after the peas, and if properly tilled afterwards, you have done with Canada thistles on that piece of land.

I have bought and partially cleaned two of the worst farms with thistles I ever saw, and I do not want any better recommendation of a farm than that it is able to produce a Canada thistle four or five feet high and an inch in diameter at the root. Such land, when properly tilled, will produce the best of crops.

I was much surprised to find so few of the farmers in the western part of Ontario had any proper rotation of crops. As long as farming is carried on in such hap-hazard manner, so long will there be thistles and poor crops. If the land was properly laid out and tilled in a suitable rotation, we should hear less of these troubles. It would be impossible to lay down a rotation of crops suitable for all parts of the country, as different localities require different courses. The best rotation that I know for this part of Ontario is what is called the seven year system. The arable land of the farm is divided into seven fields, and each field is only required to raise two grain crops during the period of seven years. The rotation is simply this: Commencing with a field of sod, ploughed in the fall or spring, and sown with oats; after the

oats are harvested, plough and harrow and manure on the surface; next spring, plough and plant potatoes, corn, turnips, mangolds, and carrots, or sow with peas, plough in the fall or spring, and sow spring wheat or barley, and seed well with different kinds of grass, according as the proprietor may think fit. Allow the land to be mown two seasons, and pastured two more, and if that rotation is properly carried out by your thistle-scared correspondents, we shall hear no more complaints of this too much dreaded pest.

A READER.

March 28th. 1870

Helping Emigrants.

To the Editor.

SIR,—The time is now rapidly approaching when we may expect a rush of emigrants to our shores, and there is but little better chance of their staying with us than there has been heretofore. Home authorities and humane private individuals are exerting themselves to a far greater extent than hitherto, to assist emigration. Their main object, however, is to rid the old countries of a superabundant population, which they find it alike difficult to support without work, and to find profitable employment for.

Our object most certainly is to retain this mass of human life here; believing it to be for their individual advantage, as well as a gain to the colony. This influx of immigrants must be received with some more organized plan of appropriation than has hitherto been exercised. They must be met at the different stations, on the leading roads, to which the emigrant agent has consigned them, and where their services are required; but this alone will not do. Vast numbers will pass on to the United States, thinking that money and employment are as plentiful now as they were two years since. We know they are not and we are well aware that the emigrant will be quite as well off in Canada as in the United States. It is, therefore, not a selfish feeling of supplying our own wants that ought to prompt our increased activity.

In the February number of the CANADA FARMER, some writer over the signature of "C" strongly advocates the different municipalities renting or constructing temporary houses, capable of receiving at each village or farm on the line of railroad, say, six to eight families, or double that number according to the locality, and thus affording immediate shelter, until work could be procured, and the immigrants established in the country adjacent. The same writer also advocates the plan of supplying to those who are destitute of means, the necessaries of life, such as flour, potatoes, and bread, in such quantity as will afford these people immediate relief, without expending a ruinous sum of money, or absolutely engaging in the task of supporting each family. This scheme contemplates no more than to render, on the first arrival of the emigrants, a cheap and ready

assistance, to be paid for by those who could afford it, but at the lowest wholesale cost, and supplied, say at half price, to those who could afford to pay no more, or be furnished gratuitously in cases of absolute indigence. This kind of assistance should be on hand directly the emigrant arrived by train, and as the writer of the article alluded to says "the management can be placed under the control of three leading men of the village." The idea is a good one, and well worth the consideration of rural municipalities.

The probability should not be lost sight of, that agricultural labourers in any section of Canada, where they can be induced to stop for a short time, will most generally make that locality their home for a considerable period. Under existing circumstances, as the same writer observes, neither are the labour requirements of any district known by the immigrants, nor is their arrival known to the resident farmer; whereas, if these temporary homes were provided, it would soon become known throughout the neighbourhood that labour, of both men and women, could be obtained at the station or village, and the demand would at once meet the supply.

Another view that goes far to encourage this course is, that the family, when just arrived, do not like to separate, even if one or two of the members are offered employment, and hence the necessity of affording temporary shelter to the whole, allowing time for each member to be employed in the neighbourhood. I am satisfied that the ideas of the writer alluded to are sound and practical, and ought to be acted on without delay.

REEVE.

Agricultural Advertisements.

To the Editor.

SIR,—Mr. Brownson's letter and your remarks thereon suggest an important question—i.e. why is there not more advertising in Canadian agricultural journals?

The American papers are liberally patronized in that respect. Take the *Agriculturist* for instance, with its twelve to fifteen closely printed large pages of advertisements, wherein readers can learn how and where to procure or obtain information respecting any and every thing that a farmer, even the most progressive can need in stock, grain, implements, building or draining materials, books, or indeed anything that may be required. Such information is extremely valuable, and gives the American farmer quite an advantage over the Canadian. Our papers have not, of course, so large a circulation as theirs, the field being more restricted, but they are, nevertheless, very extensively, and what is better, carefully read by an intelligent and improving class. Now, if our manufacturers of implements, growers of choice grain and roots, breeders of improved stock, publishers of agricultural and kindred books, and importers of all these, were to advertise freely, even if very briefly, it would profit the jour-

nals and themselves, and would be a great benefit to the readers.' Nearly every farmer, if at all progressive, needs at some time or another just such information as those advertising should give, and the comparative absence of it is quite an obstacle in the way of general progress.

Many valuable suggestions fall flat, simply because the farmer, although fully appreciating the advantages of the articles spoken of, does not know how or where to procure them. After a few fruitless enquiries, or perhaps without any enquiry, the half formed intention of improvement is given up and forgotten, while if the advertising columns of the same paper had given the desired information, further enquiry as to the merits and cost of the suggested article would be made, a purchase probably effected, some good actually done, and a good example set to others.

If manufacturers and others do not think it worth while to advertise on their own account—a grave mistake, by the by—their public spirit and patriotism should be invoked to induce them to do so for the benefit of the farming community. The advertisements need not be lengthy, but should be explicit, and the more there are of them the better, so long as no improper ones are admitted. When they become so numerous that you have to add a dozen pages for their accommodation, the value of your paper as an aid to progress and advancement will be much enhanced. No matter how good the idea you advance, and the principles you desire to inculcate may be, their real value is in their practical application. It is just as necessary to know how to obtain the means of application as to understand the principles, and until our agricultural journals give such information fully, their real practical usefulness is not all that it might and should be.

ROCK SALT.—A correspondent wishes to know where he can procure rock salt for the use of stock. We cannot learn that any of the trade supply it in this city, but we believe it may be procured from some of the leading druggists in Montreal.

FARM POULTRY.—A subscriber wishes to know which is the most profitable breed of poultry for a farmer to keep. Perhaps the Dorking, or a cross between the Dorking and Brahma, is altogether the most useful variety for the farm.

MICE.—We continue to receive complaints respecting the ravages of mice in orchards, and enquiries about modes of prevention or cure. We have twice answered these enquiries pretty fully, and must refer our correspondents for information on the subject to the WEEKLY GLOBE for the 8th and 22nd of April, or the CANADA FARMER for April and May. These little creatures appear to have been much more than commonly destructive during the past winter, perhaps in consequence of the extraordinary amount and lateness of the snowfall.

OSAGE ORANGE SEED.—A correspondent wishes to know where he can procure Osage Orange seed. Probably Mr. Leslie, of the Toronto Nurseries, who advertises the plan for sale, could supply the seed, or procure it from the United States.

MILLER'S TICK DESTROYER.—We are not aware that this application, if used according to the printed directions, either stains the wool, as a correspondent suggests, or otherwise injures the fleece. On the contrary, it is said to improve its lustre, by conducing to the comfort and health of the sheep. After shearing is the best time to apply it.

EAVE-TROUGHS.—A correspondent from Rothsay wishes to know which of the two metals, tin or zinc, is preferable for eave-troughs. The former would not be very durable, and the latter would be expensive. Galvanized iron, 28 guage, is the material now commonly used, and with a coating of paint is very serviceable. There is not much to choose between these metals in regard to the matter of lightning, to which the writer refers. A properly set lightning rod is generally a sufficient protection: and eave-troughs and water-spouts of whatever material would rather tend to conduct lightning harmlessly to the ground, than attract it so as to injure the building.

The Canada Farmer.

TORONTO, CANADA, MAY 16, 1870.

The Farm and City.

Nothing is more injurious to the rising generation of the agricultural community than a feeling of discontent with their employment, and a disparaging comparison of their position and prospects with those of the mechanic or clerk, or indeed of any other class of men. Our own observation leads us to the conclusion that where two young men are bred up in the country, with equal advantages, the man who works his own farm is usually, after a few years, in the very much better position than the one who becomes a clerk. The great drawback to "outsiders" wishing to embark in agricultural pursuits is that of getting the farm and stock necessary to carry on such an enterprise to advantage. Emigrants and others not bred on the farm feel this as a very great difficulty; but in the farmer's family, where there are probably a larger number of sons than are required to work the farm, this is not felt in anything like the same degree.

There are many young men who would never thrive or do well on land, if they had first in some other pursuit to make the

money to pay for it; and there are also many whose gregarious tastes and habits lead them to find employment amongst their fellow men where the crowd is thickest; but of the vast numbers so employed, how many ever reach comparative independence? Very, very few indeed. Many of them continue clerks, without a home, wife, or family, all the best years of their lives. No doubt many men's minds are so constituted that they can serve, but will never be able to command; and these men had better make up their minds to remain as they are, with such small salary as just about pays board and clothes and city incidental expenses, and they will soon lose all desire or hope for any amendment. Without the spur of hope, and the ambition of possessing a home and family of their own, few, except those men who save money for money's sake, will ever rise to affluence, or even competence. Moreover, there is great difficulty in obtaining even those subordinate situations, with reasonable remunerative salaries; and after they are obtained, if accident or sickness should occur, another person is probably at once placed in the position of the absent or disabled man, who is perhaps forgotten as soon as his hired service ceases. Yet our young farmers, with vigorous thews and sinews, and experience of agriculture, are bred up to entertain extravagant ideas of the ease and advantages of city life. True, they work hard at home, but the clerk works longer hours in a store, and at a less healthy occupation. On the farm a holiday can be taken whenever desired, except in very busy seasons; but in the store the case is very different. Few employers will dream of any but statutory holidays, or such occasional compulsory chances for recreation. The monotony and daily strain of city life for the most part are unremitted. Again, consider the prospects of the young man bred on the farm, where, as is generally the case, the sons work with the father on terms of pleasant companionship, and for the benefit of the homestead. The father, meantime, has in almost all cases been enabled to partly, if not altogether, purchase a farm in the neighbourhood, and raise extra stock for the settlement of one son after another. The young man, with his mind set on that one bright spot in the distance, has worked cheerfully, and consequently happily, at home until the day of leaving arrives; he marries and moves to the new farm, and the world is before him with hope always to make him happy, and a cheerful conviction that with reasonable good fortune and constant economy and industry, competence is almost assured to him for the future.

Where proper means are used, and good land occupied, there will not be one failure in fifty such instances. Housekeeping, under such circumstances, is not expensive, as almost all that is wanted is raised on the farm; and the remaining members of the parent family are always ready and willing to help in pressing times. The best recommendation such a prospect has to him whose lot it has been to be born with agricultural surroundings is, that when he looks about for instances of success, he finds them by the hundred and thousand; whereas, if the same farmer's son were taken from the farm at about the age of ten years, sent to school until fourteen, and taught by one of the ordinary school teachers, then sent to a city and a store to do the best his limited education and absolute want of capital would admit of, with a small salary and great temptations, it is safe to say that there is not one such out of fifty that ever reaches the dignity of a landed proprietor, or any destiny higher than that of a "young man about town," with expensive habits and but little hope for the future.

These observations do not apply to those who have had no farm experience or ideas of home on a farm, especially if well educated and accustomed to society of a similar class to their own. Few of these succeed well on a farm; nor is it reasonable that they should be expected to do so. They are often born in affluence, and educated without any example or pleasure in agricultural pursuits, and consequently never feel any interest in them. Young men often go into business with fair prospects, but without self-control or experience; failure is the natural consequence, and then with temper soured by reverses, capital all, or almost all, gone, and with business tastes and habits only remaining, they turn to agriculture as an utter necessity, not as a business of choice. These men very rarely are happy or successful.

Destruction of Small Birds.

The wanton destruction of insectivorous birds, partly from juvenile mischief and cruelty, and partly by adult offenders, under the mistaken idea that the little birds are thieves of grain and seed, and otherwise injurious to agriculture, has often been exposed and denounced in these columns. With the return of genial weather, these friendly visitors have made their appearance in unusual numbers, and their persecutors are once more busy in the work of extirpation.

It is, perhaps, not generally known that a law exists in Ontario for the pro-

tection of insectivorous birds. It would be well if the fact were understood and the statute enforced. The Act makes it unlawful to "kill, wound or injure any bird (except eagles, falcons, hawks, and other birds of eagle kind, wild pigeons, rice-birds, kingfishers, crows and ravens) between the first of March and the first of August." During this period it is also unlawful in any way to capture such birds or expose them for sale, or to take their eggs. The penalty for infraction of the law is from \$1 to \$10, or in default of payment, imprisonment for not less than two and not more than twenty days. The Act gives authority to any person to seize and liberate birds thus illegally captured, and magistrates and market clerks are required to confiscate all such irregularly acquired property.

Persons wishing to obtain collections of eggs or birds for purely scientific purposes, must obtain a special license for the purpose from the Minister of Agriculture.

This law is sufficiently simple and comprehensive to afford ample protection to the farmer's feathered friends, if it were only enforced, and we trust that the matter will be attended to, by farmers especially, on the ground not only of humanity, but, what is often of more force, on that of self-interest, as affecting in a very serious degree the welfare of agriculture in this country.

Agriculture in New Brunswick.

The tenth annual report of the Board of Agriculture for the Province of New Brunswick, embracing the proceedings of the year 1869, has just reached us. The statements published give a satisfactory account of the progress and present condition of agriculture in the Province. The reports of the agricultural societies are interesting, and show that the spirit of enterprise and improvement is active among our maritime neighbours. A marked advance has been made by the introduction of the best modern farm implements, and great attention continues to be paid to the important matter of improving the live stock of the country, an object which is sought to be fostered by the establishment of a government breeding farm, and new importations by the various local societies. The recent introduction of the factory system of cheese making has produced very beneficial results, and like similar establishments among ourselves and our neighbours in the United States, has during

the past year proved very remunerative, and given new stimulus to dairy husbandry.

The report contains, among other documents, a very comprehensive paper on this subject by the secretary, which all persons interested in the matter might read with interest and profit. The remarks on the importance of good dairy stock are especially deserving of attention, and the advantage of well bred animals of good milking strain over ordinary cattle are very forcibly stated. It is estimated that while thirty poor cows would produce six thousand pounds of cheese, twenty properly selected would yield, at no greater expense of maintenance per head, as much as twelve thousand pounds. One dairyman states that his five best cows paid him a profit of \$113 55, while his five poorest cows involved a loss of \$35 25 during the season. Indeed, it is shown that, as a rule, there is positive loss sustained in keeping poor animals, whether for the dairy or for other purposes.

In regard to the breeds best adapted for the dairy, it is justly observed that good milkers are not confined to any one breed, yet some breeds furnish a much greater proportion of good milking cows than others. Ayrshires are considered peculiarly adapted to the cheese dairy; but on the whole, a cross, especially one between the Ayrshires and Durhams, is recommended in preference to all others.

Besides the above contribution to dairy literature, the report contains a valuable paper on the breeding and rearing of horses, to which increased attention is being paid. The records of the Board also bring out very forcibly the advantages of farmers' clubs, and their more general establishment is strongly urged—a recommendation that carries our hearty sympathy, and which would apply with equal force to Ontario as to New Brunswick.

In regard to the harvest of the past year, the report states that the returns which have been received show the crops to have been an average or above an average in very nearly every instance. As regards their condition throughout the whole Province, they may safely be stated to have been considerably above the average of the last few years. The crops which appear to have been partial, and in a few instances almost total failures, are Indian corn and beans. An unusually cool summer and much wet weather are, no doubt, the causes of the failure of these crops. Wheat, oats and hay had yielded unusually well.

Thompson's Road Steamer.

Some time ago we drew attention to Thompson's Road Steamer, the merits of which were then quite new and on trial. Since that time it has been pretty extensively tested, and a recent article in the London *Times* eulogises it in glowing terms. It speaks of it as able to "run on any kind of road. It runs over hard roads and paved streets without jolting, over soft roads without sinking, over muddy roads without slipping; nay, it needs no road at all, for it can run with equal ease over grass fields, through ploughed fields, upon ice, through loose sand, and over frozen snow. Though small and light itself, it climbs the severest gradients and draws enormous loads. It owes all its faculties and its exemption from the disabilities of other traction engines to one device as simple as it is efficacious. The wheels, which are of great width, are surrounded by tires of vulcanized india-rubber. These thick bands of india-rubber enable the road steamer to float over the surface of the ground without the slightest damage to the road, while they likewise protect the machinery from all concussion. The intervention of the elastic tires between the wheel and the road acts, in fact, in the same way as if the engine were running over a tramway of india-rubber."

Its efficiency has been proved in a variety of ways in Edinburgh and the neighbourhood, where it has been for some time in regular use.

The road steamer, says the writer in the *Times*, already quoted, "is exceedingly trim and compact. It runs on three wheels—two large ones and a smaller one in front. The india-rubber tires for the three wheels of a ten horse power engine weigh 14 cwt. The tires are guarded by flexible shields formed of open steel bars, which give an excellent 'bite' or hold upon the ground, and while they do not in any way interfere with the elastic play of the india-rubber, they afford such protection to it as to render it virtually indestructible. The shields, which are removable, are not used for driving over ice or frozen snow, as on such surfaces iron will not bite, and here the india-rubber is of immense advantage, as it runs over them with perfect ease, and without slipping. In running through sand, also, as in Egypt, the shields are entirely dispensed with.

"These engines are now being built for the most various purposes, both for British and foreign use, and are being sent to the remotest localities. One of these engines was recently shown in Paris, where

it ran for some weeks, with one of the great Versailles omnibuses, carrying 50 passengers, attached to it. It went up a paved street where the gradients are one in nine, crossed the 'Rond Point' at hours when it was thronged with vehicles and equestrians, and in the beautifully level Paris streets easily attained a speed of 12 miles an hour. It was then despatched to a provincial town, where it was set to heavy work, and where its great tractive powers, its manageability, and its small consumption of fuel, were fully displayed. It met with the warmest recognition in France, and promises to become speedily naturalized there, French manufacturers having already arranged to build road steamers of different sizes. In the colonies, where the value of produce mainly depends on the facility with which it can be brought to the ports, and where the difficulty of getting the crops to the harbour is often a matter of despair, the capabilities of the road steamer will be keenly appreciated. Road steamers are on their way to gold mines, copper mines, and coal mines, and to do carrying service for planters."

One of these engines has recently been imported into New York, where it was submitted to various tests, and was highly approved. The cost at present is about £600, but probably they will before long be manufactured on this side the Atlantic, after Mr. Thompson's patterns, at a much lower price.

There are many ways in which such an application of steam power might be useful on Canadian farms, as it is adapted not only for carrying, but for ploughing, threshing, and a great variety of ordinary farm operations.

Notes on the Weather.

The month of April, 1870, has been, on the whole, a very favourable one for the farming interest. The spring opened early, the ice having disappeared from Toronto Bay, and navigation being resumed, on April 2nd. Swallows were observed on the 20th and 21st, and frogs were heard on the 14th. Owing to the great accumulation of snow in places, especially under the fences and in hollows, the ground was sodden with water so much as to prevent ploughing becoming general till after the thunderstorm of the 13th, which, with the warm rain following, cleared off the snowbanks, and took the frost quickly out of the soil. So far as we have seen, the winter wheat is not so bad as was anticipated, yet it presents a patchy appearance, and the plants seem to have received considerable injury in some places. The steady warm weather of the last week or ten days has, however, given much of it a

chance to start afresh, and should no hard frosts come in May to kill the small wheat plants, now almost unprotected by any top, there may yet be a tolerable crop, though there cannot, we fear, be a good one.

The mean temperature of the month has been 44° 6, or 3° 6 warmer than the average, and 4° 6 warmer than the corresponding month of last year. The highest temperature was 67° on the 14th, the lowest 29° 6 on the 8th. There have been twelve cloudy days, ten partially overcast, and eight entirely clear. Rain fell on nine days, amounting to 2.145 inches, and snow on four days, amounting to 2.7 inches. Easterly winds have been the most prevalent.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.—Our esteemed and highly valued English cotemporary commenced the present year's issue with a new series. It has discarded its weekly summary of general and political news) which was always a most interesting and well collated selection), and in its place has devoted the space thus gained to articles strictly horticultural and agricultural. Though thoroughly British in its articles and arrangement, and rather more learned than is required or advisable for the general class of Canadian and American readers, yet it forms a most valuable addition to an agricultural library, and its pages are an admirable text book for all those who go deeply into either of these subjects. It has also commenced a series of cuts of useful and interesting subjects, while its advertising columns are a study in themselves. We congratulate our cotemporary on its well-deserved and continued success, and wish for it a long course of prosperity and usefulness.

REPORT OF THE AMERICAN DAIRYMEN'S ASSOCIATION.—The dairy operations in the United States are yearly assuming larger importance, and extending over a greater range of country. The fifth annual report of the American Dairymen's Association, containing a full account of the proceedings of the last convention and statistics of various factories, gives evidence of the rapid spread of this branch of agriculture, and is an admirable compilation, full of most interesting information. Perhaps no previous report of a similar character, excellent as they have all hitherto been, has contained such a valuable collection of elaborate treatises on the various subjects connected with dairy husbandry and the factory system of cheese manufacture in particular, as that just issued. The report should be in the hands of every dairyman. We especially commend to their notice and attentive study, the papers on "Fermentation," "The Feeding of Cattle," on "Ergot," and Mr. Willard's address. Mr. Webb's commercial article on "The Cheese Product of 1869" is also highly instructive; and the prize essay of Mr. Arnold on "The Claims of Cheese as an article of Food," is every way worthy of the distinction accorded to it, and is deserving of permanent record and an extended publicity. The subject is one not only interesting to manufacturers, but important to the community at large.

The Dairy.

Raising Cows for the Dairy.

It has become quite a common practice among dairymen to purchase their cows in spring, and sell them off in the fall, under the impression that the saving in the expense of keeping them over winter is thereby a great gain. This practice, we think, is a mistaken economy, compared with what ought to obtain with all good dairymen, and results disastrously to the cheese-making interest. We will take the case of many that have come under our own observation. A dairyman has, say fifty to a hundred common cows, that he purchases in spring at an average price of \$10 each. Some are good ones, some middling, but most of them are of very indifferent quality, yielding perhaps but little milk, and that thin and poor. The calves that come in spring are, to save the trouble of raising, sold cheap to the butcher when three or four weeks old. When the season is over, the whole lot of cows come under the auctioneer's hammer, and realize perhaps, at best, an average of \$20 each. The good ones go to the States, while the poor ones are left, to be again bought back in spring, and so the matter goes on, till the number and the quality of the cows left in the country is, instead of improving, gradually but surely reduced.

Suppose, instead of this plan being adopted, the dairyman keeps a Short-horn bull of good milking strain, puts all his best cows to that bull, and reserves them for another season, selling off the poor ones, and pays some farmer to keep the cows over winter in the straw-yard, giving them some hay, and towards spring a little chopped grain or a few roots. The cost of keeping them over winter in this way need not exceed \$10 per head, and, in fact, the manure they would make would, in the eyes of most good farmers, amply repay for the straw consumed, leaving only an expense of about \$5 per head for extra hay and grain given in spring towards calving time, in order to bring them into good condition before going to their summer pastures. The calves, being by a thoroughbred bull, will be at least half Short-horn. The bull calves can be then sold to the butcher, and realize nearly double what they otherwise would, while the heifer calves could be raised on whey, to which boiled linseed or oatmeal has been added, can be kept over the next winter cheaply in the straw-yard, and at two years old be ready to take the bull, which, if a pure Short-horn, would

produce still further improved progeny. By the time they were three years old they would come in as good grade cows, with the prospect of most of them becoming extra good milkers, and their value would then twice exceed the cost of raising them, besides which a nucleus would be formed of a herd of dairy cows, that, by continually crossing and re-crossing with pure-bred Short-horn bulls, would soon become exceedingly valuable stock, superior even to the thoroughbreds so far as their milking properties went, and even the bull calves produced would readily sell for good prices, to be raised either for beef or working oxen.

Dairy Meeting.

A meeting of the patrons of the Unionville Cheese Factory, conducted by Mr. J. N. Raymer, in connection with the Cedar Grove Factory, was held at Unionville on the 2nd April, for the purpose of discussing the advantages of dairy farming. Mr. H. P. Crosby, M. P., occupied the chair, and Mr. W. Fleming acted as secretary. Mr. Crosby, on taking the chair, briefly referred to the object for which they had met, and remarked that as factories had been in operation for some time, the farmers who supported them were the best able to judge whether it paid to send milk to them or not. He thought it well for us to offer inducements to any kind of industry that would prove remunerative, so that if one kind failed we should be up to the times and able to turn our hand to something else. He adverted to the fact, that although wheat was once the staple of the country, it was not at present prices a paying crop, and argued that farmers would do well to turn their attention more to keeping cows, and extend a greater support to the factories. Canada was a large exporter of cheese, butter, and lard, to the value of some \$5,000,000 in 1869, which proved that the business was a paying one, otherwise it would not be extensively prosecuted. Our section of the country was well adapted for pasture, and although he was in favour of mixed farming, he strongly advised keeping considerable stock. There would not then be a constant drain on the farm, as much would be returned in the shape of manure. The farmer would be enabled then to keep up the fertility of the soil, and his farm would not be in danger of becoming impoverished.

Mr. James Tran, who endorsed what Mr. Crosby said, had been of opinion for many years before factories were in operation, that it would pay well to keep a large number of cows. A man on a rented farm of one hundred acres could realize enough from ten cows to pay his rent, while the manure would pay him for his trouble by enriching that under cultivation, and enabling him to raise large crops. While it was profitable for the person on the rented place, it was much more

so for those on a farm of their own, as their place would not deteriorate in productiveness nor value by the soil becoming exhausted. Since he had turned his attention more to the dairy, he could raise as much crops from some seventy acres as he could before from his whole farm. He said cheese would pay better than butter. From experiments made, it required three gallons of milk to make one pound of butter, and one gallon of milk would make a pound of cheese; so that butter would require to be selling at thirty cents per pound to pay as well as cheese even at ten cents. Last year, however, he got fourteen and three-quarters per pound for what he kept over; could make at least five dollars more per week by sending his milk to the factory. He believed in feeding well; thought one cow well fed was about as good as two poorly kept; thought chopped grain preferable to roots and bran. If cows were well fed and kept, we might make cheese in Canada equal to the best Cheddar cheese in England.

Mr. S. Reesor spoke of the necessity of keeping up the stock by fattening the old cows, and having a supply of young animals to take their places. Said that he had kept an exact account of the proceeds from his cows during the whole of last year. When the factory commenced he sent only the milk of fourteen cows, and the number generally increased until at the end of June the milk of twenty-two wassent. They gave 67,865 pounds of milk, for which he got 6,849 pounds of cheese. Before and after the factory season, he made 1,169 pounds of butter, for which, including the calves and whey, he realized \$1,280, although a number of the cows were only two-year old heifers. He admitted that there were some expenses connected with the manufacturing of the milk; so also with raising grain; nothing could be done without some expense. But keeping cows, and sending the milk to the factory, did not require so many hands, nor involve so much wear and tear of implements. It was decidedly the least expensive and most profitable.

Mr. E. Eckhardt said he had not had much experience of the business, but was well satisfied with the results of the factory last year.

Mr. J. N. Raymer spoke principally upon the importance of pure, sweet milk, to make a good quality of cheese, and urged the necessity of keeping pails, cans, etc., in which the milk is placed, strictly clean and sweet. He did not wish to complain of any who had supported the factory, as they were generally very careful; but as one impure mess might taint the whole, they would see the propriety of continued vigilance. When they considered that of every 100 parts of milk, about 57 were water, they also could see the importance of giving their cows pure water, and clean pasture to feed in.

The cows should not be overheated by hurried driving by dogs, as this fevers the milk, leading to rapid decay as well as producing bad flavour. Uncleanliness in milking not only gets filth into the milk, but also

taints it. Some, for this reason, recommend washing the udder; but if this is done it should be with warm or tepid water. But in his opinion, a careful brushing with the hand or cloth would obviate all the evils of uncleanness in milking. All vessels for holding the milk should be as free from sharp corners as possible, as they will be difficult to clean, and this impurity coming into contact with the milk affects it, as a small quantity of yeast does a batch of bread. The milk will, therefore, soon begin to ferment, producing one of the worst conditions the cheese maker has to contend with, and rendering it impossible for him to make firm, clean-favoured cheese. Wooden vessels are injurious; the wood absorbs the milk, and no amount of washing or scalding will get it entirely out. He produced a sample of the most approved tin-pails, and concluded by stating that he received during the last season, 574,430 pounds of milk, from which he had manufactured 57,928 pounds of cured cheese, the principal part of which has been disposed of in Toronto, the patrons realizing from ten to eleven cents per gallon for their milk, free from all expenses from the factory.

The chairman being requested to give his opinion respecting soiling cows, said there was no difficulty in keeping up the flow of milk when the pasture was good, but during the dry part of the summer he knew of nothing better than the western corn. He preferred planting it in rows to sowing it broadcast. It grew much better when scuffled. From one-half acre he grew enough to feed eight cows, from the time it was two feet high till the frost came. The stalk is soft, the cows eat the whole of it, and it contains a great quantity of saccharine matter. He knew of nothing better to keep up the flow of milk. The seed was not expensive and could be easily procured.

At the close of the meeting most of those present tendered their support to the factory.

How to Test the Richness of Milk.

It is of no little importance to have at hand a convenient and reliable mode of testing the richness of milk. This is usually done by the mere rule of "guess." We will give a more reliable way within the reach of all and one whereby any person may safely govern himself in deciding upon which of any number of milkmen he will patronize, or of which of any number of cows he will purchase.

Procure any long glass vessel—a cologne bottle or a long phial. Take a narrow strip of paper, just the length from the neck to the bottom of the phial, and mark it off with 100 lines at equal distances; or, if more convenient, and to obtain greater exactness, into fifty lines, and count each as two—and paste it upon the phial, so as to divide its length into a hundred equal parts. Fill it to the highest mark with milk fresh from the cow, and allow it to stand in a perpendicular position twenty-four hours. The number of

spaces occupied by the cream will give you the exact per centage in the milk, without any guess work.

Now, if you wish to carry the experiment further, and ascertain the per centage of butter in your cream, set the milk in a large dish, and collect, say 100 or 200 ounces of cream; make your butter, and you will know the per centage of butter in the cream by ascertaining the number of ounces of butter you have made from it. Thus, if 100 ounces of milk give 10 ounces of cream, and 10 ounces of cream give five ounces of butter, you will know that 100 ounces of milk will give five ounces of butter.

Such experiments are worth being made, and made carefully. In no other way can you know what you have in a cow or milk, or what you are buying. In this way also you may test the exact nutritive value of different kinds of milk from your cows—a very important matter. Farmers may derive much benefit by making a few simple experiments, now and then. They need not interfere with any of the regular duties of the farm; and nothing but a spirit of habitual indolence of thought and action will keep them from doing so. Such experiments often lead to important results, and evoke interesting and instructive facts.—*Exchange.*

Operations.

To the Editor.

Sir, - I have made cheese for five years, with from 25 to 41 cows. As many seem to think that a small dairy will not pay, I send you an account of what was done with 38 ordinary cows. The pastures were good. I got as much clover cut as they would eat night and morning. They received no grain until the middle of October. In summer nine and a half pounds of milk made one pound of cheese; after being fed with oats, peas, bran and turnips fermented with hay, seven and a quarter pounds of milk made one pound of cheese. In the month of July, about the 18th, clover was too dry for soiling. In nine days thirty-eight cows gave 571 pounds of cheese; during the next nine days they gave 959 pounds, fed on green peas; in the nine days following they gave 1,014 pounds, fed on cut cornstalks; in the next nine days they gave 1,023 pounds, fed on clover, second cutting; this was about the 24th August. About the 5th October they made 950 pounds, fed evening and morning on turnips and their leaves; all this time no grain was given; the boxes for fermenting the food were not ready. We raised nine calves, sold the others young, and made 21,653 pounds of cheese, averaging over 11 cents per pound, sold in Ottawa; no boxes were needed. The average price of calves was \$3 and \$2. The whey of each cow was worth \$1. The total amount for butter was \$2,300 83, being an average per cow of \$62 91. No grain was used till near the end of October, when I got it in working

order; the feeding without grain for each cow cost \$14 50, which left \$18 41, from which sum, in estimating the gross profit, the manufacturing has to be deducted. I have drawn out an account of cost and income from 56 cows properly fed, and you will see the balance is fair. After I stopped making cheese, butter-making was begun, the tin was taken out of the cheese vat, and milk dishes set in the water, the heat raised over 90° for about eight hours, then the milk allowed to cool in the water; it does well.

A COW'S FOOD FOR ONE YEAR.

FOOD.	PER HEAD.	DAYS.	TOTAL AMOUNT	VALUE.	TOTAL VALUE.
Cut hay	20 lbs. daily.	225	2½ tons.	\$10 00	\$22 50
Oats ..	5 "	270	40 bush.	40	16 00
Roots ..	20 "	210	70 "	6	4 20
Peameal	2 "	270	9 "	65	5 85
Bran ..	2 "	270	540 lbs.	50	3 00
Offcake.	2 "	150	100 "	3 25	3 25
Pasture	½ acre	165	5½ mos.	1 50	8 25
Soiling..	1-6 acre			20	3 40
Stabling				2 50	2 50
					\$63 95

PROCEEDS OF A COW SO FED IN ONE YEAR.

Buy 900 pounds cheese at 11c.....	\$99 00
A calf	3 00
Whey	3 00
Butter	4 00
\$109 00	
Less making 900 pounds at 2c.....	18 00
\$91 00	
" For food.....	69 00
\$22 00	

Fifty-six cows, producing \$22 each, give the amount of \$1,232 total profit. The following account shows the amount of food required for keeping fifty-six cows:—

DRY FOOD.

FODDER	PER HEAD.	TOTAL.	VALUE.	TOTAL VALUE.	ACRES,
Hay ..	2½ tons.	146 tons	\$10 00	\$1460 00	48½
Oats or barley ..	40 bush.	2,240 b.	40	\$96 00	31½
Peas ..	9 "	504 "	65	\$27 60	16½
Beets ..	70 "	3,920 "	6	235 20	5
Bran ...	510 lbs.	30,240 "	50	152 60	
				\$3071 30	

GREEN FOOD.

Pasture	½ acre.		\$8 25	\$162 00	18
Soiling.	1-6 acre		3 40	100 40	10
				\$3723 70	142½

All the stock of every kind should make nine hundred tons of manure, worth \$1 each,

which will manure fifty acres annually. It will require at least two men and one woman to feed, and with the fifty-six or sixty cows, the two people that make the cheese will also help to milk, giving an average of 11 to 12 cows each.

JOHN ROBERTSON.

Bells Corners.

The Cheese Factory System in England

We recently noticed briefly the action of the Derby (England) Agricultural Society, in the introduction of the factory system of cheese making. The movement on their part has excited considerable attention in other parts of Great Britain, and there is little doubt that the factory plan of manufacture will, before long, to a great extent, take the place of the present laborious methods of private dairies.

At the meeting in Derby, to which we refer, the Duke of Devonshire presided, and the main object of the meeting was to consider the report of a committee of sixteen of the most prominent landholders of the county, who were appointed December 24th, "to take into consideration the question of manufacturing cheese the factory system, as adopted in the United States of America and in Canada, and the desirability of its introduction into England." After inviting a full expression of opinion against as well as in favour of the system, they report that its adoption may be expected to secure the following advantages:—1st. Greater uniformity in the quality of English cheese than at present existing. 2nd. Enhancement of the quality and value of the product of milk in dairies which from poor plant and absence of good accommodation are now producing an inferior quality of cheese. 3rd. The removal of an arduous occupation, frequently deterring men of capital, from domestic considerations, from entering upon farms in which cheese making forms a prominent feature. 4th. Improvement in the value of land, from improvement in the value of product. 5th. Generally, the introduction of uniformity of system, best plant, best skill and supervision, into a manufacture hitherto subject to great uncertainty and vicissitude.

In consequence of these conclusions, the committee secured the services of an American manager, conversant with the working of the factory system in this country, whose arrival there was soon expected. A guarantee fund of £3,000 was subscribed through their influence, to insure against those who should agree to supply milk for the use of the factories, guaranteeing to them a return of 6½d. per gallon for the milk sent, and a division of all further profits over the expenses incurred. Arrangements have been made for the erection of a factory at Longford (and another account says that one is also to be erected at Derby) which it was hoped to have in operation by the first of April.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Grain in Orchards.

We desire to call attention to the articles on "Health to diseased apple-trees," and "Dwarf apple trees turned into standards," as illustrative of the effects upon a young orchard which the common practice of growing grain among the trees will surely produce in greater or less degree, according to the strength and character of the soil, and the moistness of the season. Again and yet again has the fallacy that shading the ground with growing grain or growing weeds keeps the earth about the trees moist, been exposed, and one might have thought exploded, in the pages of the CANADA FARMER; but these are the first communications from those who have tried both plans, and speak from actual experiment. Our readers have been told that growing vegetation evaporates more moisture from the ground than the direct rays of the sun upon the bare surface, and that the true way to retain the moisture about the roots of trees is to mulch or keep the surface friable. They have also been told that the true way of growing an orchard is to devote the ground that is covered by it to the sole purpose of an orchard and keep all other crops out. There is no doubt but that this is true economy, that he who tries to grow grain crops in his orchard is sacrificing his future wealth to present greed. Will our readers please ponder these articles, and remember that the writers are not theorizing, but speaking from dear-bought experience, and know whereof they affirm.

Health to Diseased Apple Trees

To the Editor.

SIR,—In a former number of the CANADA FARMER one of your correspondents complains of general disease and want of thrifty growth in his apple trees. By his own account he does not seem to understand the cause, and thinks that having cropped, partially manured, and cultured the land, he ought not to have so suffered. I notice also that some others of your contributors complain that their trees do not bear, whilst others again are quite satisfied with the productiveness of their orchards. I will give you some of my late experience in apple tree culture, and these gentlemen

can make their own comparisons, and possibly it will throw some light on their difficulties.

In 1865 I planted out about forty apple trees, some of them standards and some dwarfs. One of the standards, an August apple, commenced bearing in 1868; another, a Rhode Island Greening, bore in 1869. The American Golden Russet and English Russet also bore quite a small crop this year. In 1867 I planted two trees to fill vacancies, and one tree (a Greening, I believe) bore this autumn. To all appearance, every tree will bear next year. Last spring I planted a Snow-apple and Ribston Pippin, and I will wager the value of the trees that they both bear next year.

Four years since I planted in the lawn six Transcendant Crabs; the lawn was composed of moved earth, and the same course was pursued as to preparation as the others had received, hereafter described. I had apples the first clear year, and since then have nearly half a bushel a year; about one-half the trees bear alternately. These crabs are nearly as large as small eggs, and certainly one-half were stolen each year, as they grow beside the path.

Now, there is some reason for all this fruitfulness. I have nearly a dozen sorts; all seem inclined to bear, and the growth is very fine. Two standards and several dwarfs are three and a half to four inches in diameter in the stem near the ground, and about ten or eleven feet high. I attribute this growth entirely to drainage, manure, and absence of grain crops, with a total absence of culture, which, in my opinion, is simply destruction. If I were to see any one rooting and destroying the young tender shoots of our apple trees, I should, quoting William Cobbett, the English gardener, root and destroy him pretty quickly. I do not object to such rooting as a hog can do, as his nose will not destroy the feeders of a tree to any extent; but I do object most strongly to plough, spade, or cultivator. A harrow is the only implement I would tolerate in my orchard, but manure and drainage I will allow to any reasonable extent. With such treatment as growing wheat among young trees, you will never be satisfied with the results in apples. The wheat may be good, but the apples will be a failure. I tried it when planting, and a more stunted, leafless, lot of young trees you never saw, and I soon found it would not do, and have since totally abandoned it.

Our garden was not a good one, the soil being a poor wet sand. The year before the trees were planted I was compelled to drain with open ditches, and subso-

quently with two inch tiles; and as it is all quicksand underneath, I was induced by an old English drainer to lay the tile on a dead level to prevent the quicksand filling them, as when full of water the sand has not the same inclination to run in. Until this was done the ladies could not walk in the garden, and as we all greatly value home from the happiness it yields to its members, we turned our particular attention to making it pleasant to the family, as well as to grow good vegetables. All who are troubled with disease amongst their apple trees, not directly traceable to the action of insects or other palpable cause, may, nine times out of ten, look for the remedy in draining and manure, combined with careful and judicious pruning. Prune the trees regularly, and cut close to the stem, and prune in June, and the stumps will heal over the first year, manure well and drain carefully, and above all things, banish grain-growing of any kind from your orchard, and do not destroy roots by some insane idea of cultivation being requisite; kill all parasites, and few complaints will be made.

To those who are planting out a small orchard, where the work cannot be conveniently done with the plough, I would earnestly recommend them to spend at least two hours to each tree in digging out a hole, say two feet deep and three or four wide, removing all the cold subsoil, and filling up the hole with surface mould and rotten compost well mixed with mould. If only six trees each day are so planted, they will beat, in growth and fruit, sixteen trees as generally stuck into the earth to live or die as their chance may come. In all my planting I invariably have followed this course, and rapid growth and plenty of fruit has been the result. C. D.

Mice and Fruit Trees

To the Editor.

SIR,—On the disappearance of the snow, this spring, a very annoying sight presents itself to the gaze of the fruit grower. Fruit trees of all the various kinds have suffered severely from the ravages of the mice. In looking over my orchard, containing 170 trees, I found over sixty of them badly gnawed, the greater part of which, I fear, are past recovery. In conversing with some of my neighbours, they seemed to have suffered more severely than I had. Some complained of having lost fifty per cent, and others as high as seventy-five per cent. of their trees.

If you would inform us of the best mode of treating the damaged trees, and also of the best means of protecting them from being thus destroyed, such information would be

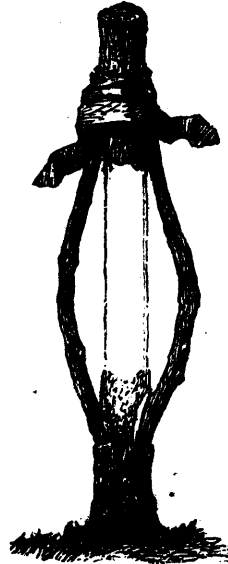
gratefully received, and eagerly read by a large number of your subscribers.

J. L.

Rodgersville, Huron Co.

NOTE BY THE HORT. EDITOR.—The best method of remedying the evil was fully explained and illustrated in the volume for 1868, at page 86 of the CANADA FARMER.

For the benefit of new subscribers, we republish the following portion of a communication from Mr. Mitchell, of St. Mary's. "Take



a thrifty limb from the top of the girdled tree, or any other tree of the same kind, from which to cut scions, large or small, according to the size of the tree, and length of the girdle. A tree one inch and a half in diameter, with three inches girdled, would require scions about the size of a pipe stem, and three in number; while a tree three inches in diameter, and girdled twelve or fifteen inches, would require scions to carry sap about three-fourths of an inch thick, and five or six in number. In order to insert them, cut into the tree, half an inch below the girdle, half the thickness of the scion you are going to use; cut perfectly square on the under side, and slanting down on the upper side. Next, cut in the same way above the girdle, only cut square above, and let the lower side be slanting upwards. Cut the scions off square at each end, and let them be one-quarter to three-fourths of an inch longer than the space from cut to cut. Slant off the inside of the ends of the scion half its thickness, bend it with your fingers, and spring it in; cover the cuts above and below with grafting wax; wind around the whole some strips of old cotton, and bank up with earth—the earth and cotton to be removed the next fall. Full half of the top should be pruned out, and the tree should not be allowed to bear fruit that season. As soon as the snow melts away the trees should be protected from sun where they are barked, by earthing up until the sap starts, when the buds begin to swell; then remove the earth, and bridge as above."

We advise our correspondent at once to cover the gnawed places with a thick coating of cow manure mixed with a little clay, and as soon as possible bank up the trees with a good mound of earth, covering up the plaster of cowdung so that it cannot dry out. He can then proceed to form a bridge with scions, at his leisure, until the trees leaf out. Indeed, if the inner bark is not wholly eaten away down to the wood, the cowdung and clay plaster, banked with earth, will be all that is wanted.

To prevent the mice from gnawing the bark it is only necessary to throw up a cone of earth around each tree early in the fall, or before snow comes, so high that the top of the cone will be always above the snow. The mice always work under the snow. If the snow fall too deep for this, the trees may be wound with stout brown paper to a point above the snow line, and tied on. Upon this may be painted a coat of coal tar, or if that cannot be had, then any cheap paint may be used, and dusted with sand. It injures the trees to paint on the bark.

Dwarf Apple Trees Turned into Standards.

To the Editor.

SIR,—I planted out twenty-five dwarf apple trees, and, as is usually the case, sowed spring wheat amongst them, and was told it would do them good, by sheltering the ground, etc., and for various other reasons; all of which I found after two years' trial were simply untrue. The trees did not grow well the first year, and I again sowed spring grain, and waited the result. The trees grew worse the second year than the first, having only little velvety leaves, more like mouse ears than apple tree leaves. A friend of mine called, and his opinion being asked, he decided that the trees were not sufficiently cut back. I allowed him to experiment on two, and they both died the year following. I found I had absolutely starved the trees by growing grain all around them.

After arriving at this conclusion, it was not long before I decided on the remedy. I first drained the land with open ditches. I then opened the earth all around each tree down to the roots, and to about four feet in diameter, and filled the hole up with compost and earth, banking up each tree about twelve inches high with it. The trees soon felt the effects, and grew rapidly the following season, and I added another large wheelbarrow load of manure to each tree during the fall of the same year, and again opened the earth and dug it all in, the following fall, but without injuring any roots. Since that time there has been no want of growth, and the earth has risen nearly ten inches around each tree by constant manuring. I find, on

examination, many roots, several feet long, sprung from above the graft; thus, of course, the dwarf tree is dwarf no longer, but a standard, and growing splendidly.

This growth is, however, it seemed to me, too luxuriant, and I opened the ground again all around the trees last autumn, and with a sharp chisel and mallet cut off all roots above the graft, many of which were as thick as my middle finger, and some even larger. I again filled up the hole with manure, about two wheelbarrow loads to each tree, spreading the earth around, and only using sufficient to just cover the manure about two inches deep with earth. The trees began to bear last year; but under this treatment, time only will show what the ultimate result will be. There is, so far, a most luxuriant growth of wood. A. B.

Trees Girdled by Mice.

To the Editor.

SIR.—In a recent issue of your journal is an enquiry by Henry Boringearth, as to the best way of preventing the girdling of trees by mice, with a reply by the Editor, recommending mounds of earth and tarred paper. I would have given you my experience last week, but waited till the snow had completely left, so that there might be no mistake. In 1861 I set out a hundred fruit trees, and in the spring of 1865 found three of the row nearest a north and south fence hopelessly girdled. The trees had to be re-grafted, and whilst at work fixing them, I came to the conclusion that the mice had got their last nibble at my trees; and so far I am right. Now for my plan. As soon as the snow begins to fall, or before, if convenient, I take an old stovepipe, split it up, slip it round the tree, pressing the lower end into the soil, and leave it to the care of the mice, who for five years have been beaten. There is scarcely an orchard in this neighbourhood that has not more or less girdled trees this spring, some being completely ruined, while my trees have not received a tooth mark, although the grass all round is riddled with mouse tracks. Now, as all my brother farmers have—or for convenience and safety ought to have—plenty of old stovepipes, if they will not try the experiment next fall, I for one will not sympathise with them for the loss of trees next spring.

J. W. D.

NEW ROSE—LOUIS VAN HOUTTE.—“D” of Deal, in the *Collage Gardener*, says that this bids fair to be the rose of the season. M. Lacharme is the raiser. M. Guillot exhibited a rose at the Lyons Horticultural Exhibition to which the first prize was awarded, but on learning that M. Lacharme had raised a rose of exactly the same colour, he compared it with his own, and finding it to be superior to his, he suppressed his own seedling, and sent out in its stead that of M. Lacharme; and this is the rose Louis Van Houtte.

The Queen of Flowers.

Will you accompany me, my reader, to one of Queen Rosa's levees? They differ in some points from Queen Victoria's—as, for example, in these:—That the best time to attend them is at sunrise; that you may go to them in dressing-gown and slippers, or with shooting coat and short pipe; that the whole court will smile upon you according to your loyalty, not according to your looks or your income; and that all the beauty you see will be real, no false foliage, no somebody-else's ringlets, no rouge, no pastes, no powders, no perfumes but their own.

Enter, then, the Rose-garden when the first sunshine sparkles in the dew, and enjoy with thankful happiness one of the loveliest scenes of earth. What a diversity, and yet what a harmony, of colour. There are White Roses, Blush Roses, Pink Roses, Rose Roses, Carmine Roses, Crimson Roses, Scarlet Roses, Vermilion Roses, Maroon Roses, Purple Roses, Roses almost black, and Roses of a glowing gold. What a diversity also, and yet what a harmony, of outline. Dwarf Roses, and Climbing Roses, Roses that droop to earth like fountains, and Roses that stretch out their branches upward as though they would kiss the coming sun, Roses “in shape no bigger than an agate-stone on the forefinger of an alderman,” and Roses four inches across, Roses in clusters, and Roses blooming singly, Roses in bud, in their glory, in their decline and their fall. And yet all these glowing tints not only combine, but educe and enhance each the other's glory. All these variations of individual form and general outline blend with a mutual grace. And over all this perfect unity what a freshness, fragrance, purity, splendor. They blush, they gleam, amid their glossy leaves, and

“Never sure, since high in Paradise,
By the four rivers, the first roses blew.”

both eye seen fairer sight. Linnaeus wept when he came suddenly upon a wide expanse of golden haze, and he is no true florist who has never felt the springs of his heart bubbled, bubbling, overflowing, as he looked on such a scene of beauty as that which I so feebly describe. Such visions seem at first too bright, too dazzling for our weakly sight; we are awed, and we shrink to feel ourselves in a divine presence; the spirit is oppressed by a happiness which it is unable unworthy to apprehend, and it finds relief in tears. It is such a feeling as one has, hearing for the first time the Hallelujah Chorus sung by a thousand voices, or seeing from clear placid Leman the sunlight on Mont Blanc. “It is too wonderful and excellent for me,” we say “it is more like heaven than earth.” Or, with Milton, we ask in reverent wonder,

“What if earth
Be but the shadow of heaven, and things herein,
Each to each other like, more than on earth is
thought?”

and our prayers go up, as the incense from the Rose, for purer eyes and hearts.

We have nothing in the whole range of flo-

riculture so completely charming as a Rosary “in the time of Roses.” A grower of most flowers, and a lover of all, I know of none which can compete with the Rose for colour, form and fragrance united, whether *en masse* or in single blooms. “Orchids,” do I hear? Well, I have stood before *Laelia purpurata* in an ecstasy of admiration, until the flower show being crowded, the police have requested me to move on. I appreciate generally with a fond delight the delicacy, the refinement, the brilliancy of this lovely class. It is the aristocracy, but not the queen of the flowers.

And the stove truly is a gladness and refreshment—gay when all without is bleak and dismal, but what will you find there like the Rose? Place Marechal Niel by the Allamanda, a truss of Madame Bravy by the Stephanotis, Charles Lefevre by the Amaryllis, and like fair maids of honor and beautiful ladies-in-waiting, these inmates of the hot-house must bow before their queen.

It is the same in the conservatory. The Camellia is of faultless form, but it has not the grace, the ease, the expression of the Rose. It is like a face whereof every feature is perfect, but which lacks the changing charms of feeling and intellect. Neither has it the colours nor the scent. So with all other greenhouse favourites; they are lovely—Azalias, Pelargoniums, Ericas—but not so lovely as the Rose.

It is the same out of doors as under glass,—not even in combination and alliance can all the flowers of the garden compete with the garden of Roses. Let the artistic “bedder out” select his colours from all the tribes and family of plants; let him have all that flower and foliage, arranged by consummate taste, can do, he can never produce a scene so fair, because he can never produce a scene so natural, as he may have in a garden of Roses. It may be more brilliant, more imposing, but there will not be that unity, that perfect peace, of which the eye wearies never. It is as a grand march of organs, trumpet, and saws, but the ear can not listen to it so long, so happily, as to some plaintive horn, in the calm eventide, or some sweet simple song.

And the Rose, as it is admired, so may it be grown, by all. As it is loved by all grades and ages, from the little village child who wreathes it from the hedge row in his sister's hair, to the princess who holds it in her gemmed *voynage*, so it may be alike enjoyed in the labourer's garden or in the conservatory of the peer. The best Cloth-of-gold I ever saw was on a cottager's wall, and wherever it is loved, there will it display its beauty. It is adapted for every position, and for every pocket too. The poorest may get his own briars, and beg a few buds from the rich, and men of moderate means may make or maintain a Rosary at a very moderate expense. They may lay the foundation for a £5 note; and then by budding from their own trees, and by an annual selection of a few additional and valuable varieties, may in two or three seasons possess a beautiful Rosarium. —*Rev. S. Reynolds Hole, in the Gardener*

Hybridizing the Apple.

Notwithstanding the efforts which the late Mr. Thomas Andrew Knight made to cross existing varieties of the cultivated apple with the Siberian Crab, they all failed to produce a result which has been of any real benefit. Mr. Knight's object in thus crossing these individuals was, as he states, "to obtain such fruits as vegetate very early in spring by introducing the farina of the Siberian Crab into the blossom of a rich and early apple, and by transferring in the same manner the farina of the apple to the blossom of the Siberian Crab." At the time Mr. Knight wrote this, the trees so produced had not yet borne fruit, but he observes, "the leaf and habit of many of the plants that I have thus obtained possess much of the character of the apple, while they vegetate as early in the spring as the Apple of Siberia, and appear to possess an equal power of bearing cold." But what was the result of these carefully performed experiments? From this crossing we got the Siberian Bitter Sweet, which, Mr. Knight himself says, "is wholly worthless, except for the press," that is, for cider making. Then the Siberian Harvey has a juice so "intensely sweet," that it, too, can only be used, mixed with other apples, for cider. Both of these were raised from the fruit of the Siberian Crab, fertilized with the Golden Harvey, one of our best dessert apples. Another called Foxley was also raised from the Siberian Crab, but the male parent was the famed Golden Pippin. Yet the Foxley is a worthless little apple, not so large as some gooseberries, and fit only for cider.

It is interesting to watch these struggles between philosophy and nature. Philosophy says, "I will," and Nature replies, "You won't." But when left to herself, Nature fashions an object without the philosopher's aid, excelling in merit all that he had dreamed of. We have such an instance in the little Fairy Apple, just introduced to public notice. This, too, was raised from the fruit of the Siberian Crab, but without any human aid. What is its parentage and how it was produced no one knows, but there it is, a haphazard tondling, destined and worthy to take its place among the worthiest of its kind.

Whether for its beauty or its excellence as a dessert fruit, the Fairy Apple cannot fail to become popular and valuable. In colour, size and form, it rivals the Pomme d'Api or Lady Apple, so much vaunted, and which makes the fruiterers' windows and our deserts gay during the dreary months of winter. For this purpose, the Fairy will command the attention of all growers of dessert fruit in large establishments, and for commercial purposes, for not only does it commend itself by its great beauty, but its flavour is similar and not inferior to that of the old Golden Pippin, its flesh being of a fine deep yellow, with a rich and briskly flavoured juice.

The fruit is produced in clusters of three to five, much in the same way as clusters of cherries. They are one and a half inches wide, and about one and a quarter inches high, rather flattened at both ends, consequently inclining to the oblate form, and very even and regular in the outline. The skin is smooth and shining, covered with bright lively crimson, shaded with streaks of a deeper tinge, and on the unexposed side it is lemon yellow. The eye is closed, set prominently, almost level with the surface, and surrounded with plaits; stalk sometimes less than a quarter of an inch long, and, frequently straight, slender, and as much as an inch or more, inserted in a small, shallow cavity, which is russety. Flesh of a fine deep yellow, firm, crisp, very juicy, with a rich brisk flavour, and fine delicate aroma when eaten with the skin on.

The fruit comes into use in December, and lasts till well on in the season. It is now (February) in perfection, and has the appearance as if it would last for some weeks on into April.

This desirable acquisition was raised by Mr. Jennings in his nursery at Shipston-on-Stour, from seed of the Scarlet Siberian Crab or Cherry apple. The seed was sown with no intention of raising new varieties of fruit, but for stocks on which to graft the ordinary varieties of apples. One of these showing signs of fruit, Mr. Jennings grafted it upon a free apple stock, and from one of the trees so produced the fruit was obtained.

The parent tree from which the seed was taken is growing in an orchard consisting of such varieties as Ribston Pippin, Wyken Pippin, Blenheim Pippin, Margil, Hanwell Souring, and Pearmain. That which is in closest proximity to it is Margil, and it is not improbable that this was the male parent. The tree is of moderate vigour, with an erect habit of growth, and is hardy and prolific. The young wood is moderately stout, of a dull purple colour, and the leaves downy, elliptical ovate, evenly serrated, with a stalk half an inch long.

Another and not an unimportant recommendation of the Fairy Apple is that it makes a delicious preserve.—R. Hogg, in the *Florist and Pomologist*.

Gardening as a Profession.

E. A. McLean, New Philadelphia, Ohio, asks if it will pay him to apprentice himself to a gardener for two or three years—if he would get knowledge enough of the business in that time to enable him to command a situation and good wages, provided he tried to learn and qualify himself. Several gentlemen replied, and stated that men are now getting \$1,000 per year near New York, as gardeners. There is a great demand and small supply for this class of labour, and skilled labour of this sort will command high wages. There is no department of horticulture where there is such a demand for

intelligent and competent men, and any young man who wants and tries to learn, and is willing to work and study, can qualify himself in three years to command high wages, but he need not expect to learn all there is to be learned.—*Rural New Yorker*.

We desire to call the attention of our young men to the foregoing paragraph, and to say that there is a demand here and everywhere for skilled labour, and particularly for skilled horticultural labour. There is no department of industry where there is so much demand for men of brains and energy, and where a competent and comfortable support is so sure and so little subject to the fluctuations which ruin commercial men, as that of tilling the soil. Give the same amount of thought and study to horticulture, and use the like judgment and care as that bestowed by commercial and professional men upon their business, and the same patient, persevering industry, and the reward is sure and satisfactory. Our young men are too often carried away by an eagerness for sudden wealth, and turn away from those pursuits which yield their rewards only to those who can wait for results. "Make haste slowly," is a sound maxim, and he who will master the science and art of gardening has at his command, if not wealth, that which the wisest man preferred above it.

Fruit in the St. Lawrence District.

It appears from the report of the Fruit Growers' Association for 1869, that in this Division of Ontario, embracing the counties of Glengarry, Stormont, Dundas, Grenville, and Leeds, the hardier varieties of apple should be planted. The Pomme Grise, St. Lawrence, Snow-apple, Golden Russet, and Northern Spy have been found to be among the most hardy and desirable sorts. The Rhode Island Greening and Early Harvest are reported to be too tender. The trees suffer from splitting of the bark, and from the attacks of the caterpillar and the borer. The Codlin moth is found in the fruit.

Most planters prefer the spring for transplanting. One says that he finds the trees to succeed equally well in spring and fall.

Pear trees are all thought to be too tender, and not to be cultivated to any advantage.

Very few varieties of plum trees have been tried. The Magnum Bonum, Purple Egg and Greengage are mentioned as doing well. A white plum is spoken of as being the surest and most profitable, but no name is given whereby to distinguish it from other white sorts. The carculio destroys much of the fruit, and the black knot and borer are very troublesome.

Of cherries the Hearts and Bigarreaus fail, but the common Kentish thrives well, and is healthy and productive.

The peach, apricot, nectarine and quince cannot be grown here.

Strawberries grow well—wild ones in great abundance. The Wilson and Triomphe

de Gand are recommended for market cultivation.

Raspberries have not been cultivated. The wild sorts grow abundantly in the new land, and no effort has been made to introduce better sorts.

English gooseberries are grown with varying success—some are troubled with mildew, while others seem in great measure to escape. The Houghton has been exempt from mildew. The worm of the sawfly has found its way there, and eats the leaves.

Blackberries have not been cultivated.

Currants are grown; all sorts thrive well and bear abundantly.

Very few varieties of grapes have been planted. The Isabella, Catawba, Rebecca, Delaware and Sweetwater are the varieties mentioned. The three sorts first named are certainly not adapted to that climate. The Delaware will probably succeed, and so should the Creveling, Israella, Brant, Barry, Massasoit, and possibly the Concord.

Sandy and gravelly soils are found to be the best for apple trees.

Reciprocity in Climate.

Horticulture has contributed more than any other branch of natural science to our knowledge of the effects of climate upon life.

It is not as depreciating the merits of what has been done, nor as complaining that more has not been done, that we invite our workers to additional exertion in this branch of scientific labour. The special point to which we at present desire to direct the attention of our readers relates to what we may call reciprocity in climate. At first sight one might think it safe to assume that wherever plants of one country thrive in another, those of the latter will also thrive in the former. Generally speaking they do; but it is not a rule. Sometimes the reciprocity fails—and it is especially where it does so that information regarding the circumstances attending the condition of the plant, both in its old and its new country, is wanted.

If, for instance, we compare the north and middle of the United States with England, we find some of these anomalies. Although the climate is so nearly the same that most of the plants of the one country thrive in the other, a certain number do not. The American Lime thrives in England, but the English Lime does not in the United States. The Canada Poplar is common and thriving in this country, but the Lombardy Poplar, although long established in America, is now dying out. There are plenty of large old trees, but they are all going back. On the converse side, we may instance the Scotch Fir and Spruce, which do well in America, but the American *Pinus resinosa* and Balsam Fir are unsatisfactory in England: the former never makes much way, and the latter, although healthy and thriving when young, never lives longer than about thirty years.

Of course for these and all other unusual

cases we have an explanation ready. Who ever caught a horticulturist without his answer?

As regards the Lime, its failure is accounted for by a beetle, *Saperda candida*, which attacks its roots; and which, after the tree had been well established, has nearly exterminated it. The Lombardy Poplar, again, is going, because only one sex of the tree was originally introduced; and all the trees in the country are from cuttings of that stock, and they are now all dying because the stock is worn out. The short life of the Balsam of Gilead in Europe again is disposed of by the assertion that the tree is naturally short-lived, and that it is not more so in England than America.

All these explanations may be true, but it would be satisfactory not to have to take them on trust, but to have them dealt with as all statements on matters of science should be—held to be wrong until proved to be right. Most of them must be capable of instant solution by those on the spot. In Canada every one must know whether the Balsam Fir is short-lived or not. At New York every botanist can tell whether all the Lombardy Poplars are of the same sex, and every nurseryman can say whether the young plants of it are raised from seed from Europe, or from cuttings from the old ones. At Philadelphia, any one who sees a dying English Lime (if any remain to die), should be able to say whether the tree is sound at heart or not.

We invite observation to such facts. If horticulturists, and more especially the nurserymen in Canada, the United States, and any other country which has supplied England with hardy introductions, would only give us a list of the English plants they have introduced, or tried to introduce, in their respective countries, with the amount of success which has attended their efforts, we should at once have a great amount of valuable information. Nay, if they would only note their failures, which would not take much time to do, even that would be of importance. We trust some may be induced to do so; and we are sure none who do will repent the trouble.

—*Gardeners' Chronicle*.

Impositions of Tree Dealers

To the Editor.

SIR,—I have been selling trees in one of the hardest places ever any fellow went into and had it not been that I am well known, and, if I may be allowed to say it, well thought of, I might better have been at home. A few years ago the rage for tree planting ran high, and some fellows took the advantage of it and went in, and not only sold trees, but sold every person that bought from them. They sold on nearly every farm from ten to thirty dollars' worth of trees. At some places they would sell from St. Catharines, at the next farm from Hamilton, then from Wellington Square or Toronto, again it would be from Rochester. They would first find out what nursery the man liked best, then

they would sell from that nursery: and after they had in this way sold all they could, they went somewhere and got a lot of the most miserable trees you ever saw, and filled the orders with these. Nearly every tree died. In fact, the farmers say they were dead when they came, and not a man of them has ten trees living now.

I have told my customers that I am an honest tree seller, and I mean to fill my orders so as to be worthy of the name.

A. C. A.

Hderton. March 24. 1870.

Bark-splitting

To the Editor.

SIR,—Upon examining my apple trees this spring I find several of them spoiled by the bark being split and loosened from the trunk for about four or five inches above the surface of the ground. The trees are young, and not yet come into bearing. There are a great number of trees similarly affected the present season in this section. Can you inform me of the cause, and means of prevention, if any? MYLES YOUNG.

If any of our readers have any experience with this bark-splitting, will they please give our correspondent the benefit of their knowledge? In the mean time, we advise Mr. Young to plaster over these cracks with a mixture of fresh cowdung and clay, put on quite thick—if possible, also to cover the place with a mould of earth so as to keep the plaster damp, and let us know whether the trees die or live.

Fruit in McGillivray.

To the Editor.

SIR.—I have some six or eight kinds of grape. They did not ripen very well the last year, owing probably to the wet and cold season. My Isabellas received the first prize at the North Middlesex fall show. Some 15 years' experience leads me to believe that all that is written on grape pruning will not answer in this section. Too much shortening and not allowing the canes properly to mature will prove injurious.

Last spring I covered the ground in my plum orchard four or five inches deep with long straw manure, with the view of stopping the ravages of that little pest the curculio, that stings my plums. The fact was that I had very few stung, and those not until the plums were nearly full grown. My plums were very good, and took the first and second prizes at the same fair. Some of my Duane's purple measured nearly seven inches in circumference. I intend repeating the straw manure this spring, and will report to you the result. D. S.

NOTE BY HORT. LD.—We are gratified that you intend to repeat the experiment. Last year the curculio did not do as much damage as usual in this section, and the crops of plums were unusually fine.

Fruit Tree Dealers.

To the Editor.

SIR,—In justice to myself and parties employed by me for the sale of fruit trees, &c., I beg to make a few remarks in reply to the communication from J. J. N., St. Mary's, in yours of the 15th Feb. I admit that there is too much truth in what he there states: but when he classes all dealers in the above commodities as rogues scoundrels, liars, &c. I think he makes too broad an assertion, and one which he cannot substantiate. He will find dishonest men in all occupations, his own not excepted, but he will also find men who at least *wish* to do right.

As far as I am concerned, during the time I have been in the business, which has extended over a period of some years, I have sold all my stuff to be delivered direct from the St. Catharines Nurseries and have strictly fulfilled my contracts in that respect, and I defy either J. J. N., the proprietor of the above nurseries, or any other person interested in the matter, to prove to the contrary. If there have been errors (which I am pleased to say have been of rare occurrence) they have been beyond my control, and I have always endeavoured to correct anything of the kind, when pointed out to me, having also invariably found the proprietor, Mr. D. W. Beadle, willing to second me in the matter.

C. P. WALDOCK.

Westminster, London P.O.

Trees for Street Planting

Mr. W. Saunders, Superintendent of the public grounds at Washington, U. S., says on this subject, that a tree to be suitable for street planting should be compact and symmetrical, not widespreading or pendent; that its supply of leaves should be large, appearing early in the spring, and assuming rich and varied autumnal tints; that it should possess a vigorous and healthy constitution, so as to be capable of thriving in a variety of soils and exposures; that it should hold its foliage perfectly throughout the season, be comparatively exempt from the attacks of insects, and not strew the ground under and around it with the decaying petals of fading flowers; that it should be easily transplanted, moderately vigorous in growth, and not given to throwing up suckers from the roots; that the wood of the branches should be tough and elastic, so as to be not easily broken by high winds, and that neither flowers nor leaves should give forth any offensive odour.

The following trees are named by him as possessing in a large degree the requisites above mentioned, namely, the Silver Maple, Sugar Maple, European Sycamore Maple, American Linden or Basswood, Tulip-tree, American Elm, American Ash, and Horse Chestnut.

Poultry Ward.

Ontario Poultry Show.

To the Editor.

SIR,—The committee of the Poultry Association have arrived at the conclusion of not holding a spring exhibition. The agricultural show will be held in October next, so that exhibitors for this year must be content with that. The Society has funds, and could have had an exhibition, had it not been for the removal of the show pens from the hall. This has crippled them, as they could not restore the coops even as before (having also to pay rent of hall) except at an expense they have not money to meet. They have therefore determined to have portable pens made as soon as funds can be provided, and then there is no doubt that one, if not two annual exhibitions will be the result.

The four already held have done much good, and this kind of competition is essential to progress, and affords the only true test of excellence. It is only by comparison, though it may be "odious," that a breeder can tell the relative value of his stock. Horses travel fast by milestones: birds look very big in their own yard, but in a pen with first prize fowls in that adjoining, they will perhaps look very small. To let the public have such exhibitions, however, requires funds. It has been long known to me a practice and theory, that with honest exhibiting, the expense is soon repaid. The sale of a few birds quickly makes up the first outlay, and you have your poultry and eggs for the price of their food.

In the last exhibition rules of the Society, its members were more protected, and non-members were made to pay on a more costly though equitable scale, but still not up to the English standard of payments. I have always been overruled when advocating high entrance fees—it was argued that people would not send their birds with such rates. Then let them keep them at home. They are the interested parties, and they cannot expect others to find pens for them gratuitously. The liberal way in which gentlemen of Toronto who were not fanciers have contributed to the prize list is really extraordinary and most praiseworthy, but they certainly cannot be expected to do so again, and all we can expect the public to do is to come and see. When there they get the fever, and buy, and so the exhibitor meets his expenses, to say nothing of prizes.

The Society has lost many candidates for the present, by not having a show; but better to do that than incur liabilities they cannot meet.

Our enemies, if there be such, need not imagine we are dead. We have only gone to roost for a time, to come out again in a better plumage and housing than before.

F. C. HASSARD.

Eggs for Hatching.

As this is the season of the year when people are most interested on the subject of eggs for hatching, I give you a few facts which correspond with my own experience. Before I had seen the matter thoroughly tested, it was my opinion that a very small per centage of eggs sent by rail could hatch, but I have now positive evidence to the contrary. I have often received eggs from a distance, and whenever they have been well packed, have had a large per centage hatch. I have received them packed in various ways, but the best results have been from those packed in dry sawdust. Last season I received four dozen from Ireland, packed in sawdust, and by accident one dozen were spoiled nearly as soon as received, and from the remaining three dozen twelve chicks were hatched. I have also sent eggs to various parts of the United States and Canada by mail, and the reports in nearly every case were very favourable.

Probably no one will dispute that fresh-laid eggs, placed immediately under hens will produce more chickens than when kept long and sent far; but that fresh eggs, well packed, can be sent from the Atlantic to the Pacific, and a fair per centage hatch, I have no doubt; and the great cause why so many have reason to complain of ill luck is because the eggs were not fresh and well packed, or that they received ill treatment after being received. I prefer sawdust for packing, first, because eggs can be packed in it and kept more firmly in their places than in anything else I ever saw used; secondly, it is lighter than any other material used that will keep them in the proper position: and lastly, because I have both received and shipped eggs packed in various ways, and in all cases the best results in hatching were from those packed in sawdust. Covers to boxes should always be put on with screws.—Cor. Country Gentleman.

Dominique Fowls

The London *Field* says of this variety, which it denominates American:—

There are two or three very useful and good breeds of poultry that are not well known in England. One of the oldest established, and certainly one of the most useful, is the Dominique. This breed more closely resembles our cuckoo Dorking than any other English variety. It differs, however, in having only four toes—a great advantage, by the way, in a practical point of view—and in the legs being yellow. According to the *American Agriculturist*, both single and double combs are admissible, but should not be found in the same strain or show pen. The double comb, however, is decidedly in the ascendant. Each feather is of a very light grey, barred across with darker slaty-blue bars or pencillings. It is a singular fact that in all cuckoo coloured fowls, whether Dorkings, Cochins, Polish, or the variety under

notice, the markings of the cocks and hens closely resemble each other—a fact which is in striking contrast to the great distinction between the sexes in black and brown, reds or duckwings, etc.

The Dominique cocks are showy birds with full saddles and hackles, and abundant, well matched sickle feathers. They should weigh from six to eight pounds, when mature. As table fowls, they should necessarily be short-legged, full-chested, and broad in the back. The face and ear lobes should be red, and the wattles and combs neat and of medium size. The hens are good layers and setters, and they really constitute a valuable breed. In the United States they are now bred up to the standard described, and really good show birds have realized as much as .£5 per head.

As before stated, the English variety most closely related to the Dominique is the cuckoo or blue mottled Dorking. This breed, before the advent of poultry shows, was highly esteemed by those who fed for the London markets, and, as stated by Mr. Elgar of Reigate, concerning them, in the Poultry Book, "they can challenge any variety of table fowl for quality of flesh. I have heard it remarked by many old country women who have fattened fowls many years for market, that the blue pullets are the best and easiest to fatten of all the coop."

Keeping Poultry.

To ensure a profitable result from the extended keeping of poultry on a mixed farm, proper accommodation is indispensable. A wooden "lean-to," put up against any of the permanent buildings, with an enclosed yard in front, both house and front being subdivided according to the number of breeds kept, is all that is requisite. The house for each breed should be ten feet square, with a sloping roof six feet high in front, and ten to twelve feet high behind. A ventilator should be placed over each division. The yard should be at least twelve feet by six feet and covered with fine gravel which ought to be changed and refreshed once a week. The partitions between the yards should be of wooden planking half an inch thick, and two and a half to three feet high to prevent the cocks from seeing each other. Above that height wire netting is a sufficient protection. Each yard should be furnished with a dust-bath, a drinking fountain, and feeding-troughs. In the house, the roosting places should consist of poles of young larch trees, or other thinnings from the plantation, laid upon tressels about three feet from the ground at most, with a ladder leading up to them. The nests and hatching dormitories may be arranged about the same height from the floor in a single tier along the walls of the house. Walls and ceilings should be regularly whitewashed with hot lime, and both houses and out-door yards carefully cleaned out at least once a week. A very fair breed-

ing stock for an ordinary sized farm would consist of one cock and twelve hens of each breed desired to be kept. To prevent "inbreeding," which effectually ruins any yard in a very brief time, the cocks should be changed every second year, and great pains should be taken to select good, healthy, well formed birds, with all the requisite points purely and distinctly marked.—Abridged from the *Highland and Agricultural Society's Journal*.

Poultry-keeping on a Large Scale.

To the Editor.

SIR,—I have some intention of going into the keeping of hens on a large scale, say from one thousand to two thousand, and would feel obliged if you or some of your readers would give me some information as to the best kinds of hens to get, the feed required, the expense of keeping a hen a year, and the profit that may reasonably be expected, together with any other suggestions you may think useful.

By so doing you will oblige

AN OLD SUBSCRIBER.

REPLY.—We would refer our correspondent for pretty full information on the points respecting which he makes enquiry, to some recent standard works on poultry, especially the following: "Eggs and Poultry as a Source of Wealth," published by Virtue Brothers, 26 Ivy Lane, London, England; "Wright's Practical Poultry Keeper," published by Cassell, Petter & Galpin, London and New York; and a small work, which we believe may be obtained in Toronto, entitled, "Poultry for the Many."

In regard to his scheme, it may be well to remind him that many attempts to keep poultry on an extensive scale have failed, owing, perhaps, in great measure, to too limited space being allowed. There are some establishments of the kind, however, (and Wright gives particulars of one) which have proved successful.

The varieties to be chosen must depend on the special object in view, whether the raising of chickens for market, or eggs, or both. The Dorkings, or a cross between them and the Brahmas, make excellent table birds, and are also good layers in winter. If more than one variety are kept, each breed must have a separate run, and great care must be taken not to have the runs too limited. Perhaps for one thousand fowls, ten runs of one acre each would be little enough. In any confined space the experiment must be hazardous. Indeed, under any circumstances, its success would be doubtful.

On the question of cost per head, Tegetmeier says, hand-fed fowls can not be kept at a less cost than one penny per week for every six pounds of weight.

We strongly advise our correspondent to procure one or all of the books mentioned before he embarks in any undertaking of the kind which he contemplates, and even if he is led to abandon his larger scheme, he will find these works an invaluable guide in raising poultry on an ordinary scale.

Entomology.

Silk Culture in America.

At a recent meeting of the "American Institute Farmers' Club," of New York, a long and exceedingly interesting paper was read on this subject by Mr. J. Q. A. Warren, who has lately returned from Europe. We have only space for the following extracts, which, however, will give our readers some idea of the nature, interest, and value of the new forms of silk-culture in Europe.

"French sericulturists have endeavoured to obtain and introduce all the best silk-producing insects that could be found, discarding such as were of no practical value, and reserving only two or three species which seemed promising. Of these I will allude to two of the most prominent: *Bombyx yama-mai* and *Bombyx cynthia*. *Bombyx yama-mai*, an oak-feeder, was first introduced into Europe about the year 1861, after great difficulty. The eggs were procured through the influence of the French Consul and Charge d'Affaires at Japan, M. Duchesne de Bellecourt.

"Many efforts have been made unsuccessfully by other parties to procure eggs of this species, on account of the reported beauty of the fabrics made from the cocoons; but the species was so highly esteemed in Japan, the law forbade their exportation under punishment of death. The Japanese had for many years been cultivating the *Yama-mai*, together with the *Bombyx mori*, the produce of which was used for making the rich vestments for the royal family. The eggs above alluded to were sent to the imperial government of France, and placed in the hands of the Society of Acclimatization, at the Jardin des Plantes, of Paris. From the want of proper food many were lost or perished, as their habits had not become sufficiently known; but a portion were saved through the efforts of the President of the Society, who procured young oak leaves from the south of France, to feed the worms in early spring, until the foliage had become sufficiently advanced on the oaks in Paris.

"The above reason is the true one why this valuable species of worm and silk was for so many years unknown to the naturalists and merchants of Europe. At the present time there is no difficulty in procuring supplies of the eggs from Japan, though great care is necessary to bring them over in a perfect state. M. Personnat, of Laval, and M. Guerin Meneville, of Paris, both learned entomologists and sericulturists, have been most indefatigable in introducing and rearing many new and valuable species of silk worms; they have devoted much time and attention to the *Bombyx yama-mai*, and speak favourably of this species as one of the most valuable among the races in the domestic menagerie of France, though, in the experience of both gentlemen, much trouble

and expense have been incurred in their propagation, having been quite unsuccessful for years. But after repeated attempts and experiments they have succeeded in bringing to perfection this delicate and beautiful insect, and raising thousands of cocoons. Their opinions are most favourable as to the ultimate success of the *Yama-mai*, and they predict they will yet be grown on a large and remunerative scale.

"Great care is necessary in feeding, and many experiments had been made to ascertain the best methods. M. Personnat raised thousands of worms, partly in the open air on oak shrubs, and partly in an open room with cut boughs, each with success. He also recommends the long boughs of oak in pots, or oak trees covered with net-work.

"Trials made in England were for years unsuccessful until the past season, when, after repeated attempts and much expense, Dr. Wallace, of Colchester, succeeded in raising and rearing the *Yama-mai*. He has published several works, giving his experience, together with full description of this beautiful insect. He paid particular attention to the temperature. The worm avoids sunshine, but likes the warmth diffused through the leafy shade. They will bear a moderate amount of cold for brief periods, but great care must be taken regarding ventilation. The experience of the gentlemen previously named coincides that the *Yama-mai* thrives better out of doors on the tree than when confined in rooms. Dr. Wallace has found that in England the worms thrive well in a freely ventilated room with a temperature of about 70° equable, and rather moist. Cleanliness is most essential.

"The *Yama-mai* is a native of Oshin, Japan, where it is cold in winter and warm in summer. The eggs taken from this district thrive well in England. Heat will not kill them, but they are readily devoured by insects and birds, unless properly covered on the trees by netting. The Japanese seed is in great demand in the French markets, also in England.

"The Oshin account says that from the birth to the commencement of the cocoon is about fifteen days, and the moth will appear in about twenty days more. In the wild state there the eggs fall from the trees in autumn, and in the spring the worms find their way to the trees, where they feed for two weeks or more, and then form their cocoons, which are gathered by the women and children, and the chrysalis destroyed by being roasted in the sun for three days. The winding of the silk, as described, is very simple, done by their hand machines, a simple wheel, with the cocoons placed in a pan of hot water. The silk is very strong, and used for coats, flowers, dresses, and ornamental work by the Japanese.

"M. le Baron de Bretton, of Austria, who paid much attention to the culture of this worm, has met with decided success since 1863, and by repeated experiments and care-

ful culture, succeeded, in 1868, in raising a crop of nearly twenty thousand cocoons. More disappointments have occurred in England, on account of the climate and other causes.

"The cocoon of the *Yama-mai* very closely resembles the *B. mori*, except in size. The shape is oval, and the colour a golden yellow or greenish hue. It is larger than the *mori*, its largest diameter being 1 1/5 to 2 1/10 inches, and 9-10 to 1 1/10 inches in thickness. The thread measures in length from 800 to 1,100 yards, and is nearly continuous throughout the cocoon. The silk is of a deep green or yellowish colour externally, but internally of a silver whiteness, the inside being more brilliant.

"Your attention will now be called to the *Bombyx cynthia*, or Ailanthus worm, which feeds on *Ailanthus glandulosa*, the culture of which has been attended with such success in Europe since 1861. From all accounts derived from the French works, the *Cynthia* was first introduced into Europe about the year 1856, a few cocoons having been sent from the province of Shan Tung, China, to France by a Piedmontese missionary named Abbe Fantoni. The climate there differs from the English climate, being a little colder in winter, but the summer is much hotter, though the changes of temperature are more rare than in England.

"The cocoons were received in November and hatched out in the following spring, and thus in Turin the first specimens of this noted species seen in Europe were born. M. Guerin Meneville, of Paris, procured quills containing eggs of the *Cynthia* in 1858: these by care and attention were successfully propagated, and from that stock eggs were multiplied and distributed over various portions of Europe, where they have been successfully acclimated.

"Regarding the tree, it is well known that it is one of the easiest to propagate and grow, and it will thrive on any soil, no matter how dry or sterile. Regarding the silk, everything is in its favour, and its qualities have been appreciated by manufacturers at Roubaix and Lyons, and others who know its worth. A noted chemist and weaver in France has found that the gloss of the ailanthus silk far surpasses any of the other known varieties of *bourre de soie*. Weavers have found the cocoons easy to card and spin, and the thread is strong and an excellent stuff for certain manufactures. The silk is easily cleaned, and will take a good dye better than the *Yama-mai*, and from experiments made will permit a stronger and finer gloss than that of the *Bombyx mai*.

"To prove the immense utility of the cultivation of the *cynthia* in France, Father Incarville said, 'The silk produced by the ailanthus lasts double the time of the mulberry worm silk, does not spot so easily, and washes like linen.' It is said that the strength of the silk is very surprising, and the durability of the Indian foulards, which are com-

posed entirely of ailanthus silk, is attributed to this fact. The cocoons of the ailanthus are elongated, of a pale gray colour, very close tissue, one and a half to one and three quarter inches long, and about three quarters broad, varying in size and weight. The worm begins its cocoon by securing itself firmly to the main stem of the leaf with its silk, so that in winter, when leaves fall, it may be secure, showing a remarkable instinct. The demand for this silk is on the increase in Europe, for it is well known to be very serviceable and durable, and the cocoons are reeled off in one continuous thread.

"The ailanthus tree is easy of cultivation, and can be raised to any extent in America, and the advent of this new insect, the *Bombyx cynthia*, will make an important era in sericulture in America. It is easily multiplied and acclimated, and its cultivation must become successful. While in England, last August, I visited the farm of Dr. Wallace, and saw some 18,000 worms feeding in the open air on the *Ailanthus glandulosa*. The same month I had the pleasure of paying a visit to the beautiful country seat of Lady Dorothy Nevill, Dangstein, Petersfield, about fifty miles from London. Her ladyship had planted a large number of ailanthus trees in a portion of her beautiful garden, and covered them with a strong enclosure of net-work to keep off the birds. There were hundreds of young ailanthus trees growing, and thousands of worms feeding in the highest state of perfection—a beautiful sight indeed, on entering the enclosure, to see those magnificent silkworms, from one to three inches long, of an intense emerald green colour, with the tubercles tipped with a gorgeous marine blue. They seemed to care naught for wind or rain; their feet having great adhesive power, they cling to the leaves with a peculiar strength. Their bodies, being covered with a fine down, seem to turn the rain like the leaf of the cabbage. Some were eating, some dormant, others commencing to spin like weavers, and many had made their cocoons and were stowed away in the leaves. Lady Nevill says they are cultivated at little expense, and the *Ailanthus glandulosa* is easy to raise. A ready market is found for all that can be cultivated, while the English cocoons are said to be finer than the French. The females lay from three hundred to three hundred and fifty eggs, and the average is about four hundred and fifty eggs to a gramme, a gramme being equal to fifteen and a half grains. A tree will produce about one hundred cocoons when in good bearing and planted in good soil.

"This beautiful study opens up a field not only for entomologists, but for all interested in natural history or in the industrial pursuits of the day, nor need it stop here. Its progress must be onward, and should be also encouraged by the fair sex, who will, indeed, find it not only a healthful and life-giving pursuit, but a beautiful and interesting study, for it will open up to their nimble fingers a most extensive and remunerative source of labour."

Apple-tree Bark-lice.

E. R. M. desires to know when is the special time for dealing with this pest, as there is a particular period in the spring when it is more effectually combatted than either earlier or later. The time when alkaline washes may be used for this purpose is early in June, when the young insect first emerges from the egg, and before it has formed its scale. During a few days at that time of year—a little earlier or later according to the season—the insect possesses the power of moving about, and being unprotected by the usual scale, can be readily attacked and destroyed. The only way to find out the exact time is to watch the trees from about the end of May, and keep a sharp look-out for these tiny creatures, wherever the scales are observed to be numerous. For a fuller description of the best methods of getting rid of the pest we must refer our correspondent to our last year's volume (CANADA FARMER 1869, pages 257 and 296), which, of course, he has had bound up for convenience of reference. Scraping off the scales from the limbs of the trees is a useful remedy that can be adopted at any time of year, and especially in the spring.

Our correspondent states that he has observed a mixture of "cold-made soft-soap" and an infusion of tobacco recommended as a remedy for this pest, and desires to know how "cold made" differs from other soft-soap, and how insects tell the difference, as he cannot. "Cold-made soft-soap" is produced by the action of lye on grease without boiling, and is very much stronger than that made in the ordinary way. Most Canadian housewives know the difference between the two forms of soap, and can make them when necessary; if they cannot, the sooner they learn the better. All insects know about the soaps is that they have to succumb to the action of the former very much more quickly than to that of the latter, because it is so much stronger. We should advise care being exercised in its application, lest injury be done to the tree as well as to the bark-lice: it should be made use of before the buds are much swollen, and can be applied with a brush.

THE AMERICAN ENTOMOLOGIST.—The March number of this valuable periodical contains an admirably executed likeness, engraved on steel, of the late lamented senior editor, Benjamin D. Walsh, State Entomologist of Illinois. Though a very great loss has been sustained by the demise of Mr. Walsh, the magazine is well kept up by his associate, Mr. C. V. Riley, State Entomologist of Missouri. The March number contains interesting articles on the Plum Curculio, Plant-lice and their enemies, Tent Caterpillars, Apple-tree borers, Gapes in Fowls, Insects injurious to the Grape-vine, a posthumous article by Mr. Walsh on Larvæ in the Human Bowels, Jottings, Correspondence, Reviews, etc. Besides the portrait, the number is embellished with many beautiful wood-cuts.

Apiary.

Bees—their Nature and Habits.

QUEENS MATE WITH MORE DRONES THAN ONE.

As I remarked in my last, this is admitted to be true, yet the queen is only once impregnated. That a queen once impregnated is impregnated for life is easily proved in the following manner: As soon as it is ascertained that a queen has mated, catch her and cut off one of her wings, so that she cannot fly; the consequence is that she remains in the hive, and never goes out to meet the drones again, and yet she remains fertile till old age, or during life. That a queen should mate with more than one drone and yet be impregnated but once, as stated above, must appear strange to those who do not fully understand how a queen is impregnated; but when this is fully understood, it appears very natural that it should be so. The impregnation of the queen is effected in the following manner. In the abdomen of the queen, communicating with the oviduct through which the eggs pass to be deposited in the cells, there is a small sac called a *sperm reservoir* or *spermatheca*. This sac, in the act of coition, and during the time the organ of the drone remains attached to the queen, becomes filled with the impregnating or seminal fluid; the queen is then said to be impregnated or fertilized. It will now be seen that if a queen mates with a drone, and the organ of the drone is prematurely removed by the bees, or in any other way, the sac will not be filled and the queen will not be fertilized but must mate again with another drone. I have never seen the bees remove it, but have seen them attempt to do so. Mr. Moore states, however, that he has not only seen the bees remove it, but has removed it himself more than once from the same queen. This being the case, we are enabled to understand what heretofore has been a mystery since the introduction of Italian bees, it has been claimed by apiarists whose veracity cannot be doubted, that some of their Italian queens produced at first a progeny of pure workers; afterwards they produced only hybrids; while others again produced at first hybrids, and afterwards pure bees. I have never seen a queen that produced that way; yet if such really is the case, it can only be accounted for in this way— a queen mates with a drone, either native or pure Italian, and the organ of the drone is not removed from her body by the bees until the seminal sac has been partly filled with the fertilizing fluid. Not being fully impregnated, she goes out again and mates with another drone. If the first drone happens to be Italian and the second black, she may at first produce hybrids, afterwards pure, or *vice versa*, as the case may be. This idea is supported by the fact that last season Mr. Gallup, of Iowa, had several queens only

partially fertilized, their fertility expiring in a short time after they commenced to lay; and my brother had a similar case. Such queens, had they mated the second time, and with a different kind of drone from the first, would have produced two kinds of worker bees.

There is a wide field for experiment in this direction, and I hope that some of our amateur beekeepers will turn their attention to it.

PROGENY OF THE QUEEN BEE.

A queen lays both impregnated and unimpregnated eggs, producing workers and drones.—Dzierzon, a noted apiarian of Germany, was the first to make this discovery. At first, however, few apiarists would accept it as true, but now it is almost universally acknowledged to be correct. That drones are the production of unimpregnated eggs is easily proved by confining the queen in a hive where there are no drones until she commences to lay, and it will be found that though she was never impregnated, yet her eggs all produce drones, and drones only. Again, if a queen is reared late in the season, after the drones are all destroyed, such a queen will always prove to be a drone-laying queen: not having been fertilized, she will lay unimpregnated eggs, and they are always found to produce drones. On the other hand, as soon as a queen is impregnated, she lays eggs which produce workers, and yet at the proper time, when drones are required, we find her laying eggs which produce drones hence they must be unimpregnated eggs.

It will be remembered that when a queen is fertilized, the seminal fluid is received into a sac, the mouth of which opens into the oviduct through which the eggs pass to be deposited in the cells.

Dzierzon concluded, therefore, that the eggs that produced workers were brought in contact with the mouth of the seminal sac, and received a minute portion of the seminal fluid, whereby they were impregnated or fertilized; while the eggs that produced drones passed through the oviduct without coming in contact with the seminal sac. In order to prove this, it was necessary to ascertain if the eggs in both ovaries or egg-bags of the queen were unimpregnated. A microscopic examination proved such to be the case. It follows, then, that eggs that produce workers are impregnated after leaving the ovaries, on their way through the oviduct, by coming in contact with the mouth of the seminal sac, while eggs that produce drones pass without coming in contact with the mouth of the sac, proving Dzierzon correct.

It will be readily seen, that such being the case, if a pure Italian queen mates with a common or black drone, her drones will be as pure as herself, as none of her eggs that produce drones come in contact with the seminal fluid received from the black drone while her workers will be hybrids, partaking both of the nature of herself and the drone with which she mated.

Natural History.

Tortoises.

To the Editor.

SIR,—It is some time since I sent you any communication on Taxidermy, and I propose now to supplement the previous articles on the modes of skinning and stuffing birds and quadrupeds, by a few directions respecting the best method of preserving specimens of one of the most curious of another order of animals, namely, reptiles. I allude to the tortoise or turtle.

They are amphibious, and, like most others of their class, extremely tenacious of life; in fact, it is hardly possible to kill them. They will live with their brains taken out, or mutilated to almost any extent. Cut off their legs, even their head, and they still live. I had an enormous one given to me some three years past by a gentleman from Hay township. It was so large that it would not go into a patent pail. As it was a male I knew that there would be no chance of breeding; and determined to try some experiments on him, to test his powers of endurance. I bored a hole through his shell, and having a pond of some half acre in extent, deposited him there, first having made a wire fast through his shell to a chain, and fastened him so that he could not come within one foot of the surface of the water, and went to see him every day. He was always alive and kicking, and sometimes he would give me a wink, as much as to say, "Old fellow, you have not killed me yet." I kept him there for six weeks; I then took him into my green-house, where the thermometer stood from 90° to 100°, and kept him tied, without food or water, for about the same number of weeks, yet could perceive no signs of death. Prompted by humanity and the love I have for all the animal kingdom, I desisted from further tormenting and gave him his liberty, and he soon started for parts unknown. But the next summer I saw a boy coming from the river with a huge tortoise, and when I examined the creature, I found it was the old brute on which I had tried the experiments.

The female lays about forty eggs on the edge of some lake or pond, covers them with dry sand or leaves, then deserts her nest, knowing that if they once hatch and get their breath, nothing can kill them. It is said that they will live one hundred years.

Their anatomical structure is very peculiar, the spinal column, ribs, and breast bone being to a certain extent joined to the shell, which may be regarded for the most part as a thickened skin or epidermis. They have no teeth; but woe betide the animal that the turtle fastens his jaws on, the piece may come off, but the vice never relaxes. Even if the head be cut off the grip of the jaw shows no sign of relaxation. The bodies of this tribe are enveloped in two shells; the upper one is formed of the ribs, etc., joined to the

plates of epidermis before mentioned, and the under one of the sternum or breast bone.

Having mentioned several ways in which the creature cannot be killed, I will describe the only way in which I have succeeded; that is, by putting a strong knife or chisel under the throat, and pushing it in about one or two inches; this severs the vertebræ, and renders the animal senseless to pain. Then separate the back and breast shells with the chisel, taking care not to break the shells. These plates are covered inside with a thin skin; that and all the muscles of the arm and neck, also the whole of the interior construction, are removed, while attention is paid to skinning the hind feet and tail, which is done as with other quadrupeds; these extremities must not, however, be removed from the upper shell, but left attached. All the fleshy parts being removed, the shells are washed out with a sponge and carefully dried; they are then slightly rubbed with the arsenical soap. Stuffing wires are now passed through the middle of the legs. After the skin has been rubbed with the preservative, the shell is returned to its place, and all is stuffed with flax or tow; the parts of the skin which have been cut are then sewed together. The two shells are now united, by four small holes being bored at their edges, and joined by strings or small wires. If not neatly done, apply some cement, coloured so as to resemble the shell.

A. B. BROWNSON.

Bayfield, Ontario.

Poetry.

Shetland.

Adieu! the cliffs that front the wave
Rolled from the icebergs' sullen home;
Adieu! the rapid firths that rave,
The rugged skerries plumed with foam.
Adieu! the gloom, the grandeur hoar,
The majesty of surge and storm;
My heart shall keep for evermore,
Wild shore, thy wonder and thy charm.

No woodland wreathes thy brows austere,
No teeming levels wave with corn.
No voice of song salutes the ear
From leafy perch at eve or morn:
Yet thine the might of mountain steeps,
And purple robes on mountain slides,
And thine the strain that never sleeps,
The thunder of Atlantic tides.

Nor yet of joyous life bereft,
Thy waters roll, thy mountains soar,
For myriad wings from crag and cleft
Swarm forth to whiten sea and shore.
In endless rings the seamow flits;
The gannet like an arrow falls;
And swart and grim the cormorant sits
On jagged reefs and rocky walls.

Stern in the storm that hurls on thee
The cataract billows' headlong snows,
Thy rocky ramparts to the sea
Their everlasting strength oppose.
But when thy wave unrippled drinks
The splendour of a setting sun,
How glorious are thy craggy brinks,
Thine islets green, and mountains dun!

Chambers' Journal.

Household.

Home Influence, and Amusements for the Family.

Many years since, in what were called the "good old times," home amusements were the order of the day, or rather evening. I lived in one of the rural districts of England, and during the winter season few evenings passed without some innocent recreation. We were not, in our locality, what is usually called "strait-laced" people, at that time, although we subsequently became such, to a great extent, and I fear the general morals of the little community rather suffered than otherwise by the change. The most sunny and delightful reminiscences of those days are connected with the Sunday observances. All went to church—yes, all, young and old—and no excuse was allowed to pass as a reason for not doing so, except illness. Bad weather hardly prevented it; we all had clothes that did not get injured by wet, and the domestics and humbler class of women invariably wore pattens, and the ladies clogs. The usual distance was from one to two miles, often more, and at those distances every one walked; for it was considered best, spiritually and physically, for all animals to rest on Sunday. These walks were indeed pleasant, through shady lanes in summer, the hedges blooming with clematis, honeysuckle, dog-roses, and the thousand flowers that fill the English roadsides and banks. But the crowning glory of early spring were the beds of primroses and blue-bells. These were truly exquisite, and left on the mind, in after years, a sweet recollection of home, that will be bright to the day of our death; aye, brighter each year as the day draws near when we must pass from this to another world.

In our part of England—far removed from manufactures and their baleful influence on the population—every cottage was more or less ornamented with creeping plants covering the porches and part of the roof, clinging to the chimneys and often overtopping them. Can any reasonable man believe, that the emigrant in a foreign land does not look back on those poor but beautiful homes with pleasing recollections; healthful alike to his happiness of mind and body, and fraught with satisfaction, notwithstanding the meagre fare and humble furniture that often characterized these abodes of love and comfort. It we would have the same feeling of pleasure follow our sons and daughters when they look back on the homes that we have provided for them, let us have something else than the usual bare walls and unadorned house; a moral influence more gratifying than the severe asperity of feeling that distinguishes many of our Canadian homes. Let us think a little more for our children, as our grandfathers thought for us, and endeavour to perpetuate that kindly family-loving feeling of home that some of us can so well recollect. In no

country in the world are home amusements or home ornaments so utterly neglected and put aside as in Canada. Germany, Holland, Prussia, France, and indeed every European country, can tell of many such home amusements, and home ornaments, and happy family gatherings. The saddening influence of an absence of all such attractions, and the cold severity of a too rigid creed and practice, have brought about in the old neighbourhood of which I have been speaking, changes by no means satisfactory to the philanthropist or reformer. The old content has given place to a restlessness of spirit, and failings, not to say vices, formerly rare, have become so prevalent as to excite neither rebuke nor notice, and similar influences are evidently at work in forming the aspect and character of too many of our Canadian homes. I do not mean to preach, still less do I mean to censure any strictness of living that good Christians may feel it best to impose on themselves; but I do desire the older heads of families to pause a moment, before they in their mature years, with passions blunted and habits sobered down by age, banish, or even by an absence of sympathy discountenance, all home amusements. Depend on it, some old folks are too prone to forget what they used to enjoy with such zest years ago. Now they too often turn a cold ear to the young folks schemes of domestic recreation. But if they would raise the social tone of their families, they must not only listen to, but they must join in such propositions with heart and soul. They must make home attractive by precept and example; they must have external ornaments in which all the family may take pride and pleasure, and they must assist by every means in their power to make the inner sanctuary of home a truly happy as well as holy place; otherwise they must be prepared to see their sons and daughters leave "the old homestead," to find amusement and excitement elsewhere. And depend upon it, such a breaking up of home influence will be disastrous in no small degree. The rural districts and rural occupations form our strength and our hope for the future of Canada.

True love of home not only endears the past, but incites in the minds of our children the desire and determination to secure for themselves the same domestic happiness. This laudable ambition forms a greater and more sure element of success in after life than can possibly be found associated with that restless and dissatisfied feeling "that anywhere away from home is better than there." My remarks are, of course, addressed exclusively to farmers, with them I have sympathy and fellow feeling, with manufacturers, merchants, tradesmen, pedlars, and all other classes of a peripatetic population I have few ideas in common. Their view seems to be to spread away, to drop into any business which accident or local advantage may suggest and place in their reach. But the farmers' sons cannot, as a rule, do this, nor can they even think much about it without

discontent and comparative injury. They are generally not adapted for such a life, but they are fitted for what they are brought up to, and what they always have been. Therefore, let the great troubled stream of trade bear its votaries on its bosom, many to sink almost at the outset, some to float bravely for a while and at last "go under," and a few, a very few, to be borne successfully to the very end. And then, when all is over, and the goal of riches is reached, what is often the "ultimatum?" Why, to end just where we of the agricultural community began, to buy a farm, build a house, and retire and live quietly the rest of their days; and as for their wealth, allow the next generation to squander in wantonness of living, the money so laboriously earned and so carefully saved by their fathers.

C. D.

Care of Packed Pork.

Hon. George Geddes gives some good advice, relative to the care of pork after it is packed, in his report of the Onondaga Salt Springs, as follows:—As the pork is used from the cask, see that whatever is left is under brine, and that salt reaches above the brine. Many people suppose that, if all the pork in the cask is kept covered with brine, that it is safe in hot weather. This is not enough; the salt must always reach above the brine, and the meat must be covered with brine too. It often happens that during the summer the brine is several inches above the meat, and above the salt too, as from time to time the pieces are taken out for consumption. The top of this brine being exposed to the warm air of summer, its surface sours. The animal matter that is always in brine rises to the surface, and then becomes tainted. A heavy coating of this animal matter will, in a few days, if undisturbed, be found on top of the brine; and as the good woman of the house, at an interval of ten days or a fortnight, visits her pork-barrel, she is astonished as she removes the cover that sat loosely on top, to see the "blanket," perhaps half an inch thick on top of the brine, and she is very much shocked with the odour that rises from it. "What is the matter with that salt pork that I paid an extra price for?" Nothing, my good woman, but there is something wrong on top of your brine. You have always known that if you used all the meat in the cask, and left two or three inches of salt in the bottom, and a foot or more of brine, that in a few days of hot weather, the small scraps that floated on the surface would become tainted, and the whole smell very unpleasantly: so you took good care to clean out your cask when the last piece of meat came out of it, unless the cask was in a very cool place and closely covered. If the salt in your pork barrel had reached above the brine, none of this trouble would have come for the oily matter in the brine would have been held down by the salt. or, if every day you had been to the cask, and taking out a

piece of meat, and in finding one to suit you, had stirred the brine and salt all up, it is not likely you would have had any sour brine. Casks that are headed up tight, after being filled with pork, should be laid down on the bilge, and rolled half over every three or four weeks.

But how can this pork, that has begun to sour, be saved? If the mischief has not gone too far, this can be done by taking the meat out of the cask, scraping each piece on every side, and then washing it in a solution of about a pound of common soda, such as may be readily purchased at the grocery stores, in one gallon of water, thoroughly. The best way is to take a sufficient quantity of this solution in a small tub, and pass each piece of meat through, rubbing it while under water smartly. Clean out the cask, wash it with water, soap, and ashes, and make it perfectly clean—wipe it dry, place the cask, open end down, on three stones, build a fire with corn cobs, or some other fuel that will impart no bad odour, and heat the cask as hot as possible without burning it. Take new salt and new brine and repack the meat, and if, as was said, you have acted in time, your meat is as good as ever.

This matter has been thus fully discussed, as this is the most common way in which farmers lose their pork in the summer season. It is not disputed that people have lived long lives without having their meat sour as has been described, because all the circumstances have not happened to be combined in their cases, necessary to produce this result; but most farmers do not live to old age without having meat injured, and, if they were to look carefully into the matter, it might turn out that, oftener than they would at first suspect, the loss occurred in this very way.

It is proper, before leaving this matter of preserving pork to say that many hogs' carcasses are tainted before they are cut up for the barrel. Of course there is no remedy after this has happened, and the soap maker can make more out of such subjects than any body else.

The above contains many useful hints, but we decidedly prefer, for curing or pickling purposes, the Liverpool or Goderich salt, and would especially recommend the latter to Canadian farmers.

Cruelty to Animals.

FOR THE LITTLE FOLKS—BY ONE OF THEMSELVES.

This, I think, is one of the worst faults a boy can have. I do not include girls as I hardly think that any girl could find it in her heart to be guilty of such an act. We often see boys with stones in their hands, ready to injure, perhaps to kill, some poor cat, or even one of the dear little birds, that sing so sweetly. Even the robin redbreast, that tiny herald of spring, is not safe from such missiles.

Besides all this, only think of the numbers of happy little families of birds that are

every year destroyed and broken up by cruel boys, and even grown-up men. Very few persons, it seems, have ever taken the trouble to think of and try to stop the barbarous habit of birdsnesting, or if they have done so, have given it up as useless to do so any longer. I am afraid that all that a little girl like me could say would be of no avail, but I mean to persevere, and beg my readers to help me all they can, and write something to the same effect as I have done. I love all living things, and that is the reason that I cannot bear to see them destroyed. I write this in spring, in hopes that others will also send something in time to save at least a few birds' nests. MAUD.

Receipts for Dyeing.

To DYE BLUE.—One quarter of a pound of copperas, two ounces of prussiate of potash, and one of oil of vitriol, is sufficient to dye five pounds of goods. Dissolve the copperas and the prussiate of potash in separate vessels in sufficient soft water to wet the goods. Put them in the copperas water and let them remain fifteen minutes, then heat the potash dye till it is lukewarm, put the goods in and let them stay fifteen minutes, take them out and add to the potash dye one ounce of oil of vitriol; put the goods in again, and for the deep shades boil them; for lighter shades take out before boiling.

To DYE SCARLET.—For two pounds of cloth allow one pound of madder, two ounces of cream of tartar, two ounces of marine or hydrochloric acid. Put it all together and bring the dye to a scalding heat. Put in the goods and let them stand ten minutes, but do not boil them. Rinse in cold water as soon as they come from the dye.

Care of Paint and Varnish Brushes.

In reply to an enquiry, the *Coachmakers' Journal* gives the following directions for the care of brushes when not in use:—

We prefer English varnish to keep varnish brushes in, or the highest grade American finishing. Turpentine added to it will not benefit them in the least; oil would be far the best. The object should be to suspend the brushes in a liquid which will not skim over on the top, and yet be as near the nature of the finishing varnish as possible. Rawlinseed oil alone will weaken the hairs or bristles, and an excess of turpentine makes them brittle, causing them to break off.

Ordinary paint brushes are generally kept in water; they should be suspended by the handles—the water to cover only the bristles. Lead brushes to be kept in tubs separate from those used for colour, and colour brushes wrapped with paper or muslin to prevent them soiling each other.

Camel hair mottlers, used for colouring bodies, retain their life or spring somewhat better when kept in turpentine; during the winter it is less troublesome, as it will not freeze—otherwise water will answer the purpose.

Agricultural Intelligence.

Short-horn Sales in Britain.

We notice by our British exchanges that quite a number of auction sales of the herds of noted breeders of shorthorns are taking place this spring. The general tenor of such as have already taken place indicates that prices are approximating to the actual intrinsic value of the animal sold, rather than the fancy figures once common, and that, as a consequence, the herds are becoming widely distributed, many tenant farmers being now able to procure good stock without too greatly encroaching upon their capital. Among the sales already over, we note that Mr. W. W. Slye, of Beaumont Grange, sold fifteen cows, at an average of £60 18s. each, and fifteen bulls at an average of £29 each. They were mostly of pure Bates blood—one cow, Lady Thorndale Bates 2nd, bringing 300 guineas, and a bull calf, one day old, out of Lady Oxford 5th, selling for 500 guineas. At the Stockeld Park sale 41 head brought an average of £32 8s. 9d. each, the bull Shuttlecock, said by good judges to be one of the very best in England, fetching 210 guineas. At the sale of the herd of the late Mr. Mann, "The Asps," Warwick, the animals were brought out in such low condition that they realized but very moderate prices, considering their quality and high character—the well known sire of the herd, Bulls Bay (23190), out of Polyhint by Earl of Dublin (10178), realizing but £26, and 24 bulls and bull calves netting but £120 10s. 6d., while the 59 females sold brought an average of £25 each, the highest price being 56 guineas for a heifer calf, Sabrina, her dam Sylphide going to 42 guineas. Several sales are yet to come off, among them the noted herd of the late Mr. Foljambe, Osberton Hall, comprising nearly one hundred head of all ages.

Spring Fair at Cobourg.

A fair, under the auspices of the West Northumberland Agricultural Society, and the Council of the town of Cobourg, was held at Cobourg on Wednesday, the 30th March.

The fair was intended for the sale of all kinds of stock, for a show of stud-horses, and for the sale and exchange of seeds. Owing to a very severe snow storm (the oldest inhabitant did not remember such a storm so late in the season) which had completely blocked up all the roads leading north and south, there was not nearly so much stock and grain brought out as had been expected at one time, but really more than was looked for, considering the severity of the storm.

There were eight stallions shown, mostly horses for general purposes. The prizes were awarded to Messrs. Underwood, Chapman, and Cockburn, in the order named. Besides these, very promising young entire

horses were shown by Mr. Harper, and by Mr. George Isaacs of Haldimand Plains.

The show of beef cattle, though not large, was of good quality. The first prize for fat oxen was given to an ox of Mr. Gillespie's. It was purchased by one of the butchers of the town for Easter beef, at the price of \$120. The second prize was given for an ox belonging to Mr. Winters; this was also bought for Easter beef.

The first prize for fat cows was awarded to a very fine cow fed and shown by Mr. Ira Brisbin, of Baltimore. This was bought by another of the butchers, at a good price per cwt., to grace his stall during Easter week. The second prize for a fat cow was given to a cow, apparently of the Devon breed, bred and fed by Mr. James Lacy.

Fat ewes were shown by Messrs. Cullis and Williams. There were no fat wethers shown, but some fat sheep were exposed for sale.

There were several lots of spring wheat, in 10 bushel lots, shown, which were all bought up for seed. One lot of fine barley was shown, and a large quantity of very fine oats, oats being the great crop of the season last year. The first prize for oats was awarded for the Surprise oats, shown by Mr. Roddick, Cobourg, but grown by Mr. Hagerman from seed brought from Michigan. They were a very fine sample. Several of the other samples shown were also very fine. Several lots of peas, clover and timothy seed, and some tares were also exhibited. Two reaping machines, a cultivator, and a newly patented bee-hive were on the ground.

In connection with the fair, it may be mentioned that the very fine yoke of fat cattle owned by John Henderson, Esq., Gore's Landing, that was awarded the first prize at this fair last year, was lately sold to an American dealer for the Boston market, for the sum of \$425. The same gentleman also sold lately a pair of two year old steers, to go to the Albany market, for the sum of \$125.

Immigration.

On the 21st of April, about five o'clock, upwards of five hundred immigrants arrived at the Union Station. They were for the most part composed of Germans and English. All of the former and a considerable portion of the latter proceeded westward to Kansas, which seems at present to be the favourite resort. About a hundred Englishmen remained over, however, and amongst them were some of the finest, most stalwart looking men that could be seen anywhere. These were chiefly Yorkshire men—men who looked like a good day's work, and seemed to be thoroughly up in farming. Some of them, however, were rather surprised when some farmers, who were on the platform awaiting the arrival of the train, approached them, and offered them \$10 a month "They could get that at home" was the general exclamation; and from the tone of their remarks, unless they receive better offers, they will go a little further westward. The fact was made very apparent that it will not do to reduce the farm servant principle of Canada to what it is in the southern and eastern counties in England, else we cannot retain these men, who in time would un-

doubtedly prove a very backbone to the agricultural interests of the Province they must be well paid, or they will not stay.

Returns have been received by the Government from a great many townships stating the number of hands wanted, and appended is a statement of the returns so far as received.

The first column indicates the number of labourers who may expect permanent employment.

The second column indicates the number of labourers who may expect employment during the busy season.

The third column indicates the number of female servants wanted.

The fourth indicates the number of mechanics required in each Township.

Haldimand	—	50	25	—
Glanford	—	50	—	—
Sarawak	5	20	6	—
Alnwick	12	10	6	4
Otonabee	—	50	50	4
Manners	—	50	25	—
Pickering	150	100	200	—
Essa	100	50	100	—
Scarboro	—	100	—	—
Georgina	—	30	20	—
West Whitby	—	—	50	—
Goderich	20	20	30	35
Woodstock	20	—	20	—
Tuckersmith	50	—	50	—
Luther	2	4	2	—
Stephen	—	20	—	—
Tilbury	10	20	5	7
Exfrid	20	50	10	9
Houghton	12	20	20	—
Dummer	—	50	—	—
Malden	15	30	12	—
Hope	100	100	50	—
Murray	20	100	50	18
Ramham	—	25	10	—
Arran	50	50	100	15
Grey	15	15	20	—
Adelaide	100	200	50	—
Ops	15	150	200	—
Moore	40	—	20	—
Warwick	25	100	50	—
Collingwood	—	50	50	—
St. Thomas	50	—	20	—
Sunnidale	20	—	20	—
North Cayuga	50	100	30	—
Cavan	100	50	100	4
Petrolia	—	20	25	10
Dereham	50	100	100	—
Dawn	30	100	50	10
North Dorchester	75	75	50	—
Adolphston	6	20	15	2
Adjala	40	120	50	28
Brant	30	30	20	—
Eldon	30	20	30	15
Emily	50	50	50	13
East Garafraxa	50	100	50	—
Hamilton	50	—	50	—
Horton	—	25	25	—
Kinloss	—	30	25	—
Nanawagawa	—	—	20	—
Nissouri	40	—	20	—
Pakanham	—	75	50	23
Raleigh	50	100	100	—
Sydenham	50	100	100	—
St. Vincent	12	40	20	10

It is said there are 3,000,000 acres devoted to turnips in England.

Reports of the fruit prospects, from all the western and southern States, are unusually favourable.

The directors of the Agricultural Society of North Renfrew, have imported three thorough-bred bulls at a cost of \$350.

The market fees of Guelph amounted to \$1,484 for the three months ending the 31st of March, against \$960 for the corresponding three months of last year.

The wild pigeons have come across in great numbers, and made a rookery a few miles from Goderich, where they are knocked down by the hundred.

*The farmers about Whitvale have organized a Farmers' Club, and intend to support the cheese factory. They think it more profitable than either stock or grain farming.

The Waterloo Cattle Market on the 12th April, was rather poor owing to bad roads. The number of cattle was less than usual but brought good figures, and four to five cents per pound, live weight, were paid and no huckstering about it.

The exports by way of Kingston to the United States for the quarter ending 31st ult., amount to \$65,290. Cattle represent \$24,477, horses \$20,574, wool \$3,689, and butter, skins, pigs, raisins and beef are the next largest exports.

The Chateaugay Society has sold one of their imported horses to Mr. Somerville, of Lower Lachine, for \$1,400 in gold. The Beauharnois Society has rescinded their resolution as to the importation of rams and bulls, and determined instead to send for another horse.

The monthly cattle fair held at Wroxeter on the 28th March, was attended by a large crowd and a number of sales made. Good working cattle sold from \$90 to \$100 per yoke; cows about \$35, and one team of horses was disposed of at \$200.

In some parts of Missouri, farmers are ploughing under their winter wheat, and sowing oats—the prospects of the crop are so poor. In other parts of the State it is looking finely.

The Ohio Farmer says, almost every country paper published in the northern portion of Ohio contains accounts of numerous cheese factories being built in their respective localities. At the present rate of increase, there will soon be a factory in every school district on cheese-making territory.

Notwithstanding the discouraging results of the beet sugar operations at Chatsworth, the citizens of Penn township, in Shelby Co., Illinois, have organized a club for the purpose of promoting this new branch of agricultural industry, and are making efforts to establish a beetsugar manufactory.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

—The schedules of prizes for horses, cattle, sheep, pigs, and agricultural implements to be offered at the annual show, to take place at Oxford in July next, have been issued. The amounts offered in prizes for the various classes are as follows: Horses, £885; cattle, £1,053; sheep, £790; pigs, £275; implements, £295—making a total of £3,268.

The January United States returns indicate an increase in winter wheat acreage in Kansas, Arkansas, Kentucky, and West Virginia—no change in California, Ohio, Wisconsin, Minnesota and Missouri, and a decrease in Illinois, Indiana, Michigan, New York, New England, and the cotton belt. The probabilities at present are opposed to another year of marked productiveness, the appearance of the plant being comparatively unpromising.

Sewage, as a manure, is now attracting great attention in England, and it is asserted that the Metropolitan Board of Works, of London, by their apathy on the subject, are conniving at an enormous waste of money and fertilizing power by neglecting to utilize the sewage of London. The annual outflow of the sewage water of London is estimated at 180,000,000 tons, and this refuse is calculated to be worth nine farthings a ton. Hence, it is contended, valuable manure is discharged into the Thames, worth \$7,500,000 per annum, or \$20,545 a day.

NEW ZEALAND.—A correspondent from New Zealand, writing to an English journal, under date of the 24th of December, reports that the prospects of harvest were very injuriously affected by extraordinary rains, which had flooded extensive tracts of land with a muddy deposit, and seriously damaged the crops. The writer, in reference to the general condition of agriculture, and the season at the date of his letter, says: "Whilst you are as dormant as a winter's bat, by the icy coat of winter spread over your grounds, we are in the heat of summer. Agricultural shows are taking place in the various settled districts, and to those who make it their duty to visit them, the progress made in the breeding of sheep, cattle and horses, is easily noted, and highly encouraging. Pure short-horns and Ayrshires, Southdowns and Leicesters, are rapidly taking the place of the mongrels which a few years ago were the universal stock. And it is questionable if Clydesdale horses, even from their native Lanark or Renfrew, will excel those bred with ourselves." Wool was being extensively exported. The growth of flax was very largely extended, and had proved profitable.

NEW EMIGRATION IDEA.—A new phase of the emigration movement, says an English paper, has sprung up in the shape of a limited liability company, formed, with the aid of the Duke of Manchester and a large number of influential gentlemen, to promote "a more perfect scheme of emigration and colonization than has yet been propounded." It proposes to establish a large capital in one pound shares, also to obtain grants of good land free, if possible, or upon easy terms of purchase, and to apportion it in moderate farms to well selected and deserving emigrants. The company offer to take special care of the settler, by sending out pioneers to prepare a portion of land and erect temporary huts. Farm implements and seed will be lent, to be repaid after the first crop. The company state that they will be able to pay interest to the shareholders investing capital, that it will be a great assistance to emigrants with small capital, and that it would be a great advantage if boards of guardians will send deserving families out under the provisions of the 12th and 13th Victoria, by which they may advance the sum of £10 per adult, to be repaid. A circular has been sent to all boards of guardians, inviting this kind of assistance, and that of Bedford has accepted the offer.

Miscellaneous.

Protecting Crows.

A correspondent of the *New England Farmer*, who has been engaged in collecting birds and eggs for twenty-five years, and has made the habits of crows a study, writes to that journal:—"I know that they destroy some insects in the spring, but mostly water insects that do no damage, but many of which prey on other insects which are injurious. But I do also know that crows live almost entirely on the eggs and the young of smaller birds, from the middle of May to the first of August, and that they feed their young on the same, and scarcely anything else. I have no doubt that a nest of four young crows—there are sometimes five—will eat two quarts of young birds or eggs in one day. That they destroy two-thirds of all the eggs and young of small birds I know to be a fact in some sections. Of some species I have known them to destroy four nests out of five, and that before the young were a week old.

"Now, I think that one small bird will destroy more noxious insects in one season than fifty crows. And this is not all. They often spoil large fields of corn when too late in the season to re-plant. If every crow, jay, hawk and owl could be fed to insects, I think it would be a blessing to the farmer and to the small birds, and I hope no law will be passed to protect crows or jays, for I see them daily hunting for the nests of small birds."

FILIAL REPARTEE.—"You are a pig," said a father to his little son, in reproof of his behaviour at table; "do you know what a pig is, my son?" "Yes, papa, a hog's little boy."

A NEW SPECIES OF PIG.—A farmer wrote as follows to a distinguished scientific agriculturist, to whom he felt under obligations for introducing a variety of swine:—"Respected sir, I went yesterday to the cattle show. I found several pigs of your species. There was a great variety of hogs, and I was astonished at not seeing you there."

Advertisements.

VINEGAR. HOW MADE FROM CIDER, WINE, Molasses or Sorghum in 10 hours, without using drugs. For circulars, address F. I. SAGE, Vinegar Maker, Cromwell, Conn. v2-1-6t.

HERDSMAN WANTED.

An experienced and competent Herdsman, to take charge of a valuable herd of Short-Horns. Good wages and a permanent situation to a first-class man. Apply, stating experience and qualifications, with references, to JAMES O. SHELDON, Geneva, N. Y., U. S. v2-5-1t.

W. EWING,
SEEDSMAN,
100 MCGILL STREET, MONTREAL,
OFFERS FOR SALE CHOICE
Farm, Garden & Flower Seeds,
BEDDING PLANTS, &c.

Descriptive priced Catalogues forwarded on application FREE.

Also Imported and home grown SEED GRAIN. Choice samples. v2-4-2t

PROVINCIAL EXHIBITION.

Agricultural and Arts Association OF ONTARIO.

THE Twenty-fifth Provincial Exhibition will be held at Toronto on the

3rd TO 7th OCTOBER NEXT.

Prize Lists and full particulars will be published in due time. By order of the Council.

HUGH C. THOMSON,
Secretary. v2-4-2t

Toronto, April 15, 1870.

BEDDING PLANTS!

WE have a Choice Stock of Bedding Plants, such as SCARLET GERANIUMS, VERBENAS, HELIOTROPES, PETUNIAS, &c. &c.

Which we can supply to purchasers at \$1. per dozen. New and rare varieties from \$2. per dozen to 50 cents each.

Beautiful Hanging-Baskets from 50 cts. to \$2.50 each. All the above can now be packed in baskets to carry to any part of the Dominion where there is Express and Stage communication. Address,

Geo. LESLIE & SONS,
TORONTO NURSERIES,
Leslie P. O.

v2-2-3t.



TO THE FARMERS OF CANADA.

WILSON, BOWMAN & CO.,

Hamilton, Ont.,

MANUFACTURERS OF THE CELEBRATED

LOCKMAN SEWING MACHINE

TAKE pleasure in announcing that the popularity of the Sewing Machine manufactured by them is still on the increase. They are now turning them out at the rate of 600 per month, and yet have been compelled within the last two weeks to increase their facilities to a capacity of one thousand per month.

The Lockman Machine, from its capacity to sew the heaviest fabrics with linen thread, as well as the finest cambrics with No. 150 cotton, is pre-eminently the FARMER'S FAVORITE FAMILY FRIEND. It is so exceedingly simple in its parts, and so strongly and durably made, that it does not require a mechanical genius for its management.

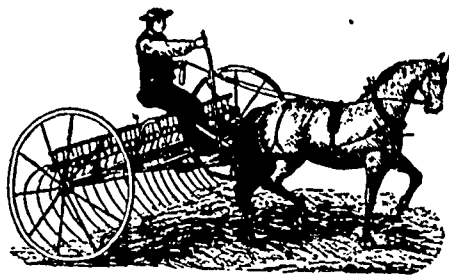
The manufacturers challenge the world to produce its equal, and yet its price is from FORTY TO FIFTY PER CENT. LOWER than that of any other First Class Lock Stitch Sewing Machine.

Every Machine is warranted by the manufacturers, who are determined that no inferior machine shall leave their premises. Parties purchasing to sell again, can obtain liberal terms by addressing the manufacturers.

WILSON, BOWMAN & CO.

Hamilton, Ontario.

v2-5-1t.



Steel Tooth Sulky Horse Rake

Will do more work, easier, cleaner, and better than any other. Does not gather dust in the hay. Will rake over rougher ground. Is light and strong, well-made and nicely finished. The teeth are fine spring steel, independent of each other, and will yield to pass obstructions. Took FIRST PRIZE at the Provincial Fair, London, 1869. For testimonials, &c., send for circular. As our manufacture for 1870 is limited, orders should be sent at once.

JAMES SOUTAR & CO.,

Foundry and Agricultural Warehouse,

v2-4-4t.

Chatham, Ont.

IMPROVE YOUR SEED.

Genuine Imported Hungarian Seed Grains.

THESE seeds are carefully selected and warranted to be as represented:

	LIST OF PRICES.		
	per bush.	peck.	quart.
Wheat.....	\$1.00	\$2.00	\$1.00
Rye.....	3.50	1.75	1.00
Oats.....	5.00	2.00	1.00

SAVE YOUR SEED FROM VERMIN AND BIRDS.

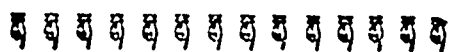
LASSING'S PATENT IMPROVED MODE OF PREPARING SEEDS. This patent powder protects all kinds of seeds from vermin and birds, and fertilizes after planting, and costs \$2 per pound, which is sufficient for 2 bushels of Seed. State, County and Town rights for sale.

Sent by Express to all parts of the country on receipt of price. Send for circular containing valuable information to farmers.

AARON MASKER,

v2-3-3t

Perth, Amboy, N. J.



TO THE WORKING CLASS.—We are now prepared to furnish all classes with constant employment at home, the whole of the time or for the spare moments. Business new, light and profitable. Persons of either sex easily earn from \$6. to \$5 per evening, and a proportional sum by devoting their whole time to the business. Boys and girls earn nearly as much as men. That all who see this notice may send their address, and test the business, we make this unparalleled offer: To such as are not well satisfied, we will send \$1 to pay for the trouble of writing. Full particulars, a valuable sample which will do to commence work on, and a copy of *The People's Literary Companion*—one of the largest and best family newspapers published—all sent free by mail. Reader, if you want permanent, profitable work, address E. C. ALLEN & CO., AUGUSTA, MAINE.

NEW ARRANGEMENTS AND GREAT INDUCEMENTS.

Wishing to give more attention to the raising of bees and queens, I offer the following inducements till the close of the coming Provincial Fair:—

To any person sending \$3.1 will send my single-boarded hive with improved entrance, price \$3, or an individual right, price \$3, and my dollar book on bee culture, soon to be published; tickets will be sent for the book. For \$5, both hive and right, or an Italian queen, and the book. For \$10, or the highest bid above that during the next six weeks, a township right and the book. For \$12, or highest bid above that, a township right, one hive, and the book. For \$400, or highest bid above that, a right for the entire Province of Quebec, with the exception of two or three counties that are sold; this right is worth \$2,500. For \$200, or highest bid above that, I will sell a patent for a Self-coiling Buggy Hub, lately introduced; specimen carriage to be seen at Brooklin, Ont.; this patent is worth \$2,000. Sale of townships not to interfere with sale of hives upon the above conditions.

J. H. THOMAS,

Brooklin, Ont.

v2-5-4t.

DOMINION OF CANADA



EMIGRATION TO THE PROVINCE OF ONTARIO.

To Capitalists,
Tenant Farmers,
Agricultural Labourers,
Mechanics,
DAY LABOURERS,

And all Parties desirous of Improving their
Circumstances by Emigrating to a New
Country.

THE attention of intending Emigrants is invited to the great advantages presented by the Province of Ontario. Persons coming on the interest of their money can easily get eight per cent. on first-class security.

Tenant Farmers with Limited Capital

Can buy and stock a Freehold Estate with the money needed to carry on a small farm in Britain. Good cleared land, with a dwelling and good barn and out houses upon it, can be purchased in desirable localities at from £4 to £10 Sig. per acre. Farm lands can readily obtain work at good wages. Among the inducements offered to intending Emigrants, by the Government, is

A FREE GRANT OF LAND (WITHOUT ANY CHARGE WHATSOEVER)

Every Head of a family can obtain, on condition of settlement, a FREE GRANT of two hundred acres of land for himself, and one hundred acres additional for each member of his family, male or female, over eighteen years of age.

All Persons over 18 years of age can obtain a FREE GRANT OF 100 ACRES.

The Free Grants are protected by a Homestead Exemption Act, and are not liable to seizure for any debt incurred before the issue of the patent, or for twenty years after its issue. They are within easy access of the front settlements, and are supplied with regular postal communication.

Registers of the Labour Market

And of Improved Farms for sale, are kept at the Immigration Agencies in the Province, and arrangements are made for directing emigrants to those points where employment can be most readily obtained. Several new lines of railway and other public works are in course of construction, or about being commenced, which will afford employment to an almost unlimited number of labourers.

Persons desiring fuller information concerning the Province of Ontario, are invited to apply personally, or by letter, to the Canadian Government Emigration Agents in Europe, viz: Wm. Dixon, 11 Adam Street, Adelphi, London, W C; J. G. Moyle, Dublin; Charles Foy, Belfast, David Shaw, Glasgow, and E. Simays, Continental Agent at Antwerp.

Also to the Emigration Agents in Canada, viz:

John A. Donaldson, Toronto, R. H. Rae, Hamilton; Wm. J. Walls, Ottawa, Jas. Macpherson, Kingston, L. Stafford, Quebec; J. J. Daley, Montreal; E. Clay, Halifax, Nova Scotia; Robert Shiver, St. John, and J. G. G. Lavion, Miramichi, New Brunswick, from whom pamphlets issued under the authority of the Government of Ontario, containing full particulars in relation to the character and resources of, and the cost of living, wages, &c., in the Province, can be obtained.

JOHN CARLING,

Commissioner of Agriculture and Public Works for the Province of Ontario.

Department of Immigration,
Toronto, October, 1869.

v2-3-121.

Markets.

Toronto Markets.

"CANADA FARMER" Office, May 9th, 1870.

FLOUR AND MEAL.

An improvement in prices is apparent in the leading wheat markets, and a still advancing tendency seems probable. But little Flour is offering, and that chiefly of superfine quality. The current rates are:

Flour—Superfine, \$4 00; Extra at \$4 45 to \$4 50
Oatmeal—\$3.90 to \$4 00
Cornmeal—\$4.00 to \$4.25.

GRAIN AND SEEDS.

The market has been quiet, but firm, and but few transactions are reported. The following are the ruling prices:

Wheat—Soules', \$1.00 to \$1.01, Spring, 93c. to 95c.;
Midge Proof, 92c. to 93c.
Barley—Inferior, 48c. to 53c., Bright, 60c.
Oats—37c. to 38c.
Peas—60c. to 63c.
Rye—56c. to 57c.
Clover Seed—\$7.25 to \$7.50.
Timothy Seed—\$4.50 to \$5.00.
Alsike Seed—\$3.50 to \$4.00.
Tares Seed—\$1.50 to \$2.00.
Hungarian Grass Seed—75c. to \$1.
Millet—75c. to \$1.

HAY AND STRAW.

Hay has been in rather light supply, and the price has consequently advanced.

Hay—\$12.00 to \$18.50.
Straw—\$5.00 to \$7.00.

PROVISIONS.

The following are wholesale prices. Farmers' produce, mostly sold by retail, is of course somewhat higher.

Bacon—Cumberland cut, 10 1/2c to 11c.
Hams—Sugar cured and canvassed, 13c to 15c
Lard—From 13c to 14c.
Butter—Dairy, 20c to 22c; in rolls (retail) 24c to 26c.
Cheese—From 14 1/2c to 15c; Reesor's Stilton, 18c,
Royal Arms, 17c.
Eggs—Fresh, 10c to 11c.
Dried Apples—From 8 1/2c to 9c
Hops—Superior, 12 1/2c to 15c; Ordinary, 10c to 12 1/2c.
Inferior, 8c.
Salt—Goldenrich, \$1.55, American, \$1 35; Liverpool, per bag, 90c.
Dressed Hogs—\$9.00 to \$9.25.

CATTLE MARKET

Prices continue high, and there is a brisk demand. We quote Toronto prices.

Beaves—From \$5.50 to \$7.00 per 100 lbs., dressed weight.
Sheep—From \$3.00 to \$7.
Lambs—From \$2 to \$4.
Calves—From \$3 to \$8.
Hides—From 5c. to 8c.
Calfskins—From 10c. to 12c.
Sheepskins—Green, from \$1.00 to \$1.40. Dry, from 20c. to 70c.
Wool—From 25c. to 27c.

Montreal—Flour—Extra, \$4.80 to \$4.85; Fancy, \$4 50 to \$4.55; Welland Canal Superfine, \$4.33 1/2 to \$4 35; Superfine No. 1 Canada wheat, \$4.20 to \$4 50; No. 1 Western, \$4.30 to \$4.35; No. 2 Western, \$4 05 to \$4 15; Bag flour, 100 lbs., \$1.90 to \$2.15. Wheat, Canada fall, \$1.00 to \$1.01; spring, \$1.00 to \$1.02; Western, 95c to 96c. Oats, per 32 lbs., 33c to 36c. Barley, per 48 lbs., 45c to 50c. Butter, dairy, 16c to 17c; store packed, 12c to 14c. Ashes, pots, \$5.47 1/2 to \$5.52 1/2; pearls, \$6.80 to \$6.90. Pork, Mess, \$26.50 to \$27.00. Peas, per 60 lbs., 75c to 80c.

London, May 7—Spring wheat, 85c to 90c; red fall, 80c to 84c; oats, 32c to 33c, peas, 54c to 56, barley, 40c to 45c; butter, 22c to 25c, eggs, 9c to 10c.

Guelph, May 3—Fall wheat, per bushel, 80c to 86c, spring wheat, 70c to 85c; oats, 28c to 30c; peas, 45c to 54c, barley, 40c to 48c, eggs, 9c to 10c; butter, 18c to 20c; potatoes, 50c to 70c, sheepskins, 95c to \$2; hides, \$5.50 to \$6.00.

Hamilton, May 3—Winter red wheat, 85c to 88c; spring do., 45c to 90c, barley, 45c to 53c; oats, 36c to 37c; peas, 45c to 57c, timothy seed, \$4.50 to \$4 70; clover seed, \$7.50 to \$7.75, butter, 23c to 25c, eggs, 12 1/2c.

New York—Flour—A shade firmer, receipts 20,000 bbls.; sales \$2,200 bbls., at \$4 85 to \$5 00 for superfine State and Western, \$5 15 to \$5 75 for common to choice extra State and Western; \$5.25 to \$6 30 for round hooped Ohio Rye Flour. Steady at \$4 35 to \$5.60. Wheat, receipts 35,000 bush., sales 38,000 bush., at \$1 18 to \$1 19 for No 2 spring; \$1 31 to \$1 32 1/2 for winter, red and amber Western Rye, Quiet. Corn, Shade firmer; receipts 12,000 bush.; sales 6,000 bush., at \$1 14 to \$1 15 for new mixed Western. Barley, Dull. Oats, Firm; receipts 6,000; sales 15,000 bush. at 60c to 65c for Western 1st store. Pork, Market dull at \$20 25 to \$23.50 for new mess. Lard, Nominal at 16c to 16 1/2c for steam, and 16 1/2c to 17c for kettle rendered. Butter, Quiet at 14c to 20c for Ohio, and 20c to 36c for State. Cheese, Quiet at 16c to 17c for common to prime.

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THE CANADA FARMER is printed and published on the 15th of every month, by the GLOBE PRINTING COMPANY, at their Printing House, 26 and 28 King Street East, Toronto, Ontario, where all communications for the paper must be addressed.

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Communications on Agricultural subjects are invited, addressed to "The Editor of the Canada Farmer," and all orders for the paper are to be sent to

GEORGE BROWN,
Managing Director.